Test Equipment Solutions Datasheet

Test Equipment Solutions Ltd specialise in the second user sale, rental and distribution of quality test & measurement (T&M) equipment. We stock all major equipment types such as spectrum analyzers, signal generators, oscilloscopes, power meters, logic analysers etc from all the major suppliers such as Agilent, Tektronix, Anritsu and Rohde & Schwarz.

We are focused at the professional end of the marketplace, primarily working with customers for whom high performance, quality and service are key, whilst realising the cost savings that second user equipment offers. As such, we fully test & refurbish equipment in our in-house, traceable Lab. Items are supplied with manuals, accessories and typically a full no-quibble 2 year warranty. Our staff have extensive backgrounds in T&M, totalling over 150 years of combined experience, which enables us to deliver industry-leading service and support. We endeavour to be customer focused in every way right down to the detail, such as offering free delivery on sales, covering the cost of warranty returns BOTH ways (plus supplying a loan unit, if available) and supplying a free business tool with every order.

As well as the headline benefit of cost saving, second user offers shorter lead times, higher reliability and multivendor solutions. Rental, of course, is ideal for shorter term needs and offers fast delivery, flexibility, try-before-you-buy, zero capital expenditure, lower risk and off balance sheet accounting. Both second user and rental improve the key business measure of Return On Capital Employed.

We are based near Heathrow Airport in the UK from where we supply test equipment worldwide. Our facility incorporates Sales, Support, Admin, Logistics and our own in-house Lab.

All products supplied by Test Equipment Solutions include:

- No-quibble parts & labour warranty (we provide transport for UK mainland addresses).
- Free loan equipment during warranty repair, if available.
- Full electrical, mechanical and safety refurbishment in our in-house Lab.
- Certificate of Conformance (calibration available on request).
- Manuals and accessories required for normal operation.
- Free insured delivery to your UK mainland address (sales).
- Support from our team of seasoned Test & Measurement engineers.
- ISO9001 quality assurance.

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EMI Test Receiver ESCS30

9 kHz to 2.75 GHz

Compact EMI test receiver conforming to all standards

Foto 42987-1

Brief description

EMI Test Receiver ESCS30 is used for measuring electromagnetic emissions in line with all commercial standards and combines three types of instruments in one:

- a portable, manually tunable test receiver with built-in battery,
- an automatic test receiver which as a stand-alone unit performs measurements and reports the results,
- a system-compatible test receiver with IEC/IEEE-bus interface and EMI software packages running under Windows™.

The number of measurements required to ensure electromagnetic compatibility is continuously increasing and is governed by laws in many countries. Thanks to the built-in intelligence of EMI Test Receiver ESCS30, the time required for measurements is reduced considerably. This specialist for EMI measurements supplies the results fast and highly accurately in line with the standards from CISPR, CENELEC, ETSI, FCC, VCCI and VDE.

Complete tests at a keystroke

Using the SPECTRUM OVERVIEW function and the peak detector, the critical ranges of the spectrum can be determined. With the aid of data reduction routines the final measurement is then made accurately at the critical frequencies using quasi-peak and average detectors.

This concept saves valuable measurement time which would otherwise be wasted for ranges with low emission levels.

At a single keystroke the ESCS30 measures as a stand-alone unit

- RFI voltage,
- RFI power,
- RFI field strength.

Main features

- Correct weighting to CISPR 16-1 and VDE 0876
- Integrated preselector
- Level measurement range –38 to +137 dBµV
- For all commercial EMI standards such as CISPR, EN, ETS, FCC, ANSI C63.4, VCC, VCCI and VDE
- Automatic overload detection
- User port for control of LISNs
- Ease of use through internal macro functions
- Internal and external battery operation

High-grade RF circuit design

- High measurement accuracy
- Fast synthesizer with high frequency resolution
- Wide dynamic range
- CISPR filters with constant group delay
- Parallel detectors for peak, quasi-peak and average indication; all detectors can be switched on simultaneously
- Tracking generator for attenuation and gain measurements; eg for checking test cables (9 kHz to 2750 MHz; option ESCS-B5)

Powerful firmware functions

- Macros for automatic and interactive test routines
- Frequency scan over up to 400 user-selectable channels
- Automatic level calibration
- Automatic consideration of frequency-dependent transducer factors
- Nonvolatile storage of all important parameters
- Frequency scan modes
  - Spectrum overview: with fixed attenuation and step size with maximum speed
  - Scan: with automatic attenuation setting and selectable step size
  - Channel: on up to 400 preset frequencies

Optimum result display for every application

- 16.5 cm (6.5“) TFT colour LCD for display of interference spectra including limit lines
- Clear digital level indication with 0.1 dB resolution on separate level display
- Quasi-analog display of results in form of bargraphs
- Time domain analysis (oscilloscope mode)
  - Measurement of pulse width and amplitude with a display range from 5 ms to 1 h, zooming up to maximum resolution
  - With a resolution of 100 µs, the time domain analysis satisfies the requirements of CISPR16-1 regarding the accuracy of pulse duration measurements
  - Triggering: internally by level setting using the display line or externally with TTL levels
- IF spectrum analysis with 10 MHz display range for visual check of the spectrum (option ESCS-B4)

