USB Power Delivery Exerciser Manual

Manual Version 1.85

For USB Protocol Suite Software Version 8.50 and above

December 2020

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1 INTRODUCTION

Integrated in Teledyne LeCroy's Voyager M310C test platform, the Power Delivery exerciser supports traffic generation, including both provider and consumer device emulation. The Power Delivery exerciser continues to evolve with each software release. Be sure to check for updated software and firmware before getting started with the Exerciser.

1.1 Scope of the Document

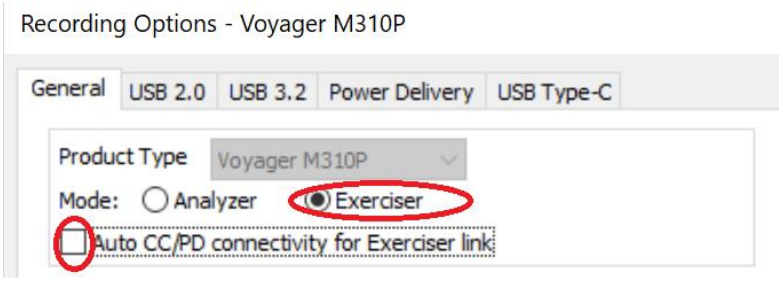
The document is intended as an extension to Voyager Exerciser language. It addresses only the new elements specific to PD Exerciser on top of the language described in "**Voyager Exerciser Language Manual**" (accessible through Menu -> Help -> Other Manuals).

1.2 Getting Started:

- The port that labeled as "Exerciser" should be used to connect DUT to the PD Exerciser. This port is same as left Analyzer port in Voyager M310C, but in other platforms "Exerciser" port is independent port.

- The PD exerciser also requires specific cable orientation (Red LED when connected wrong side-up). Voyager M310P platform is capable to work in every orientation.

- To enable the PD Trainer/Exerciser, set working mode to "Exerciser" in general page of "Recording options" and make sure "Auto CC/PD connectivity" is unchecked.



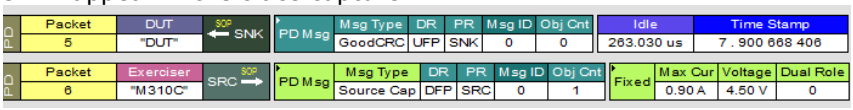
- If need to source more than 5V need to uncheck "Allow Vbus > 5V" in "Power delivery tab of "Recording Options". See important note below:

Note – *Allow VBUS > 5v* is a safety feature which prevents sourcing above 5V. When enabled, this mode will allow Voltage levels to be delivered to the DUT which may exceed their current carrying capabilities. While the Voyager system is designed to tolerate

higher current, these higher voltages may inadvertently cause damage to devices/cables under test.

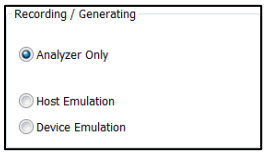
- To set *devices port name*, use the General Tab under *"Recording Options"* to add "alias labels" for your DUTs.

These labels will appear in the trace capture.



The Alias name is primarily for use in analyzer mode and requires that device names are added before recording traffic. The device naming can also be used in Exerciser mode; however message frames from the Voyager M310C will be always be labeled "M310C".

- Within the USB 3.1 tab – "*Recording/Generating"* option - leave in 'Analyzer Only' mode unless you also want to run 3.1 traffic.



- Use the example PD Exerciser scripts to begin testing:

C:\Users\Public\Documents\LeCroy\USB Protocol Suite\Examples\Power Delivery Exerciser

Example Script	Behavior
Source Power Negotiate VDM.updg	Voyager as Source negotiates default Provider 900mA@4.5V then sends Discover-Id. Using Basic Commands.
High Level Negotiate with dynamic change cap.updg	Voyager as Source negotiates default Provider 1A@5V then broadcasts lower PDO 900mA@4.5V and re-negotiates. Using High Level Commands.
Discover Cable.updg	Voyager as Source programmatically turns on VCONN and performs Discovery Process for cable. Using High Level Commands.
Sink Power Negotiate.updg	Voyager as Sink Waits to receive Source cap then negotiates as Sink - 900mA@5V. Using Basic Commands.
Apple VGA multiple Adaptor.updg	Voyager as Source enables VCONN and Sends Discover Id; Discover Mode for Apple SVID (0x05AC); Enter Mode (PD_DISPLAY_PORT_SVID) then Exit Mode; turns off VCONN. Using Basic Commands.
High Level Device Discovery.updg	Voyager as Source sends Discover Id; Discover SVIDs; Discover Modes for Display Port SVID (0xFF01); Enter Mode (0xFF01); Exit Mode (0xFF01); Discover Modes for Apple SVID (0x05AC); Enter Mode(0x5AC mode 1); Exit Mode(0x5AC mode 1); Enter Mode(0x5AC mode 2); Exit Mode(0x5AC mode 2); Using High Level Commands.
NegotiationSample_WithSwapPowerRole.updg	Voyager as Source sends SwapPowerRole; and negotiates as a Sink after power role swap. 1.5A@5V. Using High Level Commands.
Sink Auto Response.updg	Voyager as Sink will response to all incoming PD messages within 100s. Using Auto Response Command.

- To Run Sample Script – Connect Cable to Exerciser port; Click *Record*, wait a few seconds and Click *Run.* The PD Exerciser uses the sequence below at the beginning of each example script to simulate a re-connect event.

```
call PD_Disconnect()

call PD_SetResistorRp( PD_ON, CC_RP_CUR_1_5, CC_LINE_1 )
call PD_SetVBus( PD_ON )
```

Note- it's also possible to execute the example scripts before the cable is connected to M310C then performing "hot-plug" (It's possible some issues may be seen with some devices not responding to exerciser in this case).
Note – some latency may be observed when activating/downloading PD exerciser scripts (Run button) This will be improved in a future release.

Important Licensing Note:

- Operating the PD Exerciser beta requires that the USB Power Delivery Exerciser option is enabled on the M310C base unit:

USB Power Delivery - Type C	Yes	USB Power Delivery Analysis - Type-C
USB Power Delivery - Exerciser	Yes	USB Power Delivery Exerciser

2 Packet Templates

Following Packet Templates can be used in Basic or High-Level commands as data containers. All of these messages inherited from `PD_Packet` packet template except those which are used as containers for Data Objects.

2.1 PD_ControlMessage

Available fields for `PD_ControlMessage` packet template are:

2.1.1 Revision 2.0

Field Name	Field Size in bits	Description
MessageType	4b	Default: 0
Reserved1	1b	Default: 0
PortDataRole_Reserved2	1b	Default: 0
SpecificationRevision	2b	Default: PD_SPEC_REVISION_2 (Rev2.0)
PortPowerRole_CablePlug	1b	Default: 0
MessageId	3b	Default: 0
NumberOfDataObjects	3b	Default: 0
Reserved2	1b	Default: 0

2.1.2 Revision 3.0

Field Name	Field Size in bits	Description
MessageType	5b	Default: 0
PortDataRole_Reserved2	1b	Default: 0
SpecificationRevision	2b	Default: PD_SPEC_REVISION_3 (Rev3.0)
PortPowerRole_CablePlug	1b	Default: 0
MessageId	3b	Default: 0
NumberOfDataObjects	3b	Default: 0
Extended	1b	Default: 0

2.2 PD_GoodCrcMessage

`PD_GoodCrcMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_GOODCRC`.

2.3 PD_GotoMinMessage

`PD_GotoMinMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_GOTO_MIN`.

2.4 PD_AcceptMessage

`PD_AcceptMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_ACCEPT`.

2.5 PD_RejectMessage

`PD_RejectMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_REJECT`.

2.6 PD_PingMessage

`PD_PingMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_PING`.

2.7 PD_PsRdyMessage

`PD_PsRdyMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_PS_RDY`.

2.8 PD_GetSourceCapMessage

`PD_GetSourceCapMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_GET_SOURCE_CAP`.

2.9 PD_GetSinkCapMessage

`PD_GetSinkCapMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_GET_SINK_CAP`.

2.10 PD_DataRoleSwapMessage

`PD_DataRoleSwapMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_DR_SWAP`.

2.11 PD_PowerRoleSwapMessage

`PD_PowerRoleSwapMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_PR_SWAP`.

2.12 PD_VConnSwapMessage

`PD_VConnSwapMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_VCONN_SWAP`.

2.13 PD_WaitMessage

`PD_WaitMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_WAIT`.

2.14 PD_SoftResetMessage

`PD_SoftResetMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_SOFT_RESET`.

2.15 PD_DataResetMessage

`PD_DataResetMessage` packet template has same fields as `PD_ControlMessage` but default value for `MessageType` is `PD_MESSAGE_TYPE_DATA_RESET`. Only applicable to Power Delivery Rev3.0.

2.16 PD_DataResetCompleteMessage

PD_DataResetCompleteMessage packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_DATA_RESET_COMPLETE. Only applicable to Power Delivery Rev3.0.

2.17 PD_NotSupportedMsg

PD_NotSupportedMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_NOT_SUPPORTED. Only applicable to Power Delivery Rev3.0.

2.18 PD_GetSourceCapExtendedMsg

PD_GetSourceCapExtendedMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_GET_SRC_CAP_EXT. Only applicable to Power Delivery Rev3.0.

2.19 PD_GetStatusMsg

PD_GetStatusMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_GET_STATUS. Only applicable to Power Delivery Rev3.0.

2.20 PD_FRSwapMsg

PD_FRSwapMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_FR_SWAP. Only applicable to Power Delivery Rev3.0.

2.21 Pd_GetPPSStatusMsg

Pd_GetPPSStatusMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_GET_PPS_STATUS. Only applicable to Power Delivery Rev3.0.

2.22 Pd_GetCountryCodesMsg

Pd_GetCountryCodesMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_GET_COUNTRY_CODES. Only applicable to Power Delivery Rev3.0.

2.23 Pd_GetSinkCapExtendedMsg

Pd_GetSinkCapExtendedMsg packet template has same fields as PD_ControlMessage but default value for MessageType is PD_MESSAGE_TYPE_GET_SNK_CAP_EXT. Only applicable to Power Delivery Rev3.0.

2.24 PD_SourceCapabilitiesMessage

PD_SourceCapabilitiesMessage packet template contains all the fields of PD_ControlMessage but default value for MessageType is 1(PD_MESSAGE_TYPE_SOURCE_CAP -

PD_DATA_MESSAGE_TYPE_OFFSET). Following are additional data fields for PD_SourceCapabilitiesMessage packet template:

Field Name	Description
SourceCapabilitiesData	This field can contain one or more(up-to 7 according to PD Spec) PDO packet variables. PDO types which can assign to this field are: PD_PowerDataObjectFixedSupply_Source, PD_PDOFixedSupplyNotVSafe5V_Source, PD_PowerDataObjectVariableSupply_Source, PD_PowerDataObjectBatterySupply_Source, Pd_PowerDataObjectPPS When using the Transaction Engine™ functions: the PD_AddSourceCap function can be used to add desired Source PDOs to PD Exerciser.

2.24.1 PD_PowerDataObjectFixedSupply_Source

Can be used as SourceCapabilitiesData for PD_SourceCapabilitiesMessage. Available fields for this packet template are:

Field Name	Field Size in bits	Description
MaxCurrent_10mAUnits	10b	Default: 100
Voltage_50mVUnits	10b	Default: 100
PeakCurrent	2b	Default: 0
Reserved	Rev.3.0: 2b Rev.2.0: 3b	Default: 0
UnchunkedExtMsgSupported	1b	Default: 0 Rev3.0 only
DataRoleSwap	1b	Default: 0
UsbCommunicationsCapable	1b	Default: 0
UnconstrainedPower	1b	Default: 1
UsbSuspendSupported	1b	Default: 0
DualRolePower	1b	Default: 0
PowerDataType	2b	Default: 0

2.24.2 PD_PDOFixedSupplyNotVSafe5V_Source

Can be used as SourceCapabilitiesData for PD_SourceCapabilitiesMessage. Available fields for this packet template are:

Field Name	Field Size in bits	Description
MaxCurrent_10mAUnits	10b	Default: 0
Voltage_50mVUnits	10b	Default: 0
PeakCurrent	2b	Default: 0
Reserved	8b	Default: 0
PowerDataType	2b	Default: 0

2.24.3 PD_PowerDataObjectVariableSupply_Source

Can be used as SourceCapabilitiesData for PD_SourceCapabilitiesMessage. Available fields for this packet template are:

Field Name	Field Size in bits	Description
MaxCurrent_10mAUnits	10b	Default: 0
MinVoltage_50mVUnits	10b	Default: 0
MaxVoltage_50mVUnits	10b	Default: 0
PowerDataType	2b	Default: 2

2.24.4 PD_PowerDataObjectBatterySupply_Source

Can be used as `SourceCapabilitiesData` for `PD_SourceCapabilitiesMessage`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
MaxAllowablePower_250mWUnits	10b	Default: 0
MinVoltage_50mVUnits	10b	Default: 0
MaxVoltage_50mVUnits	10b	Default: 0
PowerDataType	2b	Default: 1

2.24.5 Pd_PowerDataObjectPPS

Can be used as `SourceCapabilitiesData` for `PD_SourceCapabilitiesMessage`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
MaxCurrent_50mAUnits	7b	Default: 0
PPS_Rsvd_1	1b	Default: 0
MinVoltage_100mVUnits	8b	Default: 0
PPS_Rsvd_2	1b	Default: 0
MaxVoltage_100mVUnits	8b	Default: 0
PPS_Rsvd_3	2b	Default: 0
PPSPowerLimited	1b	Default: 0
APDOType	2b	Default: 0
PowerDataType	2b	Default: 3

2.25 PD_SinkCapabilitiesMessage

`PD_SinkCapabilitiesMessage` packet template contains all the fields of `PD_ControlMessage` but default value for `MessageType` is `4`(`PD_MESSAGE_TYPE_SINK_CAP - PD_DATA_MESSAGE_TYPE_OFFSET`). Following are additional data fields for `PD_SinkCapabilitiesMessage` packet template:

Field Name	Description
SinkCapabilitiesData	This field can contain one or more(up-to 7 according to PD Spec) PDO packet variables. PDO types which can assign to this field are: `PD_PowerDataObjectFixedSupply_Sink`, `PD_PowerDataObjectVariableSupply_Sink`, `PD_PowerDataObjectBatterySupply_Sink`, `Pd_PowerDataObjectPPS` (same fields as `Pd_PowerDataObjectPPS`) When using the `Transaction Engine™` functions: the `PD_AddSinkCap` function can be used to add desired Sink PDOs to the PD Exerciser.

2.25.1 PD_PowerDataObjectFixedSupply_Sink

Can be used as `SinkCapabilitiesData` for `PD_SinkCapabilitiesMessage`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
OperationalCurrent_10mAUnits	10b	Default: 100
Voltage_50mVUnits	10b	Default: 100
Reserved	Rev.3.0: 3b Rev.2.0: 5b	Default: 0

FRSwapTypeCCurrent	2b	Default: 0 Rev3.0 only
DataRoleSwap	1b	Default: 0
UsbCommunicationsCapable	1b	Default: 0
UnconstrainedPower	1b	Default: 1
HigherCapability	1b	Default: 0
DualRolePower	1b	Default: 0
PowerDataType	2b	Default: 0

2.25.2 PD_PowerDataObjectVariableSupply_Sink

Can be used as `SinkCapabilitiesData` for `PD_SinkCapabilitiesMessage`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
OperationalCurrent_10mAUnits	10b	Default: 0
MinVoltage_50mVUnits	10b	Default: 0
MaxVoltage_50mVUnits	10b	Default: 0
PowerDataType	2b	Default: 2

2.25.3 PD_PowerDataObjectBatterySupply_Sink

Can be used as `SinkCapabilitiesData` for `PD_SinkCapabilitiesMessage`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
OperationalPower_250mWUnits	10b	Default: 0
MinVoltage_50mVUnits	10b	Default: 0
MaxVoltage_50mVUnits	10b	Default: 0
PowerDataType	2b	Default: 1

2.26 PD_RequestPacket

`PD_RequestPacket` packet template contains all the fields of `PD_ControlMessage` but default value for `MessageType` is `2`(`PD_MESSAGE_TYPE_REQUEST - PD_DATA_MESSAGE_TYPE_OFFSET`) and default value for `NumberOfDataObjects` field is `1`. Following are additional data fields for `PD_RequestPacket` packet template:

Field Name	Description
Data	This field can contain only one RDO packet variables. RDO types which can assign to this field are: `PD_RequestDataObject_Fixed_Variable_NoGiveBack`, `PD_RequestDataObject_Fixed_Variable_GiveBack`, `PD_RequestDataObject_Battery_NoGiveBack`, `PD_RequestDataObject_Battery_GiveBack`, `Pd_ProgrammableRDO` When using the `Transaction Engine™` functions: the `PD_SetNegotiationSetting_Sink` function can be used to add Request RDOs to the PD Exerciser.

2.26.1 PD_RequestDataObject_Fixed_Variable_NoGiveBack

Can be used as `data` for `PD_RequestPacket`. Available fields for this packet template are:

Field Name	Field Size in bits	Description

MaxOperatingCurrent_10mAUnits	10b	Default: 0
OperatingCurrent_10mAUnits	10b	Default: 0
Rsvd1	Rev.3.0: 3b Rev.2.0: 4b	Default: 0
UnchunkedExtMsgSupported	1b	Default: 0 Rev3.0 only
NoUsbSuspend	1b	Default: 0
UsbCommunicationsCapable	1b	Default: 0
CapabilityMismatch	1b	Default: 0
GiveBackFlag	1b	Default: 0
ObjectPosition	3b	Default: 1
Rsvd2	1b	Default: 0

2.26.2 PD_RequestDataObject_Fixed_Variable_GiveBack

Can be used as `data` for `PD_RequestPacket`. This packet template has same fields as `PD_RequestDataObject_Fixed_Variable_NoGiveBack` packet template, but default value for `GiveBackFlag` field is `1`.

2.26.3 PD_RequestDataObject_Battery_NoGiveBack

Can be used as `data` for `PD_RequestPacket`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
MaxOperatingPower_250mWUnits	10b	Default: 0
OperatingPower_250mWUnits	10b	Default: 0
Rsvd1	Rev.3.0: 3b Rev.2.0: 4b	Default: 0
UnchunkedExtMsgSupported	1b	Default: 0 Rev3.0 only
NoUsbSuspend	1b	Default: 0
UsbCommunicationsCapable	1b	Default: 0
CapabilityMismatch	1b	Default: 0
GiveBackFlag	1b	Default: 0
ObjectPosition	3b	Default: 1
Rsvd2	1b	Default: 0

2.26.4 PD_RequestDataObject_Battery_GiveBack

Can be used as `data` for `PD_RequestPacket`. This packet template has same fields as `PD_RequestDataObject_Battery_NoGiveBack` packet template, but default value for `GiveBackFlag` field is `1`.

2.26.5 Pd_ProgrammableRDO

Can be used as `data` for `PD_RequestPacket`. Available fields for this packet template are:

Field Name	Field Size in bits	Description
OperatingCurrent_50mAUnits	7b	Default: 0
PRDO_Rsvd_1	2b	Default: 0
OutputVoltage_20mVUnits	11b	Default: 0
Rsvd1	Rev.3.0: 3b Rev.2.0: 4b	Default: 0
UnchunkedExtMsgSupported	1b	Default: 0 Rev3.0 only

NoUsbSuspend	1b	Default: 0
UsbCommunicationsCapable	1b	Default: 0
CapabilityMismatch	1b	Default: 0
GiveBackFlag	1b	Default: 0
ObjectPosition	3b	Default: 1
Rsvd2	1b	Default: 0

2.27 PD_BISTCarrierModeMessage

`PD_BISTCarrierModeMessage` packet template contains all the fields of `PD_ControlMessage` but default value for `MessageType` is `3`(`PD_MESSAGE_TYPE_BIST - PD_DATA_MESSAGE_TYPE_OFFSET`) and default value for `NumberOfDataObjects` field is `1`. Following are additional data fields for `PD_BISTCarrierModeMessage` packet template:

Field Name	Field Size in bits	Description
Reserved	28b	Default: 0
BISTRequestType	4b	Default: `BIST_REQUEST_CARRIER_MODE`

2.28 PD_BISTTestDataMessage

`PD_BISTTestDataMessage` packet template contains all the fields of `PD_ControlMessage` but default value for `MessageType` is `3`(`PD_MESSAGE_TYPE_BIST - PD_DATA_MESSAGE_TYPE_OFFSET`) and default value for `NumberOfDataObjects` field is `7`. Following are additional data fields for `PD_BISTTestDataMessage` packet template:

Field Name	Field Size in bits	Description
Reserved	28b	Default: 0
BISTRequestType	4b	Default: `BIST_REQUEST_TEST_DATA`
TestData	192b(max) Should be multiple of 32b	Default: {AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA AA}

2.29 PD_BISTSharedCapacityTestModeEntry

`PD_BISTSharedCapacityTestModeEntry` packet template contains all the fields of `PD_ControlMessage` but default value for `MessageType` is `3`(`PD_MESSAGE_TYPE_BIST - PD_DATA_MESSAGE_TYPE_OFFSET`) and default value for `NumberOfDataObjects` field is `1`. Following are additional data fields for `PD_BISTSharedTestModeEntry` packet template:

Field Name	Field Size in bits	Description
Reserved	28b	Default: 0
BISTRequestType	4b	Default: `BIST_REQUEST_SHARED_TEST_MODE_ENTRY`

2.30 PD_BISTSharedCapacityTestModeExit

`PD_ BISTSharedCapacityTestModeExit` packet template contains all the fields of `PD_ControlMessage` but default value for `MessageType` is `3`(`PD_MESSAGE_TYPE_BIST - PD_DATA_MESSAGE_TYPE_OFFSET`) and default value for `NumberOfDataObjects` field is `1`. Following are additional data fields for `PD_BISTSharedTestModeExit` packet template:

Field Name	Field Size in bits	Description
Reserved	28b	Default: 0
BISTRequestType	4b	Default: BIST_REQUEST_SHARED_TEST_MODE_EXIT

2.31 PD_BatteryStatusMsg

Applicable to PD Rev3.0 only. PD_BatteryStatusMsg packet template contains all the fields of PD_ControlMessage but default value for MessageType is 5 (PD_MESSAGE_TYPE_BATTERY_STATUS - PD_DATA_MESSAGE_TYPE_OFFSET) and default value for NumberOfDataObjects field is 1. Following are additional data fields for PD_BatteryStatusMsg packet template:

2.31.1 Pd_BatteryStatusDataObject

When using the Transaction Engine™ functions: the PD_SetBatteryStatusDO can be used to add Pd_BatteryStatusDataObject to the PD Exerciser.

Field Name	Field Size in bits	Description
Reserved_1	8b	Default: 0x00
InvalidBatteryReference	1b	Default: 0x00
BatteryIsPresent	1b	Default: 0x00
BatteryChargingStatus	2b	Default: 0x00
Reserved_2	4b	Default: 0x00
BatteryPC	16b	Default: 0xFFFF

2.32 PD_AlertMsg

Applicable to PD Rev3.0 only. PD_AlertMsg packet template contains all the fields of PD_ControlMessage but default value for MessageType is 6 (PD_MESSAGE_TYPE_ALERT - PD_DATA_MESSAGE_TYPE_OFFSET) and default value for NumberOfDataObjects field is 1. Following are additional data fields for PD_AlertMsg packet template:

2.32.1 Pd_AlertDataObject

When using the Transaction Engine™ functions: the PD_SetAlertDO function can be used to add Pd_AlertDataObject to PD Exerciser.

Field Name	Field Size in bits	Description
Reserved_1	16b	Default:0x00
HotSwappableBatteries	4b	Default:0x00
FixedBatteries	4b	Default:0x00
Reserved_2	1b	Default:0x00
BatteryStatusChange	1b	Default:0x00
OverCurProtection	1b	Default:0x00
OverTempProtection	1b	Default:0x00
OperatingConditionChange	1b	Default:0x00
SourceInputChange	1b	Default:0x00
OverVoltageProtection	1b	Default:0x00
Reserved_3	1b	Default:0x00

2.33 Pd_GetCountryInfoMsg

Applicable to PD Rev3.0 only. Pd_GetCountryInfoMsg packet template contains all the fields of PD_ControlMessage but default value for MessageType is 7 (PD_MESSAGE_TYPE_GET_COUNTRY_INFO - PD_DATA_MESSAGE_TYPE_OFFSET) and default value for NumberOfDataObjects field is 1. Following are additional data fields for Pd_GetCountryInfoMsg packet template:

2.33.1 Pd_GetCountryInfoDO

When using the Transaction Engine™ functions: the Pd_SetGetCountryInfoDO function can be used to add Pd_GetCountryInfoDO to the PD Exerciser.

Field Name	Field Size in bits	Description
GetCountryInfoDO_Rsvd_1	16b	Default:0x00
Alpha2CountryCode2ndChar	8b	Default:0x00
Alpha2CountryCode1stChar	8b	Default:0x00

2.34 PD_EnterUSB_Message

Applicable to PD Rev3.0 only. Pd_EnterUSBMsg packet template contains all the fields of PD_ControlMessage but default value for MessageType is 8 (PD_MESSAGE_TYPE_ENTER_USB - PD_DATA_MESSAGE_TYPE_OFFSET) and default value for NumberOfDataObjects field is 1. Following are additional data fields for Pd_EnterUSBMsg packet template:

2.34.1 PD_EnterUSBDataObject

When using the Transaction Engine™ functions: the PD_SetEnterUSBDO function can be used to add Pd_EnterUSBDataObject to the PD Exerciser.

Field Name	Field Size in bits	Description
Reserved_1	13b	Default: 0x00
HostPresent	1b	Default: PD_FALSE
TBTSupport	1b	Default: PD_FALSE
DPSupport	1b	Default: PD_FALSE
PCIeSupport	1b	Default: PD_FALSE
CableCurrent	2b	Default: PD_CABLECURRENT_VBUS_NOT_SUPP
CableType	2b	Default: PD_CABLEYTYPE_PASSIVE
CableSpeed	3b	Default: PD_CABLESPEED_USB2_NO_SSP
Reserved_2	1b	Default: 0x00
USB3DRD	1b	Default: PD_FALSE
USB4DRD	1b	Default: PD_FALSE
Reserved_3	1b	Default: 0x00
USBMode	3b	Default: PD_USBMODE_USB2
Reserved_4	1b	Default: 0x00

2.35 PD_VDM_Unstructured_Header

Can be used as Header for Unstructured VDM messages. PD_VDM_Unstructured_Header packet template contains all the fields of PD_ControlMessage but default value for

MessageType is 0x0F(PD_MESSAGE_TYPE_VDM - PD_DATA_MESSAGE_TYPE_OFFSET) and default value for NumberOfDataObjects field is 1. Following are additional data fields for PD_VDM_Unstructured_Header packet template:

Field Name	Field Size in bits	Description
VDMCustom	15b	Default: 0x00
VDMType	1b	Default: PD_VDM_TYPE_UNSTRUCTURED_VDM
VDMSVID	16b	Default: 0x00

Following is an example which demonstrates how to send an Unstructured VDM containing two VDOs:

```
.
.
.
# Define VDO1 fields
packet VDO1Type
{
    Field1 : 2  = 0x03
    Field2 : 10 = 0xfff
    Field3 : 20 = 0xffffff
}
local $vdo1_var = VDO1Type

# Create an unstructured VDM packet with two VDOs
local $unstructured_vdm = Pd_VDM_Unstructured_Header
{
    # Number of VDOs + 1
    NumberOfDataObjects = 0x03

    # Vendor SVID
    VDMSVID = 0xABCD

    # Optional Packet variable
    VDO1 : 32 = $vdo1_var

    # Optional value
    VDO2 : 32 = 0x11111111
}

# Send VDM packet with default settings
local $SendSettings = PD_SendPacketSettings
call Pd_SendPacket($unstructured_vdm, $SendSettings)

# To receive probable response packet
local $ReceiveSettings = PD_ReceivePacketSettings
call PD_ReceivePacket($ReceiveSettings)
.
.
.
```

2.36 PD_VDM_Structured_Header

Can be used as Header for all Structured VDM messages. PD_VDM_Structured_Header packet template contains all the fields of PD_ControlMessage but default value for MessageType is 0x0F(PD_MESSAGE_TYPE_VDM - PD_DATA_MESSAGE_TYPE_OFFSET) and default value for NumberOfDataObjects field is 1. Following are additional data fields for PD_VDM_Structured_Header packet template:

Field Name	Field Size in bits	Description
VDMCommand	5b	Default: PD_VDM_COMMAND_RESERVED_0
VDMReserved1	1b	Default: 0x00
VDMCommandType	2b	Default: PD_VDM_COMMAND_TYPE_REQ
VDMObjectPosition	3b	Default: 0x00
VDMReserved2	2b	Default: 0x00
VDMStructuredVdmVersion	2b	Default: PD_VDM_STRUCTURED_VERSION_2 (Rev 3.0) Default: PD_VDM_STRUCTURED_VERSION_1 (Rev 2.0)
VDMType	1b	Default: PD_VDM_TYPE_STRUCTURED_VDM
VDMSVID	16b	Default: 0x00

2.37 PD_VDM_Discover_Identity_Message

PD_VDM_Discover_Identity_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_DISCOVER_IDENTITY and default value for VDMSVID field is PD_VDM_SID.

