

Benchtop Data Acquisition System
DAQ3120



The DAQ3120 Benchtop Data Acquisition System combines a 6-½ digit digital multimeter (DMM) and a data logger in a compact and modular design, offering a complete solution for acquiring, analyzing, and logging various physical measurements. A large 4.3" TFT color display and intuitive user interface simplify operation, while the 3-slot mainframe with a built-in 6-½ digit DMM ensures both flexibility and high-resolution measurement capability.

The system delivers high accuracy, with a basic DCV accuracy of 0.0035%. It provides signal conditioning and analog to digital conversion of 14 different input types, including temperature (using thermocouples, RTDs, and thermistors), DC/AC voltage and current, resistance, frequency, period, capacitance, and strain. This wide range of measurement capabilities allows the DAQ3120 to address diverse applications.

Seven selectable switch modules enable users to customize the system to meet specific application requirements. The DM309 extends voltage measurement capabilities up to 600 VDC or 400 VAC and the DM300 provides scan rates of up to 450 channels/s. The DAQ3120 can capture high-speed phenomena and store up to 100 kpts of data in the non-volatile internal memory with time-stamps for all readings. Data logging and transfer are facilitated through the USB host port in standalone operation.

The DAQ3120 provides versatile connectivity options including LAN, USB (USBTMC and USBVCP), and optional micro GPIB, allowing seamless integration with PCs. The included DAQ-Data logger PC software offers an intuitive solution for test configuration and control, streamlining data acquisition workflows.

Applications

- Research & development
- Industrial automation and process monitoring
- Environment chamber monitoring
- Component inspection



Features and benefits

- 3-slot base unit with built-in 6-½ digit DMM
- Basic 0.0035% DCV accuracy
- 7 available input modules for customization
 - DM300 20-CH Solid-state Multiplexer
 - DM301 20-CH Multiplexer with 2 Current CH
 - DM303 40-CH Single-Ended Multiplexer
 - DM304 4 x 8 Matrix
 - DM307 Multifunction Module
 - DM308 20-CH Actuator/General Purpose
 - DM309 High Voltage and Current Multiplexer
- Measures up to 600 VDC / 400 VAC
- Up to 450 channels/s scan rate
- Up to 120 channels per system
- 100 kpts reading non-volatile memory including time stamp
- Measures 14 different input signals:
 - Temperature with thermocouples, RTDs, and thermistors
 - AC/DC voltage and current
 - Resistance with 2-wire and 4-wire
 - Direct strain and bridge strain
 - Frequency and period
 - Capacitance
- Large 4.3" TFT color display
- Digital I/O interface offers external triggering and alarm outputs
- Log or copy data directly to a USB drive
- Includes LAN, USB (USBTMC and USBVCP), and micro GPIB (-GPIB model only) interfaces
- Supports remote operation through free PC software or the built-in web interface

Populate the base unit with any combination of three modules.

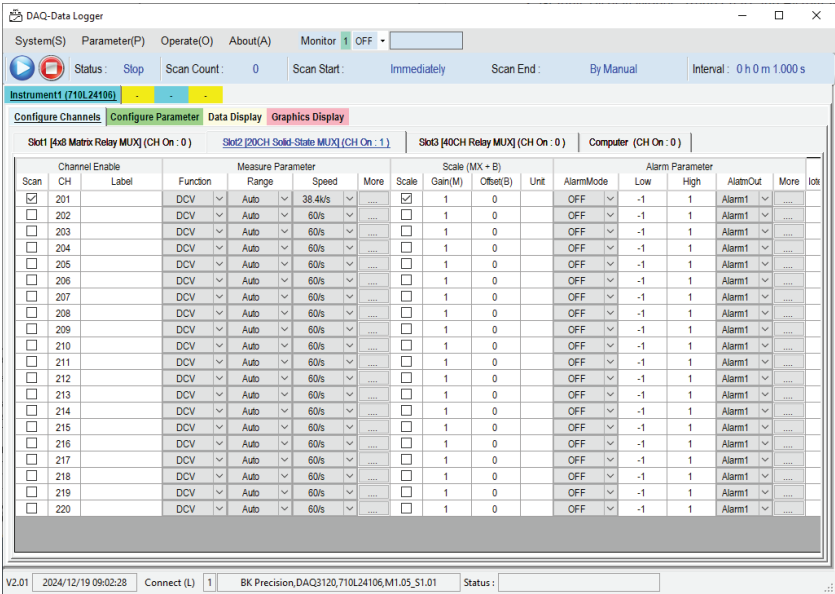
Model	DM300	DM301	DM303	DM304	DM307	DM308	DM309
Channels	20	20 + 2	40	32	16-bit digital I/O	20	8 + 2
Scan Rate	450 ch/s	80 ch/s	80 ch/s	-	-	-	60 ch/s
Voltage	120 V	300 V	300 V	300 V	42 V	300 V	600 VDC/400 Vrms
Current	-	1 A	-	-	24 mA	-	2 A
DMM	√	√	√	-	-	-	√

Operating software

DAQ-Data Logger PC Software

The DAQ-Data Logger software provides real-time measurement and display capabilities, allowing users to monitor critical parameters as they happen. Connect up to four units simultaneously and manage multiple data streams effortlessly. Visualize the data with flexible display options including data tables, trend charts, and histograms.

The tabular formatting of the channels and parameters maximize screen space, making it easy to manage systems with large number of inputs. Save and load measurement parameters for quick setup and consistent analysis. This software offers a comprehensive solution for efficient and intuitive data acquisition and analysis.