Full storage and logging of results

- Built-in 3½" disk drive
- Storage of test results and test reports as HP-GL file
- Output of results as lists and diagrams including limit lines and user-definable labelling

Specifications in brief

Frequency range	9 kHz to 2750 MHz
Frequency setting	in 10 Hz, 100 Hz, 100 kHz steps; or user-selectable
Resolution	up to 1000 MHz: 10 Hz from 1000 MHz: 100 Hz
Frequency drift	<1 x 10^{-6} (after 30 min warmup) <5 x 10^{-7} (with option ESCS-B6)
RF input	50 Ω, N female
VSWR, f <1000 MHz	<1.2 with >10 dB RF attenuation
f >1000 MHz	typ. 1.5 with >10 dB RF attenuation
RF attenuator	0 to 60 dB, 5 dB steps
Preamplifier	gain 10 dB nominal
Maximum input level (RF attenuation >10 dB)	
DC voltage	7 V
Sinewave AC voltage	137 dBµV (1 W)
Max. pulse voltage (10 µs)	150 V
Max. pulse energy (20 µs)	10 mWs
Preselector	
9 kHz to 1000 MHz	2 fixed-tuned filters, 6 tracking filters
1000 to 2750 MHz	2 tracking filters
IF bandwidths	200 Hz/ 9 kHz/ 120 kHz/ 1 MHz

Displayed noise level (average)

Range	Bandwidth	Preamplifier off	Preamplifier on
9 kHz to 30 MHz	200 Hz	<–25 dBµV, typ. –28 dBµV	<–34 dBµV, typ. –38 dBµV
50 to 30 MHz	9 kHz	<–12 dBµV	<–18 dBµV
30 to 1000 MHz	120 kHz	<+1 dBµV, typ. –1 dBµV	<–4 dBµV, typ. –7 dBµV
1000 to 2750 MHz	120 kHz	<+5 dBµV	<0 dBµV

Dynamic range	
Noise figure	typ. 5 dB (<30 MHz, preamplifier on) typ. 9 dB (>30 MHz, preamplifier on)
Intercept point d3	typ. 10 dB (preamplifier off)
Level display	
digital	in dBµV, dBµA, dBm, dBµV/ m, dBµA/ m, dBpW, dBpT
Display	3½-digit LCD, resolution 0.1 dB
analog	on analog meter in operating range of IF detector with digital display of lower range limit
Bargraph display	horizontal bar; resolution 0.1 dB
Operating range	60 dB
Overdrive indication	for RF and IF signal path
Detectors	AV, PK, QP, can be switched on simultaneously
Measuring times	1 ms to 100 s (1/ 2/ 5 steps)
in overview mode	50 µs to 1 s (1/ 2/ 5 steps)
Measurement accuracy	
Average indication for S/ N >16 dB	
9 kHz to 1000 MHz	<1.0 dB (typ. 0.5 dB)
1000 to 2750 MHz	<1.5 dB
Quasi-peak indication	to CISPR 16-1
RF spectrum analysis	
X axis (frequency)	user-selectable, linear or logarithmic
Y axis (level)	10 dB to 200 dB, 10-dB steps
Marker, traces	2 traces, 2 markers with digital display of frequency/ time/ level
Display modes	Clr/ Write, Max Hold, View
Time domain analysis	
Display range (sweep time)	5 ms to 10,000 s
Minimum resolution (X axis)	100 µs
Level display range (Y axis)	10 to 200 dB, autoscale function
IF spectrum analysis (option ESCS-B4)	
Display range	10 kHz to 10 MHz, 1/ 2/ 5 steps
IF input attenuation	0/ 20 dB (selectable)
Resolution	1/ 3/ 10 kHz
Sweep time	50 ms to 10 s, 1/ 2/ 5 steps
Level display range	80 dB
Demodulation modes	AM, FM, A0 (zero beat)
Loudspeaker	built-in; headphones connection
Date, time of day	built-in clock module
General data	
Rated temperature range	0 to +50 °C
Storage temperature range	–20 to +60 °C
Power supply	
AC supply	100/ 120/ 230/ 240 V ±10%, 47 to 420 Hz (60 VA), safety class I to VDE 0411 (IEC348)
Battery (external)	11 to 33 V: 2.5 A/ 24 V, 4.7 A/ 12 V
Battery (internal, options -B1, -B2)	13.2 V, Ni-MH
Operating time with options ESCS-B1 and 3 x ESCS-B2	4 h
Dimensions (W x H x D)	435 mm x 236 mm x 350 mm
Weight	18.4 kg
with ESCS-B1 and 3 x ESCS-B2	22.9 kg

Ordering information

EMI Test Receiver	ESCS30	1102.4500.30
Options		
Battery Controller Ni-MH and battery support (without battery packs)	ESCS-B1	1102.6490.02
Battery Pack Ni-MH (max. 3 packs can be inserted, option ESCS-B1 required)	ESCS-B2	1102.6690.02
IF Spectrum Analysis	ESCS-B4	1102.6890.02
Tracking Generator 9 kHz to 2750 MHz	ESCS-B5	1102.7097.02
OCXO Reference Oscillator	ESCS-B6	1102.9397.02
RMS Detector	ESCS-B9	1102.7897.02