

Current Probe EZ-17

Electromagnetic emission and susceptibility measurements in the range 5 Hz to 100 (200) MHz

The Current Probes EZ-17 are used in particular where other coupling networks, such as line-impedance stabilization networks, are either not available or not suitable for practical reasons. Current probes are also used to measure the electromagnetic susceptibility (EMS) of equipment and systems.

- Model 02 for emission measurements in the range 20 Hz to 100 (200) MHz
- Model 03 for emission and susceptibility measurements in the range 20 Hz to 100 (200) MHz
- Model 04 with balanced connector for emission measurements in the range 5 Hz to 2 MHz
- Wide frequency range
- High sensitivity
- High load capacity for DC and AC currents (300 A)
- Small dimensions in spite of large inner diameter (30 mm)
- Simple clamping thanks to spring-loaded mechanism
- Calibrated to CISPR 16-1/8.93



ROHDE & SCHWARZ

Description

RF currents carried on supply and control lines of equipment and systems can be measured with the aid of current probes clamped on to the conductors. The current probe itself forms a transformer, the current-carrying conductor being its primary winding. A voltage proportional to the primary current is measured at the RF output of the current probe.

Fields of application

Current probes are used in particular where other coupling networks, such as line-impedance stabilization networks, are either not available or not suitable for practical reasons. Current probes are however also used to measure the electromagnetic susceptibility of equipment and systems. With the aid of the current probe, sinewave or pulse-shaped RF current is injected into lines or cable harnesses. The shielding

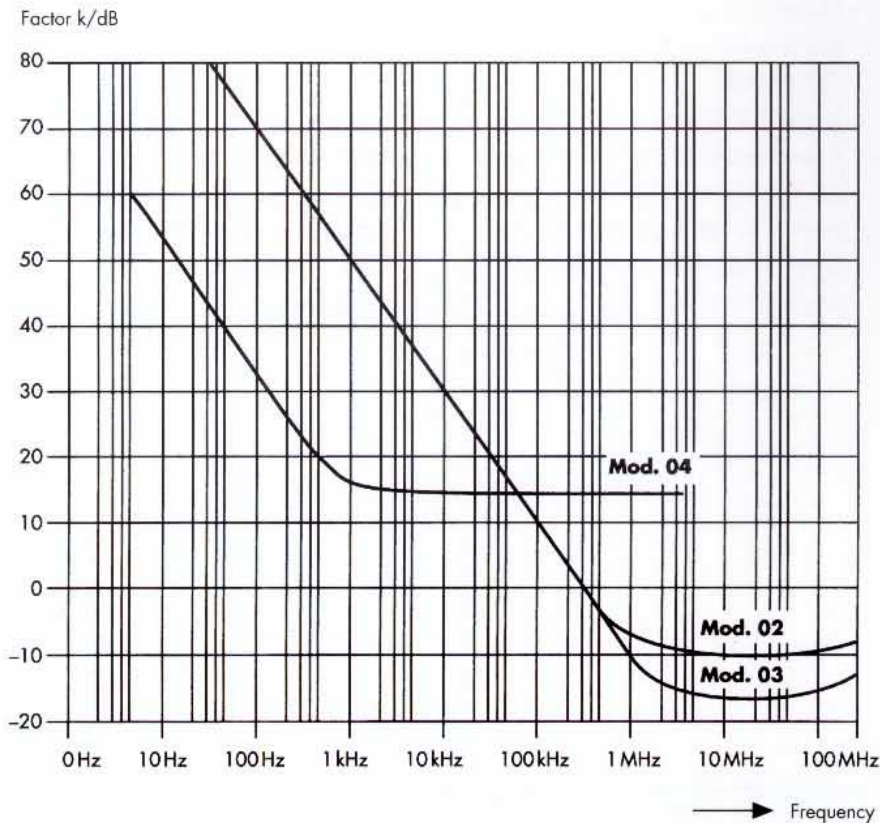
effectiveness of RF cables can also very easily be measured with the aid of current probes. The Current Probes EZ-17 from Rohde & Schwarz comply with the following standards:

- CISPR 16-1 and VDE 0876 Part 1/Part 161 for standards stipulating maximum values for RFI current
- MIL-STD-461A, B and C CE 01 and 03 as well as MIL-STD-461D CE 101
- VG 95373 Part 20 and VG 95377 Part 14
- DEF STAN 59-41 DCE 01 and 02
- GAM EG 13
- RTCA/DO 160 C and ED-14-C

Three models to suit different applications

Models 02 to 04 of the Current Probe EZ-17 are suitable for the following applications in the frequency range 5 Hz to 100 MHz:

- Model 02 with its flat frequency response above 1 MHz and output impedance of $50\ \Omega$ is ideal for emission measurements as well as for measuring the shielding effectiveness
- Due to its small transducer factor in the range from 1 to 200 MHz, model 03 is particularly suitable for emission measurements with stringent requirements placed on sensitivity (eg VG 95 373 limit class 1) and due to its high load capacity also recommended for EMS measurements (bulk current injection tests)
- Model 04 has been especially optimized for high sensitivity at low frequencies and is therefore ideally suited for emission measurements to MIL-STD-461 A, B, C and D CE 01 and CE 101 as well as to comparable other military EMC standards. A balanced connector with shielded, balanced connecting cable prevents coupling of stray currents to the cable shield as often occurs at low frequencies



Thanks to their high magnetic overload capacity, the Current Probes EZ-17 can be used on three-phase power lines with currents up to 300 A without any adverse effect on the result of the RF current measurement. The small dimensions – despite the large inner diameter – and the simple clamping mechanism permit the current probes to be used even where space is at a premium.