Virtual Front Panel control via Web Interface

This instrument features a built-in web interface that enables users to operate the DAQ3120 remotely from any device on the network. The web interface provides a virtual front panel that mirrors the DAQ3120 and offers all the same functions like configuring channels, executing scans, and monitoring measurements.

Because the interface is built-in, there's no software to install. To connect, simply type the instrument's IP address or hostname into a Java-enabled web browser. Enhance security and control access by enabling password protection. This convenient web interface allows users to easily configure, control, and monitor the instrument remotely.



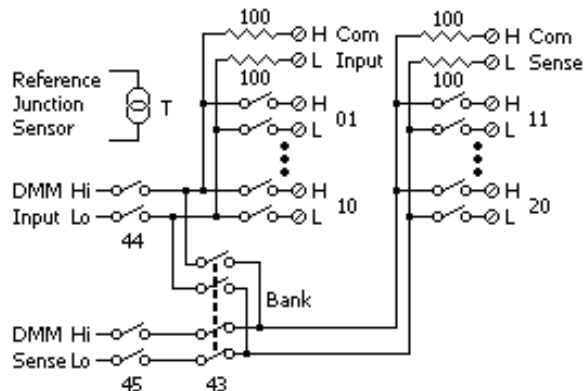
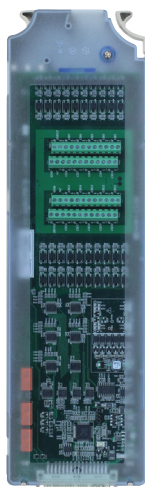
Measurement Modules

DM300

The DM300 20-CH Solid-State Multiplexer is a general-purpose module with solid state relays for achieving scanning speeds up to 450 channels per second and a maximum input of 120 V. This module provides 20 channels arranged in two 10-CH banks with 2-wire inputs. All channels switch both high and low lines, providing fully isolated inputs for the internal DMM or external instruments. During 4-wire measurements, channels from bank 1 are paired with channels from bank 2 to provide source and sense connections.

Features and benefits

- Scanning speed up to 450 channels per second
- 2-wire and 4-wire measurements
- Built-in cold junction reference for thermocouples
- 120 V maximum input voltage and fully isolated inputs

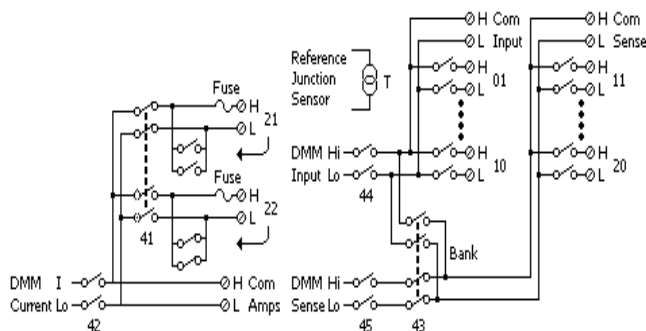
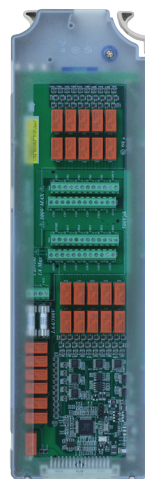


DM301

The DM301 20-CH Multiplexer with 2 current channels is the most versatile module with armature relays for achieving a maximum input of 300 V and a scanning speed of 80 channels per second. The two additional current channels measure up to 1 A each without the need for external shunts. Similar to the DM300, the 20 inputs are split into two banks with a switch to make 4-wire measurements. Both 2-wire and 4-wire channels can be mixed on the same module.

Features and benefits

- Scanning speed up to 80 channels per second
- 2-wire and 4-wire measurements
- Built-in cold junction reference for thermocouples
- 300 V maximum input
- 2 extra channels for direct current measurements up to 1 A each

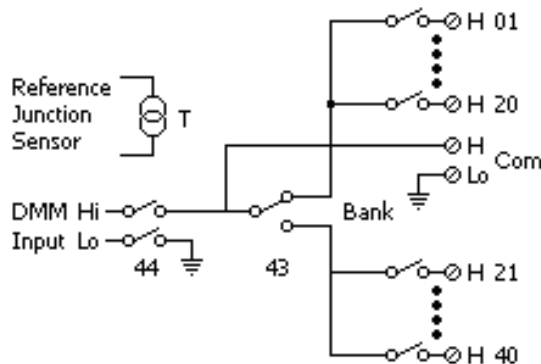
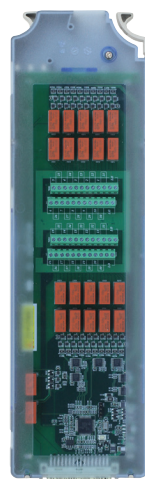


DM303

The DM303 40-CH Single-Ended Multiplexer is the highest density module with 40 single-wire inputs using armature relays for achieving scanning speeds up to 80 channels per second. All inputs connect to a common signal ground, making it suitable for applications in battery testing, component characterization, and benchtop testing. The common signal ground line is isolated from ground and can be floated up to 300 V. This module also supports 2-wire internal measurements except current.