2.38 PD_VDM_Discover_Identity_Response

PD_VDM_Discover_Identity_Response packet template contains all the fields of PD_VDM_Discover_Identity_Message but default value for VDMCommandType field is PD_VDM_COMMAND_TYPE_RESPONDER_ACK. Following are additional data fields for PD_VDM_Discover_Identity_Response packet template:

Field Name	Description
VDOs	This field can contain up-to 6 VDOs, but should contain at least 3 VDOs (according to PD Spec). VDO types which can assign to this field are: PD_VDM_Discover_Identity_ID_Header_VDO, PD_VDM_Discover_Identity_Cert_Stat_VDO, PD_VDM_Discover_Identity_Product_VDO, PD_VDM_Discover_Identity_Cable_VDO (Rev 2.0 only), PD_DiscoverId_DFP_VDO (Rev 3.0 only), PD_DiscoverId_UFP_1_VDO (Rev 3.0 only), PD_DiscoverId_UFP_2_VDO (Rev 3.0 only), PD_DiscoverIdPassiveCableVdo (Rev 3.0 only), Pd_DiscoverIdActiveCableVdo_1 (Rev 3.0 only), Pd_DiscoverIdActiveCableVdo_2 (Rev 3.0 only), PD_VDM_Discover_Identity_Alternate_Mode_Adapter_VDO, Pd_DiscoverIdVConnPoweredDeviceVdo (Rev 3.0 only) When using the Transaction Engine™ functions: the PD_AddDiscoverIdentityVDO function can be used to add DiscoverIdentity VDOs to the PD Exerciser.

2.38.1 PD_VDM_Discover_Identity_ID_Header_VDO

Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are varies from Revision 2.0 to higher revisions:

2.38.1.1 Revision 2.0

Field Name	Field Size in bits	Description
IDHeaderVDO_USBVendorID	16b	Default: 0x05FF (LeCroy ID)
IDHeaderVDO_Reserved	10b	Default: 0x00
IDHeaderVDO_ModalOperationSupported	1b	Default: 0x00
IDHeaderVDO_ProductType	3b	Default: PD_VDM_ID_HEADER_VDO_PRODUCT_TYPE_UNDEFINED
IDHeaderVDO_DataCapableAsUSBDevice	1b	Default: 0x00
IDHeaderVDO_DataCapableAsUSBHost	1b	Default: 0x00

2.38.1.2 Revision 3.0

Field Name	Field Size in bits	Description
USBVendorID	16b	Default: 0x05FF (LeCroy ID)
Reserved	5b	Default: 0x00
Connector_Type	2b	Default: PD_CABLE_CONNECTOR_TYPE_TYPEC_RECEPTACLES

ProductType_DFP	3b	Default: PD_PRODUCT_TYPE_UNDEFINED
ModalOperationSupported	1b	Default: 0x00
ProductType_UFP_Cable	3b	Default: PD_PRODUCT_TYPE_UNDEFINED
DataCapableAsUSBDevice	1b	Default: 0x00
DataCapableAsUSBHost	1b	Default: 0x00

2.38.2 PD_VDM_Discover_Identity_Cert_Stat_VDO

Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
CertStatVDO_XID	32b	Default: 0x00

2.38.3 PD_VDM_Discover_Identity_Product_VDO

Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
ProductVDO_BCDDevice	16b	Default: 0x00
ProductVDO_USBProductId	16b	Default: 0x00

2.38.4 PD_VDM_Discover_Identity_Cable_VDO

Applicable to PD Rev 2.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
CableVDO_USBSuperSpeedSignalingSupport	3b	Default: PD_CABLE_USB31_GEN1_SIGNALING
CableVDO_SOPDPrimeControllerPresent	1b	Default: 0x00 should be 0x00 in case of passive cable
CableVDO_VBusThroughCable	1b	Default: 0x00
CableVDO_VBusCurrentHandlingCapability	2b	Default: PD_CABLE_CUR_HANDLING_CAP_3A
CableVDO_SSRX2DirectionalitySupport	1b	Default: 0x00
CableVDO_SSRX1DirectionalitySupport	1b	Default: 0x00
CableVDO_SSTX2DirectionalitySupport	1b	Default: 0x00
CableVDO_SSTX1DirectionalitySupport	1b	Default: 0x00
CableVDO_CableTerminationType	2b	Default: 0x00
CableVDO_CableLatency	4b	Default: PD_CABLE_LATENCY_MAX_10ns
CableVDO_Rsvd_2	1b	Default: 0x00
CableVDO_TypeCPlugToTypeA_B_C_Captive	2b	Default: PD_CABLE_TYPEC_TO_TYPEC
CableVDO_Reserved	4b	Default: 0x00
CableVDO_FirmwareVersion	4b	Default: 0x00
CableVDO_HardwareVersion	4b	Default: 0x00

2.38.5 PD_VDM_DiscoverIdentity_UFP1_VDO

Applicable to Rev 3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
USBHighestSpeed	3b	Default: PD_USB_HIGHEST_SPEED_USB20_ONLY

AlternateModes	3b	Default: PD_SUPP_ALTERNATE_MODE
Reserved_1	18b	Default: 0x00
DeviceCapability	4b	Default: PD_DEV_CAP_USB20
Reserved_2	1b	Default: 0x00
UFPVDOVersion	3b	Default: PD_UFP_VDO_VERSION_1_0

2.38.6 PD_VDM_DiscoverIdentity_UFP2_VDO

Applicable to Rev 3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
USB3MaxPower	7b	Default: 0x00
USB3MinPower	7b	Default: 0x00
Reserved_1	2b	Default: 0x00
USB4MaxPower	7b	Default: 0x00
USB4MinPower	7b	Default: 0x00
Reserved_2	2b	Default: 0x00

2.38.7 PD_VDM_DiscoverIdentity_DFP_VDO

Applicable to Rev 3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
PortNumber	5b	Default: 0x00
Reserved_1	19b	Default: 0x00
HostCapability	3b	Default: PD_HOST_CAP_USB20
Reserved_2	2b	Default: 0x00
DFPVDOVersion	3b	Default: PD_DFP_VDO_VERSION_1_0

2.38.8 PD_DiscoverIdPassiveCableVdo

Applicable to Rev 3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
USBHighestSpeed	3b	Default: PD_USB_HIGHEST_SPEED_USB32_GEN1
Reserved_1	2b	Default: 0x00
VBusCurHandlingCap	2b	Default: PD_CABLE_CUR_HANDLING_CAP_3A
Reserved_2	2b	Default: 0x00
MaxVBusVoltage	2b	Default: PD_CABLE_MAX_VBUS_20V
CableTerminationType	2b	Default: PD_CABLE_VCONN_NOT_REQUIRED
CableLatency	4b	Default: PD_CABLE_LATENCY_MAX_10ns
Reserved_3	1b	Default: 0x00
TypeCtoTypeC_Captive	2b	Default: PD_CABLE_TYPEC_TO_TYPEC
Reserved_4	1b	Default: 0x00
Version	3b	Default: PD_CABLE_PASSIVE_VDO_VERSION_1

FirmwareVersion	4b	Default: 0x00
HardwareVersion	4b	Default: 0x00

2.38.9 Pd_DiscoverIdActiveCableVdo_1

Applicable to Rev3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
USBHighestSpeed	3b	Default: PD_USB_HIGHEST_SPEED_USB32_GEN1
SOPDoublePrimeController	1b	Default: 0x00
VBusThrough	1b	Default: 0x01
VBusCurHandlingCap	2b	Default: PD_CABLE_CUR_HANDLING_CAP_3A
SBUType	1b	Default: PD_CABLE_PASSIVE_SBU
SBUSupported	1b	Default: PD_FALSE
MaxVBusVoltage	2b	Default: PD_CABLE_MAX_VBUS_20V
CableTerminationType	2b	Default: PD_CABLE_TERM_ACTIVE_ACTIVE
CableLatency	4b	Default: PD_CABLE_LATENCY_MAX_10ns
Reserved_2	1b	Default: 0x00
ConnectorType	2b	Default: PD_CABLE_TYPEC_TO_TYPEC
Reserved_3	1b	Default: 0x00
Version	3b	Default: PD_CABLE_ACTIVE_VDO_VERSION_1_3
FirmwareVersion	4b	Default: 0x00
HardwareVersion	4b	Default: 0x00

2.38.10 Pd_DiscoverIdActiveCableVdo_2

Applicable to Rev3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
USBGen	1b	Default: PD_CABLE_ACTIVE_USB_GEN1
Reserved_1	1b	Default: 0x00
OpticallyIsolatedActCbl	1b	Default: PD_FALSE
USBLanesSupported	1b	Default: PD_CABLE_ACTIVE_SS_ONE_LANE
USB32Supported	1b	Default: PD_FALSE
USB2Supported	1b	Default: PD_FALSE
USB2HubHopsConsumed	2b	Default: 0x00
USB4Supported	1b	Default: PD_FALSE
ActiveElement	1b	Default: PD_CABLE_ACTIVE_REDRIVER
PhysicalConnection	1b	Default: PD_CABLE_ACTIVE_PHYSICAL_CONN_COPPER
U3ToU0TransMode	1b	Default: PD_CABLE_ACTIVE_U3_TO_U0_DIRECT
U3CLdPower	3b	Default: PD_CABLE_ACTIVE_U3POWER_GR_THAN_10mW
Reserved_3	1b	Default: 0x00
ShutdownTemperature	8b	Default: 0x00
MaxOperatingTemperature	8b	Default: 0x00

2.38.11 PD_VDM_Discover_Identity_Alternate_Mode_Adapter_VDO

Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are varies from Revision 2.0 to higher revisions:

2.38.11.1 Revision 2.0

Field Name	Field Size in bits	Description
AMDVDO_USBSuperSpeedSignalingSupport	3b	Default: 0x01
AMDVDO_VBusRequired	1b	Default: 0x00
AMDVDO_VConnRequired	1b	Default: 0x00
AMDVDO_VConnPower	3b	Default: 0x00
AMDVDO_SSRX2DirectionalitySupport	1b	Default: 0x00
AMDVDO_SSRX1DirectionalitySupport	1b	Default: 0x00
AMDVDO_SSTX2DirectionalitySupport	1b	Default: 0x00
AMDVDO_SSTX1DirectionalitySupport	1b	Default: 0x00
AMDVDO_Reserved	12b	Default: 0x00
AMDVDO_FirmwareVersion	4b	Default: 0x00
AMDVDO_HardwareVersion	4b	Default: 0x00

2.38.11.2 Revision 3.0

Field Name	Field Size in bits	Description
USBHighestSpeed	3b	Default: PD_AMA_USB_HIGHEST_SPEED_USB20_ONLY
VBusRequired	1b	Default: 0x00
VConnRequired	1b	Default: 0x00
VConnPower	3b	Default: PD_AMA_VCONN_POWER_1
Reserved	13b	Default: 0x00
Version	3b	Default: PD_AMA_VDO_VERSION_1
FirmwareVersion	4b	Default: 0x00
HardwareVersion	4b	Default: 0x00

2.38.12 Pd_DiscoverIdVConnPoweredDeviceVdo

Applicable to Rev3.0 only. Can be used as VDOs for PD_VDM_Discover_Identity_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
ChargeThroughSupport	1b	Default: 0x00
GroundImpedance_1mOUnits	6b	Default: 0x00
VBUSImpedance_2mOUnits	6b	Default: 0x00
VPD_Rsvd_1	1b	Default: 0x00
ChargeThroughCurrentSupport	1b	Default: PD_VPD_CHARGE_THROUGH_CURRENT_SUPP_3A
MaxVbusVoltage	2b	Default: PD_VPD_MAX_VBUS_20V
VPD_Rsvd_2	4b	Default: 0x00
VDOVersion	3b	Default: PD_VPD_VDO_VERSION_1
FirmwareVersion	4b	Default: 0x00
HWVersion	4b	Default: 0x00

2.39 PD_VDM_Discover_Svids_Message

PD_VDM_Discover_Svids_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_DISCOVER_SVIDS and default value for VDMSVID field is PD_VDM_SID.

2.40 PD_VDM_Discover_Svids_Response

PD_VDM_Discover_Svids_Response packet template contains all the fields of PD_VDM_Discover_Svids_Message but default value for VDMCommandType field is PD_VDM_COMMAND_TYPE_RESPONDER_ACK. Following are additional data fields for PD_VDM_Discover_Svids_Response packet template:

Field Name	Description
DiscoverSVIDsResponderVDOs	Contains one or more VDOs. The only VDO type which can assign to this field is: Discover_SVIDs_Responder_VDO When using the Transaction Engine™ functions: the PD_AddSvid function can be used to add SVID VDOs to the PD Exerciser.

2.40.1 Discover_SVIDs_Responder_VDO

Can be used as DiscoverSVIDsResponderVDOs for PD_VDM_Discover_Svids_Response packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
SVID1	16b	Default: 0x00
SVID2	16b	Default: 0x00

2.41 PD_VDM_Discover_Modes_Message

PD_VDM_Discover_Modes_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_DISCOVER_MODES and default value for VDMSVID field is PD_VDM_SID.

2.42 PD_VDM_Discover_Modes_Response

PD_VDM_Discover_Modes_Response packet template contains all the fields of PD_VDM_Discover_Modes_Message but default value for VDMCommandType field is PD_VDM_COMMAND_TYPE_RESPONDER_ACK. Following are additional data fields for PD_VDM_Discover_Modes_Response packet template:

Field Name	Description
DiscoverModes	This field should contain one or more VDOs(modes). Each Mode can be a PD_VDO packet variable which has 32bits data length. When using the Transaction Engine™ functions: the PD_AddMode or PD_AddModeVDO functions can be used to add desired Modes to the PD Exerciser.

2.42.1 PD_VDO

Can be used as DiscoverModes for PD_VDM_Discover_Modes_Response packet template or as VDO for PD_VDM_Enter_Mode_Message and PD_VDM_Attention_Message packet templates. Available fields of this packet template are:

Field Name	Field Size in bits	Description
Data	32b	Default: 0x00

2.42.2 PD_VDM_DisplayPort_DiscoverMode_Vdo

In response to a Discover Mode Command, the VDO assigned to the DiscoverModes field can be in type of PD_VDM_DisplayPort_DiscoverMode_Vdo packet template, if the requested VDMSVID is PD_DISPLAY_PORT_SVID(0xFF01). Available data fields for PD_VDM_DisplayPort_DiscoverMode_Vdo packet template are:

Field Name	Fields Size in bits	Description
PortCapability	2b	Default: PD_DISPLAYPORT_UFPD_CAPABLE
Signaling	4b	Default: 0x01
ReceptacleIndication	1b	Default: 0x00
Usb2SignalingNotUsed	1b	Default: 0x01
DFPDPinAssignmentSupported	8b	Default: 0x00
UFPDPinAssignmentSupported	8b	Default: 0x00
Reserved_DMV	8b	Default: 0x00

2.43 PD_VDM_Enter_Mode_Message

PD_VDM_Enter_Mode_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_ENTER_MODE and default value for VDMSVID field is PD_VDM_SID. Following are additional data fields for PD_VDM_Enter_Mode_Message packet template:

Field Name	Description
VDO	This field may contain one VDO. The VDO can be a PD_VDO packet variable which has 32bits data length. When using the Transaction Engine™ functions: the PD_EnterModeVdo function can be used to add an EnterMode VDO to PD Exerciser. This function will actually send an EnterMode command using this VDO towards the peer device/cable plug.

2.44 PD_VDM_Enter_Mode_Response

PD_VDM_Enter_Mode_Response packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_ENTER_MODE and default value for VDMSVID field is PD_VDM_SID and default value for VDMCommandType field is PD_VDM_COMMAND_TYPE_RESPONDER_ACK.

2.45 PD_VDM_Exit_Mode_Message

PD_VDM_Exit_Mode_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_EXIT_MODE and default value for VDMSVID field is PD_VDM_SID.

2.46 PD_VDM_Exit_Mode_Response

PD_VDM_Exit_Mode_Response packet template contains all the fields of PD_VDM_Exit_Mode_Message but default value for VDMCommandType field is PD_VDM_COMMAND_TYPE_RESPONDER_ACK.

2.47 PD_VDM_Attention_Message

PD_VDM_Attention_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_ATTENTION and default value for VDMSVID field is PD_VDM_SID. Following are additional data fields for PD_VDM_Attention_Message packet template:

Field Name	Description
VDO	This field may contain one VDO. The VDO can be a PD_VDO packet variable which has 32bits data length. When using the Transaction Engine™ functions: the PD_AttentionVdo function can be used to add an Attention VDO to the PD Exerciser. This function will actually send an Attention command using this VDO towards the peer device/cable plug.

2.48 PD_VDM_DisplayPort_UpdateStatus_Message

PD_VDM_DisplayPort_UpdateStatus_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for NumberOfDataObjects field is 2 and default value for VDMCommand field is PD_VDM_COMMAND_DISPLAYPORT_STATUS_UPDATE and default value for VDMSVID field is PD_DISPLAY_PORT_SVID. Following are additional data fields for PD_VDM_DisplayPort_UpdateStatus_Message packet template:

Field Name	Description
StatusVdo	Contains only one VDO in type of PD_VDM_DisplayPort_Status_VDO packet template. When using the Transaction Engine™ functions: the PD_SetDisplayPortSetting can be used to add a DisplayPort UpdateStatus VDO to the PD Exerciser.

2.48.1 PD_VDM_DisplayPort_Status_VDO

Can be used as StatusVdo for PD_VDM_DisplayPort_UpdateStatus_Message and PD_VDM_DisplayPort_UpdateStatus_Response packet templates. Following are available data fields for this packet template:

Field Name	Field Size in bits	Description
DFPD_UFPD_Connected	2b	Default: PD_DISPLAYPORT_DISCONNECTED
PowerLow	1b	Default: 0x00
AdaptorEnabled	1b	Default: 0x00
MultiFunctionPreferred	1b	Default: 0x00
UsbConfigurationRequest	1b	Default: 0x00
ExitDisplayModeRequest	1b	Default: 0x00
HPD_State	1b	Default: 0x00
IRQ_HPD	1b	Default: 0x00
Reserved_DPS_1	23b	Default: 0x00

2.49 PD_VDM_DisplayPort_UpdateStatus_Response

PD_VDM_DisplayPort_UpdateStatus_Response packet template contains all the fields of PD_VDM_DisplayPort_UpdateStatus_Message but default value for VDMCommandType field is PD_VDM_COMMAND_TYPE_RESPONDER_ACK.

2.50 PD_VDM_DisplayPort_Configure_Message

PD_VDM_DisplayPort_Configure_Message packet template contains all the fields of PD_VDM_Structured_Header but default value for NumberOfDataObjects field is 2 and default value for VDMCommand field is PD_VDM_COMMAND_DISPLAYPORT_CONFIGURE and default value for VDMSVID field is PD_DISPLAY_PORT_SVID. Following are additional data fields for this packet template:

Field Name	Description
ConfigureVdo	Contains only one VDO in type of PD_VDM_DisplayPort_Configure_VDO packet template. When using the Transaction Engine™ functions: the PD_SetDisplayPortSetting can be used to add a DisplayPort Configure VDO to the PD Exerciser.

2.50.1 PD_VDM_DisplayPort_Configure_VDO

Can be used as ConfigureVdo for PD_VDM_DisplayPort_Configure_Message packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
SelectConfiguration	2b	Default: PD_DISPLAYPORT_CONFIGURATION_USB
Signaling	4b	Default: 0x00
Reserved_DPC_1	2b	Default: 0x00
UFPU_PinAssignment	8b	Default: 0x00
Reserved_DPC_2	16b	Default: 0x00

2.51 PD_VDM_DisplayPort_Configure_Response

PD_VDM_DisplayPort_Configure_Response packet template contains all the fields of PD_VDM_Structured_Header but default value for VDMCommand field is PD_VDM_COMMAND_DISPLAYPORT_CONFIGURE and default value for VDMSVID field is PD_DISPLAY_PORT_SVID and default value for VDMCommandType is PD_VDM_COMMAND_TYPE_RESPONDER_ACK.

2.52 PD_ExtMsgHeaders

Applicable to Rev3.0 only. PD_ExtMsgHeaders packet template contains all the fields of PD_ControlMessage but the default value of Extended field is 1. Following are the additional fields for this packet template:

Field Name	Field Size in bits	Description
DataSize	9b	Default: 0x00
Reserved	1b	Default: 0x00
RequestChunk	1b	Default: 0x00
ChunkNumber	4b	Default: 0x00
Chunked	1b	Default: 0x00

2.53 PD_SourceCapExtendedMsg

Applicable to Rev3.0 only. PD_SourceCapExtendedMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 1

(PD_MESSAGE_TYPE_SRC_CAP_EXT - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_SCEDB_DATA_SIZE. Following are the additional fields for this packet template:

2.53.1 Pd_SourceCapExtDataBlock

When using the Transaction Engine™ functions: the PD_SetSrcCapExtDataBlock function can be used to add Pd_SourceCapExtDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
VendorId	16b	Default: 0x00
ProductId	16b	Default: 0x00
XId	32b	Default: 0x00
FirmwareVersion	8b	Default: 0x00
HardwareVersion	8b	Default: 0x00
LoadStep	2b	Default: 0x00
IOC	1b	Default: 0x00
Reserved_1	5b	Default: 0x00
HoldupTime	8b	Default: 0x00
LPSCompliant	1b	Default: 0x00
PS1Compliant	1b	Default: 0x00
PS2Compliant	1b	Default: 0x00
Reserved_2	5b	Default: 0x00
LowTouchCurEPS	1b	Default: 0x00
GroundPinSupport	1b	Default: 0x00
GrndPinForProtectiveEarth	1b	Default: 0x00
Reserved_3	5b	Default: 0x00
PeakCur1_PercentOverload	5b	Default: 0x00
PeakCur1_OverloadPeriod	6b	Default: 0x00
PeakCur1_DutyCycle	4b	Default: 0x00
PeakCur1_VBusVoltageDroop	1b	Default: 0x00
PeakCur2_PercentOverload	5b	Default: 0x00
PeakCur2_OverloadPeriod	6b	Default: 0x00
PeakCur2_DutyCycle	4b	Default: 0x00
PeakCur2_VBusVoltageDroop	1b	Default: 0x00
PeakCur3_PercentOverload	5b	Default: 0x00
PeakCur3_OverloadPeriod	6b	Default: 0x00
PeakCur3_DutyCycle	4b	Default: 0x00
PeakCur3_VBusVoltageDroop	1b	Default: 0x00
TouchTemp	8b	Default: 0x00
ExternalSupplyIsPresent	1b	Default: 0x00
ExternalSupplyCondition	1b	Default: 0x00
InternalBatteryIsPresent	1b	Default: 0x00
Reserved_4	5b	Default: 0x00
NumberOfFixedBatteries	4b	Default: 0x00
NumberOfHotSwappableBatteries	4b	Default: 0x00
SourcePDP	7b	Default: 0x00
Reserved_5	1b	Default: 0x00

2.54 PD_StatusMsg

Applicable to PD Rev3.0 only. PD_StatusMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 2(PD_MESSAGE_TYPE_STATUS -

PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_SOP_SDB_DATA_SIZE. Following are the additional fields for this packet template:

2.54.1 Pd_StatusDataBlock

When using the Transaction Engine™ functions: the PD_SetStatusDataBlock function can be used to add Pd_StatusDataBlock to PD Exerciser.

Field Name	Field Size in bits	Description
InternalTemp	8b	Default: 0x00
PresentInput_Rsvd_1	1b	Default: 0x00
ExternalPowerIsPresent	1b	Default: 0x00
ExternalPower_AC_DC	1b	Default: 0x00
InternalPowerBattery	1b	Default: 0x00
InternalPowerNonBattery	1b	Default: 0x00
PresentInput_Rsvd_1_2	3b	Default: 0x00
FixedBattery	4b	Default: 0x00
HotSwappableBattery	4b	Default: 0x00
EventFlags_Rsvd_1	1b	Default: 0x00
OverCurProtectionEvent	1b	Default: 0x00
OverTempProtectionEvent	1b	Default: 0x00
OverVoltProtection	1b	Default: 0x00
OperatingModeFlag	1b	Default: 0x00
EventFlags_Rsvd_2	3b	Default: 0x00
TempStatus_Rsvd_1	1b	Default: 0x00
TemperatureStatus	2b	Default: PD_TEMP_STATUS_NORMAL
TempStatus_Rsvd_2	5b	Default: 0x00
PowerStatus_Rsvd_1	1b	Default: 0x00
PowLimited_CableCurrent	1b	Default: PD_FALSE
PowLimited_InsuffPower	1b	Default: PD_FALSE
PowLimited_InsuffExtPower	1b	Default: PD_FALSE
PowLimited_EventFlagsSet	1b	Default: PD_FALSE
PowLimited_Temperature	1b	Default: PD_FALSE
PowerStatus_Rsvd_2	2b	Default: 0x00

2.55 Pd_StatusMsg_Cable

Applicable to PD Rev3.0 only. Pd_StatusMsg_Cable packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 2(PD_MESSAGE_TYPE_STATUS - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_SOPP_SDB_DATA_SIZE. Following are the additional fields for this packet template:

2.55.1 Pd_StatusDataBlock_Cable

When using the Transaction Engine™ functions: the PD_SetStatusDataBlock_Cable function can be used to add Pd_StatusDataBlock_Cable to the PD Exerciser.

Field Name	Field Size in bits	Description
InternalTemp	8b	Default: 0x00
ThermalShutdown	1b	Default: PD_FALSE
Rsvd	7b	Default: 0x00

2.56 PD_GetBatteryCapMsg

Applicable to PD Rev3.0 only. PD_GetBatteryCapMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 3 (PD_MESSAGE_TYPE_GET_BATTERY_CAP - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_GBCDB_DATA_SIZE. Following are the additional fields for this packet template:

2.56.1 Pd_GetBatteryCapDataBlock

When using the Transaction Engine™ functions: the PD_SetGetBatteryCapDataBlock function can be used to add Pd_GetBatteryCapDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
BatteryCapRef	8b	Default: 0x00

2.57 PD_GetBatteryStatusMsg

Applicable to PD Rev3.0 only. PD_GetBatteryStatusMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 4 (PD_MESSAGE_TYPE_GET_BATTERY_STATUS - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_GBSDB_DATA_SIZE. Following are the additional fields for this packet template:

2.57.1 Pd_GetBatteryStatusDataBlock

When using the Transaction Engine™ functions: the PD_SetGetBatteryStatusDataBlock function can be used to add Pd_GetBatteryStatusDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
BatteryStatusRef	8b	Default: 0x00

2.58 PD_BatteryCapabilitiesMsg

Applicable to PD Rev3.0 only. PD_BatteryCapabilitiesMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 5 (PD_MESSAGE_TYPE_BATTERY_CAP - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_BCDB_DATA_SIZE. Following are the additional fields for this packet template:

2.58.1 Pd_BatteryCapDataBlock

When using the Transaction Engine™ functions: the PD_SetBatteryCapDataBlock function can be used to add Pd_BatteryCapDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
VendorId	16b	Default: 0x00
ProductId	16b	Default: 0x00
DesignCap_100mWHUnits	16b	Default: 0x00
LastFullChargeCap_100mWHUnits	16b	Default: 0x00
InvalidBatteryRef	1b	Default: 0x00

BCDB_Rsvd_1	7b	Default: 0x00

2.59 PD_GetManufacturerInfoMsg

Applicable to PD Rev3.0 only. PD_GetManufacturerInfoMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 6 (PD_MESSAGE_TYPE_GET_MANUFACTURER_INFO - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_GMIDB_DATA_SIZE. Following are the additional fields for this packet template:

2.59.1 Pd_GetManufacturerInfoDataBlock

When using the Transaction Engine™ functions: the PD_SetGetManufacturerInfoDataBlock function can be used to add Pd_GetManufacturerInfoDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
Target	8b	Default: PD_MANINFO_TARGET_PORT_CABLE
ManufacturerInfoRef	8b	Default: 0x00

2.60 PD_ManufacturerInfoMsg

Applicable to PD Rev3.0 only. PD_ManufacturerInfoMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 7 (PD_MESSAGE_TYPE_MANUFACTURER_INFO - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_MIDB_DATA_SIZE. Following are the additional fields for this packet template:

2.60.1 Pd_ManufacturerInfoDataBlock

When using the Transaction Engine™ functions: the PD_SetManufacturerInfoDataBlock and PD_SetManufacturerInfoDataBlock_Cable functions can be used to add Pd_ManufacturerInfoDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
VendorId	16b	Default: 0x00
ProductId	16b	Default: 0x00
ManufacturerString	Undefined(max is 176b)	Default: null Can be initialized using a byte stream

2.61 PD_SecurityRequestMsg

Applicable to PD Rev3.0 only. PD_SecurityRequestMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 8 (PD_MESSAGE_TYPE_SECURITY_REQUEST - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value for DataSize field is PD_SRQDB_DATA_SIZE. Following are the additional fields for this packet template:

Field Name	Description
SecurityRequestDB	Can contain only one Security Request Data Block. Available SRDB types are: PD_SRQDB_GetDigests, PD_SRQDB_GetCertificate, PD_SRQDB_Challenge

	When using the Transaction Engine™ functions: the PD_SetSecurityRequestDataBlock function can be used to add Security Request Data Blocks to the PD Exerciser.

