

100ADM-F 100AFS 100AFS-PH

Current Filter Units



100ADM-F

The 100ADM-F, 100AFS, and 100AFS-PH filter units reduce the level of current harmonics when testing electromechanical protection relays. They are designed for use with our range of secondary injection test sets. The 100ADM-F is designed to complement the 100ADM, and has similar styling.

All electromechanical protection relays have iron cores that saturate and distort the test current under high overload test conditions. This distortion causes significant errors in the measured trip time of these relays during testing. Distortion of the waveform can be a particular problem with disc induction type over-current and sensitive earth fault relays.

For example, testing a CDG11 disc induction over-current relay without a filter causes significant timing errors. The results below show the errors for a 1.3s 1A CDG11 over-current relay on its 0.5A plug setting, tested at 5A.

	Current	THD	Trip time	Error
No Filter	5A	34.5%	1.54s	18.5%
With Filter	5A	6.12%	1.30s	0%

Three filter units are available: the 100ADM-F, the 100AFS, and the 100AFS-PH. All three units have the same filtering characteristics and have current ranges covering 0.25A to 100A. The 100ADM-F is supplied in an insulated case to

Features

- Forces test current to a sinusoid
- Greatly improves timing accuracy when testing electromechanical relays
- Wide range of test currents
- High overload capability
- 50/60Hz operating frequency
- High efficiency
- Current monitoring output
- Compact and portable

match the 100ADM, complete with protective cover and carrying strap. The 100AFS has a steel case with carrying handles, but is otherwise functionally similar and electrically identical to the 100ADM-F. The 100AFS-PH has all the features of the 100AFS, and also has a four position phase selector switch to simplify testing of three phase relays.

	Case style	Current ranges	Phase selector
100ADM-F	Insulated	0.25A-100A	ū
100AFS	Steel	0.25A-100A	ū
100AFS-PH	Steel	0.25A-100A	ū

100AFS



100ADM-F, 100AFS, 100AFS-PH Specification

Current Ranges and Ratings

All of the filter units have the following ranges:

Range	Continuous rating	5 min on/ 15 min off
0.25A	0.125A	0.25A
0.5A	0.25A	0.5A
1A	0.5A	1A
2.5A	1.25A	2.5A
5A	2.5A	5A
10A	5A	10A
25A	12.5A	25A
50A	25A	50A
100A	50A	100A

Frequency

The unit may be used at either 50Hz or 60Hz, selectable by a switch on the front panel.

Range Selection

The lower ranges (0.25A-50A) are selected by a switch, and the highest current range is selected by a terminal.

Current Monitor

A current monitoring output is provided on all the filter units that provides an output of 0-100mA corresponding to the rated current for the range.

Filter Unit Impedance

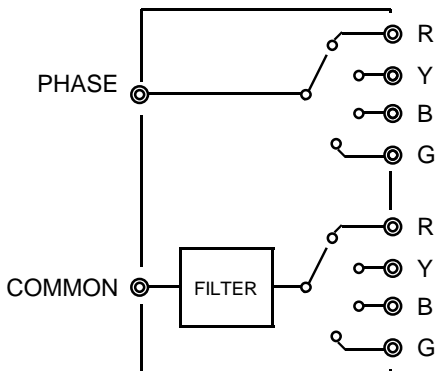
The table below give the impedance in ohms of the filter unit against frequency on each range.

Range	Impedance (Ω)			
	50Hz	150Hz	250Hz	350Hz
0.25A	880 Ω	17.5k Ω	30.4k Ω	41.5k Ω
0.5A	220 Ω	4.38k Ω	7.65k Ω	10.3k Ω
1A	47.7 Ω	950 Ω	1.65k Ω	2.25k Ω
2.5A	7.8 Ω	150 Ω	250 Ω	360 Ω
5A	1.94 Ω	38 Ω	65 Ω	90 Ω
10A	510m Ω	9.5 Ω	16.5 Ω	22.5 Ω
25A	85m Ω	1.5 Ω	2.5 Ω	3.6 Ω
50A	22m Ω	380m Ω	650m Ω	900m Ω
100A	5.5m Ω	95m Ω	165m Ω	225m Ω

Phase Selector Switch (100AFS-PH only)

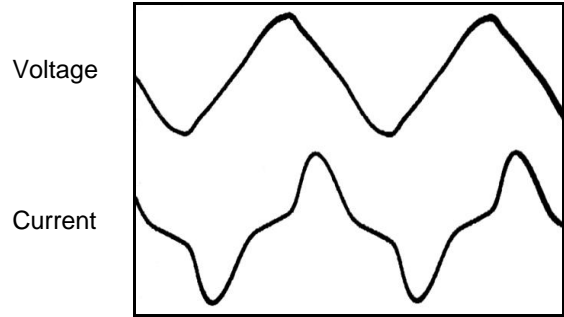
The 100AFS-PH has a 4 way phase selector switch to simplify testing three phase current relays one phase at a time. A two pole switch is used to switch both the supply and return leads to the relay under test.

100AFS-PH phase switching arrangement



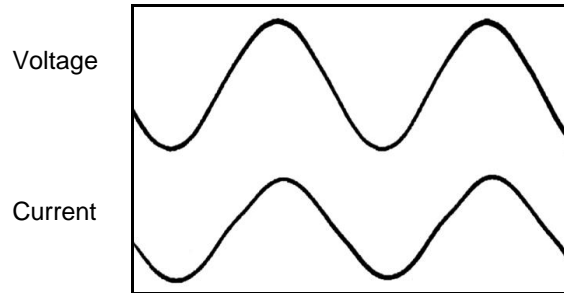
Current Waveforms

The waveforms below show the current and voltage waveforms for a disc induction type relay supplied from a 100ADM current injection system without a filter. The distortion of the current waveform can be clearly seen.



Voltage and current waveforms for disc induction relay without filter unit

The effect of adding the filter unit is shown below - very little distortion is evident on the current waveform.



Voltage and current waveforms for disc induction relay with filter unit

Temperature Range

Storage -20°C to 60°C

Operating 0°C to 45°C

Unit	Dimensions	Weight
100ADM-F	340mm x 230mm x 330mm	15.6kg
100AFS	490mm x 152mm x 160mm	16kg
100AFS-PH	490mm x 152mm x 160mm	16kg

Accessories

Operating manual
Current monitor plug and lead

Optional Accessories

100AL lead set

Note: Due to the company's continuous research programme, the information above may change at any time without prior notification. Please check that you have the most recent data on the product.

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