Features and benefits

- Scanning speed up to 80 channels per second
- Single-wire switching for common low applications
- Supports 2-wire measurement (except current)
- Channel-to-ground isolation



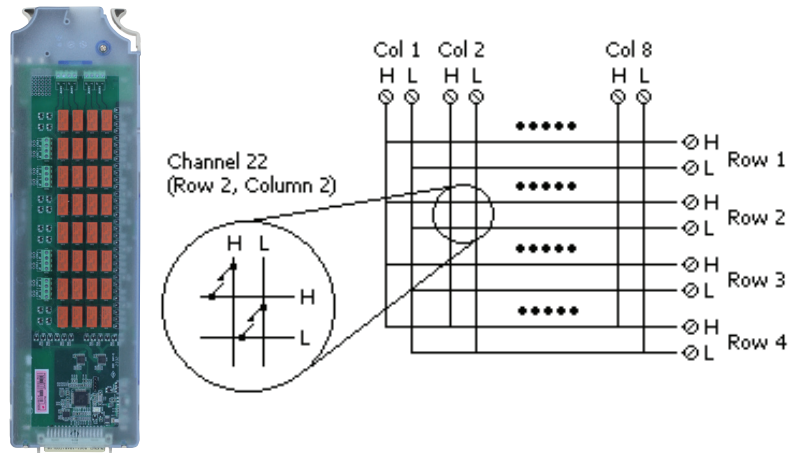
Measurement Modules (continue)

DM304

The DM304 4 x 8 Matrix is a dedicated switch module providing up to 32 cross-points in a 4 row by 8 column matrix. This module allows different test equipment to connect to multiple points on the device under test (DUT) at the same time. Additional DM304 modules can be wired together to expand the number of rows or columns, reaching up to 96 cross-points.

Features and benefits

- 32 2-wire cross-points
- 3 ms switching speed
- 300 V and 1 A maximum
- Expandable to 96 cross-points

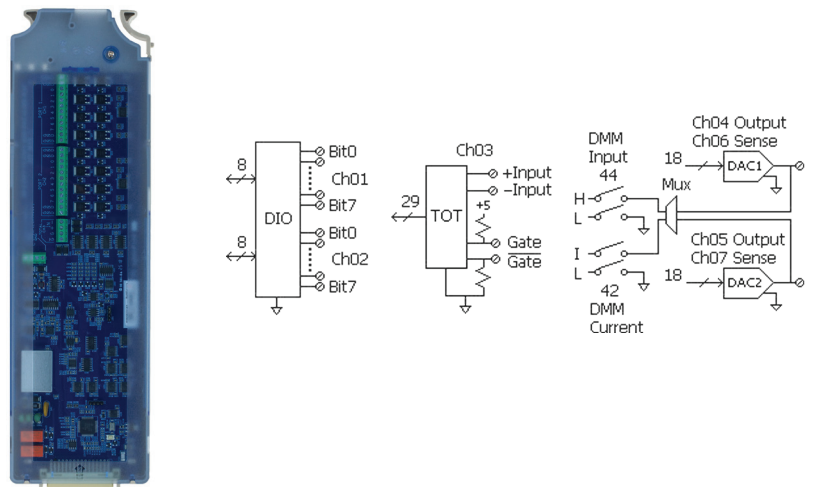


DM307

The DM307 Multi-function module expands the system's capabilities beyond simple measurement by providing a mix of digital and analog control functions. It features two 8-bit digital I/O ports to control external devices and read digital signals, a totalizer to count pulses from devices at a rate up to 100 kHz, and two analog output (DAC) channels to generate a programmable voltage or current output. The module continuously monitors alarm limits for both the digital and totalizer inputs, logging alarm conditions even between scans. Sense channels are also available to monitor current or voltage when sourcing a voltage or current respectively.

Features and benefits

- 16 bits of digital input and output
- 100 kHz totalizer input
- ± 12 V analog outputs or ± 24 mA outputs

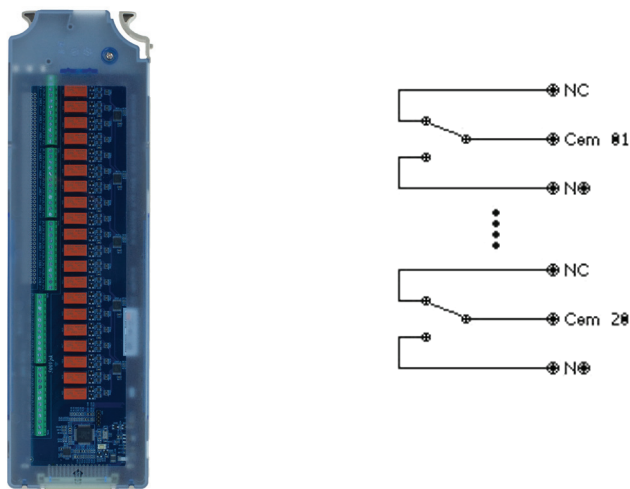


DM308

The DM308 20-CH Actuator/General Purpose Switch is a dedicated switch module with 20 independent single pole double throw (SPDT) relays. Each relay has Normally-Open, Normally-Closed, and Common contacts, providing users flexibility on how they connect and control DUTs. Common applications include power cycling DUTs, controlling indicator and status lights, or activating external power relays and solenoid valves. This module can handle up to 300 V and 1 A with a maximum switching power of 50 W.