2.61.1 PD_SRQDB_GetDigests

Can be used as SecurityRequestDB for PD_SecurityRequestMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_GET_DIGESTS
AuthParam1	8b	Default: 0x00
AuthParam2	8b	Default: 0x00

2.61.2 PD_SRQDB_GetCertificate

Can be used as SecurityRequestDB for PD_SecurityRequestMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_GET_CERTIFICATE
AuthParam1	8b	Default: 0x00
AuthParam2	8b	Default: 0x00
Offset	16b	Default: 0x00
Length	16b	Default: 0x00

2.61.3 PD_SRQDB_Challenge

Can be used as SecurityRequestDB for PD_SecurityRequestMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_GET_CHALLENGE
AuthParam1	8b	Default: 0x00
AuthParam2	8b	Default: 0x00
Nonce	256b	Default: { 00 00 00 00 }

2.62 PD_SecurityResponseMsg

Applicable to PD Rev3.0 only. PD_SecurityResponseMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 9 (PD_MESSAGE_TYPE_SECURITY_RESPONSE - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value for DataSize field is PD_SRPDB_DATA_SIZE. Following are the additional fields for this packet template:

Field Name	Description
SecurityResponseDB	Can contain only one Security Response Data Block. Available SRPDB types are: PD_SRPDB_Digests, PD_SRPDB_Certificate, PD_SRPDB_ChallengeAuth,

	PD_SRPDB_Error When using the Transaction Engine™ functions: the PD_SetSecurityResponseDataBlock function can be used to add Security Response Data Blocks to the PD Exerciser.

2.62.1 PD_SRPDB_Digests

Can be used as SecurityResponseDB for PD_SecurityResponseMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_DIGESTS
AuthParam1	8b	Default: 0x01
AuthParam2	8b	Default: 0x00
DigestArray	2048b(max)	Max len is 256 bytes, each digest is 32 bytes. Packet variables of PD_Security_Digest type, can be assigned to this field.

2.62.1.1 PD_Security_Digest

Can be used as DigestArray for PD_SRPDB_Digests packet template. Available fields of this packet template are:

Field Name	Field Size in bits	Description
Digest	256b	Default: 0x00

2.62.2 PD_SRPDB_Certificate

Can be used as SecurityResponseDB for PD_SecurityResponseMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_CERTIFICATE
AuthParam1	8b	Default: 0x00
AuthParam2	8b	Default: 0x00
Certificate	undefined	Default: null Can be initialized using a byte stream.

2.62.3 PD_SRPDB_ChallengeAuth

Can be used as SecurityResponseDB for PD_SecurityResponseMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_CHALLENGE_AUTH
AuthParam1	8b	Default: 0x00
AuthParam2	8b	Default: 0x00
MinProtVer	8b	Default: 0x00
MaxProtVer	8b	Default: 0x00
Capabilities	8b	Default: 0x01
Rsvd	8b	Default: 0x00

CertChainHash	256b	Default: { 00 00 00 00 }
Salt	256b	Default: { 00 00 00 00 }
ContextHash	256b	Default: { 00 00 00 00 }
Signature	256b	Default: { 00 00 00 00 }

2.62.4 PD_SRPDB_Error

Can be used as SecurityResponseDB for PD_SecurityResponseMsg packet template. Available data fields for this packet template are:

Field Name	Field Size in bits	Description
AuthProtocolVersion	8b	Default: PD_AUTH_PROT_VER_1
AuthMessageType	8b	Default: PD_AUTH_TYPE_ERROR
AuthParam1	8b	Default: 0x00
AuthParam2	8b	Default: 0x00

2.63 Pd_PPSStatusMsg

Applicable to PD Rev3.0 only. Pd_PPSStatusMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 12 (PD_MESSAGE_TYPE_PPS_STATUS - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_PPSSDB_DATA_SIZE. Following are the additional fields for this packet template:

2.63.1 Pd_PPSStatusDataBlock

When using the Transaction Engine™ functions: the Pd_SetPPSStatusDataBlock function can be used to add Pd_PPSStatusDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
OutputVoltage_20mVUnits	16b	Default: 0xFFFF
OutputCurrent_50mAUnits	8b	Default: 0xFF
PPSSDB_Rsvd_1	1b	Default: 0x00
PresentTemperatureFlag	2b	Default: 0x01
OperatingModeFlag	1b	Default: 0x00
PPSSDB_Rsvd_2	4b	Default: 0x00

2.64 Pd_CountryInfoMsg

Applicable to PD Rev3.0 only. Pd_CountryInfoMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 13 (PD_MESSAGE_TYPE_COUNTRY_INFO - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_CIDB_DATA_SIZE. Following are the additional fields for this packet template:

2.64.1 Pd_CountryInfoDataBlock

When using the Transaction Engine™ functions: the Pd_SetCountryInfoDataBlock function can be used to add Pd_CountryInfoDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
Alpha2CountryCode1stChar	8b	Default: 0x00
Alpha2CountryCode2ndChar	8b	Default: 0x00

CIDB_Rsvd_1	16b	Default: 0x00
CountrySpecificData	2048b max	Default: null Byte stream data. Max length is 256Bytes.

2.65 Pd_CountryCodesMsg

Applicable to PD Rev3.0 only. Pd_CountryCodesMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 14 (PD_MESSAGE_TYPE_COUNTRY_CODES - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_CCDB_DATA_SIZE. Following are the additional fields for this packet template:

2.65.1 Pd_CountryCodesDataBlock

When using the Transaction Engine™ functions: the Pd_SetCountryCodesDataBlock function can be used to add Pd_CountryCodesDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
NumberOfCountryCodes	16	Default: 0x01
Alpha2CountryCode1stChar	8b	Default: 0x00
Alpha2CountryCode2ndChar	8b	Default: 0x00
CountryCodes	2048b max	Default: 0x00 Should be multiple of 16bits. Max Len is 256Bytes. Each CountryCode is 2Bytes. Each CountryCode can be assigned using the CountryCode packet variable.

2.65.1.1 CountryCode

Can be used as CountryCodes for Pd_CountryCodesDataBlock of Pd_CountryCodesMsg message. Following are available fields of CountryCode packet templates:

Field Name	Field Size in bits	Description
Alpha2CountryCode1stChar	8b	Default: 0x00
Alpha2CountryCode2ndChar	8b	Default: 0x00

2.66 Pd_SinkCapExtendedMsg

Applicable to PD Rev3.0 only. Pd_SinkCapExtendedMsg packet template contains all the fields of PD_ExtMsgHeaders but the default value of MessageType field is 15 (PD_MESSAGE_TYPE_SNK_CAP_EXT - PD_EXT_MESSAGE_TYPE_OFFSET) and the default value of DataSize field is PD_SKEDB_DATA_SIZE. Following are the additional fields for this packet template:

2.66.1 Pd_SinkCapExtDataBlock

When using the Transaction Engine™ functions: the Pd_SetSnkCapExtDataBlock function can be used to add Pd_SinkCapExtDataBlock to the PD Exerciser.

Field Name	Field Size in bits	Description
VendorId	16b	Default: 0x00
ProductId	16b	Default: 0x00

XId	32b	Default: 0x00
FirmwareVersion	8b	Default: 0x00
HardwareVersion	8b	Default: 0x00
SKEDBVersion	8b	Default: PD_SKEDB_VERSION_1
LoadStep	2b	Default: PD_SKEDB_LOADSTEP_150mA_PER_uS
LoadStep_Rsvd	6b	Default: 0x00
OverLoad_10PercentUnits	5b	Default: 0x00
OverloadPeriod_20mSUnits	6b	Default: 0x00
DutyCycle_5PercentUnits	4b	Default: 0x00
TolerateVBusDroop	1b	Default: 0x00
RequiresLPSSource	1b	Default: 0x00
RequiresPS1Source	1b	Default: 0x00
RequiresPS2Source	1b	Default: 0x00
Compliance_Rsvd	5b	Default: 0x00
TouchTemp	8b	Default: PD_SKEDB_TOUCHTEMP_DEFAULT
NumberOfFixedBatteries	4b	Default: 0x00
NumberOfHotSwappableSlots	4b	Default: 0x00
PPSChargingSupported	1b	Default: 0x00
VBusPowered	1b	Default: 0x01
MainsPowered	1b	Default: 0x00
BatteryPowered	1b	Default: 0x00
BatteryEssentiallyUnlimited	1b	Default: 0x00
SinkModes_Rsvd	3b	Default: 0x00
SinkMinPDP	7b	Default: 0x00
SinkMinPDP_Rsvd	1b	Default: 0x00
SinkOperationalPDP	7b	Default: 0x00
SinkOperationalPDP_Rsvd	1b	Default: 0x00
SinkMaxPDP	7b	Default: 0x00
SinkMaxPDP_Rsvd	1b	Default: 0x00

3 Type-C Commands

In addition to Power Delivery commands, PD Exerciser also provides a command set to manage USB Type-C connection . It includes some low level commands for manipulating voltages, capacitors and resistors as well as some high level commands that let you have SINK, SINKAS, SOURCE and DRP state machines, described in Type-C specification, with the facilities to customize different behaviors and characteristics. Note that at the present, Type-C state machines are just followed when related commands are running. In other words, Type-C state machines are not followed in parallel to other Power Delivery commands execution.

3.1 PD_SetResistorRp

Sets resistor Rp On/Off.

Format

```
Call PD_SetResistorRp( state, current, line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`current`

Possible values:

```
CC_RP_CUR_DEFAULT
CC_RP_CUR_1_5
CC_RP_CUR_3_0
```

`line`

Possible values:

```
CC_LINE_1
CC_LINE_2
CC_LINE_ALL
```

Result

None

Examples

```
Call PD_SetResistorRP( PD_ON, CC_RP_CUR_1_5, CC_LINE_2 )
```

3.2 PD_SetResistorRd

Sets resistor Rd On/Off.

Format

```
Call PD_SetResistorRd( state, line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`line`

Possible values:

```
CC_LINE_1
CC_LINE_2
CC_LINE_ALL
```

Result

None

Examples

```
Call PD_SetResistorRd( PD_ON, CC_LINE_1 )
```

3.3 PD_SetResistorRa

Sets resistor Ra On/Off.

Format

```
Call PD_SetResistorRa( state, line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`line`

Possible values:

```
CC_LINE_1
CC_LINE_2
CC_LINE_ALL
```

Result

None

Examples

```
Call PD_SetResistorRa( PD_ON, CC_LINE_2 )
```

3.4 PD_SetVBusCap10MicroFarad

Sets the VBus Capacitor(10 Micro Farad) On/Off.

Format

```
Call PD_SetVBusCap10MicroFarad( state )
```

Parameters

`state`

Possible values:

PD_ON
PD_OFF

Result

None

Examples

`Call PD_SetVBusCap10MicroFarad( PD_ON )`

3.5 PD_SetVBusCap1MicroFarad

Sets the VBus Capacitor(1 Micro Farad) On/Off.

Format

`Call PD_SetVBusCap1MicroFarad( state )`

Parameters

`state`

Possible values:

PD_ON
PD_OFF

Result

None

Examples

`Call PD_SetVBusCap1MicroFarad( PD_ON )`

3.6 PD_SetVBus

Sets VBus On/Off.

Format

`Call PD_SetVBus( state, voltage_milli_volt )`

Parameters

`state`

Possible values:

PD_ON
PD_OFF

`voltage_milli_volt`

The voltage which applied on VBus. `voltage_mili_volt` cannot be greater than 20500 mV. In order to apply voltages greater than 5V, the corresponding check box should be set in recording options.

Result

None

Examples

```
Call PD_SetVBus( PD_ON, 5000 )
```

3.7 PD_WaitForVBus

Compares VBus voltage with the desired value within a specific time.

Format

```
Call PD_WaitForVBus( voltage_mv, wait_timeout_us, compare_operator )
```

Parameters

`voltage_mv`

The desired VBus voltage value(in milli-volt) to be compared with the VBus voltage value.

`wait_timeout_us`

The function will monitor the VBus voltage within this time-out(in micro seconds). If VBus voltage reaches to the desired value during this time-out then the function returns `PD_RESULT_OK` otherwise it returns `PD_RESULT_FAILED` with sub-result set to `PD_SUBRESULT_TIMEOUT_OCCURRED`.

`compare_operator`

Indicates the desired comparator.

Possible values:

```
PD_COMPARE_EQUAL
PD_COMPARE_GREATER
PD_COMPARE_LESS
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Values
PD_RESULT_OK
PD_RESULT_FAILED
PD_SUBRESULT_TIMEOUT_OCCURRED

Examples

```
call PD_WaitForVBus(VBUS_VOLTAGE_V5_SAFE_MIN, 1000000, PD_COMPARE_GREATER)
```

3.8 PD_SetVConn

Sets VConn On/Off.

Format

```
Call PD_SetVConn( state, cc_line, voltage_mili_volt )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`cc_line`

Possible values:

```
CC_LINE_AUTO
CC_LINE_1
CC_LINE_2
```

`voltage_mili_volt`

Indicates the desired VConn voltage in mV.

Result

None

Examples

```
Call PD_SetVConn( PD_ON, CC_LINE_2, 3000 )
```

3.9 PD_SetLoadOnVBus

Enables/Disables load on VBus.

Format

```
Call PD_SetLoadOnVBus( state )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

Result

None

Examples

```
Call PD_SetLoadOnVBus( PD_ON )
```

3.10 PD_SetResistor100K

Sets the Resistor100K on the specified CC line.

Format

```
Call PD_SetResistor100K( state, cc_line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`cc_line`

Possible values:

```
CC_LINE_ALL
CC_LINE_1
CC_LINE_2
```

Result

None

Examples

```
Call PD_SetResistor100K( PD_ON, CC_LINE_1 )
```

3.11 PD_SetResistor95_3K

Sets the Resistor95.3K on the specified CC line.

Format

```
Call PD_SetResistor95_3K( state, cc_line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`cc_line`

Possible values:

```
CC_LINE_ALL
CC_LINE_1
CC_LINE_2
```

Result

None

Examples

```
Call PD_SetResistor95_3K( PD_ON, CC_LINE_1 )
```

3.12 PD_SetResistor264K

Sets the Resistor264K on the specified CC line.

Format

```
Call PD_SetResistor264K( state, cc_line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`cc_line`

Possible values:

```
CC_LINE_ALL
CC_LINE_1
CC_LINE_2
```

Result

None

Examples

```
Call PD_SetResistor264K( PD_ON, CC_LINE_1 )
```

3.13 PD_SetBCSourceMode

Enables/Disables Battery Charger Source Mode.

Format

```
Call PD_SetBCSourceMode( state )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

Result

None

Examples

```
Call PD_SetBCSourceMode( PD_ON )
```

3.14 PD_SetCapacitor400pF

Sets the Capacitor400pF on the specified CC line.

Format

```
Call PD_SetCapacitor400pF( state, cc_line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`cc_line`

Possible values:

```
CC_LINE_ALL
CC_LINE_1
CC_LINE_2
```

Result

None

Examples

```
Call PD_SetCapacitor400pF( PD_ON, CC_LINE_1 )
```

3.15 PD_SetCC1Capacitor390pF

Enables/Disables the Capacitor 390pF on CC1.

Format

```
Call PD_SetCC1Capacitor390pF( state )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

Result

None

Examples

```
Call PD_SetCC1Capacitor390pF( PD_ON )
```

3.16 PD_ReportSafeStateStatus

Enables/Disables USB Safe States report on the specified lines.

Format

```
Call PD_ReportSafeStateStatus( lines )
```

Parameters

`lines`

Possible values:

```
DP_LINE_1
DP_LINE_2
DM_LINE_1
DM_LINE_2
RX_LINE_1
RX_LINE_2
TX_LINE_1
TX_LINE_2
```

```
SBU_LINE_1
SBU_LINE_2
```

Result

None

Examples

```
#Enables USB Safe States report on DP_LINE_2, DM_LINE_2, SBU_LINE_1, SBU_LINE_2
#lines and disables the report on all other lines.
call PD_ReportSafeStateStatus(DP_LINE_2 | DM_LINE_2 | SBU_LINE_1 | SBU_LINE_2)
```

3.17 PD_SetVbusToCCWithResistor53_2K

Puts VBus voltage on specified CC line using the 53.2K resistor

Format

```
Call PD_SetVbusToCCWithResistor53_2K( state, cc_line )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

`cc_line`

Possible values:

```
CC_LINE_ALL
CC_LINE_1
CC_LINE_2
```

Result

None

Examples

```
Call PD_SetVbusToCCWithResistor53_2K( PD_ON, CC_LINE_1 )
```

3.18 PD_AllowVbusWithoutCCTerm

Allows/Prevents to turn on VBus without any CC terminations.

Format

```
Call PD_AllowVbusWithoutCCTerm( state )
```

Parameters

`state`

Possible values:

```
PD_ON
PD_OFF
```

Result

None

Examples

```
Call PD_AllowVbusWithoutCCTerm( PD_ON )
```

3.19 PD_TerminateCCLines

Terminates CC lines with the specified resistors.

Format

```
Call PD_TerminateCCLines( CC1_Resistor, CC2_Resistor )
```

Parameters

`CC1_Resistor`

Possible values:

```
CC_OPEN
CC_RP
CC_RP_1_5
CC_RP_3_0
CC_RD
CC_RA
```

`CC2_Resistor`

Possible values:

```
CC_OPEN
CC_RP
CC_RP_1_5
CC_RP_3_0
CC_RD
CC_RA
```

Result

None

Examples

```
Call PD_TerminateCCLines( CC_RP_1_5, CC_OPEN )
```

3.20 PD_WaitForUUTPinState

Waits until either a time-out being occurred or a specific UUT pin state being detected for a specific duration of time.

Format

```
Call PD_WaitForUUTPinState( pin_state, state_duration, pin_selector, timeout )
```

Parameters

`pin_state`

The specific UUT pin state to check.

Possible values:

```
CC_PIN_STATE_NONE
CC_PIN_STATE_SRC_OPEN
```

```
CC_PIN_STATE_SRC_RD
CC_PIN_STATE_SRC_RA
CC_PIN_STATE_SNK_OPEN
CC_PIN_STATE_SNK_RP
```

`state_duration`

Time duration(in micro seconds) to check the presentation of the UUT specified pin state.

`pin_selector`

Indicates the CC line(s)

```
CC_PIN_SELECTOR_NEITHER
CC_PIN_SELECTOR_EITHER
CC_PIN_SELECTOR_BOTH
CC_PIN_SELECTOR_ONLY_ONE
CC_PIN_SELECTOR_ONE_OTHER
CC_PIN_SELECTOR_CC1
CC_PIN_SELECTOR_CC2
```

`timeout`

If the time-out(in micro seconds) occurs function will return.

Result

None

Examples

```
Call PD_WaitForUUTPinState(CC_PIN_STATE_SRC_RD, 50000, CC_PIN_SELECTOR_CC2, 200000)
```

3.21 PD_SetStartDRPSetting

It is used to customize behavior and characteristics of the Exerciser when acts as a DRP device. Settings will be applied to `PD_StartDRP` function.

Format

```
Call PD_SetStartDRPSetting( PD_Start_DRP_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_Start_DRP_Settings`. This type contains following data fields:

Field Name	Default Values	Description
Timeout	PD_DEFAULT_TIMEOUT_INFINIT	Indicates the timeout in micro second for connecting as a SINK or SOURCE. Should be greater than 5000us.
WithRa	PD_FALSE	Indicates whether to provide Ra on one of CC lines or not.
WithAccessory	PD_FALSE	If set to PD_TRUE, the command checks whether the UUT transitions to the AudioAccessory state or not.
AdvertizedCurrent	CC_RP_CUR_1_5	Indicates advertised current level on Rp.
WithVConn	PD_FALSE	Indicates whether to turn on the VConn or not.
VConnVoltage_mV	VCONN_VOLTAGE_DEFAULT	Indicates the VConn voltage level when start sourcing.
AccessoryStateDuration	1000000 (us)	Time duration to check whether the UUT is in AudioAccessory state or not.
StartWithSNK	PD_FALSE	If is set to PD_TRUE, DRP state machine starts from Unattached.SNK state instead of Unattached.SRC state.

WithTrySRC	PD_FALSE	If is set to PD_TRUE, Exerciser supports Try.SRC state machine.
WithTrySNK	PD_FALSE	If is set to PD_TRUE, Exerciser supports Try.SNK state machine.

Result

None

Examples

```
$startdrp_setting = PD_Start_DRP_Settings
{
   WithTrySRC = PD_TRUE
}
Call PD_SetStartDRPSetting( $startdrp_setting )
```

3.22 PD_StartDRP

It starts DRP state machine for connecting to a Type-C device. The command quits if timeouts or Exerciser transitions to Attached.Src or Attached.SNK. Usually is being called after `PD_SetStartDRPSetting` function.

Format

```
Call PD_StartDRP()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Values
PD_RESULT_OK
PD_RESULT_FAILED

Examples

```
Call PD_StartDRP()
```

3.23 PD_SetStartSourceSetting

It is used to customize behavior and characteristics of the Exerciser when acts as a SOURCE device. Settings will be applied to `PD_StartSource` command.

Format

```
Call PD_SetStartSourceSetting( PD_Start_Source_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_Start_Source_Settings`. Available fields for this type are:

Field Names	Default Values	Description
Timeout	PD_DEFAULT_TIMEOUT_INFINIT	Indicates the timeout (micro seconds) for connecting as SOURCE.

		Should be greater than 5000us.
WithRa	PD_FALSE	Indicates whether to provide Ra on one of CC lines or not.
WithAccessory	PD_FALSE	If set to PD_TRUE, the command checks whether the UUT transitions to the AudioAccessory state or not.
AdvertizedCurrent	CC_RP_CUR_1_5	Indicates advertised current level on Rp.
WithVConn	PD_FALSE	Indicates whether to turn on VConn or not.
VConnVoltage_mV	VCONN_VOLTAGE_DEFAULT	Indicates the VConn voltage level when start sourcing.
AccessoryStateDuration	1000000 (us)	Time duration to check whether the UUT is in AudioAccessory state or not.

Result

None

Examples

```
$startsrc_setting = PD_Start_Source_Settings
{
   WithRa = PD_TRUE
}
Call PD_SetStartSourceSetting( $startsrc_setting )
```

3.24 PD_StartSource

It starts SOURCE state machine for connecting to a Type-C device. The command is terminated if timeout occurs or the Exerciser transitions to Attached.SRC state. Usually is being called after PD_SetStartSourceSetting function.

Format

```
Call PD_StartSource()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

Result Values
PD_RESULT_OK
PD_RESULT_FAILED

Examples

```
Call PD_StartSource()
```

3.25 PD_SetStartSinkSetting

It is used to customize behavior and characteristics of the Exerciser when acts as a SINK device. Settings will be applied to PD_StartSink command.

Format

```
Call PD_SetStartSinkSetting( PD_Start_Sink_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_Start_Sink_Settings`. Available fields of this type are:

Field Name	Default Values	Description
Timeout	PD_DEFAULT_TIMEOUT_INFINIT	Indicates the timeout (micro second) for connecting as a SINK. Should be greater than 5000us.
WithRa	PD_FALSE	Indicates whether to provide Ra on one of CC lines or not.
WithAccessory	PD_FALSE	Indicates whether to support SINKAS state machine or not.
AdvertizedCurrent	CC_RP_CUR_1_5	When WithAccessory setting is PD_TRUE: indicates advertised current level on Rp.
StartWithSNK	PD_TRUE	Applies when WithAccessory setting is PD_TRUE. If is set to PD_FALSE, SINKAS state machine starts from Unattached.Accessory state instead of Unattached.SNK state.
AccessoryStateDuration	1000000 us	When WithAccessory setting is PD_TRUE: indicates the time that Execiser stays in Powered.Accessory or Audio.Accessory states.
PoweredAccessoryExitState	PD_TYPE_C_STATE_NONE	When WithAccessory setting is PD_TRUE: indicates the exit state from Powered.Accessory state.

Result

None

Examples

```
$startsnk_setting = PD_Start_Sink_Settings
{
   WithAccessory = PD_TRUE
}
Call PD_SetStartSinkSetting( $startsnk_setting )
```

3.26 PD_StartSink

It starts SINK or SINKAS state machine for connecting to a Type-C device. The command is terminated if timeout occurs or Exerciser transitions to Attached.SNK. When Exerciser acts as SINKAS, with no exit state for Powered.Accessory state, that state will be the last state and command is terminated after specified time for this state duration. Usually is being called after the `PD_SetStartSinkSetting` function.

Format

```
Call PD_StartSink()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Values
PD_RESULT_OK

PD_RESULT_FAILED

Examples

```
Call PD_StartSink()
```

4 Basic Commands

4.1 PD_SendPacket

Sends the data payload towards the device. You can customize its behavior using provided settings.

Format

```
Call PD_SendPacket(PD_Packet $send_packet, PD_SendPacketSettings $settings)
```

Parameters

`$send_packet`

Defines the payload. Refer to `Packet Templates` for available packet templates.

`$settings`

Settings for sending packet. It should be inherited from `PD_SendPacketSettings` template.

Table below shows `PD_SendPacketSettings` structure in detail:

Field Name	Possible/Default Values	Description
OrderedSetType	PD_ORDERED_SET_TYPE_SOP(default) PD_ORDERED_SET_TYPE_SOP_PRIME PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME PD_ORDERED_SET_TYPE_HARDRESET PD_ORDERED_SET_TYPE_CABLERESET	Defines Ordered set type.
WaitForGoodCrc	PD_TRUE(default) PD_FALSE	If the command should wait for peer GoodCrc message.
ResetOnError	PD_TRUE(default) PD_FALSE	Send Soft Reset if relative GoodCrc has not been received, in case of sending SoftReset failure, HardReset will be sent.
RetryCount	PD_DEFAULT_RETRY_COUNT_REV_2(default.Rev2.0) PD_DEFAULT_RETRY_COUNT_REV_3(default.Rev3.0)	Indicates the Retry Count.
RetryDelayTime	0(default)	Delay time between two consecutive retries.
AutoMessageId	PD_TRUE(default) PD_FALSE	To increase MessageId automatically.

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed
PD_SUBRESULT_NO_GOODCRC	Subresult - No GoodCRC received for sent packet
PD_SUBRESULT_HARDRESET	Subresult - HardReset occurred.
PD_SUBRESULT_SOFTRESET	Subresult - SoftReset occurred.

Examples

```
#send a discover identity command
################################
$send_setting = PD_SendPacketSettings
{
   # could be PD_ORDERED_SET_TYPE_SOP_PRIME for cables
   OrderedSetType = PD_ORDERED_SET_TYPE_SOP
}
```

```
$discover_identity = PD_VDM_Discover_Identity_Message
Call PD_SendPacket( $discover_identity, $send_setting )

# Send Request message
######################
$request_data = PD_RequestDataObject_Fixed_Variable_NoGiveBack
{
    MaxOperatingCurrent_10mAUnits = 90
    OperatingCurrent_10mAUnits = 90
}
$request_packet = PD_RequestPacket
{
    Data = $request_data
}
#calling PD_SendPacket() command using default settings
$send_packet_settings = PD_SendPacketSettings
Call PD_SendPacket($request_packet, $send_packet_settings)
```

4.2 PD_SendPacket_Cable

Sends a packet as a Marked Cable towards the device.

Format

```
Call PD_SendPacket_Cable( PD_Packet $send_packet,
                PD_SendPacketSettings_Cable $settings )
```

Parameters

`$send_packet`

Defines the payload. Refer to `Packet Templates` for available packet templates.

`$settings`

Settings for sending packet. It should be derived from `PD_SendPacketSettings_Cable` template.

`PD_SendPacketSettings_Cable` is derived from `PD_SendPacketSettings` template. Default values for some fields is changed as below:

```
OrderedSetType = PD_ORDERED_SET_TYPE_SOP_PRIME
ResetOnErrors = PD_FALSE
RetryCount = 0
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of possible result values:

Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed
PD_SUBRESULT_NO_GOODCRC	Subresult - No GoodCRC received for sent packet

Examples

```
#send a discover identity response
###################################
$send_setting = PD_SendPacketSettings_Cable

$header_vdo = PD_VDM_Discover_Identity_ID_Header_VDO
$stat_vdo = PD_VDM_Discover_Identity_Cert_Stat_VDO
$product_vdo = PD_VDM_Discover_Identity_Product_VDO
$cable_vdo = PD_VDM_Discover_Identity_Cable_VDO

$discover_identity_response = PD_VDM_Discover_Identity_Response
{
   VDOs = $header_vdo + $stat_vdo + $product_vdo + $cable_vdo
```

```
}
Call PD_SendPacket_Cable( $discover_identity_response, $send_setting )
```

4.3 Pd_SendErroneousChunks

Applicable to PD Rev 3.0 only. Sends packet chunks towards the UUT and has the ability to skip sending some packet chunks. User may set the `$PdGlobalSettings.UnchunkedSupport` (refer to `PD_Set`) setting to `PD_FALSE` before calling this function.