Transducer factor k of the various models of Current Probe EZ-17

Specifications

	Model 02	Model 03	Model 04
Frequency range Range with constant transducer factor (-3 dB) Transducer factor reduced by 20 dB/decade in range	20 Hz to 100 (200) ¹⁾ MHz 1 to 100 MHz 20 Hz to 1 MHz	20 Hz to 100 (200) ¹⁾ MHz 2 to 100 MHz 20 Hz to 2 MHz	5 Hz to 2 MHz 1 kHz to 2 MHz 5 Hz to 1 kHz
RF connector Output impedance VSWR Insertion impedance	N female 50 Ω (f > 10 MHz) < 2 (f > 10 MHz) < 0.8 Ω	N female reactive - < 1 Ω	Twinax female reactive - < 0.1 Ω
Transfer impedance Z_T in range with constant transducer factor Transducer factor k ¹⁾ in range with flat frequency response	3.16 Ω -10 dB	7.1 Ω -17 dB	0.17 Ω +15 dB
Effect by external magnetic fields Suppression of indication from current-carrying conductors next to probe	> 40 dB	> 40 dB	> 30 dB (< 9 kHz) > 40 dB (9 kHz to 1 MHz) > 30 dB (> 1 MHz)
Load capacity (RF current measurement) Max. DC current or peak AC current RMS value of RF current	300 A (f < 1 kHz) 2 A (f > 1 MHz)	300 A (f < 1 kHz) 1 A (f > 1 MHz)	300 A (f < 100 Hz) 20 A (f > 1 kHz)
Load capacity (EMS measurement) AC (RMS value) dropping to	6 A (f < 1 kHz) 0.2 A (up to 1 MHz) 2 W (f > 1 MHz)	6 A (f < 1 kHz) 0.45 A (up to 1 MHz) 10 W (f > 1 MHz) (50 W for max. 15 min)	1 A (f < 10 kHz) 10 W (f > 10 kHz)

General data (all models)
Rated temperature range
Storage temperature range
Permissible core temperature
Mechanical stress

-10 to +55 °C
-25 to +70 °C
80 °C
shock-tested to MIL-STD-810D (shock spectrum, 40 g), vibration-tested to MIL-T-28800D, class 5; IEC Publ. 68-2-6

Dimensions
L x W x H
Inner diameter
Weight

95 mm x 84 mm x 26 mm
30 mm
0.6 kg

Ordering information

Current Probe

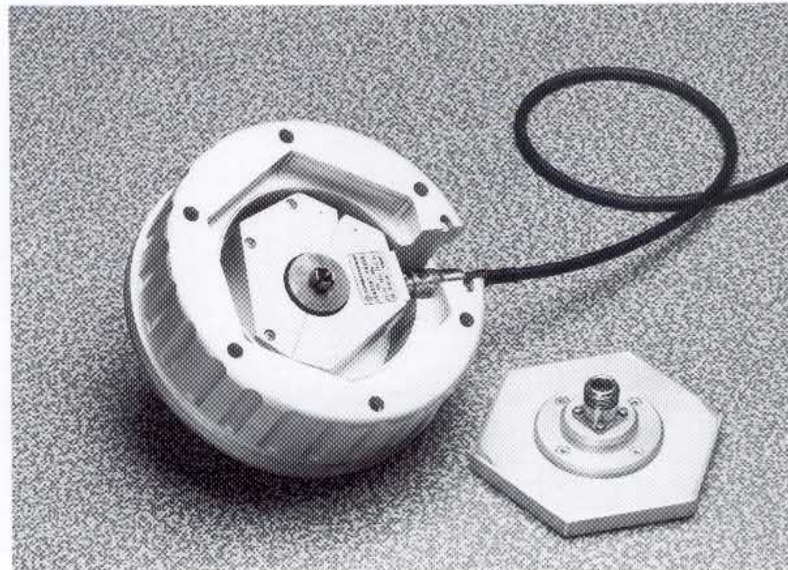
Model 02: 20 Hz to 100 MHz	EZ-17	0816.2063.02
Model 03: 20 Hz to 100 MHz	EZ-17	0816.2063.03
Model 04: 5 Hz to 2 MHz	EZ-17	0816.2063.04

Accessories supplied

Model 02	RF connecting cable with N connectors (1 m), coding connector	
Model 03	RF connecting cable with N connectors (1 m)	
Model 04	RF connecting cable with Twinax connectors (EZ-15; 1.5 m)	
All models	operating manual with information on relevant transducer factor	

Recommended extras

Calibration Jig	EZ-18	1026.6490.02
Connecting Cable with BNC/ Twinax connector (adapter)	EZ-19	1052.2630.02



Calibration Jig EZ-18 with Current Probe EZ-17 inserted and cover removed

¹⁾ The manual contains a table specifying the transducer factor from 20 Hz to 200 MHz (models 02 and 03) and from 5 Hz to 2 MHz (model 04). The transducer factor k is calculated as $k = 20 \log (1/Z_T)$.

Certified Quality System
ISO 9001
REG. NO 1934-02



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