Features and benefits

- 20 SPDT (Form C) latching relays
- Flexible contact connection with NO and NC contacts
- 300 V and 1 A contacts for actuation and control



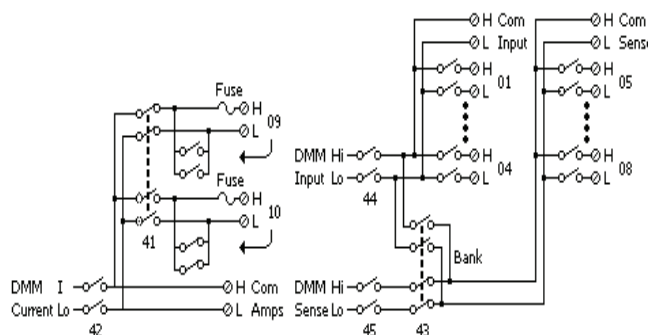
Measurement Modules (continue)

DM309

The DM309 8-CH High Voltage Multiplexer with 2 Current Channels increases the maximum measurable voltage from 300 to 600 VDC or 400 Vrms. The 2 additional current channels handle DC and AC measurements up to 2 A without the need of external shunts. For added protection, each current channel connects to a fuse conveniently located within the module. This module supports thermocouple measurements as well, provided there is an external cold junction reference available.

Features and benefits

- Scanning speed up to 60 channels per second
- 600 VDC or 400 Vrms maximum input
- 2-wire and 4-wire measurements
- 2 extra channels for current measurements up to 2 A each



DAQ3120 Modules Overview

Module	Input Type	No. of Channels	Speed (CH/s)	Max. Voltage	Max. Current	Bandwidth	Thermal Offset	Internal DMM
DM300 Solid-State Multiplexer	2-wire solid-state (4-wire selectable)	20	450	120 V	-	10 MHz	< 4 μ V	✓
DM301 Multiplexer with Current CH	2-wire armature (4-wire selectable)	20 + 2 ⁽¹⁾	80	300 V	1 A	10 MHz	< 4 μ V	✓
DM303 Single-Ended Multiplexer	1-wire armature (common low)	40	80	300 V	-	10 MHz	< 1 μ V	✓
DM304 4 x 8 Matrix	2-wire armature	32	-	300 V	-	10 MHz	< 1 μ V	-
DM307 Multifunction Module	16-bit Digital I/O	16 ⁽²⁾	-	42 V	-	-	-	-
	100 kHz Totalizer input	1	-	42 V	-	10 MHz		
	18-bit DAC output	2	-	± 12 V	± 24 mA	-		
DM308 Actuator/General Purpose Switch	Single Pole Double Throw (Form C relay)	20	-	300 V	-	-	< 4 μ V	-
DM309 High Voltage and Current	2-wire armature (4-wire selectable)	8 + 2 ⁽¹⁾	60	600 V DC 400 V AC	2 A	10 MHz	< 4 μ V	✓

Supported DMM Functions

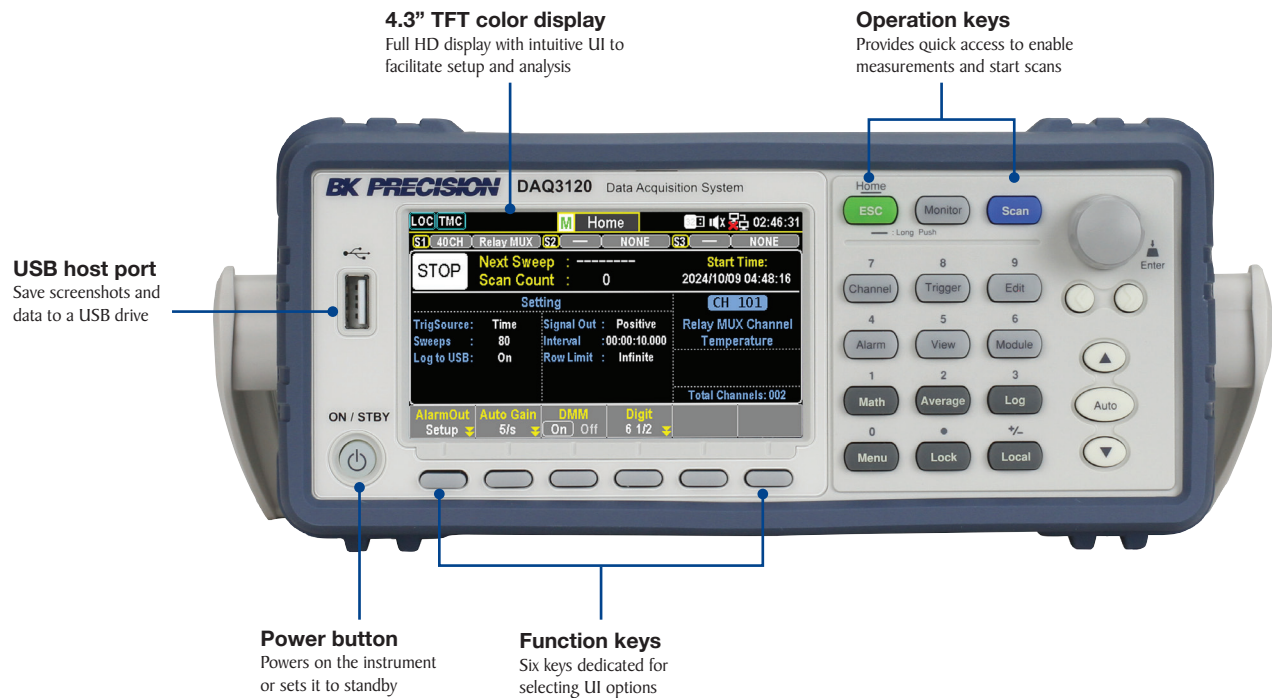
Modules	AC/DC Voltage	AC/DC Current	Frequency & Period	2-Wire Resistance	4-wire Resistance	Thermocouple	2-Wire RTD	4-Wire RTD	Thermistor	Capacitance
DM300 Solid-State Multiplexer	✓	-	✓	✓	✓	✓	-	-	-	-
DM301 Multiplexer with Current CH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DM303 Single-Ended Multiplexer	✓	-	✓	✓	-	-	✓	-	✓	✓
DM309 High Voltage and Current	✓	✓	✓	✓	✓	✓ ⁽³⁾	✓	✓	✓	✓