Format

```
Pd_SendErroneousChunks( Pd_Packet $SentPacket, PD_SendErrChunksSettings
$SendErrChunksSettings )
```

Parameters

`$send_packet`

Defines the payload. Refer to `Packet Templates` for available packet templates.

`$SendErrChunksSettings`

It should be inherited from `PD_SendErrChunksSettings` template. It includes all the fields of `PD_SendPacketSettings` (refer to `PD_SendPacket`) packet template but the default value for `RetryCount` field is `PD_DEFAULT_RETRY_COUNT_REV_3`. Following are additional fields of `PD_SendErrChunksSettings` packet template:

Field Name	Default Values	Description
SkipSendChunkIndex	PD_INVALID_VALUE	Indicates from which chunk number the function should stop sending chunks.

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed
PD_SUBRESULT_NO_GOODCRC	Subresult - No GoodCRC received for sent packet
PD_SUBRESULT_HARDRESET	Subresult - HardReset occurred.
PD_SUBRESULT_SOFTRESET	Subresult - SoftReset occurred.

Examples

```
Packet TempExtendedPacket : Pd_Packet
{
    : Pd_MessageHeader
    : Pd_ExtendedMsgHeader
    : Pd_GenericPacket

    Extended = 1
}

Main
{
    .
    .
    .

    Pd_Set $PdGlobalSettings.UnchunkedSupport = PD_FALSE

    local $ErrChunkSettings = PD_SendErrChunksSettings
    {
        SkipSendChunkIndex = 4
    }

    local $SentPacket = TempExtendedPacket
```

```
        {
            MessageType = _00011111
            DataSize    = 260

            Data = { 00 01 02 03 }
        }

        call Pd_SendErroneousChunks($SentPacket, $ErrChunkSettings)

        .
        .
        .
    }
```

4.4 PD_SendCorruptedPacket

Sends a packet towards the Unit Under Test which is corrupted intentionally.

Format

```
Call PD_SendCorruptedPacket( PD_Packet $send_payload,
    PD_SendCorruptedPacketSettings $send_settings )
```

Parameters

`$send_payload`

The payload to be sent. Refer to `Packet Templates` for available packet templates.

`$send_settings`

Settings for sending the corrupted payload. Setting type is `PD_SendCorruptedPacketSettings`:

Field Name	Possible/Default Values	Description
PreambleBitLen	0x40(default)	Indicates the length of Preamble in bit.
NoPreamble	PD_TRUE PD_FALSE(default)	Indicates whether to insert the Preamble or not.
OrderedsetType	PD_ORDERED_SET_TYPE_SOP(default), PD_ORDERED_SET_TYPE_SOP_PRIME, PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME, PD_ORDERED_SET_TYPE_SOP_PRIME_DEBUG, PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME_DEBUG, PD_ORDERED_SET_TYPE_HARDRESET, PD_ORDERED_SET_TYPE_CABLERESET, PD_ORDERED_SET_TYPE_INVALID	Indicates the ordered-set type.
CorruptedOrderedset	PD_TRUE PD_FALSE(default)	If OrderedsetType field is PD_ORDERED_SET_TYPE_INVALID then content of this field will be replaced with ordered-set in the sent packet.
NoCrc	PD_TRUE PD_FALSE(default)	Indicates whether to insert Crc in the packet or not.
CorruptCrc4b	PD_TRUE PD_FALSE(default)	Indicates whether to corrupt Crc before 5-bit encoding or not.
CorruptCrc5b	PD_TRUE PD_FALSE(default)	Indicates whether to corrupt Crc after 5-bit encoding or not.
CorruptCrc4bBitOffset	0x00(default)	Indicates the bit offset (starting from 0) of 4-bit encoded Crc data to be corrupted. This field will be processed if CorruptCrc4b is PD_TRUE.
CorruptCrc4bBitLen	0x00(default)	Indicates the length of corrupted Crc value which will be injected into Crc before 4-bit encoding. Will be processed if CorruptCrc4b is PD_TRUE.
CorruptCrc5bBitOffset	0x00(default)	Indicates the bit offset (starting from 0) of 5-bit encoded Crc data to be corrupted. This

		field will be processed if CorruptCrc5b is PD_TRUE.
CorruptCrc5bBitLen	0x00(default)	Indicates the length of corrupted Crc value which will be injected into Crc after 5-bit encoding. Will be processed if CorruptCrc5b is PD_TRUE.
CorruptCrc4bValue	0x00(default)	Byte stream. Indicates the value to be replaced with Crc before 4-bit encoding value from CorruptCrc4bBitOffset with length of CorruptCrc4bBitLen. Will be processed if CorruptCrc4b is PD_TRUE.
CorruptCrc5bValue	0x00(default)	Byte stream. Indicates the value to be replaced with Crc after 5-bit encoding value from CorruptCrc5bBitOffset with length of CorruptCrc5bBitLen. Will be processed if CorruptCrc5b is PD_TRUE.
CorruptPayload4b	PD_TRUE PD_FALSE(default)	Indicates whether to corrupt Payload before 5-bit encoding or not.
CorruptPayload5b	PD_TRUE PD_FALSE(default)	Indicates whether to corrupt Payload after 5-bit encoding or not.
CorruptPayload4bBitOffset	0x00(default)	Indicates the bit offset of Payload (before 5-bit encoding) to get as the first data bit being corrupted (e.g. bit offset 0x08 means: get the Payload data corrupted starting from offset 0x08). This field will be processed if CorruptPayload4b is PD_TRUE.
CorruptPaylaod4bBitLen	0x00(default)	Indicates the bit length of Payload (before 5-bit encoding) to get corrupted.(e.g. bit length 0x03 means: corrupt Payload(before 5-bit encoding) starting from CorruptPayload4bBitOffset and length of 0x03 bits). This field will be processed if CorruptPayload4b is PD_TRUE.
CorruptPaylaod4bValue	0x00(default)	Byte stream. Defines the value to be replaced with the Payload (before 5-bit encoding) data. The offset and length of replacing data should be defined using CorruptPayload4bBitOffset and CorruptPaylaod4bBitLen fields. This field will be processed if CorruptPayload4b field is PD_TRUE.
CorruptPyload5bBitOffset	0x00(default)	Indicates the bit offset of Payload (after 5-bit encoding) to get as the first data bit being corrupted (e.g. bit offset 0x08 means: get the Payload data corrupted starting from offset 0x08). This field will be processed if CorruptPayload5b field is PD_TRUE.
CorruptPyload5bBitLen	0x00(default)	Indicates the bit length of Payload (after 5-bit encoding) to get corrupted.(e.g. bit length 0x03 means: corrupt Payload(after 5-bit encoding) starting from CorruptPyload5bBitOffset and length of 0x03 bits).This field will be processed if CorruptPayload5b field is PD_TRUE.
CorruptPyload5bValue	0x00(default)	Byte stream. Defines the value to be replaced with the Payload (after 5-bit encoding) data. The offset and length of replacing data should be defined using CorruptPyload5bBitOffset and CorruptPyload5bBitLen fields. Will be processed if CorruptPayload5b field is PD_TRUE.

NoEop	PD_TRUE PD_FALSE(default)	Indicates whether to insert EOP in the packet or not.
CorruptEop	PD_TRUE PD_FALSE(default)	Indicates whether to corrupt EOP in th packet or not
CorruptedEopSymbol	0x00(default)	COrrupted EOP symbol to be replaced with EOP in the packet. This field will be processed if CorruptEop field is PD_TRUE.
OperationType	PD_CORRUPT_OPERATION_TYPE_CUSTOM_VALUE(default) PD_CORRUPT_OPERATION_TYPE_FLIP_ALL_BITS PD_CORRUPT_OPERATION_TYPE_INCREMENT_MSG_ID	Defines the operation type which will be applied. Only one operation type can be chosen at a time. Default operation which is PD_CORRUPT_OPERATION_TYPE_CUSTOM_VALUE will be replacing data from the specified offset for specified length. PD_CORRUPT_OPERATION_TYPE_FLIP_ALL_BITS will be flipping all the bits in between the specified offset to the specified length. PD_CORRUPT_OPERATION_TYPE_INCREMENT_MSG_ID will be incrementing MsgID of the $send_message

Result

None

Examples

```
$GetSinkCapsPacket = PD_GetSinkCapMessage
{
    PortPowerRole_CablePlug = 1
}
$corrupted_send_settings = PD_SendCorruptedPacketSettings
{
    CorruptCrc4b = PD_TRUE
}

call PD_SendCorruptedPacket($GetSinkCapsPacket, $corrupted_send_settings)
```

4.5 PD_ReceivePacket

Receives a packet from device. You can specify the packet type using its settings.

Format

```
Call PD_ReceivePacket( PD_ReceivePacketSettings $receive_Settings )
```

Parameters

$receive_Settings

Settings for receiving packet. The structure type should be PD_ReceivePacketSettings.

Table below shows this structure in detail:

Field Name	Possible/Default Values	Description
OrderedSetType	PD_ORDERED_SET_TYPE_SOP(default) PD_ORDERED_SET_TYPE_SOP_PRIME PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME PD_ORDERED_SET_TYPE_HARDRESET PD_ORDERED_SET_TYPE_CABLERESET	Ordered set type for receiving message.
PacketType	PD_MESSAGE_TYPE_ANY(default) PD_MESSAGE_TYPE_GOODCRC	Message type to receive.

	PD_MESSAGE_TYPE_GOTO_MIN PD_MESSAGE_TYPE_ACCEPT PD_MESSAGE_TYPE_REJECT PD_MESSAGE_TYPE_PING PD_MESSAGE_TYPE_PS_RDY PD_MESSAGE_TYPE_GET_SOURCE_CAP PD_MESSAGE_TYPE_GET_SINK_CAP PD_MESSAGE_TYPE_DR_SWAP PD_MESSAGE_TYPE_PR_SWAP PD_MESSAGE_TYPE_VCONN_SWAP PD_MESSAGE_TYPE_WAIT PD_MESSAGE_TYPE_SOFT_RESET PD_MESSAGE_TYPE_HARD_RESET PD_MESSAGE_TYPE_CABLE_RESET PD_MESSAGE_TYPE_NOT_SUPPORTED PD_MESSAGE_TYPE_GET_SRC_CAP_EXT PD_MESSAGE_TYPE_GET_STATUS PD_MESSAGE_TYPE_FR_SWAP PD_MESSAGE_TYPE_GET_PPS_STATUS PD_MESSAGE_TYPE_GET_COUNTRY_CODES PD_MESSAGE_TYPE_GET_SNK_CAP_EXT PD_MESSAGE_TYPE_SOURCE_CAP PD_MESSAGE_TYPE_REQUEST PD_MESSAGE_TYPE_BIST PD_MESSAGE_TYPE_SINK_CAP PD_MESSAGE_TYPE_BATTERY_STATUS PD_MESSAGE_TYPE_ALERT PD_MESSAGE_TYPE_GET_COUNTRY_INFO PD_MESSAGE_TYPE_VDM PD_MESSAGE_TYPE_SRC_CAP_EXT PD_MESSAGE_TYPE_STATUS PD_MESSAGE_TYPE_GET_BATTERY_CAP PD_MESSAGE_TYPE_GET_BATTERY_STATUS PD_MESSAGE_TYPE_BATTERY_CAP PD_MESSAGE_TYPE_GET_MANUFACTURER_INFO PD_MESSAGE_TYPE_MANUFACTURER_INFO PD_MESSAGE_TYPE_SECURITY_REQUEST PD_MESSAGE_TYPE_SECURITY_RESPONSE PD_MESSAGE_TYPE_PPS_STATUS PD_MESSAGE_TYPE_COUNTRY_INFO PD_MESSAGE_TYPE_COUNTRY_CODES PD_MESSAGE_TYPE_SNK_CAP_EXT	
VdmCommand	PD_VDM_COMMAND_ANY(default) PD_VDM_COMMAND_DISCOVER_IDENTITY PD_VDM_COMMAND_DISCOVER_SVIDS PD_VDM_COMMAND_DISCOVER_MODES PD_VDM_COMMAND_ENTER_MODE PD_VDM_COMMAND_EXIT_MODE PD_VDM_COMMAND_DISPLAYPORT_STATUS_UPDATE PD_VDM_COMMAND_DISPLAYPORT_CONFIGURE PD_VDM_COMMAND_ATTENTION	VDM command.
VdmCommandType	PD_VDM_COMMAND_TYPE_INITIATOR(default) PD_VDM_COMMAND_TYPE_RESPONDER_ACK PD_VDM_COMMAND_TYPE_RESPONDER_NAK PD_VDM_COMMAND_TYPE_RESPONDER_BUSY PD_VDM_COMMAND_TYPE_ANY	VDM command type.
AutoGoodCrc	PD_TRUE(default) PD_FALSE	Send GoodCrc on receiving a message, automatically.
DelayBeforeGoodCrc	0(default) Or other user defined value.	Delay before sending GoodCrc message.
WaitTimeOut	PD_DEFAULT_TIMEOUT_SENDER_RESPONSE(default) PD_DEFAULT_TIMEOUT_INFINIT Or other user defined value.	Receive timeout(micro second).
DiscardPrevReceived	PD_TRUE PD_FALSE(default)	Discards any (unprocessed) packet received before calling PD_ReceivePacket function.
ReturnOnUnexpectedPkt	PD_TRUE PD_FALSE(default)	If set to PD_TRUE, cause PD_ReceivePacket() function to return on receiving unexpected packet.
NoSoftResetResponse	PD_TRUE PD_FALSE(default)	If set to PD_TRUE, the PD_ReceivePacket() function will not respond to any received Soft_Resets.
NoHardResetResponse	PD_TRUE PD_FALSE(default)	If set to PD_TRUE, the PD_ReceivePacket() function will not respond to any received Hard_Resets.

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed
PD_SUBRESULT_RECEIVE_TIMEOUT	Subresult - No packet received within specified time
PD_SUBRESULT_UNEXPECTED_MSG_RECEIVED	Subresult - Unexpected packet received
PD_SUBRESULT_HARDRESET	Subresult - HardReset received
PD_SUBRESULT_SOFTRESET	Subresult - SoftReset received

Examples

```
#Receive source caps
####################
# Wait to receive source capability. GoodCRC is sent automatically.
$recv_settings = PD_ReceivePacketSettings
{
    WaitTimeOut = PD_DEFAULT_TIMEOUT_INFINIT
    PacketType = PD_MESSAGE_TYPE_SOURCE_CAP
}
call PD_ReceivePacket($recv_settings)

#Receive VDM message
####################
$receive_settings = PD_ReceivePacketSettings
{
    PacketType = PD_MESSAGE_TYPE_VDM
}
call PD_ReceivePacket( $receive_settings )
```

4.6 PD_SendSoftReset

Sends Soft Reset and performs the reset according to the selected Ordered-Set Type.

Format

```
Call PD_SendSoftReset( orderedset_type )
```

Parameters

`orderedset_type`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

If sending SoftReset succeeded the result is `PD_RESULT_OK`. In case of failure it may lead to Power Negotiation.

Examples

```
Call PD_SendSoftReset( PD_ORDERED_SET_TYPE_SOP )
```

4.7 PD_SendHardReset

Sends Hard Reset and performs the reset.

Format

```
Call PD_SendHardReset()
```

Parameters

None

Result

None

Examples

```
Call PD_SendHardReset()
```

4.8 PD_SendCableReset

Sends Cable Reset and resets all the cable related states in protocol layer.

Format

```
Call PD_SendCableReset()
```

Parameters

None

Result

None

Examples

```
Call PD_SendCableReset()
```

4.9 PD_DelayNoAutoResponse

Delays Exerciser execution for specified time.

Format

```
Call PD_DelayNoAutoResponse( Micro_Sec )
```

Parameters

```
Micro_Sec
```

Delay in micro seconds.

Result

None

Examples

```
#calling PD_DelayNoAutoResponse
Call PD_DelayNoAutoResponse(15000)
```

4.10 PD_Delay

Delays Exerciser execution for specified time.

Format

```
Call PD_Delay( delay_value )
```

Parameters

`delay_value`

Delay in micro seconds.

Result

None

Examples

```
#calling PD_Delay
Call PD_Delay(15000)
```

4.11 PD_SetRoles

Sets data role and power role of Exerciser.

Format

```
Call PD_SetRoles( DataRole, PowerRole )
```

Parameters

`DataRole`

Possible values:

```
PD_PORT_DATA_ROLE_UFP
PD_PORT_DATA_ROLE_DFP
```

`PowerRole`

Possible values:

```
PD_PORT_POWER_ROLE_SINK
PD_PORT_POWER_ROLE_SOURCE
```

Examples

```
Call PD_SetRoles( PD_PORT_DATA_ROLE_DFP, PD_PORT_POWER_ROLE_SOURCE )
```

4.12 PD_Set

Using this command you can change necessary settings or variables inside the Exerciser.

Format

```
PD_Set $PdGlobalSettings.<field_name> = <value>
PD_Set $PdTimers.<field_name> = <value>
```

Parameters

List of `$PdGlobalSettings` fields:

Field Name	Possible/Default Values	Description
PortDataRole	PD_PORT_DATA_ROLE_DFP PD_PORT_DATA_ROLE_UFP(default)	Defines port data role.
PortPowerRole	PD_PORT_POWER_ROLE_SINK(default) PD_PORT_POWER_ROLE_SOURCE	Defines port power role.
CheckMessageId	PD_FALSE(Default) PD_TRUE	Enables/Disables received packet message id verification.
SpecificationRevision	PD_SPEC_REVISION_1 PD_SPEC_REVISION_2(Default) PD_SPEC_REVISION_3 Or any user defined value.	Changes the SpecificationRevision of all messages sent by the Exerciser. **Note 1 (Rev.3.0 or higher, all messages except non-SOP messages which are sent by PD Exerciser to a cable plug):** This setting will be applied only if the *AutoSpecRev* setting of PD_SetNegotiationSetting_Source (PD Exerciser operating as Source) or PD_SetNegotiationSetting_Sink (PD Exerciser operating as Sink) has been set to PD_FALSE. **Note 2:** To set the Specification Revision of GoodCrc messages which are sent by PD Exerciser, refer to *AutoGoodCRCSpecRev* and *GoodCRCSpecRev* global settings.
EnableCableEmulator	PD_FALSE(default) PD_TRUE	Enables/Disables SOP Cable Emulator engine in Exerciser. If enabled, the Exerciser simulates a SOP Prime Marked Cable as well as source or sink PD Device. *It should be set only once in the target Exerciser Script*.
EnableCableDPrimeEmulator	PD_FALSE (default) PD_TRUE	Enables/Disables SOP Double Prime Cable Emulator engine in Exerciser. If enabled, the Exerciser simulates a SOP Double Prime Marked Cable as well as source or sink PD Device. *It should be set only once in the target Exerciser Script*.
EnableDeviceEmulator	PD_FALSE, PD_TRUE(default)	If disabled, Device Emulator AutoResponse will be disabled (in case of Exerciser acting as a Sink or Source device).
NegotiateAfterReset	PD_FALSE, PD_TRUE (default)	If set to PD_TRUE, then the Exerciser will run Negotiation after receiving/sending SoftReset or HardReset.
VConnPassThrough	PD_FALSE(default), PD_TRUE	Indicates whether the Exerciser is connected to the DUT using a VConn Pass Through cable or not.
PDWorkingRevision	PD_SPEC_REVISION_2(default) PD_SPEC_REVISION_3	Sets the Power Delivery working revision. *It should be set only once in the target Exerciser Script*. Its recommended to change this setting using PD_SetWorkingRevision high-level function.
UnchunkedSupport	PD_FALSE, PD_TRUE (default)	Indicates whether to support sending un-chunked messages or not.
StructuredVDMVersion	PD_INVALID_VALUE(default) Or any user defined value.	Indicates the VDM version of structured VDM messages. If the value is PD_INVALID_VALUE then the Exerciser assigns the proper value for structured VDM version according to current operational Power Delivery Revision.
VConnThroughConnectCCLine	CC_LINE_1 (default) CC_LINE_2	Indicates the desired CC line which makes the PD Exerciser to try to establish the Type-C connection on this CC line. This setting is

		only applicable when the cable is a VConnPassThrough cable.
FRSwapSupport	PD_TRUE (default) PD_FALSE	Applies only if the run-time working revision is Rev.3.0 or higher. Indicates whether the Fast Role Swap is supported by Pd Exerciser engine or not.
AutoGoodCRCSpecRev	PD_TRUE (default) PD_FALSE	If set to PD_TRUE, proper Specification Revision will be set in each GoodCRC message sent to peer port (SOP or non-SOP) depending on the run-time working revision and whether the PD Exerciser is operating as Cable Emulator or not. Otherwise the value of $PdGlobalSettings.GoodCRCSpecRev will be used.
GoodCRCSpecRev	PD_SPEC_REVISION_1 (default) PD_SPEC_REVISION_2 PD_SPEC_REVISION_3	If $PdGlobalSettings.AutoGoodCRCSpecRev is PD_FALSE, then this value will be used as Specification revision of all GoodCRC messages sent by PD Exerciser.
InitiateAMS	PD_TRUE (default) PD_FALSE	Applies If the run-time working revision is Rev.3.0 or higher. If set to PD_TRUE, then the PD Exerciser will always check for SinkTxNG and SinkTxOk values, regarding to its current role as Source or Sink, before starting an AMS.
SpecificationRevisionToCable	PD_SPEC_REVISION_1 PD_SPEC_REVISION_2 PD_SPEC_REVISION_3 (default)	Applies if the run-time working revision is Rev.3.0 or higher. If *AutoSpecRevCable* setting of PD_SetDiscoverIdentitySetting has been set to PD_FALSE, then this value will be used as Specification Revision of all non-SOP messages which are sent by PD Exerciser to cable plug.
DisableVBusOn	PD_TRUE PD_FALSE (default)	If set to PD_TRUE, then PD Exerciser will not turn the VBus on.
CheckBatteryRef	PD_TRUE (default) PD_FALSE	Applies if the run-time working revision is Rev.3.0 or higher. If set to PD_TRUE, then PD Exerciser will check the Battery Reference received by Get_Battery_Status, Alert, Get_Battery_Cap and Manufacturer_info messages with the number of batteries defined by PD Exerciser (using the PD_SetSrcCapExtDataBlock command) and replies with a proper message.
CheckCountryCode	PD_TRUE (default) PD_FALSE	Applies if the run-time working revision is Rev.3.0 or higher. If set to PD_TRUE, then PD Exerciser will check the Country Codes received by Get_Country_info message with the available country codes which has been added using the Pd_SetCountryCodesDataBlock function and replies with a proper message. **Note:** PD Exerciser checks the received country codes with only the first 15 country codes which has been added by Pd_SetCountryCodesDataBlock function.
ChangeHWSettingDelay	5000(default)	Indicates how much delay (in micro seconds) is needed to apply after changing any Hardware Setting (e.g. changing Rp/Rd/Ra resistors or inserting/removing a capacitor etc.).

SetVbusDelay	20000(default)	Indicates how much delay (in micro seconds) is needed to apply after changing the VBus state.

List of `$PdTimers` fields(for detailed description refer to Power Delivery Specification):

Field Name	Description
tTypeCSinkWaitCap	Default: 620000 us
tTypeCSendSourceCap	Default: 150000 us
tPSTransition	Default: 550000 us
tPSSourceOff	Default: 920000 us
tPSSourceOn	Default: 480000 us
tSrcTransition	Default: 25000 us
tDiscoverIdentity	Default: 45000 us
tSafe0V	Default: 650000 us
tSafe5V	Default: 275000 us
tPSHardResetMin	Default: 25000 us
tPSHardResetMax	Default: 35000 us
tPSHardReset	Default: 30000 us
tSrcRecoverMin	Default: 660000 us
tSrcRecoverMax	Default: 1000000 us
tSrcRecover	Default: 1000000 us
tReceive	Default: 1100 us
tVCONNStable	Default: 50000 us
tVCONNSourceOff	Default: 25000 us
tVCONNSourceOn	Default: 50000 us
tVCONNSourceTimeout	Default: 200000 us
tVCONNSourceTimeoutMin	Default: 100000 us
tVCONNSourceTimeoutMax	Default: 200000 us
tSenderResponse	Default: 30000 us
tBISTContMode	Default: 60000 us
tVDMBusy	Default: 50000 us
tVDMWaitModeEntry	Default: 50000 us
tVDMWaitModeExit	Default: 50000 us
tSwapSourceStart	Default: 20000 us
tSrcSwapStdbyMax	Default: 650000 us
tNewSrcMax	Default: 275000 us
tDRP	Default: 80000 us
dcSRC_DRP	Default: 50(time percent)
tCCDebounce	Default: 100000 us
tCCDebounceMin	Default: 100000 us
tCCDebounceMax	Default: 200000 us
tDRPTry	Default: 75000 us
tDRPTryMin	Default: 75000 us
tDRPTryMax	Default: 150000 us
tDRPTryWait	Default: 400000 us
tDRPTryWaitMin	Default: 400000 us
tDRPTryWaitMax	Default: 800000 us
tPDDebounce	Default: 10000 us
tPDDebounceMin	Default: 10000 us
tPDDebounceMax	Default: 20000 us
tTryCCDebounce	Default: 20000 us
tTryTimeout	Default: 1100000 us
tSinkTx	Default: 18000 us
tFRSwapTx	Default: 110 us
tFRSwapInitMax	Default: 15000 us
tFRSwapInitMin	Default: 500 us
tFRSwapComplete	Default: 0 us
tFRSwap5V	Default: 0 us
tErrorRecovery	Default: 25000 us
tChunkSenderResponse	Default: 30000 us

tChunkingNotSupported	Default: 50000 us

Result

None

Examples

```
# Enables cable emulator
PD_Set $PdGLOBALSETTINGS.EnableCableEmulator = PD_TRUE

Main
{
   # Sets GoodCRC timeout
   PD_Set $PdTimers.tReceive = 950

   Call PD_WaitForDiscoverIdentity_Cable()
}
```

4.13 IfMatched/ElseMatched

Compares Exerciser settings, Received Packet Fields and Command Results to a desired value.

Using this command you can compare Exerciser settings or variables to other Exerciser settings or variables or to a constant.

Format

```
Ifmatched(<1st_operand>, <2nd_operand>, <operator>)
{
    #command list
}
[
ElseMatched(<1st_operand>, <2nd_operand>, <operator>)
{
 #command list
}
 #more optional ElseMatched(<1st_operand>, <2nd_operand>, <operator>) here
  .
  .
  .
ElseMatched
{
     #command list
}
]
IfMatchedEnd

* ElseMatched clause is optional
```

Parameters

1st_operand

1st operand should be in one of the following formats:

```
$PdGlobalSettings.<field_name>
```

```
$PdResult.<field_name>
$<packet_variable>.<field_name>
```

List of `$PdResult` fields:

Field Name	Description
Result	Last executed command result
Subresult	Last executed command subresult (in case of failure, this field describes the reason)
LastReceivedPacketOrderedSet	Last received packet ordered set type
LastReceivedPacketType	Last received packet type
LastReceivedPacketPowerRole	Last received packet power role field value
LastReceivedPacketDataRole	Last received packet data role field value
LastReceivedPacketSentToCable	Indicates whether the last received packet has been sent to cable(packet towards the cable) or not
LastReceivedPacketMsgID	Last received packet `MessageId` field value
LastReceivedPacketVdmCommand	Last received packet VDM command value, if the packet is VDM packet
LastReceivedPacketVdmCommandType	Last received packet VDM command type value, if the packet is VDM packet
LastReceivedPacketVdmSVID	Last received packet SVID, if the packet is a VDM packet
LastReceivedPacketVdmObjPos	Last received packet `ObjetctPosition`, if the packet is a VDM packet
LastSelectedCapIndex	Last received packet selected capability index, if the packet is Request message
LastRequestHasMismatch	Last received packet `HasMismatch` field value, if the packet is Request message
ExplicitContract	Indicates whether explicit contract is established or not.
LastReceivedUnchunkedSupport	Indicates whether the UUT supports Unchuncked messages or not. Applicable to PD Rev3.0 only.
DataRoleSwapped	Indicates whether the DataRole swapped or not comparing to the initial value of PD Exerciser DataRole.
PowerRoleSwapped	Indicates whether the PowerRole swapped or not comparing to the initial value of PD Exerciser PowerRole.

For available `$PdGlobalSettings` fields refer to `PD_Set`.

`2nd_operand`

It could be as `<1st_operand>` or a constant `<value>`.

`operator`

List of possible values for operator:

```
PD_COMPARE_EQUAL
PD_COMPARE_GREATER
PD_COMPARE_LESS
PD_COMPARE_NOT_EQUAL
```

Result

None

Examples

```
$send_setting = PD_SendPacketSettings
{
   ResetOnError = PD_FALSE
    OrderedSetType = PD_ORDERED_SET_TYPE_SOP
}
$receive_settings = PD_ReceivePacketSettings
{
    PacketType = PD_MESSAGE_TYPE_VDM
}
#send the packet
$discover_identity = PD_VDM_Discover_Identity_Message
Call PD_SendPacket( $discover_identity, $send_setting )

#check for result
```

```
IfMatched( $PdResult.Result, PD_RESULT_OK, PD_COMPARE_EQUAL )
{
   Call PD_ReceivePacket( $receive_settings )
}
ElseMatched( $PdResult.Result, PD_RESULT_FAILED, PD_COMPARE_EQUAL )
{
   Call PD_SendHardReset()
}
ElseMatched
{
   $ping_msg = PD_PingMessage
   Call PD_SendPacket( $ping_msg, $send_setting )
}
IfMatchedEnd
```

4.14 PD_Loop

Using this command you can create a loop containing other Exerciser commands.

