

**Radio Frequency Current Transducers
Medium Aperture (15mm) Core Type
Type FE/R/15/10 mk1 Type FE/R/15/1 mk 2 & mk3**

Using the technology developed for the low cost RFCT type FE/R/5/1 it is possible to extend the design to produce transducers to meet customers specific requirements. This literature describes a medium aperture, radio frequency current transducers that has been developed for measuring rf discharge current pulses in an HV test facility. The aperture has been selected to enable the transducer to be installed over the coaxial cable normally used for HV testing, or alternatively it can be fitted to a coaxial bushing built from 15mm plumbing copper tubing.

The transducers have been designed to be used for feeding 50 Ω input instrumentation as well as for condition monitoring with the use Radio Frequency Pulse Activity Monitor. It can also be used for measuring the rf currents in mains leads as part of emission testing for EMC approval. The three versions offer different sensitivities, bandwidths and capacities.



Medium Aperture Radio Frequency Current Transducer

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Specification FE/R/(diameter mm)/Sensitivity V/A)

<i>Principle Parameters</i>	FE/R/15/10	FE/R/15/1 mk1	FE/R/15/1 mk2
Nominal Sensitivity	10mV/mA	1mV/mA	1mV/mA
Terminating Impedance	50Ω	50Ω	50Ω
Low frequency limit	100 kHz	10kHz	4.4 kHz
Upper Frequency	140MHz	>200MHz	30MHz

<i>Other Parameters</i>			
Droop rate	0.0016mS	0.016mS	0.038mS
Rise time (20%-80%) τ	<5nS	<3nS	Note 1
Insertion Impedance	2Ω	0.2Ω	0.04Ω
Transfer Impedance	10Ω	1Ω	1Ω
Insulation resistance	>10,000MΩ 5kV for 1min	>10,000MΩ 5kV for 1min	>10,000MΩ 5kV for 1min
Max. continuous rf current (thermal limit)	0.5 Arms	2.4 A rms	5 A rms
Total pulse current of a polarity	20 A.μS (20x10 ⁶ pC)	200 A.μS (200x10 ⁶ pC)	1000 A.μS (1x10 ⁹ pC)

<i>Performance in the presence of mains currents</i>			
Max. lf current for linear operation	10 A rms	10 A rms	10 A rms
Rejection of 50Hz current	66 db	46db	32db

Physical Dimensions

Aperture	15mm
Outer Diameter	45mm
Thickness	25mm
Cable length	3m or 2m
Weight (with cable)	0.2 kg

Note 1 Step response with fast rise time produces overshoot with decaying ring on front edge at 40MHz
 Frequency response test gives Flat within 0.6db from low frequency limit to 20MHz 4db resonance at 38MHz