(1) The additional two channels are dedicated current inputs

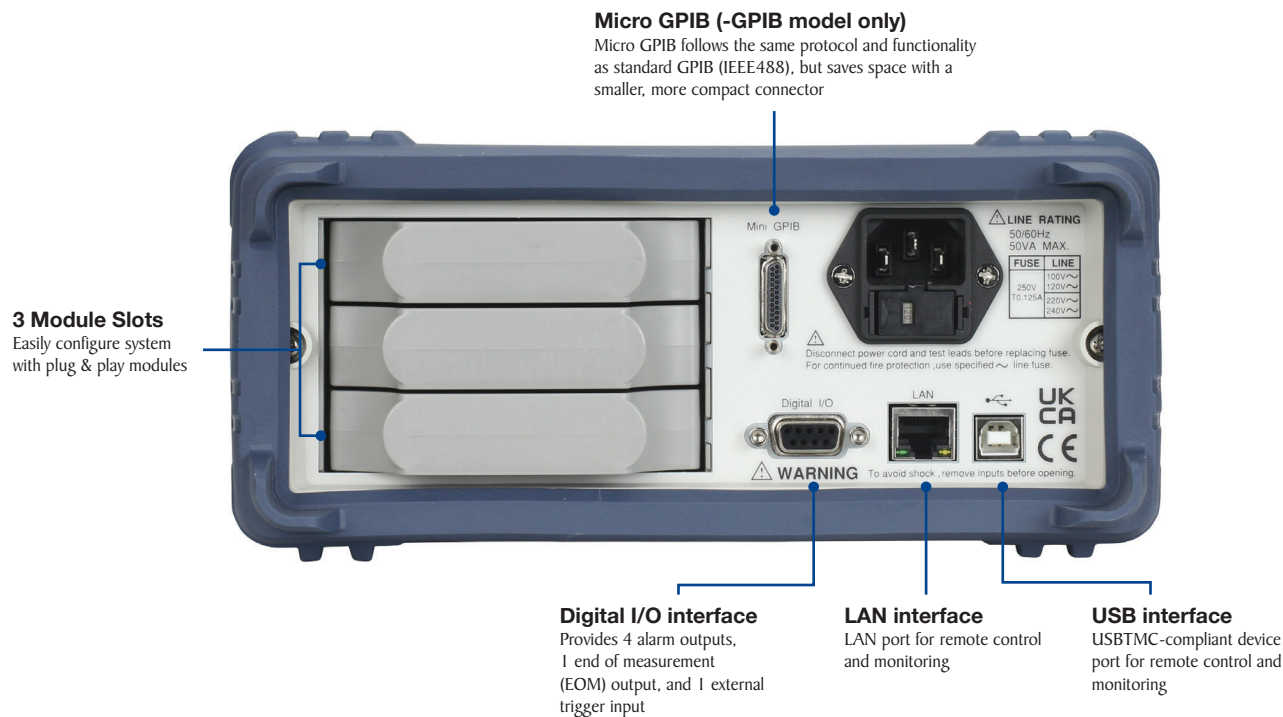
(2) Channels are split into two 8-bit digital input/output registers

(3) Requires external cold junction and manual reference setting

Front panel



Rear panel



Specifications

Note: All specifications apply to the unit after a temperature stabilization time of 1 hour over an ambient temperature range of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.
Increment of one coefficient per one degree Celsius when the range is beyond $\text{TCAL} \pm 5\text{ }^{\circ}\text{C}$. Accuracy Specifications: $\pm$ (% of reading + % of range)