Note - The limit for using nested `PD_Loop()` commands is 8.

Format

```
PD_Loop(count)
{
    #command list
}
```

Parameters

`count`

Loop count

Result

None

Examples

```
$send_setting = PD_SendPacketSettings
{
    OrderedSetType = PD_ORDERED_SET_TYPE_SOP
}
$ping_msg = PD_PingMessage

PD_Loop(3)
{
   call PD_SendPacket( $ping_msg, $send_setting )
}
```

4.15 PD_TimerLoop

Using this command you can create a loop(containing other Exerciser commands) which is bound to a predefined timer. On timer timeout, the loop will exit.

Note - The limit for using nested `PD_TimerLoop()` commands is 8.

Format

```
PD_TimerLoop(timeout)
{
    #command list
}
```

Parameters

`timeout`

Loop duration in Micro Seconds.

Result

None

Examples

```
$send_setting = PD_SendPacketSettings
{
    OrderedSetType = PD_ORDERED_SET_TYPE_SOP
}
$ping_msg = PD_PingMessage

# Sending Ping message for 200ms
PD_TimerLoop(200000)
{
   call PD_SendPacket( $ping_msg, $send_setting )
}
```

4.16 PD_Stop

Stops the Exerciser.

Format

```
Call PD_Stop( return_value )
```

Parameters

`return_value`

Value returned to Exerciser.

Result

None

Examples

```
Call PD_Stop(0)
```

4.17 PD_Disconnect

Simulates cable detach.

Format

```
Call PD_Disconnect()
```

Parameters

None

Result

None

Examples

```
Call PD_Disconnect()
```

4.18 PD_StartUSBExerciser

Starts specified Exercisers which are waiting for PD Exerciser's permission.

Format

```
Call PD_StartUSBExerciser( ExercisersTypes )
```

Parameters

`ExercisersTypes`

Possible values:

```
PD_USB2_EXERCISER
PD_USB3_EXERCISER
PD_USB4_EXERCISER
PD_TBT3_EXERCISER
```

Result

None

Examples

```
Call PD_StartUSBExerciser( PD_USB2_EXERCISER | PD_USB3_EXERCISER )
```

4.19 PD_RunUSB3TermDetection

Directs the Exerciser to actively perform USB 3 Rx Termination detection. A TERM State (Report) event will be displayed in the trace.

NOTE: This command is state agnostic. Performing Rx Termination detection in certain states could interfere with SS communication and result in unexpected link behavior.

Format

```
Call PD_RunUSB3TermDetection()
```

Parameters

None

Result

None

Examples

```
Call PD_RunUSB3TermDetection()
```

4.20 PD_ResumeUSB2Exerciser

Resumes USB2 Exerciser execution paused by Break command.

Format

```
Call PD_ResumeUSB2Exerciser()
```

Parameters

None

Result

None

Examples

```
Call PD_ResumeUSB2Exerciser()
```

4.21 PD_ReportUSB3TermStatus

Reports the last-known USB 3 Rx Termination status, typically from when the Exerciser was most recently in eSS.Inactive, Rx.Detect, U2, or U3. A TERM State (Report) event will be displayed in the trace.

Format

```
Call PD_ReportUSB3TermStatus()
```

Parameters

None

Result

None

Examples

```
Call PD_ReportUSB3TermStatus()
```

4.22 PD_IncreaseMsgId

Increase Message ID(Exerciser mode: DFP/UFP).

Format

```
Call PD_IncreaseMsgId(OrderedSetType)
```

Parameters

`OrderedSetType`

Indicates the OrderedSet type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
Call PD_IncreaseMsgId(PD_ORDERED_SET_TYPE_SOP)
```

4.23 PD_DecreaseMsgId

Decrease Message ID(Exerciser mode: DFP/UFP).

Format

```
Call PD_DecreaseMsgId(OrderedSetType)
```

Parameters

`OrderedSetType`

Indicates the OrderedSet type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
Call PD_DecreaseMsgId(PD_ORDERED_SET_TYPE_SOP)
```

4.24 PD_IncreaseMsgId_Cable

Increase Message ID(Exerciser mode: Cable Emulator).

Format

```
Call PD_IncreaseMsgId_Cable(OrderedSetType)
```

Parameters

`OrderedSetType`

Indicates the OrderedSet type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
Call PD_IncreaseMsgId_Cable(PD_ORDERED_SET_TYPE_SOP_PRIME)
```

4.25 PD_DecreaseMsgId_Cable

Decrease Message ID(Exerciser mode: Cable Emulator).

Format

```
Call PD_DecreaseMsgId_Cable(OrderedSetType)
```

Parameters

`OrderedSetType`

Indicates the OrderedSet type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
Call PD_DecreaseMsgId_Cable(PD_ORDERED_SET_TYPE_SOP_PRIME)
```

4.26 PD_SendExternalTriggerOut

Sends the external trigger out.

Format

```
Call PD_SendExternalTriggerOut()
```

Parameters

None

Result

None

Examples

```
Call PD_SendExternalTriggerOut()
```

5 Transaction Engine™

Power Delivery Transaction Engine™ includes high level commands and auto response capability.

5.1 High Level Commands

5.1.1 PD_SetWorkingRevision

Sets the Exerciser working revision along with Specification Revision. It should call once in whole Exerciser script. The default working revision is PD_SPEC_REVISION_2.

Format

```
Call PD_SetWorkingRevision( revision )
```

Parameters

`revision`

Indicates the target revision.

Possible values:

```
PD_SPEC_REVISION_2(default),
PD_SPEC_REVISION_3
```

Result

None

Examples

```
Call PD_SetWorkingRevision( PD_SPEC_REVISION_3 )
```

5.1.2 PD_SetNegotiationSetting_Source

Applies settings to power negotiation related commands as Source in PD Exerciser. If the user wants to change default settings for Source Power Negotiation, has to call this function prior calling the PD_NegotiatePower_Source or PD_NegotiatePower or PD_WaitForNegotiatePower functions to take effect.

Format

```
Call PD_SetNegotiationSetting_Source( PD_Negotiation_Source_Settings $settings )
```

Parameters

`$settings`

Defines negotiation settings for source. Should be in type of PD_Negotiation_Source_Settings template. Table below shows all available fields of PD_Negotiation_Source_Settings template:

Field Name	Possible/Default Values	Description
NegotiationResponse	PD_NEGOTIATION_ACCEPT(default) PD_NEGOTIATION_WAIT PD_NEGOTIATION_REJECT	Indicates the response type.
SourceCapsRetryCount	DEFAULT_SOURCE_CAPS_RETRY_COUNT(default)	Source capabilities retry count.

VBusVoltage_mv	VBUS_VOLTAGE_V5_SAFE(default)	VBus voltage in millivolt.
SourceCapMsgSpecRev	PD_INVALID_VALUE(default) Or other user defined value.	If the value is not PD_INVALID_VALUE then SourceCap Message in Negotiation sequence will be transferred using this Specification Revision.
AutoSpecRev	PD_FALSE, PD_TRUE(default)	Rev3.0 only. Indicates whether the Exerciser should detect the Specification Revision automatically from Negotiation process or not.
AutoUnchunkedSupport	PD_FALSE, PD_TRUE(default)	Rev3.0 only. Indicates whether the Exerciser should detect the Un-chunked Support automatically from Negotiation sequence or not.
SkipNegotiationResponse	PD_TRUE PD_FALSE(Default)	Prevents the source from sending a response back to request in the negotiation.

Note - If user sets the VBusVoltage_mv, then the PD Exerciser will set VBusVoltage_mv on the VBus regardless the actual voltage value which UUT selected during the negotiation process, otherwise the Exerciser will set the VBus using the voltage which UUT selected during the negotiation process.

Note - In order to apply voltages greater than 5V, the corresponding check box should be set in recording options (*Allow VBUS > 5v*).

Result

None

Examples

```
#set negotiation using default values
$settings = PD_Negotiation_Source_Settings
call PD_SetNegotiationSetting_Source( $settings )

#set negotiation using reject as response
$settings
{
   NegotiationResponse = PD_NEGOTIATION_REJECT
}
call PD_SetNegotiationSetting_Source( $settings )
```

5.1.3 PD_AddSourceCap

Adds a specified Source Capability to the PD Exerciser. Before adding a group of source caps make sure that there is no unwanted source cap in the list by calling PD_ResetSourceCaps function. This function has to be called prior calling the PD_NegotiatePower_Source or PD_NegotiatePower or PD_WaitForNegotiatePower functions to take effect.

Note - By default there is one pre-defined source cap(vSafe5V) in the list.

Format

```
Call PD_AddSourceCap(PD_PowerDataObject $PowerDataObject)
```

Parameters

`$PowerDataObject`

Parameter type is `PD_PowerDataObject`. Refer to `PD_SourceCapabilitiesMessage` for available source power data objects.

Result

None

Examples

```
local $power_data_object = PD_PowerDataObjectFixedSupply_Source
{
   MaxCurrent_10mAUnits = 20
   Voltage_50mVUnits = 250
}
call PD_AddSourceCap($power_data_object)
```

5.1.4 PD_ResetSourceCaps

Clears all *Source Capabilities* defined in PD Exerciser. It should be called prior calling the `PD_AddSourceCap` function.

Format

```
Call PD_ResetSourceCaps()
```

Parameters

None

Result

None

Examples

```
call PD_ResetSourceCaps()
```

5.1.5 PD_NegotiatePower_Source

This command tries to establish an explicit contract as Source.

Note: The `PD_ResetSourceCaps`, `PD_AddSourceCap` and `PD_SetNegotiationSetting_Source` functions may need to be called before calling this function.

Format

```
Call PD_NegotiatePower_Source()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_REQUEST_MSG_INVALID_INDEX	Subresult - Invalid index in request message
PD_SUBRESULT_RESPONSE_WAIT	Subresult - `Wait` message has been sent as `Request` message response
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message has been sent as `Request` message response

Examples

```
call PD_NegotiatePower_Source()
```

5.1.6 PD_SetNegotiationSetting_Sink

Applies power negotiation settings as Sink. If the user wants to change default settings for Sink Power Negotiation, has to call this function prior calling the `PD_NegotiatePower_Sink` or `PD_NegotiatePower` or `PD_WaitForNegotiatePower` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetNegotiationSetting_Sink( PD_Negotiation_Sink_Settings $settings )
```

Parameters

`$settings`

Should be from `PD_Negotiation_Sink_Settings` type.

Table below shows all available fields of PD_Negotiation_Sink_Settings template:

Field Name	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Indicates the wait timeout(micro second) to receive SourceCapabilities Message. (default =)
SinkRequestData	`0x1000280A`(default)	Defines data object of Request message. Refer to `PD_RequestPacket` for available Request RDOs.
AutoSinkRequest	`PD_TRUE`(Default) `PD_FALSE`	Builds the `SinkRequestData` automatically according to current PD Exerciser sink capabilities and received source capabilities.
RetryCountOnWait	`2`(default)	Indicates the retry count upon receiving Wait Message after sending the Request.
RetryDelayOnWait	`100000 us`(default)	Indicates the delay time before retrying the `Request`, upon receiving `Wait` Message.
RequestMsgSpecRev	`PD_INVALID_VALUE`(default) Or other user defined value.	If the value is not `PD_INVALID_VALUE` then `Request` message in Negotiation sequence will be transferred using this Specification Revision.
ExTriggerOnAccept	`PD_FALSE`(default) `PD_TRUE`	Indicates whether to notify PD Exerciser through External Trigger on receiving `Accept` message or not.
ExTriggerOnPSRDY	`PD_FALSE`(default) `PD_TRUE`	Indicates whether to notify PD Exerciser through External Trigger on receiving `PS_RDY` message or not.

AutoSpecRev	PD_FALSE, PD_TRUE(default)	Rev3.0 only. Indicates whether the Exerciser should detect the Specification Revision automatically from Negotiation process or not.
AutoUnchunkedSupport	PD_FALSE, PD_TRUE(default)	Rev3.0 only. Indicates whether the Exerciser should detect the Un-chunked Support automatically from Negotiation sequence or not.

Result

None

Examples

```
#Set sink negotiation settings as default
$settings = PD_Negotiation_Sink_Settings
call PD_SetNegotiationSetting_Sink( $settings )
```

5.1.7 PD_AddSinkCap

Adds Sink Capabilities to PD Exerciser. Before adding a group of sink caps make sure that there is no unwanted sink cap in the list by calling PD_ResetSinkCaps function. This function has to be called prior calling the PD_NegotiatePower_Sink or PD_NegotiatePower or PD_WaitForNegotiatePower or PD_DelayAutoResponse functions to take effect.

Note - By default there is one pre-defined sink cap in the list.

Format

```
Call PD_AddSinkCap(PD_PowerDataObject $PowerDataObject)
```

Parameters

$PowerDataObject

Parameter type is PD_PowerDataObject. Refer to PD_SinkCapabilitiesMessage for available sink power data objects.

Result

None

Examples

```
local $power_data_object = PD_PowerDataObjectFixedSupply_Sink
{
   OperationalCurrent_10mAUnits = 50
   Voltage_50mVUnits = 100
}
call PD_AddSinkCap($power_data_object)
```

5.1.8 PD_ResetSinkCaps

Clears all *Sink Capabilities* defined for PD Exercise. It should be called prior calling the PD_AddSinkCap function.

Format

```
Call PD_ResetSinkCaps()
```

Parameters

None

Result

None

Examples

```
call PD_ResetSinkCaps()
```

5.1.9 PD_NegotiatePower_Sink

Tries to establish explicit contract as Sink by sending a `Request` message.

Note: The `PD_ResetSinkCaps`, `PD_AddSinkCap` and `PD_SetNegotiationSetting_Sink` functions may need to be called before calling this function.

Format

```
Call PD_NegotiatePower_Sink()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` received as the response
PD_SUBRESULT_RESPONSE_WAIT	Subresult - `Wait` received as the response
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `PS_RDY` message not received.

Examples

```
call PD_NegotiatePower_Sink()
```

5.1.10 PD_WaitForNegotiatePower

Tries to establish explicit contract either as Source or Sink according to the current PD Exerciser power role. If the current power role of PD Exerciser is Source, this command will wait to receive `Request` message and if the current power role of PD Exerciser is Sink, it will wait to receive `Source_Capabilities` message.

Note: If the PD Exerciser is operating as Source then the `PD_ResetSourceCaps`, `PD_AddSourceCap` and `PD_SetNegotiationSetting_Source` functions may need to be called prior calling this function and if the PD Exerciser is operating as Sink then the `PD_ResetSinkCaps`, `PD_AddSinkCap` and `PD_SetNegotiationSetting_Sink` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForNegotiatePower()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message received as the response
PD_SUBRESULT_RESPONSE_WAIT	Subresult - `Wait` message received as the response
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Request`(PD Exerciser as Source)/`Source_Capabilities`(PD Exerciser as Sink) message not received or `PS_RDY` message not received(PD Exerciser as Sink)

Examples

```
call Pd PD_WaitForNegotiatePower()
```

5.1.11 PD_NegotiatePower

Negotiates power with the peer port according to PD Exerciser current power role. If PD Exerciser operates as Source, this function starts power negotiation as Source and if the PD Exerciser operates as Sink, this function starts power negotiation as Sink(will wait to receive `Request` message).

Note - If the PD Exerciser is operating as Source then the `PD_ResetSourceCaps`, `PD_AddSourceCap` and `PD_SetNegotiationSetting_Source` functions may need to be called prior calling this function and if the PD Exerciser is operating as Sink then the `PD_ResetSinkCaps`, `PD_AddSinkCap` and `PD_SetNegotiationSetting_Sink` functions may need to be called prior calling this function.

Format

```
Call PD_NegotiatePower()
```

Parameters

None

Result

If PD Exerciser operates as Source this function returns same sub-results as `PD_NegotiatePower_Source` function. If PD Exerciser operates as Sink this function returns same sub-results as `PD_NegotiatePower_Sink` function.

Examples

```
Call PD_NegotiatePower()
```

5.1.12 PD_SetSwapPowerRoleSetting

It has to be called prior calling the PD_SwapPowerRole or PD_WaitForSwapPowerRole or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetSwapPowerRoleSetting( Pd_SwapPowerRole_Settings $settings )
```

Parameters

`$settings`

Should be from `Pd_SwapPowerRole_Settings` type.

Following is the list of `Pd_SwapPowerRole_Settings` fields:

Field Name	Possible/Default Values	Description
SwapResponse	PD_MESSAGE_TYPE_ACCEPT (default) PD_MESSAGE_TYPE_WAIT PD_MESSAGE_TYPE_REJECT PD_RESPONSE_NOT_SUPPORTED (PD3.0 only)	Defines the response type.
SkipSwap	PD_TRUE PD_FALSE(Default)	If set to PD_TRUE, PD_SwapPowerRole AMS will not swap the power role.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(in micro-seconds) to wait in order to receive the PR_SWAP message.
RetryCountOnWait	2(default)	Indicates the retry count after receiving Wait message in response to sent PR_Swap Message.
RetryDelayOnWait	100000(default)	Indicates the retry delay time(in micro-seconds) upon receiving Wait message in response to sent PR_Swap Message.
SwapResponseOnWait	PD_MESSAGE_TYPE_ACCEPT (default) PD_MESSAGE_TYPE_WAIT PD_MESSAGE_TYPE_REJECT PD_RESPONSE_NOT_SUPPORTED (PD3.0 only)	Defines the response type in a case that the DUT initially responded to PR_Swap message with a Wait message and after a while issued a PR_Swap message towards the PD Exerciser.
SkipSendingPSRDY	PD_TRUE PD_FALSE(Default)	If set to PD_TRUE, PD_SwapPowerRole AMS will not send the PS_RDY message.
NewSrcRpType	CC_RP_CUR_DEFAULT CC_RP_CUR_1_5 (Default) CC_RP_CUR_3_0	Indicates the Rp current value when swapping from Sink to Source.
SendPSRDYDelay	0 (default)	Indicates the delay (in micro-seconds) to send PS_RDY message.
SkipWaitingForVBus	PD_TRUE PD_FALSE(Default)	If set to PD_TRUE, will skip waiting for VBus On/Off operations.
NoGoodCRCToPSRDY	PD_TRUE PD_FALSE(Default)	If set to PD_TRUE, PD_SwapPowerRole AMS will not send the GoodCRC for PS_RDY message.

Result

None

Examples

```
#Set response to REJECT;
#Set response on receiving Wait message to ACCEPT;
#Set Rp type while swapping to source as CC_RP_CUR_3_0;
```

```
$settings = Pd_SwapPowerRole_Settings
{
   SwapResponse = PD_MESSAGE_TYPE_REJECT
   SwapResponseOnWait = PD_MESSAGE_TYPE_ACCEPT
   NewSrcRpType = CC_RP_CUR_3_0
}
call PD_SetSwapPowerRoleSetting( $settings )
```

5.1.13 PD_SwapPowerRole

Tries to swap power role. It will start Swap Power Role AMS.

Note: The `PD_SetSwapPowerRoleSetting` function may need to be called prior calling this function.

Format

```
Call PD_SwapPowerRole()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - Response not received
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message received as response
PD_SUBRESULT_RESPONSE_WAIT	Subresult - `Wait` message received as response
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `PS_RDY` message not received(PD Exerciser as Sink)
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message received as response

Examples

```
call PD_SwapPowerRole()
```

5.1.14 PD_WaitForSwapPowerRole

Waits to receive `PR_Swap` message and will respond to incoming messages as part of the *Swap Power Role* AMS.

Note: The `PD_SetSwapPowerRoleSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForSwapPowerRole()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_WAIT	Subresult - `Wait` message has been sent as response
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message has been sent as response
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `PR_Swap` message not received or `PS_RDY` message not received(PD Exerciser as Sink)
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message has been sent as response

Examples

```
call PD_WaitForSwapPowerRole()
```

5.1.15 Pd_SetFRSwapNewSnkSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_FastRoleSwap` function to take effect.

Format

```
Call Pd_SetFRSwapNewSnkSetting( Pd_FRSwapNewSnkSettings $fr_swap_settins )
```

Parameters

`$fr_swap_settins`

Should be from `Pd_FRSwapNewSnkSettings` type. Following are the available fields for this packet template:

Field Name	Possible/Default Values	Description
NoGoodCRCToPSRDY	PD_TRUE PD_FALSE(Default)	Indicates whether to send a `GoodCRC` message to receiving `PS_RDY` message or not.
SkipSendingPSRDY	PD_TRUE PD_FALSE(Default)	Indicates whether to skip sending `PS_RDY` message or not.
NoGoodCRCToFRSwap	PD_TRUE PD_FALSE(Default)	Indicates whether to send a `GoodCRC` message to receiving `FR_Swap` message or not.
SkipSendingAccept	PD_TRUE PD_FALSE(Default)	Indicates whether to skip sending `Accept` message or not.

Result

None

Examples

```
$settings = Pd_FRSwapNewSnkSettings
{
   NoGoodCRCToFRSwap = PD_TRUE
}
call Pd_SetFRSwapNewSnkSetting( $settings )
```

5.1.16 Pd_SetFRSwapNewSrcSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_WaitForFRSwapSignal` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call Pd_SetFRSwapNewSrcSetting( Pd_FRSwapNewSrcSettings $fr_swap_settins )
```

Parameters

`$fr_swap_settins`

Should be from `Pd_FRSwapNewSrcSettings` type. Following are the available fields for this packet template:

Field Name	Possible/Default Values	Description
NoGoodCRCToPSRDY	PD_TRUE PD_FALSE(Default)	Indicates whether to send a GoodCRC message to receiving PS_RDY message or not.
SkipSendingPSRDY	PD_TRUE PD_FALSE(Default)	Indicates whether to skip sending PS_RDY message or not.
VBusVoltageThreshold_mV	VBUS_VOLTAGE_V5_SAFE_MAX(Default)	If the VBus drops below this value, the new Source(PD Exerciser) will turn on the VBus.
NewVBusVoltage_mV	VBUS_VOLTAGE_V5_SAFE(Default)	PD Exerciser as new Source will increase the VBus voltage up-to this value.
FRSwapSignalWaitTimeout	1000000(Default)	Time-out to wait for receiving the FR_Swap Signal (micro seconds).
FRSwapNewSrcRpCurrent	CC_RP_CUR_1_5(Default)	PD Exerciser as new Source will apply this RpCurrent value.
NoGoodCrcToAccept	PD_TRUE PD_FALSE(Default)	Indicates whether to send a GoodCRC message to receiving Accept message or not.

Result

None

Examples

```
$settings = Pd_FRSwapNewSrcSettings
{
   VBusVoltageThreshold_mV = VBUS_VOLTAGE_V5_SAFE
   NoGoodCrcToAccept = PD_TRUE
}
call Pd_SetFRSwapNewSrcSetting( $settings )
```

5.1.17 PD_FastRoleSwap

Applicable to PD Rev 3.0 only. Sends the *FastRoleSwap* Signal and handles *Fast Role Swap* AMS.

Note - The `Pd_SetFRSwapNewSnkSetting` function may need to be called prior calling this function.

Format

```
Call PD_FastRoleSwap()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded.
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).

Examples

```
Call PD_FastRoleSwap()
```

5.1.18 PD_WaitForFRSwapSignal

Applicable to PD Rev 3.0 only. Waits for a specified time to receive the *FR_Swap Signal*. During this time, any received messages will be handeled.

Note 1- Received *FastRoleSwap* Signal will handle by *FastRoleSwap Event Handler* automatically.

Note 2- The `Pd_SetFRSwapNewSrcSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForFRSwapSignal()
```

Parameters

None

Result

None

Examples

```
Call PD_WaitForFRSwapSignal()
```

5.1.19 Pd_GetPPSStatus

Applicable to PD Rev 3.0 only. Sends `Get_PPS_Status` message and starts the *GetPPSStatus* AMS.

Format

```
Call Pd_GetPPSStatus()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - Response not received
PD_SUBRESULT_UNEXPECTED_MSG_RECEIVED	Subresult - Unexpected packet received
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - Not_Supported has been received as response

Examples

```
Call Pd_GetPPSStatus()
```

5.1.20 Pd_SetGetPPSStatusSetting

Applicable to PD Rev 3.0 only. It must be called prior to call Pd_WaitForGetPPSStatus or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetGetPPSStatusSetting( PD_GetPPSStatus_Settings $settings )
```

Parameters

$settings

Parameter type is PD_GetPPSStatus_Settings. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive Get_PPS_Status message.
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the Get_PPS_Status message.

Result

None

Examples

```
$get_ppsstatus_setting = PD_GetPPSStatus_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetPPSStatusSetting( $get_ppsstatus_setting )
```

5.1.21 Pd_SetPPSStatusDataBlock

Applicable to PD Rev 3.0 only. Sets the *PPS Status Data Block* in PD Exerciser. It must be called before Pd_WaitForGetPPSStatus or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetPPSStatusDataBlock( PD_PPSStatusDataBlock $pps_status_db )
```

Parameters

$pps_status_db

Parameter type is `PD_PPSStatusDataBlock`. Refer to `Pd_PPSStatusMsg` for available fields.

Result

None

Examples

```
$pps_status_db = PD_PPSStatusDataBlock
Call PD_SetPPSStatusDataBlock( $pps_status_db )
```

5.1.22 Pd_ResetPPSStatusDataBlock

Applicable to PD Rev 3.0 only. Clears the *PPS Status Data Block* in PD Exerciser. Should be called prior calling the `Pd_SetPPSStatusDataBlock` function.

Format

```
Call PD_ResetPPSStatusDataBlock()
```

Parameters

None

Result

None

Examples

```
Call PD_ResetPPSStatusDataBlock()
```

5.1.23 Pd_WaitForGetPPSStatus

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `Get_PPS_Status` message. It will respond to incoming messages as part of *GetPPSStatus* AMS.

Note: The `Pd_ResetPPSStatusDataBlock`, `Pd_SetPPSStatusDataBlock` and `Pd_SetGetPPSStatusSetting` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForGetPPSStatus( )
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).

PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Get_PPS_Status message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - Not_Supported message sent as response.

Examples

```
Call PD_WaitForGetPPSStatus()
```

5.1.24 Pd_SetPPSNegotiationSetting_Sink

Applicable to PD Rev 3.0 only. Applies power negotiation settings as a Sink which is communicating with a PPS Source. If the user wants to change default settings for Sink Power Negotiation, has to call this function prior to call Pd_StartPPSNegotiatePower_Sink and Pd_NextPPSNegotiatePower_Sink functions to take effect. This function is not supported by PD_DelayAutoResponse function.

Format

```
Call PD_SetPPSNegotiationSetting_Sink( PD_PPSNegotiation_Sink_Settings $settings
)
```

Parameters

`$settings`

Should be from PD_PPSNegotiation_Sink_Settings type. Pd_PPSNegotiation_Sink_Settings template contains all fields of Pd_Negotiation_Sink_Settings(Refer to PD_SetNegotiationSetting_Sink) and some extra fields which are listed in table below:

Field Name	Default Values	Description
MinOutputVolt_20mVUnits	0x00	Min output voltage in 20mV units. Output Voltage will be increased from this value. Refer to Pd_ProgrammableRDO.
MaxOutputVolt_20mVUnits	0x00	Max output voltage in 20mV units. Output Voltage will be decreased from this value. Refer to Pd_ProgrammableRDO.
OperatingCur_50mAUnits	0x00	Refer to Pd_ProgrammableRDO.
UnchunkedExtMsgSupported	1	Refer to Pd_ProgrammableRDO.
NoUsbSuspend	0	Refer to Pd_ProgrammableRDO.
UsbCommunicationsCapable	0	Refer to Pd_ProgrammableRDO.
CapabilityMismatch	0	Refer to Pd_ProgrammableRDO.
ObjectPosition	0	Refer to Pd_ProgrammableRDO.
VoltageStep_20mVUnits	0x01	Voltage Step in 20mV units.
IncrementalStep	PD_TRUE (increasing)	Indicates whether the Voltage is increasing or decreasing.

Result

None

Examples

```
#Set pps negotiation sink settings
$pps_nego_settings = Pd_PPSNegotiation_Sink_Settings
{
    MinOutputVolt_20mVUnits = 500
    MaxOutputVolt_20mVUnits = 500
    OperatingCur_50mAUnits = 10
    ObjectPosition = 1
    VoltageStep_20mVUnits = 2
    IncrementalStep = PD_FALSE
}
call Pd_SetPPSNegotiationSetting_Sink($pps_nego_settings)
```

5.1.25 Pd_StartPPSNegotiatePower_Sink

Applicable to PD Rev 3.0 only. Starts *PPS Power Negotiation* as a Sink. This function should be called before Pd_NextPPSNegotiatePower_Sink.

Note: The Pd_SetPPSNegotiationSetting_Sink function may need to be called prior calling this function.

Format

```
Call PD_StartPPSNegotiatePower_Sink()
```

Parameters

None

Result

Refer to PD_NegotiatePower_Sink.

Examples

