Токовый пробник
EZ-17

Electromagnetic emission and susceptibility measurements in the range 20 Hz to 100 (200) 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 16-1-2

- 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

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 R&S®EZ-17 comply with the following standards:

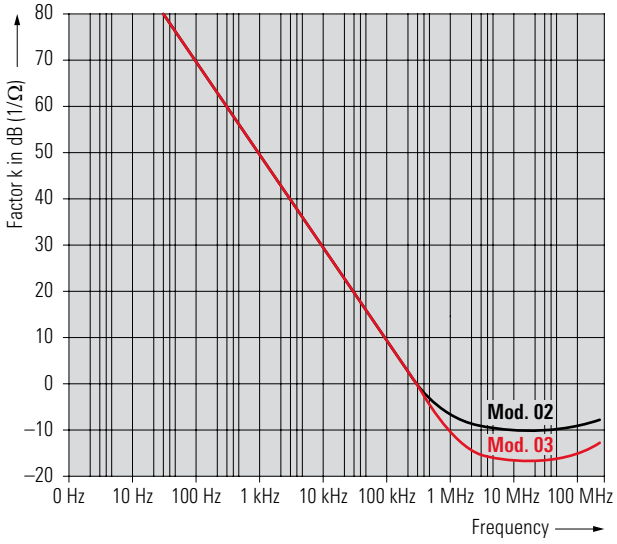
- CISPR 16-1 and VDE 0876 Part 1/ Part 161 for standards stipulating maximum values for RFI current
- MIL-STD-461 A, B and C CE 01 and 03 as well as MIL-STD-461D/E CE 101
- VG 95373 Part 20 and VG 95377 Part 14
- DEF STAN 59-41 DCE 01 and 02
- GAM EG 13
- RTCA/DO 160 C and ED-14-C

Three models to suit different applications

The models 02 and 03 of the Current Probe R&S®EZ-17 are suitable for the following applications in the frequency range 20 Hz to 100 MHz:

- Model 02 with its flat frequency response above 1 MHz and output impedance of 50 Ω is ideal for emission measurements as well as for measuring the shielding effectiveness
- Due to its small transducer factor in the range from 1 MHz to 200 MHz, model 03 is particularly suitable for emission measurements with stringent requirements placed on sensitivity (e.g. VG 95 373 limit class 1) and, due to its high load capacity, also recommended for EMS measurements (bulk current injection tests)

Owing to their high magnetic overload capacity, the Current Probes R&S®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 allow the current probes to be used even where space is at a premium.



Transducer factor k of the three models of the Current Probe R&S®EZ-17

Specifications

	Model 02	Model 03
Frequency range	20 Hz to 100 (200)[1] MHz	20 Hz to 100 (200)[1] MHz
Range with constant transducer factor (–3 dB)	1 MHz to 100 MHz	2 MHz to 100 MHz
Transducer factor reduced by 20 dB/decade in range	20 Hz to 1 MHz	20 Hz to 2 MHz
RF connector	N female	N female
Output impedance	50 Ω (f ≥ 10 MHz)	reactive
VSWR	<2 (f > 10 MHz)	—
Insertion impedance	≤0.8 Ω	≤1 Ω
Transfer impedance Z_T		
In range with constant transducer factor	3.16 Ω	7.1 Ω
Transducer factor k[1] in range with flat frequency response	–10 dB (1/Ω)	–17 dB (1/Ω)
Effect by external magnetic fields		
Suppression of indication from current-carrying conductors next to probe	>40 dB	>40 dB
Load capacity (RF current measurement)		
Max. DC current or peak AC current	300 A (f < 1 kHz)	300 A (f < 1 kHz)
RMS value of RF current	2 A (f > 1 MHz)	1 A (f > 1 MHz)
Load capacity (EMS measurement)		
AC (RMS value)	6 A (f < 1 kHz)	6 A (f < 1 kHz)
Dropping to	0.2 A (up to 1 MHz) 2 W (f > 1 MHz)	0.45 A (up to1 MHz) 10 W (f > 1 MHz) (50 W for max. 15 min)
General data (all models)		
Operating temperature range	–10 °C to +55 °C	
Storage temperature range	–25 °C to 70 °C	
Permissible core temperature	80 °C	
Mechanical stress	shock-tested to MIL-STD-810D (shock spectrum, 40 g), vibration-tested to MIL-T-28800D, class 5; EN 60068-2-6	
Dimensions		
L × W × H	95 mm × 84 mm × 26 mm	
Inner diameter	30 mm	
Weight	0.6 kg	

[1] The manual contains a table specifying the transducer factor from 20 Hz to 200 MHz. The transducer factor k is calculated as $k = 20 \log (1/Z_T)$, where Z_T is the transfer impedance.

Ordering information

Current Probe		
Model 02: 20 Hz to 100 MHz	R&S®EZ-17	0816.2063.02
Model 03: 20 Hz to 100 MHz	R&S®EZ-17	0816.2063.03
Accessories supplied		
Model 02	RF connecting cable with N connectors (1 m), coding connector	
Model 03	RF connecting cable with N connectors (1 m)	
Both models	operating manual with information on relevant transducer factor	