DC Characteristics ⁽¹⁾						
DC Voltage						
Input Protection	600 V on all ranges					
Input Bias	< 30 pA (Typical, 25 °C)					
Measure Method	Sigma-delta A/D Converter					
Range ⁽²⁾	Input Resistance	24 Hour TCAL ± 1 °C	90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C	
100.0000 mV	10 MΩ or Auto (> 10 GΩ)	0.0030 + 0.0050	0.0040 + 0.0060	0.0050 + 0.0060	0.0005 + 0.0005	
1.000000 V		0.0020 + 0.0006	0.0035 + 0.0007	0.0048 + 0.0007	0.0005 + 0.0001	
10.00000 V		0.0015 + 0.0004	0.0020 + 0.0005	0.0035 + 0.0005	0.0005 + 0.0001	
100.0000 V	10 MΩ ± 1%	0.0020 + 0.0006	0.0035 + 0.0006	0.0050 + 0.0006	0.0005 + 0.0001	
600.000 V		0.0025 + 0.0020	0.0040 + 0.0020	0.0050 + 0.0020	0.0005 + 0.0001	
Resistance ⁽³⁾						
Input Protection	600 V on all ranges					
Max lead Resistance	10% of range per lead for 100 Ω, 1 kΩ ranges. 1 k Ω per lead on all other ranges					
Measure Method	Selectable 4-wire or 2-wire					
Range ⁽²⁾	Test Current	24 Hour TCAL ± 1 °C	90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C	
100.0000 Ω	1 mA	0.003 + 0.0030	0.008 + 0.004	0.010 + 0.004	0.0008 + 0.0005	
1.000000 kΩ	1 mA	0.002 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0008 + 0.0001	
10.00000 kΩ	100 μA	0.002 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0008 + 0.0001	
100.0000 kΩ	10 μA	0.002 + 0.0005	0.008 + 0.001	0.010 + 0.001	0.0008 + 0.0001	
1.000000 MΩ	5 μA	0.002 + 0.0010	0.008 + 0.001	0.010 + 0.001	0.0010 + 0.0002	
10.00000 MΩ	500 nA	0.015 + 0.0010	0.020 + 0.001	0.040 + 0.001	0.0030 + 0.0004	
100.0000 MΩ	500 nA 10 MΩ	0.300 + 0.0100	0.800 + 0.010	0.800 + 0.001	0.1500 + 0.0004	
1.000000 GΩ	500 nA 10 MΩ	2.50 + 0.0500	3.50 + 0.0500	3.50 + 0.0500	1.0000 + 0.0040	
DC Current						
Input Protection	Internal, 250 V fuse for 2 A					
Range ⁽²⁾	Burden Voltage	Shunt	24 Hour TCAL ± 1 °C	90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C
Characteristics – typical: DC current						
1.000000 μA	< 0.015 V	10 kΩ	0.025 + 0.050	0.050 + 0.050	0.050 + 0.050	0.002 + 0.003
10.00000 μA	< 0.15 V	10 kΩ	0.020 + 0.010	0.040 + 0.025	0.050 + 0.025	0.002 + 0.003
100.0000 μA	< 0.020 V	100 Ω	0.010 + 0.020	0.040 + 0.025	0.050 + 0.025	0.002 + 0.003
Specification: DC current						
1.000000 mA	< 0.20 V	100 Ω	0.007 + 0.006	0.030 + 0.006	0.050 + 0.006	0.002 + 0.001
10.00000 mA	< 0.15 V	10 Ω	0.007 + 0.020	0.030 + 0.020	0.050 + 0.020	0.002 + 0.001
100.0000 mA	< 0.7 V	1 Ω	0.010 + 0.004	0.030 + 0.005	0.050 + 0.005	0.002 + 0.002
2.000000 A	< 0.8 V	0.1 Ω	0.180 + 0.020	0.200 + 0.020	0.200 + 0.020	0.005 + 0.001
Diode Test ⁽⁴⁾						
Range ⁽²⁾		24 Hour TCAL ± 1 °C		90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C
5 V		0.002 + 0.030		0.008 + 0.030	0.01 + 0.03	0.001 + 0.002
Reading Rates						
Measurement		Speed (readings per second)				Digits
DCV DCI 2W/4W Resistance		5 readings/s, 20 readings/s, 60 readings/s, 100 readings/s				6 ½
		400 readings/s, 1200 readings/s, 2400 readings/s				5 ½
		4800 readings/s, 7500 readings/s, 14400 readings/s, 19200 readings/s, 38400 readings/s				4 ½
Diode		400 readings/s				6 ½

(1) DC Specification: In addition to the warm-up time, measurement settings must be set at 5 /s speed and A-Zero

(2) The range of measurement exceeds the set range by 20% except in 600 V DC, 2 A DC, and diode

(3) These specifications apply to 4-wire Ω function or 2-wire Ω using math null for offset. Without math null, add an additional 2 Ω error. 100 M Ω and 1 G Ω ranges are only available in 2-wire

(4) This applies to the voltage measured from the input terminal. 1 mA test current is the typical value. A change of current source leads to variation in the buck of diode junction

Specifications (cont.)