```
call Pd_StartPPSNegotiatePower_Sink()

PD_Loop(10)
{
    call Pd_NextPPSNegotiatePower_Sink()
    call PD_DelayAutoResponse(100000)
}
```

5.1.26 Pd_NextPPSNegotiatePower_Sink

Applicable to PD Rev 3.0 only. Next *PPS Power Negotiation* as a Sink with incremented or decremented output voltage value. This function should be called after Pd_StartPPSNegotiatePower_Sink.

Note: The Pd_SetPPSNegotiationSetting_Sink function may need to be called prior calling this function.

Format

```
Call PD_NextPPSNegotiatePower_Sink()
```

Parameters

None

Result

Refer to PD_NegotiatePower_Sink.

Examples

```
call Pd_StartPPSNegotiatePower_Sink()

PD_Loop(10)
{
    call Pd_NextPPSNegotiatePower_Sink()
    call PD_DelayAutoResponse(100000)
}
```

5.1.27 PD_SetDataResetSetting

Applicable to PD Rev 3.0 only. It must be called prior to call `PD_WaitForDataReset` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call Pd_SetDataResetSetting( Pd_DataReset_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_DataReset_Settings`. Available fields for this type are:

Field Names	Possible/Default Values	Description
DataResetWaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait TimeOut(micro second) to receive `Pd_DataResetMessage`.
DataResetResponse	`PD_RESPONSE_REJECT`, `PD_RESPONSE_ACCEPT`(default)	Indicates response upon receiving the `Pd_DataResetMessage`.
SkipSendingPSRDY	`PD_TRUE`, `PD_FALSE` (default)	To skip sending PSRdy packet.
RunningUSBExercisers	`PD_USB2_EXERCISER` (default) `PD_USB3_EXERCISER`, `PD_USB4_EXERCISER`, `PD_TBT3_EXERCISER`,	Exercisers to be run in Data Reset process

Result

None

Examples

```
$send_data_reset = PD_DataReset_Settings
{
   DataResetResponseType = PD_RESPONSE_REJECT
   RunningUSBExercisers = PD_USB2_EXERCISER | PD_USB3_EXERCISER
}
Call PD_SetDataResetSetting( $send_data_reset )
```

5.1.28 PD_SendDataReset

Applicable to PD Rev 3.0 only. Sends `Pd_DataResetMessage` and starts the *DataReset* AMS.

Format

```
Call PD_SendDataReset()
```

Parameters

None

Result

User can evaluate the command results (including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded

PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - Response not received
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been received
PD_SUBRESULT_UNEXPECTED_MSG_RECEIVED	Subresult - Unexpected message received as response

Examples

```
call PD_SendDataReset()
```

5.1.29 PD_WaitForDataReset

Waits for user-defined time-out to receive Pd_DataResetMessage and will respond to incoming messages as part of the *DataReset* AMS.

Note: The PD_SetDataResetSetting function may need to be called prior calling this function.

Format

```
Call PD_WaitForDataReset()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DataReset message not received
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as response

Examples

```
call PD_WaitForDataReset()
```

5.1.30 PD_SetSwapDataRoleSetting

It must be called before PD_SwapDataRole or PD_WaitForSwapDataRole or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetSwapDataRoleSetting( Pd_SwapDataRole_Settings $settings )
```

Parameters

$settings

Should be from Pd_SwapDataRole_Settings type. Table below shows all fields of the Pd_SwapDataRole_Settings template which are applied to *DR_Swap AMS*:

Field Name	Possible/Default Values	Description
SwapResponse	PD_MESSAGE_TYPE_ACCEPT(default) PD_MESSAGE_TYPE_REJECT PD_MESSAGE_TYPE_WAIT PD_RESPONSE_NOT_SUPPORTED (PD3.0 only)	Defines the response type.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(in micro-seconds) to wait in order to receive DR_SWAP message.
RetryCountOnWait	2 (default)	Indicates the retry count after receiving Wait Message in response to sent DR_Swap Message.
RetryDelayOnWait	100000 (default)	Indicates the retry delay time(in micro-seconds) upon receiving Wait Message in response to sent DR_Swap Message.
SwapResponseOnWait	PD_MESSAGE_TYPE_ACCEPT (default) PD_MESSAGE_TYPE_WAIT PD_MESSAGE_TYPE_REJECT PD_RESPONSE_NOT_SUPPORTED (PD3.0 only)	Defines the response type in a case that the DUT initially responded to DR_Swap message with a Wait message and after a while issued a DR_Swap message towards the PD Exerciser.

Result

None

Examples

```
#Set response to REJECT;
#Set response on receiving Wait message to ACCEPT;
$settings = Pd_SwapDataRole_Settings
{
   SwapResponse = PD_MESSAGE_TYPE_REJECT
   SwapResponseOnWait = PD_MESSAGE_TYPE_ACCEPT
}
call PD_SetSwapDataRoleSetting( $settings )
```

5.1.31 PD_SwapDataRole

Tries to swap the data role. It will start the *Swap Data Role AMS*.

Note: The PD_SetSwapDataRoleSetting function may need to be called prior calling this function.

Format

```
Call PD_SwapDataRole()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - Response not received

PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been received
PD_SUBRESULT_RESPONSE_WAIT	Subresult - Wait message has been received
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - Not_Supported message received as response

Examples

```
call PD_SwapDataRole()
```

5.1.32 PD_WaitForSwapDataRole

Waits for user-defined time-out to receive DR_Swap message and will respond to incoming messages as part of the *Swap Data Role* AMS.

Note: The PD_SetSwapDataRoleSetting function may need to be called prior calling this function.

Format

```
Call PD_WaitForSwapDataRole()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as response
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DR_Swap message not received
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - Not_Supported message has been sent as response

Examples

```
call PD_WaitForSwapDataRole()
```

5.1.33 PD_SetSwapVConnSetting

It has to be called prior calling the PD_SwapVConn or PD_WaitForSwapVConn or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetSwapVConnSetting( Pd_SwapVConn_Settings $settings )
```

Parameters

```
$settings
```

Should be from Pd_SwapVConn_Settings type. Table below shows the Pd_SwapVConn_Settings template fields:

Field Name	Possible/Default Values	Description
SwapResponse	PD_MESSAGE_TYPE_ACCEPT(default) PD_MESSAGE_TYPE_REJECT PD_MESSAGE_TYPE_WAIT PD_RESPONSE_NOT_SUPPORTED (PD3.0 only)	Defines the response type.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(in micro-seconds) to wait in order to receive VCONN_SWAP message.
SkipSwap	PD_TRUE PD_FALSE(Default)	If set to PD_TRUE, the command skips VConn swap.
RetryCountOnWait	2 (default)	Indicates the retry count after receiving Wait Message in response to sent VConn_Swap Message.
RetryDelayOnWait	100000 (default)	Indicates the retry delay time(in micro-seconds) upon receiving Wait Message in response to sent VConn_Swap Message.
SwapResponseOnWait	PD_MESSAGE_TYPE_ACCEPT (default) PD_MESSAGE_TYPE_WAIT PD_MESSAGE_TYPE_REJECT PD_RESPONSE_NOT_SUPPORTED (PD3.0 only)	Defines the response type in a case that the DUT initially responded to VConn_Swap message with a Wait message and after a while issued a VConn_Swap message towards the PD Exerciser.

Result

None

Examples

```
#Set the response to REJECT;
#skip swapping in the case that PD Exerciser is initiator;
$settings = Pd_SwapVConn_Settings
{
   SwapResponse = PD_MESSAGE_TYPE_REJECT
   SkipSwap = PD_TRUE
}
call PD_SetSwapVConnSetting( $settings )
```

5.1.34 PD_SwapVConn

Tries to swap VConn. It will start the *Swap VConn* AMS.

Note: The PD_SetSwapVConnSetting function may need to be called prior calling this function.

Format

```
Call PD_SwapVConn()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for

	PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - Response not received
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been received
PD_SUBRESULT_RESPONSE_WAIT	Subresult - Wait message has been received
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - PS_RDY message not received(PD Exerciser as VCONN Source)
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - Not_Supported message message has been received

Examples

```
call PD_SwapVConn()
```

5.1.35 PD_WaitForSwapVConn

Waits for user-defined time-out to receive VCONN_Swap message and will respond to incoming messages as part of *Swap VConn* AMS.

Note: The PD_SetSwapVConnSetting function may need to be called prior calling this function.

Format

```
Call PD_WaitForSwapVConn()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - VCONN_Swap message not received
PD_SUBRESULT_RESPONSE_WAIT	Subresult - Wait message has been sent as response
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as response
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - Not_Supported message has been sent as response

Examples

```
call PD_WaitForSwapVConn()
```

5.1.36 PD_SetGotoMinSetting

It has to be called prior to call PD_WaitForGotoMin or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetGotoMinSetting( PD_GotoMin_Settings $settings )
```

Parameters

`$settings`

Setting type is `PD_GotoMin_Settings`. Available fields of this type are:

Field Name	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait time-out(micro second) for receiving GotoMin message.
ResponseType	`PD_RESPONSE_UNSPECIFIED`(default), `PD_RESPONSE_NOT_SUPPORTED`	Indicates the response type upon receiving GotoMin message.

Result

None

Examples

```
$gotomin_setting = PD_GotoMin_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGotoMinSetting( $gotomin_setting )
```

5.1.37 PD_GotoMin

Starts the *GotoMin* AMS.

Format

```
Call PD_GotoMin()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` are valid also (depends on the error type which has been occurred during sending data).
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message has been received

Examples

```
call PD_GotoMin()
```

5.1.38 PD_WaitForGotoMin

Waits for user-defined time-out to receive `GotoMin` message and will respond to incoming messages as part of *GotoMin* AMS.

Note: The `PD_SetGotoMinSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForGotoMin()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `GotoMin` or `PS_RDY` message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message has been sent as response

Examples

```
call PD_WaitForGotoMin()
```

5.1.39 PD_SetGetSourceCapSetting

It has to be called prior to call `PD_WaitForGetSourceCapabilities` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetGetSourceCapSetting( PD_GetSourceCapability_Settings $settings )
```

Parameters

`$settings`

Setting type is `PD_GetSourceCapability_Settings`. Available fields of this type are:

Field Name	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait time-out(micro second) for receiving GetSourceCap message.
ResponseType	`PD_RESPONSE_UNSPECIFIED`(default), `PD_RESPONSE_NOT_SUPPORTED`	Indicates the response type upon receiving GetSourceCap message.
SkipNegotiationAsSink	`PD_FALSE`(default), `PD_TRUE`	Enables the sink to skips negotiation after receiving SourceCap message.

Result

None

Examples

```
$getsrccap_setting = PD_GetSourceCapability_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetSourceCapSetting( $getsrccap_setting )
```

5.1.40 PD_GetSourceCapabilities

Starts *GetSourceCapabilities* AMS.

Format

```
Call PD_GetSourceCapabilities()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message received as response
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No messages received as response
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message received as response

Examples

```
Call PD_GetSourceCapabilities()
```

5.1.41 PD_WaitForGetSourceCapabilities

Waits for user-defined time-out to receive `Get_Source_Cap` message. It will respond to incoming messages as part of the *Get_Source_Cap* AMS.

Note: The `PD_SetGetSourceCapSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForGetSourceCapabilities()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also

	(depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Get_Source_Cap message not received
PD_SUBRESULT_REQUEST_MSG_INVALID_INDEX	Subresult - Invalid index in request message
PD_SUBRESULT_RESPONSE_WAIT	Subresult - Wait message has been sent as request message response
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as request message response
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - Not_Supported message has been sent as response

Examples

```
Call PD_WaitForGetSourceCapabilities()
```

5.1.42 PD_SetGetSinkCapSetting

It has to be called prior to call PD_WaitForGetSinkCapabilities or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetGetSinkCapSetting( PD_GetSinkCapability_Settings $settings )
```

Parameters

$settings

Setting type is PD_GetSinkCapability_Settings. For available fields of this type are:

Field Name	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait time-out(micro second) for receiving GetSourceCap message.
ResponseType	PD_RESPONSE_UNSPECIFIED(default), PD_RESPONSE_NOT_SUPPORTED	Indicates the response type upon receiving GetSourceCap message.
NoGoodCRCToSnkCap	PD_FALSE(default), PD_TRUE	Prevents the source device from sending GoodCRC for the SinkCap messages.

Result

None

Examples

```
$getsnkcap_setting = PD_GetSinkCapability_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetSinkCapSetting( $getsnkcap_setting )
```

5.1.43 PD_GetSinkCapabilities

Starts the *GetSinkCapabilities* AMS.

Format

```
Call PD_GetSinkCapabilities()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message received as response
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No messages received as response
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message received as response

Examples

```
Call PD_GetSinkCapabilities()
```

5.1.44 PD_WaitForGetSinkCapabilities

Waits for user-defined timeout to receive `Get_Sink_Cap` message. It will respond to incoming messages as part of *GetSinkCapabilities* AMS.

Note: The `PD_SetGetSinkCapSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForGetSinkCapabilities()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Sink_Cap` message not received.
PD_SUBRESULT_RESPONSE_REJECT	Subresult - `Reject` message has been sent as response.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Rev3.0 only. Subresult - `Not_Supported` message has been sent as response

Examples

```
Call PD_WaitForGetSinkCapabilities()
```

5.1.45 PD_SendBISTCarrierMode

Starts *BISTCarrierMode* AMS.

Format

```
Call PD_SendBISTCarrierMode(OrderedSetType)
```

Parameters

`OrderedSetType`

Indicates the Ordered Set type

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed

Examples

```
Call PD_SendBISTCarrierMode(PD_ORDERED_SET_TYPE_SOP)
```

5.1.46 PD_SendBISTTestData

Starts *BISTTestData* AMS.

Format

```
Call PD_SendBISTTestData( OrderedSetType, PD_BISTTestData $test_data )
```

Parameters

`OrderedSetType`

Indicates the Ordered Set type

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`$test_data`

Defines the Test Data to be sent to the UUT

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` are valid also (depends on the error type which has been occurred during sending data).

Examples

```
$test_data = PD_BISTTestData
{
    TestData = { 00 00 00 00
                 AA AA AA AA
                 AA AA 00 00
                 AA AA AA AA
                 00 00 AA AA
                 AA AA AA AA }
}

Call PD_SendBISTTestData( PD_ORDERED_SET_TYPE_SOP_PRIME, $test_data )
```

5.1.47 PD_GetSourceCapExtended

Applicable to PD Rev 3.0 only. Starts *GetSourceCapExtended* AMS.

Format

```
Call PD_GetSourceCapExtended()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call PD_GetSourceCapExtended()
```

5.1.48 PD_SetGetSrcCapExtSetting

Applicable to PD Rev 3.0 only. It has to be called prior to call `PD_WaitForGetSrcCapExtended` or `PD_DelayAutoResponse` functions.

Format

```
Call PD_SetGetSrcCapExtSetting( PD_GetSourceCapExtented_Settings $settings )
```

Parameters

`$settings`

Setting type is `PD_GetSourceCapExtented_Settings`. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive Get_Source_Cap_Extended message. Default:
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the Get_Source_Cap_Extended message.
SkipSrcCapExt	PD_TRUE, PD_FALSE(default)	Indicates whether to skip sending Source_Capabilities_Extended message or not.
SendSrcCapExtDelay	0(default)	Defines the delay before sending Source_Capabilities_Extended message.

Result

None

Examples

```
$getsrccapext_setting = PD_GetSourceCapExtented_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetSrcCapExtSetting( $getsrccapext_setting )
```

5.1.49 PD_WaitForGetSrcCapExtended

Applicable to PD Rev 3.0 only. Wait for user-defined time-out to receive *Get_Source_Cap_Extended* message. It will respond to incoming messages as part of *GetSourceCapExtended* AMS.

Note: The `PD_SetGetSrcCapExtSetting`, `PD_SetSrcCapExtDataBlock` and `PD_ResetSrcCapExtDataBlock` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForGetSrcCapExtended()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends

	on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Source_Cap_Extended` message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message sent as response.

Examples

```
Call PD_WaitForGetSrcCapExtended()
```

5.1.50 PD_SetSrcCapExtDataBlock

Applicable to PD Rev 3.0 only. Sets *Source Capabilities Extended Data Block* in PD Exerciser. It has to be called prior calling the `PD_WaitForGetSrcCapExtended` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetSrcCapExtDataBlock( PD_SourceCapExtDataBlock $src_cap_ext )
```

Parameters

`$src_cap_ext`

parameter type is `PD_SourceCapExtDataBlock`. Refer to `PD_SourceCapExtendedMsg` for available data fields.

Result

None

Examples

```
$src_cap_ext = PD_SourceCapExtDataBlock
Call PD_SetSrcCapExtDataBlock( $src_cap_ext )
```

5.1.51 PD_ResetSrcCapExtDataBlock

Applicable to PD Rev 3.0 only. Clears the *Source Capabilities Extended Data Block* in PD Exerciser. It should be called before calling the `PD_SetSrcCapExtDataBlock` function.

Format

```
Call PD_ResetSrcCapExtDataBlock()
```

Parameters

None

Result

None

Examples

```
Call PD_ResetSrcCapExtDataBlock()
```

5.1.52 PD_GetStatus

Applicable to PD Rev 3.0 only. Starts the *GetStatus* AMS.

Format

```
Call PD_GetStatus()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call PD_GetStatus()
```

5.1.53 PD_SetGetStatusSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_WaitForGetStatus` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetGetStatusSetting( PD_GetStatus_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_GetStatus_Settings`. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait TimeOut(micro second) to receive `Get_Status` message.
ResponseType	`PD_RESPONSE_NOT_SUPPORTED`, `PD_RESPONSE_UNSPECIFIED`(default)	Indicates response upon receiving the `Get_Status` message.

Result

None

Examples

```
$getstatus_setting = PD_GetStatus_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetStatusSetting( $getstatus_setting )
```

5.1.54 PD_WaitForGetStatus

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `Get_Status` message. It will respond to incoming messages as part of *GetStatus* AMS.

Note: The `PD_SetGetStatusSetting`, `PD_SetStatusDataBlock` and `PD_ResetStatusDataBlock` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForGetStatus( )
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Status` message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message sent as response.

Examples

```
Call PD_WaitForGetStatus()
```

5.1.55 PD_SetStatusDataBlock

Applicable to PD Rev 3.0 only. Sets the *Status Data Block* in PD Exerciser. It has to be called prior calling the `PD_WaitForGetStatus` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetStatusDataBlock( PD_StatusDataBlock $status_db )
```

Parameters

`$status_db`

Parameter type is `PD_StatusDataBlock`. Refer to `PD_StatusMsg` for available fields.

Result

None

Examples

```
$status_db = PD_StatusDataBlock
Call PD_SetStatusDataBlock( $status_db )
```

5.1.56 PD_ResetStatusDataBlock

Applicable to PD Rev 3.0 only. Clears the *Status Data Block* in PD Exerciser. It should be called prior calling the `PD_SetStatusDataBlock` function.

Format

```
Call PD_ResetStatusDataBlock()
```

Parameters

None

Result

None

Examples

```
Call PD_ResetStatusDataBlock()
```

5.1.57 PD_GetBatteryStatus

Applicable to PD Rev 3.0 only. Starts the *GetBatteryStatus* AMS.

Note: The `PD_SetGetBatteryStatusDataBlock` may need to be called prior calling this function.

Format

```
Call PD_GetBatteryStatus()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call PD_GetBatteryStatus()
```

5.1.58 PD_SetGetBatteryStatusDataBlock

Applicable to PD Rev 3.0 only. Sets the *GetBatteryStatus Data Block* in PD Exerciser. It has to be called before `PD_GetBatteryStatus` function to take effect.

Format

```
Call PD_SetGetBatteryStatusDataBlock( PD_GetBatteryStatusDataBlock
$get_battery_stat_db )
```

Parameters

`$get_battery_stat_db`

Parameter type is `PD_GetBatteryStatusDataBlock`. Refer to `PD_GetBatteryStatusMsg` for available fields.

Result

None

Examples

```
$get_battery_stat_db = PD_GetBatteryStatusDataBlock
Call PD_SetGetBatteryStatusDataBlock( $get_battery_stat_db )
```

5.1.59 PD_SetGetBatteryStatusSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_WaitForGetBatteryStatus` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetGetBatteryStatusSetting( PD_GetBatteryStatus_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_GetBatteryStatus_Settings`. Available fields of this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait TimeOut(micro second) to receive `Get_Battery_Status` message.
ResponseType	`PD_RESPONSE_NOT_SUPPORTED`, `PD_RESPONSE_UNSPECIFIED`(default)	Indicates response upon receiving the `Get_Battery_Status` message.

Result

None

Examples

```
$getbattstatus_setting = PD_GetBatteryStatus_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetBatteryStatusSetting( $getbattstatus_setting )
```

5.1.60 PD_WaitForGetBatteryStatus

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `Get_Battery_Status` message. It will respond to incoming messages as part of *GetBatteryStatus* AMS.

Note: The `PD_SetGetBatteryStatusSetting`, `PD_SetBatteryStatusDO` and `PD_ResetBatteryStatusDO` functions may need to be called prior to call this function.

Format

```
Call PD_WaitForGetBatteryStatus()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Battery_Status` message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message sent as response.

Examples

```
Call PD_WaitForGetBatteryStatus()
```

5.1.61 PD_SetBatteryStatusDO

Applicable to PD Rev 3.0 only. Sets the *BatteryStatus Data Object* in PD Exerciser. It has to be called prior calling the `PD_WaitForGetBatteryStatus` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetBatteryStatusDO( PD_BatteryStatusDataObject $battery_status )
```

Parameters

`$battery_status`

Parameter type is `PD_BatteryStatusDataObject`. Refer to `PD_BatteryStatusMsg` for available fields of this type.

Result

None

Examples

```
$battery_status = PD_BatteryStatusDataObject
Call PD_SetBatteryStatusDO( $battery_status )
```

5.1.62 PD_ResetBatteryStatusDO

Applicable to PD Rev 3.0 only. Clears the *BatteryStatus Data Object* in PD Exerciser. It should be called prior to call the `PD_SetBatteryStatusDO` function.

Format

```
Call PD_ResetBatteryStatusDO()
```

Parameters

None

Result

None

Examples

```
Call PD_ResetBatteryStatusDO()
```

5.1.63 PD_Alert

Applicable to PD Rev 3.0 only. Starts *Alert* AMS.

Note: The `PD_SetAlertDO` function may need to be called prior to call this function.

Format

```
Call PD_Alert()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` are valid also (depends on the error type which has been occurred during sending data).

Examples

```
Call PD_Alert()
```

5.1.64 PD_SetAlertDO

Applicable to PD Rev 3.0 only. Sets *Alert Data Object* in PD Exerciser. It has to be called prior calling the `PD_Alert` function to take effect.

Format

```
Call PD_SetAlertDO( PD_AlertDataObject $alert_do )
```

Parameters

`$alert_do`

Parameter type is `PD_AlertDataObject`. Refer to `PD_AlertMsg` for available fields of this type.

Result

None

Examples

```
$alert_do = PD_AlertDataObject
Call PD_SetAlertDO( $alert_do )
```

5.1.65 PD_SetAlertSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_WaitForAlert` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetAlertSetting( PD_Alert_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_Alert_Settings`. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive `Alert` message.
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the `Alert` message.

Result

None

Examples

```
$alert_setting = PD_Alert_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetAlertSetting( $alert_setting )
```

5.1.66 PD_WaitForAlert

Applicable to PD Rev 3.0 only. Waits for a user-defined time-out to receive `Alert` message. It will respond to incoming messages as part of the *Alert* AMS.

Note: The `PD_SetAlertSetting` function may need to be called prior to call this function.

Format

```
Call PD_WaitForAlert()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for

	PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Alert message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - Not_Supported message sent as response.

Examples

```
Call PD_WaitForAlert()
```

5.1.67 PD_GetBatteryCap

Applicable to PD Rev 3.0 only. Starts the *GetBatteryCap* AMS.

Note: The PD_SetGetBatteryCapDataBlock function may need to be called prior to call this function.

Format

```
Call PD_GetBatteryCap()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - Not_Supported message received.

Examples

```
Call PD_GetBatteryCap()
```

5.1.68 PD_SetGetBatteryCapDataBlock

Applicable to PD Rev 3.0 only. Sets the *GetBatteryCap Data Block* in PD Exerciser. It has to be called prior calling the PD_GetBatteryCap function to take effect.

Format

```
Call PD_SetGetBatteryCapDataBlock( PD_GetBatteryCapDataBlock $get_battery_cap_db
)
```

Parameters

$get_battery_cap_db

Parameter type is PD_GetBatteryCapDataBlock. Refer to PD_GetBatteryCapMsg for available fields of this type.

Result

None

Examples

```
$get_battery_cap_db = PD_GetBatteryCapDataBlock
Call PD_SetGetBatteryCapDataBlock( $get_battery_cap_db )
```

5.1.69 PD_SetGetBatteryCapSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the PD_WaitForGetBatteryCap or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetGetBatteryCapSetting( PD_GetBatteryCap_Settings $settings )
```

Parameters

`$settings`

Parameter type is `PD_GetBatteryCap_Settings`. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait TimeOut(micro second) to receive `Get_Battery_Cap` message.
ResponseType	`PD_RESPONSE_NOT_SUPPORTED`, `PD_RESPONSE_UNSPECIFIED`(default)	Indicates response upon receiving the `Get_Battery_Cap` message.

Result

None

Examples

```
$getbattcap_setting = PD_GetBatteryCap_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call PD_SetGetBatteryCapSetting( $getbattcap_setting )
```

5.1.70 PD_WaitForGetBatteryCap

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `Get_Battery_Cap` message. It will respond to incoming messages as part of the *GetBatteryCap* AMS.

Note: The PD_SetGetBatteryCapSetting, PD_SetBatteryCapDataBlock and PD_ResetBatteryCapDataBlock functions may need to be called prior to call this function.

Format

```
Call PD_WaitForGetBatteryCap()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Battery_Cap` not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message sent as response.

Examples

```
Call PD_WaitForGetBatteryCap()
```

5.1.71 PD_SetBatteryCapDataBlock

Applicable to PD Rev 3.0 only. Sets the *BatteryCap Data Block* in PD Exerciser. It has to be called prior calling the `PD_WaitForGetBatteryCap` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetBatteryCapDataBlock( PD_BatteryCapDataBlock $battery_cap_db )
```

Parameters

`$battery_cap_db`

Parameter type is `PD_BatteryCapDataBlock`. Refer to `PD_BatteryCapabilitiesMsg` for available fields of this type.

Result

None

Examples

```
$battery_cap_db = PD_BatteryCapDataBlock
Call PD_SetBatteryCapDataBlock( $battery_cap_db )
```

5.1.72 PD_ResetBatteryCapDataBlock

Applicable to PD Rev 3.0 only. Clears the *BatteryCap Data Block* in PD Exerciser. Should be called before calling `PD_SetBatteryCapDataBlock` command.

Format

```
Call PD_ResetBatteryCapDataBlock()
```

Parameters

None

Result

None

Examples

```
Call PD_ResetBatteryCapDataBlock()
```

5.1.73 PD_GetManufacturerInfo

Applicable to PD Rev 3.0 only. Starts *GetManufacturerInfo* AMS.

Note: The PD_SetGetManufacturerInfoDataBlock function may need to be called prior to call this function.

Format

```
Call PD_GetManufacturerInfo( OrderedSetType )
```

Parameters

`OrderedSetType`

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call PD_GetManufacturerInfo( PD_ORDERED_SET_TYPE_SOP )
```

5.1.74 PD_SetGetManufacturerInfoDataBlock

Applicable to PD Rev 3.0 only. Sets *GetManufacturerInfo Data Block* in PD Exerciser. It has to be called prior calling the PD_GetManufacturerInfo function to take effect.

Format

```
Call PD_SetGetManufacturerInfoDataBlock( PD_GetManufacturerInfoDataBlock
$get_manuf_info_db )
```

Parameters

`$get_manuf_info_db`

Parameter type is `PD_GetManufacturerInfoDataBlock`. Refer to PD_GetManufacturerInfoMsg for available fields of this type.

Result

None

Examples

```
$get_manuf_info_db = PD_GetManufacturerInfoDataBlock
Call PD_SetGetManufacturerInfoDataBlock( $get_manuf_info_db )
```

5.1.75 PD_SetGetManufacturerInfoSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_WaitForGetManufacturerInfo` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetGetManufacturerInfoSetting( PD_GetManufacturerInfo_Settings $settings
)
```

Parameters

`$settings`

Parameter type is PD_GetManufacturerInfo_Settings. Available fields of this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	`PD_DEFAULT_TIMEOUT_INFINIT`(default)	Wait TimeOut(in micro seconds) to receive `Get_Manufacturer_Info` message.
ResponseType	`PD_RESPONSE_NOT_SUPPORTED`, `PD_RESPONSE_UNSPECIFIED`(default)	Indicates response upon receiving the `Get_Manufacturer_Info` message.

Result

None

Examples

```
$getmaninfo_setting = PD_GetManufacturerInfo_Settings
{
   WaitTimeout = 50000
}
Call PD_SetGetManufacturerInfoSetting( $getmaninfo_setting )
```

5.1.76 PD_WaitForGetManufacturerInfo

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `Manufacturer_Info` message. It will respond to incoming messages as part of the *GetManufacturerInfo* AMS.