AC Characteristics ⁽⁵⁾								
True RMS AC Voltage ^{(6) (7) (8)}								
Measurement Method		AC-coupled True RMS – measures the AC component of input with up to 400 Vdc of bias on any range						
Crest factor		Maximum 5:1 at full scale						
	24 Hour TCAL ± 1 °C		90 Day TCAL ± 5 °C		1 Year TCAL ± 5 °C		Temperature Coefficient/°C	
Range ⁽⁶⁾ Frequency	100 mV	1 V to 400 V	100 mV	1 V to 400 V	100 mV	1 V to 400 V	100 mV	1 V to 400 V
3 Hz to 5 Hz	1.00 + 0.03	1.00 + 0.02	1.00 + 0.04	1.00 + 0.03	1.00 + 0.04	1.00 + 0.03	0.100 + 0.004	0.100 + 0.004
5 Hz to 10 Hz	0.35 + 0.03	0.35 + 0.02	0.35 + 0.04	0.35 + 0.03	0.35 + 0.04	0.35 + 0.03	0.035 + 0.004	0.035 + 0.004
10 Hz to 20 kHz	0.04 + 0.03	0.04 + 0.02	0.05 + 0.04	0.05 + 0.03	0.06 + 0.04	0.06 + 0.03	0.005 + 0.003	0.005 + 0.003
20 kHz to 50 kHz	0.10 + 0.05	0.10 + 0.04	0.11 + 0.05	0.11 + 0.05	0.12 + 0.05	0.12 + 0.05	0.011 + 0.005	0.011 + 0.005
50 kHz to 100 kHz	0.55 + 0.08	0.55 + 0.08	0.60 + 0.08	0.60 + 0.08	0.60 + 0.08	0.60 + 0.08	0.060 + 0.008	0.060 + 0.008
100 kHz to 300 kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.200 + 0.020	0.200 + 0.020
True RMS AC Current ^{(6) (8) (9)}								
Input Protection		Internal, 250 V fuse for 2 A						
Range ⁽⁶⁾	Burden Voltage	Shunt	Frequency	24 Hour TCAL ± 1 °C	90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C	
100 μA	< 0.020 V	100 Ω	3 Hz to 5 Hz	1.00 + 0.04	1.00 + 0.06	1.00 + 0.06	0.100 + 0.006	
			5 Hz to 10 Hz	0.35 + 0.04	0.35 + 0.06	0.35 + 0.06	0.035 + 0.006	
			10 Hz to 5 kHz	0.10 + 0.04	0.10 + 0.06	0.10 + 0.06	0.015 + 0.006	
			5 kHz to 10 kHz	0.18 + 0.04	0.18 + 0.10	0.18 + 0.10	0.035 + 0.006	
1 mA	< 0.20 V	100 Ω	3 Hz to 5 Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006	
			5 Hz to 10 Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006	
			10 Hz to 5 kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006	
			5 kHz to 10 kHz	0.15 + 0.04	0.15 + 0.04	0.15 + 0.04	0.030 + 0.006	
10 mA	< 0.15 V	10 Ω	3 Hz to 5 Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006	
			5 Hz to 10 Hz	0.35 + 0.04	0.35 + 0.04	0.35 + 0.04	0.035 + 0.006	
			10 Hz to 5 kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006	
			5 kHz to 10 kHz	0.18 + 0.04	0.18 + 0.04	0.18 + 0.04	0.030 + 0.006	
100 mA	< 0.7 V	1 Ω	3 Hz to 5 Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006	
			5 Hz to 10 Hz	0.30 + 0.04	0.30 + 0.04	0.30 + 0.04	0.035 + 0.006	
			10 Hz to 5 kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006	
			5 kHz to 10 kHz	0.15 + 0.04	0.15 + 0.04	0.15 + 0.04	0.030 + 0.006	
2 A	< 0.8 V	0.1 Ω	3 Hz to 5 Hz	1.00 + 0.04	1.00 + 0.04	1.00 + 0.04	0.100 + 0.006	
			5 Hz to 10 Hz	0.35 + 0.04	0.35 + 0.04	0.35 + 0.04	0.035 + 0.006	
			10 Hz to 5 kHz	0.23 + 0.04	0.23 + 0.04	0.23 + 0.04	0.015 + 0.006	
			5 kHz to 10 kHz	0.23 + 0.04	0.23 + 0.04	0.23 + 0.04	0.030 + 0.006	
AC Bandwidth								
Input Impedance		1 MΩ ± 2%, in parallel with 100 pF						
Input Protection		400 Vrms on all ranges						
Speed		Bandwidth (ACV)			Bandwidth (ACI)		Digits	
1/s (> 3 Hz)		3 Hz to 300 kHz			3 Hz to 10 kHz		6 ½	
5/s (> 20 Hz)		20 Hz to 300 kHz			20 Hz to 10 kHz		5 ½	
20/s (> 200 Hz)		200 Hz to 300 kHz			200 Hz to 10 kHz		4 ½	

(5) AC Specification: Specified after 60 minutes of warm-up time on a sine wave

(6) The range of measurements exceeds the set range by 20% except in 400 V AC and 2 A AC

(7) Specifications are for sine wave input > 5% of range. For 1% to 5% of range and < 50 kHz, add 0.1% of range additional error. For 50 kHz to 100 kHz, add 0.13% of range. The measurement range of 400 VAC is limited within the range of 7.5 x 10⁻⁷ Volt-Hz

(8) Three speed settings provided for low-frequency performance: 1/s (3 Hz), 5/s (20 Hz), 20/s (200 Hz). No errors for frequencies greater than the filter settings

(9) Specifications are for sine wave input > 5% of range, and is beyond 10 µA AC. For inputs from 1% to 5% of range, add 0.1% of range additional error

Specifications (cont.)

Crest Factor Errors (non-sine wave)		Low Frequency Errors (% of reading)			
Crest Factor	Error (% of reading)	Frequency	1/s (> 3 Hz)	5/s (> 20 Hz)	20/s (> 200 Hz)
1 to 2	0.05%	10 Hz to 20 Hz	0	0.74	-
2 to 3	0.15%	20 Hz to 40 Hz	0	0.22	-
3 to 4	0.30%	40 Hz to 100 Hz	0	0.06	0.73
4 to 5	0.40%	100 Hz to 200 Hz	0	0.01	0.22
		200 Hz to 1 kHz	0	0	0.18
		> 1 kHz	0	0	0

Frequency and Period Characteristics					
Frequency / Period ⁽¹⁰⁾ ⁽¹¹⁾					
Range	Frequency	24 Hour TCAL ± 1 °C	90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C
100 mV to 400 V ⁽¹²⁾	3 Hz to 5 Hz	0.100	0.100	0.100	0.100
	5 Hz to 10 Hz	0.050	0.050	0.050	0.035
	10 Hz to 40 Hz	0.030	0.030	0.030	0.015
	40 Hz to 1 MHz ⁽¹³⁾	0.006	0.006	0.006	0.015
Function		Gate Time		Digits	
Frequency, Period		1 s, 100 ms		6 ½	
		10 ms		5 ½	
		1 ms		4 ½	

Temperature Characteristics ⁽¹⁴⁾			
RTD (Accuracy based on Pt100)			
Range	Resolution	1 Year (23°C ± 5°C)	Temperature Coefficient 0° to 18°C and 28° to 55°C
-200 °C to -100 °C	0.001 °C	0.09 °C	0.004 °C / °C
-100 °C to -20 °C	0.001 °C	0.08 °C	0.005 °C / °C
-20 °C to 20 °C	0.001 °C	0.06 °C	0.005 °C / °C
20 °C to 100 °C	0.001 °C	0.08 °C	0.005 °C / °C
100 °C to 300 °C	0.001 °C	0.12 °C	0.007 °C / °C
300 °C to 600 °C	0.001 °C	0.22 °C	0.009 °C / °C
Thermocouples (Accuracy based on ITS-90)			
Range	Range	Frequency	90 Day/1 Year (23°C ± 5°C)
E	-200 °C to 1000 °C	0.002 °C	0.2 °C
J	-210 °C to 1200 °C	0.002 °C	0.2 °C
T	-200 °C to 400 °C	0.002 °C	0.3 °C
K	-200 °C to 1372 °C	0.002 °C	0.3 °C
N	-200 °C to 1300 °C	0.003 °C	0.4 °C
R	-50 °C to 1768 °C	0.01 °C	1 °C
S	-50 °C to 1768 °C	0.01 °C	1 °C
B	350 °C to 1820 °C	0.01 °C	1 °C
Thermistor (2.2 kΩ, 5 kΩ, 10 kΩ or User Type)			
Range	Resolution	90 Day/1 Year (23°C ± 5°C)	Temperature Coefficient 0° to 18°C and 28° to 55°C
-80 ° to 150 °C	0.001 °C	0.1 °C	0.003 °C / °C

(10) This specification will be available after 60 minutes of warm-up and sine wave input, unless stated otherwise. This specification applies to 1 s gate time.

(11) This specification is available when both sine wave and square wave input ≥ 100 mV. For the input of 10 mV to 100 mV, the % of reading error needs to be multiplied by 10 times.

(12) The amplitude range is from 10% to 120% and is lower than 400 VAC.

(13) The input ≥ 60 mV, for 300 k ~ 1 MHz, within 100 mV range.

(14) The actual measurement range and test lead error will be constrained by the adopted test lead. The test lead accuracy adder covers all errors of measurements and ITS-90 temperature change.

Specifications (cont.)

Capacitance ⁽¹⁵⁾				
Range	24 Hour TCAL ± 1 °C	90 Day TCAL ± 5 °C	1 Year TCAL ± 5 °C	Temperature Coefficient/°C
1.000 nF	2.00 + 2.00	2.00 + 2.00	2.00 + 2.00	0.05 + 0.01
10.00 nF	2.00 + 1.00	2.00 + 1.00	2.00 + 1.00	0.05 + 0.01
100.0 nF	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
1.000 µF	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
10.00 µF	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01
100.0 µF	2.00 + 0.40	2.00 + 0.40	2.00 + 0.40	0.05 + 0.01

(15) Specifications are for film Capacitance inputs that are greater than 10% range.

General	
Display Resolution	4.3" color WQVGA (480x272) with LED backlight
Slot	3 module slots
Internal Memory	100 kSa (nonvolatile)
Interface	USB host port, USBTMC-compliant device port, LAN, 9-pin D-sub Digital I/O, and optional micro GPIB
AC Line Input	100 VAC to 240 VAC ± 10%, 50/60 Hz Max power consumption 50 VA
Environment	80% R.H. at 40 °C non-condensing Operating altitude up to 2,000 m
Weight	9.92 lbs (4.5 kg)
Warranty	3 Years
Safety and EMC	Refer to https://www.bkprecision.com/support/downloads/ce-declarations for the latest revision of the declaration of conformity
Standard Accessories	Power cord, certificate of calibration, USB cable, and screwdriver
Optional Accessories	Rackmount kit for DAQ3120 (RKDAQ)
Temperature	
Operation	32 °F to 141 °F (0 °C to 55 °C)
Storage	-40 °F to 158 °F (-40 °C to 70 °C)
Dimension (W x H x D)	
Rack (without rubber boot)	8.7" x 3.5" x 13.7" (220 x 88 x 348.6 mm)
Bench (with rubber boot)	10.5" x 4.2" x 14.1" (266.9 x 107 x 357.8 mm)

Ordering Information

① Start with the DAQ3120 or DAQ3120-GPIB base unit to control the modules' relay system.



DAQ3120



DAQ3120-GPIB



② Populate the base unit with any combination of up to 3 modules.
*These modules do not connect to the built-in DMM

Model	Description
DM300	20-CH Solid-state Multiplexer
DM301	20-CH Multiplexer with 2 Current CH
DM303	40-CH Single-Ended Multiplexer
DM304*	4 x 8 Matrix
DM307*	Multifunction Module
DM308*	20-CH Actuator/General Purpose
DM309	High Voltage and Current Multiplexer

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● B&K Precision group member ● Independent service center ● Service center location

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Certification body NSF-ISR

Certificate number 6Z241-IS8



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