Note: The `PD_SetGetManufacturerInfoSetting` and `PD_SetManufacturerInfoDataBlock` functions may need to be called prior to call this function.

Format

```
Call PD_WaitForGetManufacturerInfo()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description

PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Get_Manufacturer_Info message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - Not_Supported message sent as response.

Examples

```
Call PD_WaitForGetManufacturerInfo()
```

5.1.77 PD_SetManufacturerInfoDataBlock

Applicable to PD Rev 3.0 only. Sets *ManufacurerInfo Data Block* in PD Exerciser. It has to be called prior calling the PD_WaitForGetManufacturerInfo or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetManufacturerInfoDataBlock( PD_ManufacturerInfoDataBlock
$manufacturer_info_db )
```

Parameters

`$manufacturer_info_db`

Parameter type is PD_ManufacturerInfoDataBlock. Refer to PD_ManufacturerInfoMsg for available fields of this type.

Result

None

Examples

```
$manufacturer_info_db = PD_ManufacturerInfoDataBlock
Call PD_SetManufacturerInfoDataBlock( $manufacturer_info_db )
```

5.1.78 PD_SetSecurityRequestSetting

Applicable to PD Rev 3.0 only. It has to be called prior calling the PD_WaitForSecurityRequest or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetSecurityRequestSetting( PD_SecurityRequest_Settings $settings )
```

Parameters

`$settings`

Parameter type is PD_SecurityRequest_Settings. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(in micro seconds) to receive Security_Request message.
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the Security_Request message.

Result

None

Examples

```
$secreq_settings = PD_SecurityRequest_Settings
{
   WaitTimeout = 50000
}
Call PD_SetSecurityRequestSetting( $secreq_settings )
```

5.1.79 PD_SecurityRequest

Applicable to PD Rev 3.0 only. Starts the *SecurityRequest* AMS.

Note: The `PD_SetSecurityRequestDataBlock` function may need to be called prior to call this function.

Format

```
Call PD_SecurityRequest( OrderedSetType )
```

Parameters

`OrderedSetType`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call PD_SecurityRequest( PD_ORDERED_SET_TYPE_SOP )
```

5.1.80 PD_SetSecurityRequestDataBlock

Applicable to PD Rev 3.0 only. Sets the *SecurityRequest Data Block* in PD Exerciser. It has to be called prior calling the `PD_SecurityRequest` function to take effect.

Format

```
Call PD_SetSecurityRequestDataBlock( PD_SecurityRequestDB $security_req_db )
```

Parameters

`$security_req_db`

Parameter type is PD_SecurityRequestDB. Refer to PD_SecurityRequestMsg for available types which are derived from this type.

Result

None

Examples

```
$security_req_db = PD_SRQDB_GetDigests
Call PD_SetSecurityRequestDataBlock( $security_req_db )
```

5.1.81 PD_WaitForSecurityRequest

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive Security_Request message. It will respond to incoming messages as part of the *SecurityRequest* AMS.

Note: The PD_SetSecurityRequestSetting and PD_SetSecurityResponseDataBlock functions may need to be called prior to call this function.

Format

```
Call PD_WaitForSecurityRequest()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Security_Request message not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - Not_Supported message sent as response.

Examples

```
Call PD_WaitForSecurityRequest()
```

5.1.82 PD_SetSecurityResponseDataBlock

Sets the SecurityResponse Data Block in PD Exerciser. It must be called before PD_WaitForSecurityRequest or PD_DelayAutoResponse to take effect.

Format

```
Call PD_SetSecurityResponseDataBlock( PD_SecurityResponseDB $security_resp_db )
```

Parameters

```
$security_resp_db
```

Parameter type is PD_SecurityResponseDB. Refer to PD_SecurityResponseMsg for available types which are derived from this type.

Result

None

Examples

```
$security_resp_db = PD_SRPDB_Certificate
Call PD_SetSecurityResponseDataBlock( $security_resp_db )
```

5.1.83 Pd_SetGetCountryInfoSetting

Applicable to PD Rev 3.0 only. It has to be called prior to call Pd_WaitForGetCountryInfo or PD_DelayAutoResponse functions to take effect.

Format

```
Call Pd_SetGetCountryInfoSetting( Pd_GetCountryInfo_Settings $settings )
```

Parameters

$settings

Setting type is Pd_GetCountryInfo_Settings. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive Get_Country_Info message.
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the Get_Country_Info message.

Result

None

Examples

```
$getcountryinfo_setting = Pd_GetCountryInfo_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call Pd_SetGetCountryInfoSetting( $getcountryinfo_setting )
```

5.1.84 Pd_SetCountryInfoDataBlock

Applicable to PD Rev 3.0 only. Sets *CountryInfo Data Block* in PD Exerciser. It has to be called prior to call Pd_WaitForGetCountryInfo or PD_DelayAutoResponse functions to take effect.

Format

```
Call Pd_SetCountryInfoDataBlock( Pd_CountryInfoDataBlock $country_info_db )
```

Parameters

$country_info_db

parameter type is Pd_CountryInfoDataBlock. Refer to Pd_CountryInfoMsg for available data fields.

Result

None

Examples

```
$country_info_db = Pd_CountryInfoDataBlock
Call Pd_SetCountryInfoDataBlock( $country_info_db )
```

5.1.85 Pd_ResetCountryInfoDataBlock

Applicable to PD Rev 3.0 only. Clears the *CountryInfo Data Block* in PD Exerciser. Should be called prior to call Pd_SetCountryInfoDataBlock.

Format

```
Call Pd_ResetCountryInfoDataBlock()
```

Parameters

None

Result

None

Examples

```
Call Pd_ResetCountryInfoDataBlock()
```

5.1.86 Pd_SetGetCountryInfoDO

Applicable to PD Rev 3.0 only. Sets *GetCountryInfo Data Object* in PD Exerciser. It has to be called prior to call Pd_GetCountryInfo function to take effect.

Format

```
Call Pd_SetGetCountryInfoDO( Pd_GetCountryInfoDO $get_country_info_do )
```

Parameters

`$get_country_info_do`

parameter type is Pd_GetCountryInfoDO. Refer to Pd_GetCountryInfoMsg for available data fields.

Result

None

Examples

```
$get_country_info_do = Pd_GetCountryInfoDO
Call Pd_SetGetCountryInfoDO( $get_country_info_do )
```

5.1.87 Pd_GetCountryInfo

Applicable to PD Rev 3.0 only. Starts *GetCountryInfo* AMS.

Note: The Pd_SetGetCountryInfoDO function may need to be called prior calling this function.

Format

```
Call Pd_GetCountryInfo( OrderedSetType )
```

Parameters

`OrderedSetType`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call Pd_GetCountryInfo(PD_ORDERED_SET_TYPE_SOP)
```

5.1.88 Pd_WaitForGetCountryInfo

Applicable to PD Rev 3.0 only. Wait for user-defined time-out to receive `Get_Country_Info` message. It will respond to incoming messages as part of *GetCountryInfo* AMS.

Note: The `Pd_SetGetCountryInfoSetting`, `Pd_SetCountryInfoDataBlock` and `Pd_ResetCountryInfoDataBlock` functions may need to be called prior calling this function.

Format

```
Call Pd_WaitForGetCountryInfo()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Country_info` not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message sent as response.

Examples

```
Call Pd_WaitForGetCountryInfo()
```

5.1.89 Pd_SetGetCountryCodesSetting

Applicable to PD Rev 3.0 only. It has to be called prior to call Pd_WaitForGetCountryCodes or PD_DelayAutoResponse functions to take effect.

Format

```
Call Pd_SetGetCountryCodesSetting( Pd_GetCountryCodes_Settings $settings )
```

Parameters

`$settings`

Setting type is Pd_GetCountryCodes_Settings. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive Get_Country_Codes message.
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the Get_Country_Codes message.

Result

None

Examples

```
$getcountrycodes_setting = Pd_GetCountryCodes_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call Pd_SetGetCountryCodesSetting( $getcountrycodes_setting )
```

5.1.90 Pd_SetCountryCodesDataBlock

Applicable to PD Rev 3.0 only. Sets *CountryCodes Data Block* in PD Exerciser. It has to be called prior to call Pd_WaitForGetCountryCodes or PD_DelayAutoResponse functions to take effect.

Format

```
Call Pd_SetCountryCodesDataBlock( Pd_CountryCodesDataBlock $country_codes_db )
```

Parameters

`$country_codes_db`

parameter type is Pd_CountryCodesDataBlock. Refer to Pd_CountryCodesMsg for available data fields.

Result

None

Examples

```
$country_codes_db = Pd_CountryCodesDataBlock
Call Pd_SetCountryCodesDataBlock( $country_codes_db )
```

5.1.91 Pd_ResetCountryCodesDataBlock

Applicable to PD Rev 3.0 only. Clears the *CountryCodes Data Block* in PD Exerciser. Should be called prior to call `Pd_SetCountryCodesDataBlock`.

Format

```
Call Pd_ResetCountryCodesDataBlock()
```

Parameters

None

Result

None

Examples

```
Call Pd_ResetCountryCodesDataBlock()
```

5.1.92 Pd_GetCountryCodes

Applicable to PD Rev 3.0 only. Starts *GetCountryCodes* AMS.

Format

```
Call Pd_GetCountryCodes( OrderedSetType )
```

Parameters

`OrderedSetType`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call Pd_GetCountryCodes(PD_ORDERED_SET_TYPE_SOP)
```

5.1.93 Pd_WaitForGetCountryCodes

Applicable to PD Rev 3.0 only. Wait for user-defined time-out to receive `Get_Country_Codes` message. It will respond to incoming messages as part of *GetCountryCodes* AMS.

Note: The `Pd_SetGetCountryCodesSetting`, `Pd_SetCountryCodesDataBlock` and `Pd_ResetCountryCodesDataBlock` functions may need to be called prior calling this function.

Format

```
Call Pd_WaitForGetCountryCodes()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Country_Codes` not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message sent as response.

Examples

```
Call Pd_WaitForGetCountryCodes()
```

5.1.94 PD_EnterUSB

Applicable to PD Rev 3.0 only. Starts *EnterUSB* AMS.

Format

```
Call Pd_EnterUSB( OrderedSetType )
```

Parameters

`OrderedSetType`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results (including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description

PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as Request message response
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.

Examples

```
Call Pd_EnterUSB(PD_ORDERED_SET_TYPE_SOP)
```

5.1.95 PD_WaitForEnterUSB

Applicable to PD Rev 3.0 only. Wait for user-defined time-out to receive EnterUSB message. It will respond to incoming messages as part of *EnterUSB* AMS.

Note: The PD_SetEnterUSBSetting function may need to be called prior calling this function.

Format

```
Call Pd_WaitForEnterUSB()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as response
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.

Examples

```
Call Pd_WaitForEnterUSB()
```

5.1.96 PD_SetEnterUSBSetting

Applicable to PD Rev 3.0 only. It has to be called prior to call PD_WaitForEnterUSB or PD_DelayAutoResponse functions to take effect.

Format

```
Call Pd_SetEnterUSBSetting( Pd_EnterUSB_Settings $settings )
```

Parameters

`$settings`

Setting type is Pd_EnterUSB_Settings. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive EnterUSB message.
ResponseType	PD_RESPONSE_REJECT, PD_RESPONSE_ACCEPT(default)	Indicates response upon receiving the EnterUSB message.

Result

None

Examples

```
$enterusb_setting = Pd_EnterUSB_Settings
{
   ResponseType = PD_RESPONSE_REJECT
}
Call Pd_SetEnterUSBSetting( $enterusb_setting )
```

5.1.97 PD_SetEnterUSBDO

Applicable to PD Rev 3.0 only. Sets *PD_EnterUSBDataObject* in PD Exerciser. It has to be called prior to call PD_EnterUSB function to take effect.

Format

```
Call Pd_SetEnterUSBDO( Pd_EnterUSBDataObject $enter_usb_do )
```

Parameters

$enter_usb_do

Parameter type is Pd_EnterUSBDataObject. Refer to PD_EnterUSBDataObject for available data fields.

Result

None

Examples

```
$enter_usb_do = Pd_EnterUSBDataObject
Call Pd_EnterUSBDO( $enter_usb_do )
```

5.1.98 PD_ResetEnterUSBDO

Applicable to PD Rev 3.0 only. Clears the *Pd_EnterUSBDataObject* in PD Exerciser. Should be called prior to call PD_SetEnterUSBDO.

Format

```
Call Pd_ResetEnterUSBDO()
```

Parameters

None

Result

None

Examples

```
Call Pd_ResetEnterUSBDO()
```

5.1.99 Pd_SetGetSnkCapExtSetting

Applicable to PD Rev 3.0 only. It has to be called before `Pd_GetSinkCapExtended` or `Pd_WaitForGetSnkCapExtended` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call Pd_SetGetSnkCapExtSetting( Pd_GetSinkCapExtented_Settings $settings )
```

Parameters

`$settings`

Setting type is `Pd_GetSinkCapExtented_Settings`. Available fields for this type are:

Field Names	Possible/Default Values	Description
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Wait TimeOut(micro second) to receive Get_Sink_Cap_Extended message.
ResponseType	PD_RESPONSE_NOT_SUPPORTED, PD_RESPONSE_UNSPECIFIED(default)	Indicates response upon receiving the Get_Sink_Cap_Extended message.
SkipSnkCapExt	PD_TRUE, PD_FALSE(default)	Indicates whether to skip sending Sink_Capabilities_Extended message or not.
SendSnkCapExtDelay	0(default)	Defines the delay before sending Sink_Capabilities_Extended message.

Result

None

Examples

```
$getsnkcapext_setting = Pd_GetSinkCapExtented_Settings
{
   ResponseType = PD_RESPONSE_NOT_SUPPORTED
}
Call Pd_SetGetSnkCapExtSetting( $getsnkcapext_setting )
```

5.1.100 Pd_SetSnkCapExtDataBlock

Applicable to PD Rev 3.0 only. Sets *Sink Capabilities Extended Data Block* in PD Exerciser. It has to be called before `Pd_WaitForGetSnkCapExtended` or `PD_DelayAutoResponse` to take effect.

Format

```
Call Pd_SetSnkCapExtDataBlock( Pd_SinkCapExtDataBlock $snk_cap_ext )
```

Parameters

`$snk_cap_ext`

parameter type is `Pd_SinkCapExtDataBlock`. Refer to `Pd_SinkCapExtendedMsg` for available data fields.

Result

None

Examples

```
$snk_cap_ext = Pd_SinkCapExtDataBlock
Call Pd_SetSnkCapExtDataBlock( $snk_cap_ext )
```

5.1.101 Pd_ResetSnkCapExtDataBlock

Applicable to PD Rev 3.0 only. Clears the *Sink Capabilities Extended Data Block* in PD Exerciser. Should be called prior to call `Pd_SetSnkCapExtDataBlock`.

Format

```
Call Pd_ResetSnkCapExtDataBlock()
```

Parameters

None

Result

None

Examples

```
Call Pd_ResetSnkCapExtDataBlock()
```

5.1.102 Pd_GetSinkCapExtended

Applicable to PD Rev 3.0 only. Starts *GetSinkCapExtended* AMS.

Note: The `Pd_SetGetSnkCapExtSetting` function may need to be called prior calling this function.

Format

```
Call Pd_GetSinkCapExtended()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - `Not_Supported` message received.

Examples

```
Call Pd_GetSinkCapExtended()
```

5.1.103 Pd_WaitForGetSnkCapExtended

Applicable to PD Rev 3.0 only. Wait for user-defined time-out to receive `Get_Sink_Cap_Extended` message. It will respond to incoming messages as part of *GetSinkCapExtended* AMS.

Note: The Pd_SetGetSnkCapExtSetting, Pd_SetSnkCapExtDataBlock and Pd_ResetSnkCapExtDataBlock functions may need to be called prior calling this function.

Format

```
Call Pd_WaitForGetSnkCapExtended()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Get_Sink_Cap_Extended not received.
PD_SUBRESULT_RESPONSE_NOT_SUPPORTED	Subresult - Not_Supported message sent as response.

Examples

```
Call Pd_WaitForGetSnkCapExtended()
```

5.1.104 PD_SetDiscoverIdentitySetting

It must be called prior calling the PD_DiscoverIdentity or PD_WaitForDiscoverIdentity or PD_PerformDiscoveryProcess or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetDiscoverIdentitySetting( PD_DiscoverIdentity_Settings $settings )
```

Parameters

$settings

Should be from PD_DiscoverIdentity_Settings type. Table below shows the available fields of PD_DiscoverIdentity_Settings template:

Field Name	Possible/Default Values	Description
DiscoverIdentityRetryCount	20 (default)	Indicates the DiscoverIdentity retry count.
DiscoverIdentityResponse	PD_DISCOVERIDENTITY_ACK(default) PD_DISCOVERIDENTITY_BUSY PD_DISCOVERIDENTITY_NAK	Indicates the response type.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(micro second) to wait for receiving Discover Identity Command.
RetryCountOnWait	4(default)	Indicates the retry count if Wait message received as response.
RetryDelayOnWait	50000(default)	Indicates the retry delay time(micro second) if Wait message received as response.
AutoSpecRevCable	PD_TRUE(default)	Only applicable for Rev.3.0 or higher.

		Indicates whether to detect Specification Revision of messages towards the cable automatically or not.
SendResponseDelay	0(default)	Sends response after specified delay.

Result

None

Examples

```
#apply settings
$settings = PD_DiscoverIdentity_Settings
{
   DiscoverIdentityRetryCount = 5
}
call PD_SetDiscoverIdentitySetting( $settings )
```

5.1.105 PD_AddDiscoverIdentityVDO

Adds *DiscoverIdentity VDO* in PD Exerciser. It has to be called prior calling the PD_WaitForDiscoverIdentity or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_AddDiscoverIdentityVDO( PD_DiscoverIdentity_VDO $vdo )
```

Parameters

$vdo

Parameter type is PD_DiscoverIdentity_VDO. Refer to PD_VDM_Discover_Identity_Response for available DiscoverID VDOs.

Result

None

Examples

```
#In this example, PD working revision is PD_SPEC_REVISION_2
#Add a ID Header VDO
$vdo = PD_VDM_Discover_Identity_ID_Header_VDO
{
   IDHeaderVDO_USBVendorID = 0xFF01
   IDHeaderVDO_ModalOperationSupported = 1
   IDHeaderVDO_ProductType = PD_VDM_ID_HEADER_VDO_PRODUCT_TYPE_PERIPHERAL
   IDHeaderVDO_DataCapableAsUSBDevice = 1
}
call PD_AddDiscoverIdentityVDO( $vdo )
```

5.1.106 PD_ResetDiscoverIdentityVDO

Clears *DiscoverIdentity VDOs* in PD Exerciser. It should be called prior calling the PD_AddDiscoverIdentityVDO function.

Format

```
Call PD_ResetDiscoverIdentityVDO()
```

Parameters

None

Result

None

Examples

```
call PD_ResetDiscoverIdentityVDO()
```

5.1.107 PD_DiscoverIdentity

Starts *DiscoverIdentity* AMS.

Format

```
Call PD_DiscoverIdentity( OrderedSetType )
```

Parameters

`OrderedSetType`

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY received as response

Examples

```
call PD_DiscoverIdentity(PD_ORDERED_SET_TYPE_SOP)
```

5.1.108 PD_WaitForDiscoverIdentity

Waits for user-defined time-out to receive DISCOVERIDENTITY command. It will respond to incoming messages as part of *DiscoverIdentity* AMS.

Note: The `PD_SetDiscoverIdentitySetting`, `PD_AddDiscoverIdentityVDO` and `PD_ResetDiscoverIdentityVDO` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForDiscoverIdentity()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DISCOVERIDENTITY command not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY has been sent as response

Examples

```
call PD_WaitForDiscoverIdentity()
```

5.1.109 PD_SetDiscoverSVIDSetting

It has to be called prior calling the PD_DiscoverSvids or PD_WaitForDiscoverSvids or PD_PerformDiscoveryProcess or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetDiscoverSVIDSetting( PD_DiscoverSvids_Settings $settings )
```

Parameters

`$settings`

Should be from PD_DiscoverSvids_Settings type. Table below shows the available fields of PD_DiscoverSvids_Settings template:

Field Name	Possible/Default Values	Description
DiscoverSvidsResponse	PD_DISCOVERSVIDS_ACK(default) PD_DISCOVERSVIDS_BUSY PD_DISCOVERSVIDS_NAK	Indicates the response type.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(micro second) to wait for receiving Discover SVID Command.
RetryCountOnWait	4(default)	Indicates the retry count if Wait message received as response.
RetryDelayOnWait	50000(default)	Indicates the retry delay time(micro second) if Wait message received as response.

Result

None

Examples

```
#Using default settings
$settings = PD_DiscoverSvids_Settings
call PD_SetDiscoverSVIDSetting( $settings )
```

5.1.110 PD_AddSvid

Adds *SVIDs* to PD Exerciser. It has to be called prior calling the PD_DiscoverSvids or PD_WaitForDiscoverSvids or PD_PerformDiscoveryProcess or PD_DelayAutoResponse functions to take effect.

Note - Up to 11 *SVIDs* can be added using this command.

Format

```
Call PD_AddSvid(value)
```

Parameters

`value`

SVID value to add

Result

None

Examples

```
call PD_AddSvid(0xFF01)
```

5.1.111 PD_ResetSvids

Clears *SVIDs* which is added to PD Exerciser. It should be called prior calling the `PD_AddSvid` function.

Format

```
Call PD_ResetSvids()
```

Parameters

None

Result

None

Examples

```
call PD_ResetSvids()
```

5.1.112 PD_DiscoverSvids

Starts *DiscoverSVID* AMS.

Note - PD Exerciser supports only one(first) DiscoverSVIDs Ack message.

Format

```
Call PD_DiscoverSvids(OrderedSetType)
```

Parameters

`OrderedSetType`

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for

	PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY received as response

Examples

```
call PD_DiscoverSvids(PD_ORDERED_SET_TYPE_SOP)
```

5.1.113 PD_WaitForDiscoverSvids

Waits for user-defined time-out to receive DISCOVERSVID command. It will respond to incoming messages as part of the *DiscoverSVIDs* AMS.

Note: The PD_SetDiscoverSVIDSetting, PD_AddSvid and PD_ResetSvids functions may need to be called prior calling this function.

Format

```
Call PD_WaitForDiscoverSvids()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DISCOVERSVIDS message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY has been sent as response

Examples

```
call PD_WaitForDiscoverSvids()
```

5.1.114 PD_SetDiscoverModeSetting

It has to be called prior calling the PD_DiscoverModes or PD_WaitForDiscoverModes or PD_PerformDiscoveryProcess or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetDiscoverModeSetting( PD_DiscoverModes_Settings $settings )
```

Parameters

`$settings`

It should be from PD_DiscoverModes_Settings type. Table below describes the PD_DiscoverModes_Settings template:

Field Name	Possible/Default Values	Description

DiscoverModesResponse	PD_DISCOVERMODES_ACK(default) PD_DISCOVERMODES_BUSY PD_DISCOVERMODES_NAK	Response type
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(micro second) to wait for receiving Discover Modes command.
RetryCountOnWait	4(default)	Indicates the retry count if Wait message received as response.
RetryDelayOnWait	50000(default)	Indicates the retry delay time(micro second) if Wait message received as response.

Result

None

Examples

```
#apply settings
$settings = PD_DiscoverModes_Settings
{
   DiscoverModesResponse = PD_DISCOVERMODES_BUSY
}
call PD_SetDiscoverModeSetting( $settings )
```

5.1.115 PD_AddMode

Adds *Modes* to the PD Exerciser. It has to be called prior calling the PD_DiscoverModes or PD_WaitForDiscoverModes or PD_PerformDiscoveryProcess or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_AddMode(Mode)
```

Parameters

Mode

Mode to add

Result

None

Examples

```
call PD_AddMode(0x00000001)
```

5.1.116 PD_AddModeVDO

Adds *Mode with VDO* to the PD Exerciser. It has to be called prior calling the PD_DiscoverModes or PD_WaitForDiscoverModes or PD_PerformDiscoveryProcess or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_AddModeVDO(PD_Generic_VDO $ModeVdo)
```

Parameters

$ModeVdo

Parameter type is `PD_Generic_VDO`. Refer to `PD_VDM_Discover_Modes_Response` for available VDOs which can be use as this parameter.

Result

None

Examples

```
local $vdo_1 = PD_VDO
{
   Data = 0x01
}
call PD_AddModeVDO($vdo_1)
```

5.1.117 PD_ResetModes

Clears `Modes` which are added to PD Exerciser. It should be called prior calling the `PD_AddMode` or `PD_AddModeVDO` functions.

Format

```
Call PD_ResetModes()
```

Parameters

None

Result

None

Examples

```
call PD_ResetModes()
```

5.1.118 PD_DiscoverModes

Starts *DicoverModes* AMS.

Format

```
Call PD_DiscoverModes(OrderedSetType, selectedSvid)
```

Parameters

`OrderedSetType`

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`selectedSvid`

Indicates the SVID value

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY received as response

Examples

```
call PD_DiscoverModes(PD_ORDERED_SET_TYPE_SOP,0xFF00)
```

5.1.119 PD_WaitForDiscoverModes

Waits for user-defined time-out to receive DISCOVERMODE command. It will respond to incoming messages as part of *DiscoverModes* AMS.

Note: The PD_SetDiscoverModeSetting, PD_AddMode, PD_AddModeVDO and PD_ResetModes functions may need to be called prior calling this function.

Format

```
Call PD_WaitForDiscoverModes()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DISCOVERMODES message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY has been sent as response

Examples

```
call PD_WaitForDiscoverModes()
```

5.1.120 PD_SetEnterModeSetting

It has to be called prior calling the PD_WaitForEnterMode or PD_DelayAutoResponse functions to take effect.

Format

```
Call PD_SetEnterModeSetting( PD_EnterMode_Settings $settings )
```

Parameters

```
$settings
```

Should be from PD_EnterMode_Settings type. Table below describes the PD_EnterMode_Settings template:

Field Name	Possible/Default Values	Description
EnterModeResponse	PD_ENTERMODE_ACK(default) PD_ENTERMODE_NAK	Response type.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(micro second) to wait for receiving Enter Mode command.
SkipSendingResponse	PD_FALSE(default) PD_TRUE	If set to PD_TRUE, will skip sending the EnterMode response.

Result

None

Examples

```
#Using default setting
$settings = PD_EnterMode_Settings
call PD_SetEnterModeSetting( $settings )
```

5.1.121 PD_EnterMode

Starts *EnterMode* AMS.

Format

```
Call PD_EnterMode(OrderedSetType, selectedSvid, modeIndex)
```

Parameters

`OrderedSetType`

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`selectedSvid`

Indicates the SVID

`modeIndex`

Indicates the mode index for the specified SVID

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response

Examples

```
call PD_EnterMode(PD_ORDERED_SET_TYPE_SOP,0xFF00, 1)
```

5.1.122 PD_EnterModeVdo

Starts *EnterMode* AMS. It sends the specified *VDO* using the *EnterMode* command.

Format

```
Call PD_EnterModeVdo( OrderedSetType, selectedSvid, modeId, PD_Generic_VDO $Vdo
)
```

Parameters

`OrderedSetType`

Indicates the ordered set type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`selectedSvid`

Indicates the SVID

`modeId`

Indicates the mode index related to the specified SVID

`$Vdo`

Vendor defined data object. It should be from `PD_VDO`(Inherited from `PD_Generic_VDO`) type. (Refer to `PD_VDO`)

Field Name	Description
Data	VDO data

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response

Examples

```
$vdo = PD_VDO
{
   Data = 0x00
}
call PD_EnterModeVdo(PD_ORDERED_SET_TYPE_SOP, 0xFF01, 1, $vdo)
```

5.1.123 PD_WaitForEnterMode

Waits for user-defined time-out to receive ENTERMODE command. It will respond to incoming messages as part of *EnterMode* AMS.

Note: The `PD_SetEnterModeSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForEnterMode()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - ENERMODE message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response

Examples

```
call PD_WaitForEnterMode()
```

5.1.124 PD_SetExitModeSetting

It has to be called prior calling the `PD_WaitForExitMode` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetExitModeSetting( PD_ExitMode_Settings $settings )
```

Parameters

`$settings`

Should be from `PD_ExitMode_Settings` type. Table below describes the `PD_ExitMode_Settings` template:

Field Name	Possible/Default Values	Description
ExitModeResponse	PD_EXITMODE_ACK(default) PD_EXITMODE_NAK	Indicates the response type.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(default)	Timeout(micro second) to wait for receiving the Exit Mode command.

Result

None

Examples

```
#Using default settings
$settings = PD_ExitMode_Settings
call PD_SetExitModeSetting( $settings )
```

5.1.125 PD_ExitMode

Starts *ExitMode* AMS.

Format

```
Call PD_ExitMode(OrderedSetType, selectedSvid, modeIndex)
```

Parameters

`OrderedSetType`

possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`selectedSvid`

Indicates the SVID

`modeIndex`

Indicates the mode index related to the specified SVID

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response

Examples

```
call PD_ExitMode(PD_ORDERED_SET_TYPE_SOP, 0xFF00, 1)
```

5.1.126 PD_WaitForExitMode

Waits for user-defined time-out to receive EXITMODE command. It will respond to incoming messages as part of *ExitMode* AMS.

Note: The `PD_SetExitModeSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForExitMode()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the

	error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - EXITMODE message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response

Examples

```
call PD_WaitForExitMode()
```

5.1.127 PD_Attention

Starts *Attention* AMS.

Format

```
Call PD_Attention( OrderedSetType, selectedSvid, modeIndex )
```

Parameters

`OrderedSetType`

Indicates the ordered set type. possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`selectedSvid`

Indicates the SVID

`modeIndex`

Indicates the mode index related to the specified SVID

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for **PD_SendPacket** are valid also (depends on the error type which has been occurred during sending data).

Examples

```
call PD_Attention(PD_ORDERED_SET_TYPE_SOP, 0xFF01, 1 )
```

5.1.128 PD_AttentionVdo

Starts *Attention* AMS. It sends the specified VDO using he *Attention* command.

Format

```
Call PD_AttentionVdo( OrderedSetType, selectedSvid, modeIndex, PD_Generic_VDO
$Vdo )
```

Parameters

`rderedSetType`

Indicates the ordered set type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP
```

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

`selectedSvid`

Indicates the SVID

`modeId`

Indicates the mode index related to the specified SVID

`$Vdo`

Vendor defined data object. Should be from `PD_VDO`(Inherited from `PD_Generic_VDO`) type. (Refer to `PD_VDO`)

Field Name	Description
Data	VDO data

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` are valid also (depends on the error type which has been occurred during sending data).

Examples

```
$vdo = PD_VDO
{
   Data = 0x00
}
call PD_AttentionVdo(PD_ORDERED_SET_TYPE_SOP, 0xFF01, 1, $vdo)
```

5.1.129 PD_SetDiscoveryProcessSetting

It has to be called prior calling the `PD_PerformDiscoveryProcess` function to take effect.

Format

```
Call PD_SetDiscoveryProcessSetting(PD_DiscoveryProcess_Settings $settings)
```

Parameters

`$settings`

Should be from `PD_DiscoveryProcess_Settings` type. Table below describes the `PD_DiscoveryProcess_Settings` template:

Field Name	Possible/Default Values	Description
Discover_SOP_PP_During_SOP_P	PD_TRUE PD_FALSE(Default)	Indicates whether perform SOP Double Prime discovery during SOP Prime discovery process or not.
SkipEnterMode	PD_FALSE(Default)	Indicates whether to skip the EnterMode phase or not.

Result

None

Examples

```
#Using default settings
```

```
$settings = PD_DiscoveryProcess_Settings
call PD_SetDiscoveryProcessSetting( $settings )
```

5.1.130 PD_PerformDiscoveryProcess

Performs full discovery process.

Note 1: PD Exerciser supports only one(first) DiscoverSVIDs Ack message (up to 12 SVIDs).

Note 2: The `PD_SetDiscoveryProcessSetting` function may need to be called prior calling this function.

Format

```
Call PD_PerformDiscoveryProcess( OrderedSetType )
```

Parameters

`OrderedSetType`

Indicates the ordered set type. Possible values:

```
PD_ORDERED_SET_TYPE_SOP
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
call PD_PerformDiscoveryProcess(PD_ORDERED_SET_TYPE_SOP)
```

5.1.131 PD_SetDisplayPortSetting

It has to be called prior calling the `PD_DisplayPort_UpdateStatus` or `PD_DisplayPort_Configure` or `PD_WaitForDisplayPortStatus` or `PD_WaitForDisplayPortConfigure` or `PD_DelayAutoResponse` functions to take effect.

Format

```
Call PD_SetDisplayPortSetting( PD_DisplayPort_Settings $settings )
```

Parameters

`$settings`

Should be from `PD_DisplayPort_Settings` type. Table below describes the `PD_DisplayPort_Settings` template:

Field Name	Possible/Default Values	Description
ConfigureResponse	PD_DISPLAYPORT_ACK(Default) PD_DISPLAYPORT_NAK	Indicates the response for incoming Display Port Configure command.
DisplayPortModeIndex	0x01(Default)	Mode index related to the Display Port SVID.
StatusVdo	0x00(Default)	Indicates the *Display Port Status Vendor Defined Data Object* which can be used in Display Port Update Status initiator or responder messages.
ConfigureVdo	0x00(Default)	Indicates the *Display Port Configure Vendor Defined Data Object* which can be used in

		Display Port Configure initiator message.
WaitTimeout	PD_DEFAULT_TIMEOUT_INFINIT(Default)	Timeout(micro second) to wait for receiving *Display Port Update Status or Configure* command.

Result

None

Examples

```
#Using default settings
################################
$settings = PD_DisplayPort_Settings
call PD_SetDisplayPortSetting($settings)

#Set the StatusVdo
################################
$update_status = PD_VDM_DisplayPort_Status_VDO
{
    DFPD_UFPD_Connected     = PD_DISPLAYPORT_DFPD_CONNECTED
    PowerLow                = 0x00
    AdaptorEnabled          = 0x01
    MultiFunctionPreferred  = 0x01
    UsbConfigurationRequest = 0x00
    ExitDisplayModeRequest  = 0x00
    HPD_State               = 0x00
    IRQ_HPD                 = 0x00
    Reserved_DPS_1          = 0x00
}
$settings
{
    StatusVdo = $update_status
}
Call PD_SetDisplayPortSetting($settings)

#Set the ConfigureVdo to default
################################
$config = PD_VDM_DisplayPort_Configure_VDO
$settings
{
    ConfigureVdo = $config
}
Call PD_SetDisplayPortSetting($settings)
```

5.1.132 PD_DisplayPort_UpdateStatus

Starts *DisplayPortUpdateStatus*(Structured VDM) AMS.

Note: The `PD_SetDisplayPortSetting` function may need to be called prior calling this function.

Format

```
Call PD_DisplayPort_UpdateStatus()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received

Examples

```
call PD_DisplayPort_UpdateStatus()
```

5.1.133 PD_DisplayPort_Configure

Starts *DisplayPortConfigure*(Structured VDM) AMS.

Note: The `PD_SetDisplayPortSetting` function may need to be called prior calling this function.

Format

```
Call PD_DisplayPort_Configure()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_RESPONSE_TIMEOUT	Subresult - No response received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK received as response

Examples

```
call PD_DisplayPort_Configure()
```

5.1.134 PD_WaitForDisplayPortStatus

Waits for user-defined time-out to receive DisplayPort STATUS command. It will respond to incoming messages as part of the *DisplayPortStatus*(Structured VDM) AMS.

Note: The `PD_SetDisplayPortSetting` function may need to be called prior calling this function.

Format

```
Call PD_WaitForDisplayPortStatus()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the

	error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - UPDATE_STATUS message not received

Examples

```
call PD_WaitForDisplayPortStatus()
```

5.1.135 PD_WaitForDisplayPortConfigure

Waits for user-defined time-out to receive DisplayPort CONFIGURE command. It will respond to incoming messages as part of *DisplayPortConfigure*(Structured VDM) AMS.

Note: The PD_SetDisplayPortSetting function may need to be called prior calling this function.

Format

```
Call PD_WaitForDisplayPortConfigure()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Configure message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response

Examples

```
call PD_WaitForDisplayPortConfigure()
```

5.1.136 PD_SetDiscoverIdentitySetting_Cable

It has to be called prior calling the PD_WaitForDiscoverIdentity_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as a Cable Plug to be able to process this function.

Format

```
Call PD_SetDiscoverIdentitySetting_Cable( PD_DiscoverIdentity_Settings_SOPPrime $settings )
Call PD_SetDiscoverIdentitySetting_Cable( PD_DiscoverIdentity_Settings_SOPDPrime $settings )
```

Parameters

$settings

For SOP Prime, use PD_DiscoverIdentity_Settings_SOPPrime and for SOP Double Prime, use PD_DiscoverIdentity_Settings_SOPDPrime. Refer to PD_SetDiscoverIdentitySetting for more details. Only DiscoverIdentityResponse and WaitTimeout settings applied.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
PD_Set $PdGlobalSettings.EnableCableDPrimeEmulator = PD_TRUE
.
.
#Using default settings
$settings = PD_DiscoverIdentity_Settings_SOPPrime
call PD_SetDiscoverIdentitySetting_Cable( $settings )

$settings_dprime = PD_DiscoverIdentity_Settings_SOPDPrime
call PD_SetDiscoverIdentitySetting_Cable( $settings_dprime )
```

5.1.137 PD_WaitForDiscoverIdentity_Cable

Waits for user-defined time-out to receive DISCOVERIDENTITY command. It will respond to incoming messages as part of the *DiscoverIdentity* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The `PD_SetDiscoverIdentitySetting_Cable`, `PD_AddDiscoverIdentityVDO_Cable` and `PD_ResetDiscoverIdentityVDO_Cable` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForDiscoverIdentity_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DISCOVER_IDENTITY message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY has been sent as response

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForDiscoverIdentity_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.138 PD_AddDiscoverIdentityVDO_Cable

Adds *DiscoverIdentity VDO*(for cable) to the PD Exerciser. It has to be called prior calling the PD_WaitForDiscoverIdentity_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_AddDiscoverIdentityVDO_Cable( PD_DiscoverIdentity_VDO $vdo, ordered_set
)
```

Parameters

`$vdo`

Parameter type is PD_DiscoverIdentity_VDO. Refer to PD_VDM_Discover_Identity_Response for available DiscoverID VDOs.

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
#Add a Cable VDO
$vdo = PD_VDM_Discover_Identity_Cable_VDO
call PD_AddDiscoverIdentityVDO_Cable( $vdo, PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.139 PD_ResetDiscoverIdentityVDO_Cable

Clears *DiscoverIdentity VDOs*(for cable) in PD Exerciser. It should be called prior to call PD_AddDiscoverIdentityVDO_Cable function.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
call PD_ResetDiscoverIdentityVDO_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
```

```
.
.
call PD_ResetDiscoverIdentityVDO_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.140 PD_SetDiscoverSVIDSetting_Cable

It has to be called prior calling the PD_WaitForDiscoverSvids_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as a Cable Plug to be able to process this command.

Format

```
Call PD_SetDiscoverSVIDSetting_Cable( PD_DiscoverSvids_Settings_SOPPrime
$settings )
Call PD_SetDiscoverSVIDSetting_Cable( PD_DiscoverSvids_Settings_SOPDPrime
$settings )
```

Parameters

`$settings`

For SOP Prime, use `PD_DiscoverSvids_Settings_SOPPrime` and for SOP Double Prime, use `PD_DiscoverSvids_Settings_SOPDPrime`. Refer to PD_SetDiscoverSVIDSetting for more details. Only `DiscoverSvidsResponse` and `WaitTimeout` settings applied.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
PD_Set $PdGlobalSettings.EnableCableDPrimeEmulator = PD_TRUE
.
.
#Using default settings
$settings = PD_DiscoverSvids_Settings_SOPPrime
call PD_SetDiscoverSVIDSetting_Cable( $settings )

$settings_dprime = PD_DiscoverSvids_Settings_SOPDPrime
call PD_SetDiscoverSVIDSetting_Cable( $settings_dprime )
```

5.1.141 PD_WaitForDiscoverSvids_Cable

Waits for user-defined time-out to receive DISCOVERSVID command. It will respond to incoming messages as part of *DiscoverSVIDs* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The PD_SetDiscoverSVIDSetting_Cable, PD_AddSvid_Cable and PD_ResetSvids_Cable functions may need to be called prior calling this function.

Format

```
Call PD_WaitForDiscoverSvids_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DISCOVER_SVIDS message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY has been sent as response

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForDiscoverSvids_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.142 PD_AddSvid_Cable

Adds *SVIDs* (Cable Plug) to the PD Exerciser. It has to be called prior calling the PD_WaitForDiscoverSvids_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_AddSvid_Cable(value, ordered_set)
```

Parameters

`value`

SVID value to add

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
call PD_AddSvid_Cable(0xFF81, PD_ORDERED_SET_TYPE_SOP_PRIME)
```

5.1.143 PD_ResetSvids_Cable

Clears *SVIDs*(for cable) which is added to PD Exerciser. It should be called prior to call PD_AddSvid_Cable function.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_ResetSvids_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
call PD_ResetSvids_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.144 PD_SetDiscoverModeSetting_Cable

It has to be called prior calling the `PD_WaitForDiscoverModes_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetDiscoverModeSetting_Cable( PD_DiscoverModes_Settings_SOPPrime
$settings )
Call PD_SetDiscoverModeSetting_Cable( PD_DiscoverModes_Settings_SOPDPrime
$settings )
```

Parameters

`$settings`

For SOP Prime, use `PD_DiscoverModes_Settings_SOPPrime` and for SOP Double Prime, use `PD_DiscoverModes_Settings_SOPDPrime`. Refer to `PD_SetDiscoverModeSetting` for more details. Only `DiscoverModesResponse` and `WaitTimeout` settings applied.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
PD_Set $PdGlobalSettings.EnableCableDPrimeEmulator = PD_TRUE
.
.
#Using default settings
$settings = PD_DiscoverModes_Settings_SOPPrime
call PD_SetDiscoverModeSetting_Cable( $settings )

$settings_dprime = PD_DiscoverModes_Settings_SOPDPrime
call PD_SetDiscoverModeSetting_Cable( $settings_dprime )
```

5.1.145 PD_WaitForDiscoverModes_Cable

Waits for user-defined time-out to receive DISCOVERMODE command. It will respond to incoming messages as part of *DiscoverModes* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The PD_SetDiscoverModeSetting_Cable, PD_AddModeVDO_Cable, PD_AddMode_Cable and PD_ResetModes_Cable functions may need to be called prior calling this function.

Format

```
Call PD_WaitForDiscoverModes_Cable( ordered_set )
```

Parameters

ordered_set

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using IfMatched/ElseMatched command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - DISCOVER_MODES message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response
PD_SUBRESULT_RESPONSE_BUSY	Subresult - BUSY has been sent as response

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForDiscoverModes_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.146 PD_AddModeVDO_Cable

Adds *Mode*(for cable) with VDO to the PD Exerciser. It has to be called prior calling the PD_WaitForDiscoverModes_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_AddModeVDO_Cable(PD_Vdo $ModeVdo, ordered_set)
```

Parameters

$ModeVdo

Should be from PD_Vdo type. Table below describes the PD_VDO template that can be use as ModeVdo (Refer to PD_VDO):

Field Name	Description
Data	VDO

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
local $vdo_1 = PD_VDO
{
   Data = 0x01
}
call PD_AddModeVDO_Cable($vdo_1, PD_ORDERED_SET_TYPE_SOP_PRIME)
```

5.1.147 PD_AddMode_Cable

Adds *Mode*(Cable Plug) to the PD Exerciser. It has to be called prior calling the `PD_WaitForDiscoverModes_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_AddMode_Cable(Mode, ordered_set)
```

Parameters

`Mode`

Mode to add

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
call PD_AddMode_Cable(0x00000001, PD_ORDERED_SET_TYPE_SOP_PRIME)
```

5.1.148 PD_ResetModes_Cable

Clears *Modes*(for cable) which are added to PD Exerciser. It should be called prior calling the `PD_AddModeVDO_Cable` and `PD_AddMode_Cable` functions.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_ResetModes_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_ResetModes_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.149 PD_SetEnterModeSetting_Cable

It has to be called prior calling the `PD_WaitForEnterMode_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetEnterModeSetting_Cable( PD_EnterMode_Settings_SOPPrime $settings )
Call PD_SetEnterModeSetting_Cable( PD_EnterMode_Settings_SOPDPrime $settings )
```

Parameters

`$settings`

For SOP Prime, use `PD_EnterMode_Settings_SOPPrime` and for SOP Double Prime, use `PD_EnterMode_Settings_SOPDPrime`. Refer to `PD_SetEnterModeSetting` for more details.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
PD_Set $PdGlobalSettings.EnableCableDPrimeEmulator = PD_TRUE
.
.
#Using default setting
$settings = PD_EnterMode_Settings_SOPPrime
call PD_SetEnterModeSetting_Cable( $settings )

$settings_dprime = PD_EnterMode_Settings_SOPDPrime
call PD_SetEnterModeSetting_Cable( $settings_dprime )
```

5.1.150 PD_WaitForEnterMode_Cable

Waits for user-defined time-out to receive ENTERMODE command. It will respond to incoming messages as part of *EnterMode* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The `PD_SetEnterModeSetting_Cable` function may need to be called prior calling this function.

Format

```
Call PD_WaitForEnterMode_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - ENTER_MODE message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForEnterMode_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.151 PD_SetExitModeSetting_Cable

It has to be called prior calling the `PD_WaitForExitMode_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetExitModeSetting_Cable( PD_ExitMode_Settings_SOPPrime $settings )
Call PD_SetExitModeSetting_Cable( PD_ExitMode_Settings_SOPDPrime $settings )
```

Parameters

`$settings`

For SOP Prime, use `PD_ExitMode_Settings_SOPPrime` and for SOP Double Prime, use `PD_ExitMode_Settings_SOPDPrime`. Refer to `PD_SetExitModeSetting` for more details.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
PD_Set $PdGlobalSettings.EnableCableDPrimeEmulator = PD_TRUE
.
.
#Using default settings
$settings = PD_ExitMode_Settings_SOPPrime
call PD_SetExitModeSetting_Cable( $settings )

$settings_dprime = PD_ExitMode_Settings_SOPDPrime
call PD_SetExitModeSetting_Cable( $settings_dprime )
```

5.1.152 PD_WaitForExitMode_Cable

Waits for user-defined time-out to receive EXITMODE command. It will respond to incoming messages as part of *ExitMode* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The `PD_SetExitModeSetting_Cable` function may need to be called prior calling this function.

Format

```
Call PD_WaitForExitMode_Cable( ordered_set )
```

Parameters

`ordered_set`

Possible values:

```
PD_ORDERED_SET_TYPE_SOP_PRIME
PD_ORDERED_SET_TYPE_SOP_DOUBLE_PRIME
```

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - EXIT_MODE message not received
PD_SUBRESULT_RESPONSE_NAK	Subresult - NAK has been sent as response

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForExitMode_Cable( PD_ORDERED_SET_TYPE_SOP_PRIME )
```

5.1.153 PD_SetManufacturerInfoDataBlock_Cable

Applicable to PD Rev 3.0 only. Sets *ManufacurerInfo Data Block*(for cable) to the PD Exerciser. It has to be called prior calling the `PD_WaitForGetManufacturerInfo_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetManufacturerInfoDataBlock_Cable( PD_ManufacturerInfoDataBlock
$manufacturer_info_db )
```

Parameters

`$manufacturer_info_db`

Parameter type is `PD_ManufacturerInfoDataBlock`. Refer to `PD_ManufacturerInfoMsg` for available fields of this type.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
$manufacturer_info_db = PD_ManufacturerInfoDataBlock
Call PD_SetManufacturerInfoDataBlock_Cable( $manufacturer_info_db )
```

5.1.154 PD_SetGetManufacturerInfoSetting_Cable

Applicable to PD Rev 3.0 only. It has to be called prior calling the `PD_WaitForGetManufacturerInfo_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note : PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetGetManufacturerInfoSetting_Cable( PD_GetManufacturerInfo_Settings
$settings )
```

Parameters

`$settings`

Refer to `PD_SetGetManufacturerInfoSetting` for more details.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
$getmaninfo_setting = PD_GetManufacturerInfo_Settings
{
   WaitTimeout = 50000
}
Call PD_SetGetManufacturerInfoSetting_Cable( $getmaninfo_setting )
```

5.1.155 PD_WaitForGetManufacturerInfo_Cable

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive Manufacturer_Info message. It will respond to incoming messages as part of *GetManufacturerInfo* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The `PD_SetGetManufacturerInfoSetting_Cable` and `PD_SetManufacturerInfoDataBlock_Cable` functions may need to be called prior calling this function.

Format

```
Call PD_WaitForGetManufacturerInfo_Cable()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Manufacturer_Info` message not received.

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForGetManufacturerInfo_Cable()
```

5.1.156 PD_SetSecurityResponseDataBlock_Cable

Applicable to PD Rev 3.0 only. Sets the *SecurityResponse Data Block*(for cable) to the PD Exerciser. It has to be called prior calling the `PD_WaitForSecurityRequest_Cable` or `PD_DelayAutoResponse` functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetSecurityResponseDataBlock_Cable( PD_SecurityResponseDB
$security_resp_db )
```

Parameters

`$security_resp_db`

Parameter type is `PD_SecurityResponseDB`. Refer to `PD_SecurityResponseMsg` for available types which are derived from this type.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
```

```
.
$security_resp_db = PD_SRPDB_Certificate
Call PD_SetSecurityResponseDataBlock_Cable( $security_resp_db )
```

5.1.157 PD_SetSecurityRequestSetting_Cable

Applicable to PD Rev 3.0 only. It has to be called prior calling the PD_WaitForSecurityRequest_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetSecurityRequestSetting_Cable( PD_SecurityRequest_Settings $settings )
```

Parameters

`$settings`

Refer to PD_SetSecurityRequestSetting for more details.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
$secreq_settings = PD_SecurityRequest_Settings
{
   WaitTimeout = 50000
}
Call PD_SetSecurityRequestSetting( $secreq_settings )
```

5.1.158 PD_WaitForSecurityRequest_Cable

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive Security_Request message. It will respond to incoming messages as part of *SecurityRequest* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The PD_SetSecurityResponseDataBlock_Cable and PD_SetSecurityRequestSetting_Cable functions may need to be called prior calling this function.

Format

```
Call PD_WaitForSecurityRequest_Cable()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for

	PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - Security_Request message not received.

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForSecurityRequest_Cable()
```

5.1.159 Pd_SetGetStatusSetting_Cable

Applicable to PD Rev 3.0 only. It has to be called prior calling the Pd_WaitForGetStatus_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call Pd_SetGetStatusSetting_Cable( Pd_GetStatus_Settings $settings )
```

Parameters

`$settings`

Parameter type is PD_GetStatus_Settings. Refer to PD_SetGetStatusSetting for available settings:

Result

None

Examples

```
$getstatus_setting = PD_GetStatus_Settings
{
   WaitTimeout = 250000
}
Call Pd_SetGetStatusSetting_Cable( $getstatus_setting )
```

5.1.160 PD_SetStatusDataBlock_Cable

Applicable to PD Rev 3.0 only. Sets the *Cable Status Data Block* in PD Exerciser. It has to be called prior calling the Pd_WaitForGetStatus_Cable or PD_DelayAutoResponse functions to take effect.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetStatusDataBlock_Cable( Pd_StatusDataBlock_Cable $status_db )
```

Parameters

`$status_db`

Parameter type is Pd_StatusDataBlock_Cable. Refer to Pd_StatusMsg_Cable for available fields.

Result

None

Examples

```
$cable_status_db = Pd_StatusDataBlock_Cable
Call PD_SetStatusDataBlock_Cable( $cable_status_db )
```

5.1.161 Pd_ResetStatusDataBlock_Cable

Applicable to PD Rev 3.0 only. Clears the *Cable Status Data Block* in PD Exerciser. It should be called prior calling the `PD_SetStatusDataBlock_Cable` function.

Note - PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call Pd_ResetStatusDataBlock_Cable()
```

Parameters

None

Result

None

Examples

```
Call Pd_ResetStatusDataBlock_Cable()
```

5.1.162 Pd_WaitForGetStatus_Cable

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `Get_Status` message. It will respond to incoming messages as part of *GetStatus* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The `Pd_SetGetStatusSetting_Cable`, `PD_SetStatusDataBlock_Cable` and `Pd_ResetStatusDataBlock_Cable` functions may need to be called prior calling this function.

Format

```
Call Pd_WaitForGetStatus_Cable( )
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_SendPacket` and `PD_ReceivePacket` are valid also (depends on the error type which has been occurred during sending or receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `Get_Status` message not received.

Examples

```
Call Pd_WaitForGetStatus_Cable()
```

5.1.163 PD_SetEnterUSBSetting_Cable

Applicable to PD Rev 3.0 only. It has to be called prior calling the PD_WaitForEnterUSB_Cable or PD_DelayAutoResponse functions to take effect.

Note : PD Exerciser should also act as Cable Plug to be able to process this command.

Format

```
Call PD_SetEnterUSBSetting_Cable( PD_EnterUSB_Settings $settings )
```

Parameters

`$settings`

Refer to PD_SetEnterUSBSetting for more details.

Result

None

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
$enter_usb_setting = PD_EnterUSB_Settings
{
   WaitTimeout = 50000
}
Call PD_SetEnterUSBSetting_Cable( $enter_usb_setting )
```

5.1.164 PD_WaitForEnterUSB_Cable

Applicable to PD Rev 3.0 only. Waits for user-defined time-out to receive `EnterUSB` message. It will respond to incoming messages as part of *EnterUSB* AMS.

Note 1: PD Exerciser should also act as Cable Plug to be able to process this command.

Note 2: The PD_SetEnterUSBSetting_Cable functions may need to be called prior calling this function.

Format

```
Call PD_WaitForEnterUSB_Cable()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

List of result values:

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for PD_SendPacket and PD_ReceivePacket are valid also (depends on the error type which has been occurred during sending or receiving data).

PD_SUBRESULT_RESPONSE_REJECT	Subresult - Reject message has been sent as response
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult – EnterUSB message not received.

Examples

```
PD_Set $PdGlobalSettings.EnableCableEmulator = PD_TRUE
.
.
Call PD_WaitForEnterUSB_Cable()
```

5.1.165 Pd_SetHardResetSetting

It has to be called prior calling the PD_DelayAutoResponse function or any other *HighLevel Transaction Engine™* functions to take effect.

Format

```
Call Pd_SetHardResetSetting( Pd_HardResetSettings $settings )
```

Parameters

$settings

Should be from Pd_HardResetSettings type. Following are the available fields of this packet template:

Field Name	Possible/Default Values	Description
WaitTimeOut	PD_DEFAULT_TIMEOUT_INFINIT(Default)	Indicates the time-out for waiting to receive the HardReset. Only applies to the Pd_WaitForHardReset function.
NoResponse	PD_FALSE(Default)	Indicates whether the PD Exerciser should respond to received HardResets or not. It applies to all *HighLevel Transaction Engine™* functions as well as PD_DelayAutoResponse function.

Result

None

Examples

```
#Ignore all received HardResets
$settings = Pd_HardResetSettings
{
   NoResponse = PD_TRUE
}
call Pd_SetHardResetSetting( $settings )
```

5.1.166 Pd_WaitForHardReset

Waits for user-defined time-out to receive HardaReset signal. It handles the HardReset signal.

Note: The Pd_SetHardResetSetting function may need to be called prior calling this function.

Format

```
Call Pd_WaitForHardReset()
```

Parameters

None

Result

User can evaluate the command results(including sub-results) using `IfMatched/ElseMatched` command.

Result Value	Description
PD_RESULT_OK	Command succeeded
PD_RESULT_FAILED	Command failed. In this case corresponding sub results for `PD_ReceivePacket` are valid also (depends on the error type which has been occurred while receiving data).
PD_SUBRESULT_MSG_NOT_RECEIVED	Subresult - `HardReset` signal not received

Examples

```
call Pd_WaitForHardReset()
```

5.2 Auto Responses Capability

To gain auto response capability, use below command. This command will respond to any incoming Power Delivery messages according to current operational settings. In addition to this command, at the start of each High-Level command Auto-Response is activated.

5.2.1 PD_DelayAutoResponse

Format

```
Call PD_DelayAutoResponse( duration_micro_Sec )
```

Parameters

`duration_micro_Sec`

Command waits for maximum specified duration and responses to received packet automatically.

Examples

```
call PD_DelayAutoResponse( 1000 )
```

5.2.2 PD_PauseAutoResponse

Responsive PD Exerciser pause which waits until `ResumePDGeneration()` called by the *Automation Application*. By calling this function, an *Automation Application* get notified that PD Exerciser Engine is paused. Refer to ***USBAnalyzerAutomationManual*** for more information on `WaitForPDGenerationPauseTag()` and `ResumePDGeneration()` API calls.

Note: All the rules which are applied to the `PD_DelayAutoResponse` function, will apply to this function too.

Format

```
Call PD_PauseAutoResponse( tag )
```

Parameters

`tag`

Makes each call to `PD_PauseAutoResponse` unique.

Examples

```
# PD Exerciser Script example:
call PD_PauseAutoResponse( 1 )

' WSH example:
Set Analyzer = WScript.CreateObject("CATC.USBTracer")

Analyzer.WaitForPDGenerationPauseTag 15000, diff_time, pauseTag, isGenDone

If pauseTag <> 0 Then
   WScript.Quit
End If

Analyzer.ResumePDGeneration
```

6 Appendix A:

How to Contact Teledyne LeCroy

Send e-mail…	psgsupport@teledyne.com
Contact support…	teledynelecroy.com/support/contact
Visit Teledyne LeCroy's web site…	teledynelecroy.com
Tell Teledyne LeCroy…	Report a problem to Teledyne LeCroy Support via e-mail by selecting **Help > Tell Teledyne LeCroy** from the application toolbar. This requires that an e-mail client be installed and configured on the host machine.