



MFR 11

Multi Function Relay Protection

APPLICATIONS

The MFR 1 Series is a family of industrial grade protective relays that offer multiple protective features in a single package.

Using a digital processor to measure true RMS values enables a high degree of measuring accuracy regardless of harmonics, transients or disturbing pulses.

The MFR 11 model is a generator or mains protection unit packaged into one compact device. Typical applications are generators and switchgear equipment that require independent protection architecture. Different packages offer additional functionality.

The MFR 11/MP is for mains protection use with over-/undervoltage, -frequency and voltage asymmetry with 24 Vdc power supply while the MFR 11/NU has the same functions, but utilizes a wide-range power supply.

The MFR 11/VDEW adds phase/vector jump monitoring to the MP package. The MFR 11/G59 package adds df/dt (ROCOF) protection. The MFR 11/G59N has the same features as the G59 package, but utilizes the wide-range power supply.

The MFR 11/SC is used for synch-check and zero voltage detection to check whether two systems are synchronous or de-energized.

The compact size and multiple functions of the MFR 11 help to simplify switchgear design. The digital display offers a user-friendly interface to setup the unit as well as monitor the operation and display any alarms.

DESCRIPTION

Features (all versions)

- True RMS voltage
- Configurable trip/control set points
- Configurable delays for each alarm
- Two-line LC display

MFR 11/MP

- 24 Vdc power supply
- 3 configurable relays
- Over-/undervoltage monit. (59/27)
- Over-/underfrequency monit. (81O/U)
- Voltage asymmetry monitoring (47)

MFR 11/NU

Same features as MFR 11/MP, plus:

- Wide-range power supply (no 24 Vdc) (90 to 265 Vac/dc)

MFR 11/VDEW

Same features as MFR 11/MP, plus:

- Vector/phase shift monitoring (78)

MFR 11/G59

Same features as MFR 11/MP, plus:

- 8 configurable relays
- Vector/phase shift monitoring (78)
- df/dt ROCOF monitoring (81RL)

MFR 11/G59N

Same features as MFR 11/G59, plus:

- Wide-range power supply (no 24 Vdc) (90 to 265 Vac/dc)

MFR 11/SC

Same features as MFR 11/MP, plus:

- 2 configurable relays
- Synch-check (fixed to relay 3) (25)
- Zero voltage monitoring: dead bus start functionality (close CB to dead busbar)

MFR 11/SC+N

Same features as MFR 11/SC, but

- Wide-range power supply (no 24 Vdc) (90 to 265 Vac/dc)

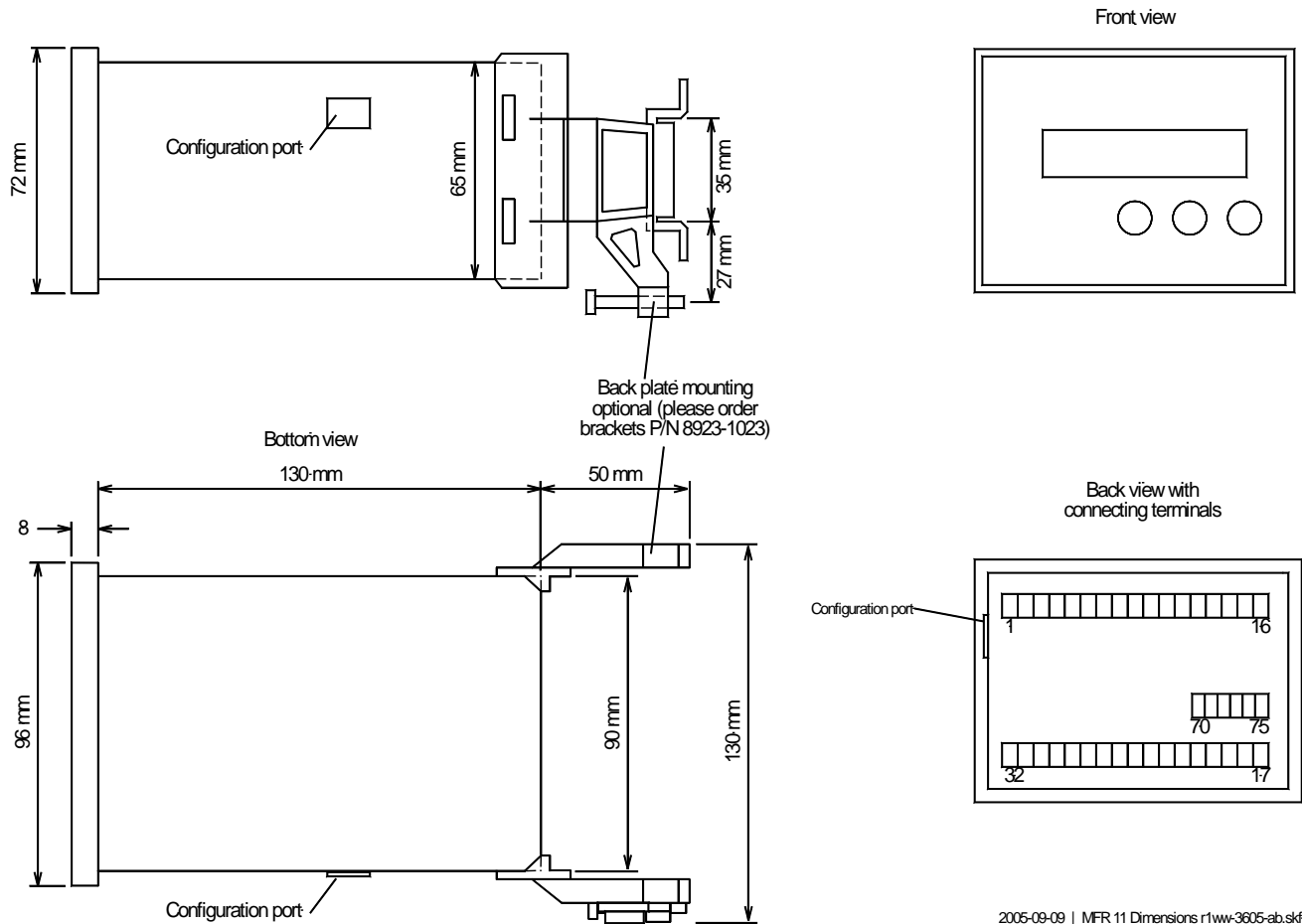
- True RMS sensing
- Synch-check
- Programmable relay outputs
- Discrete inputs for enabling or remote acknowledgment
- PC and front panel configurable
- Microprocessor technology for accurate, repeatable and reliable operation
- Programmable threshold setpoints with individual time delays
- CE marked
- UL/cUL Listed
- GL Approval

SPECIFICATIONS

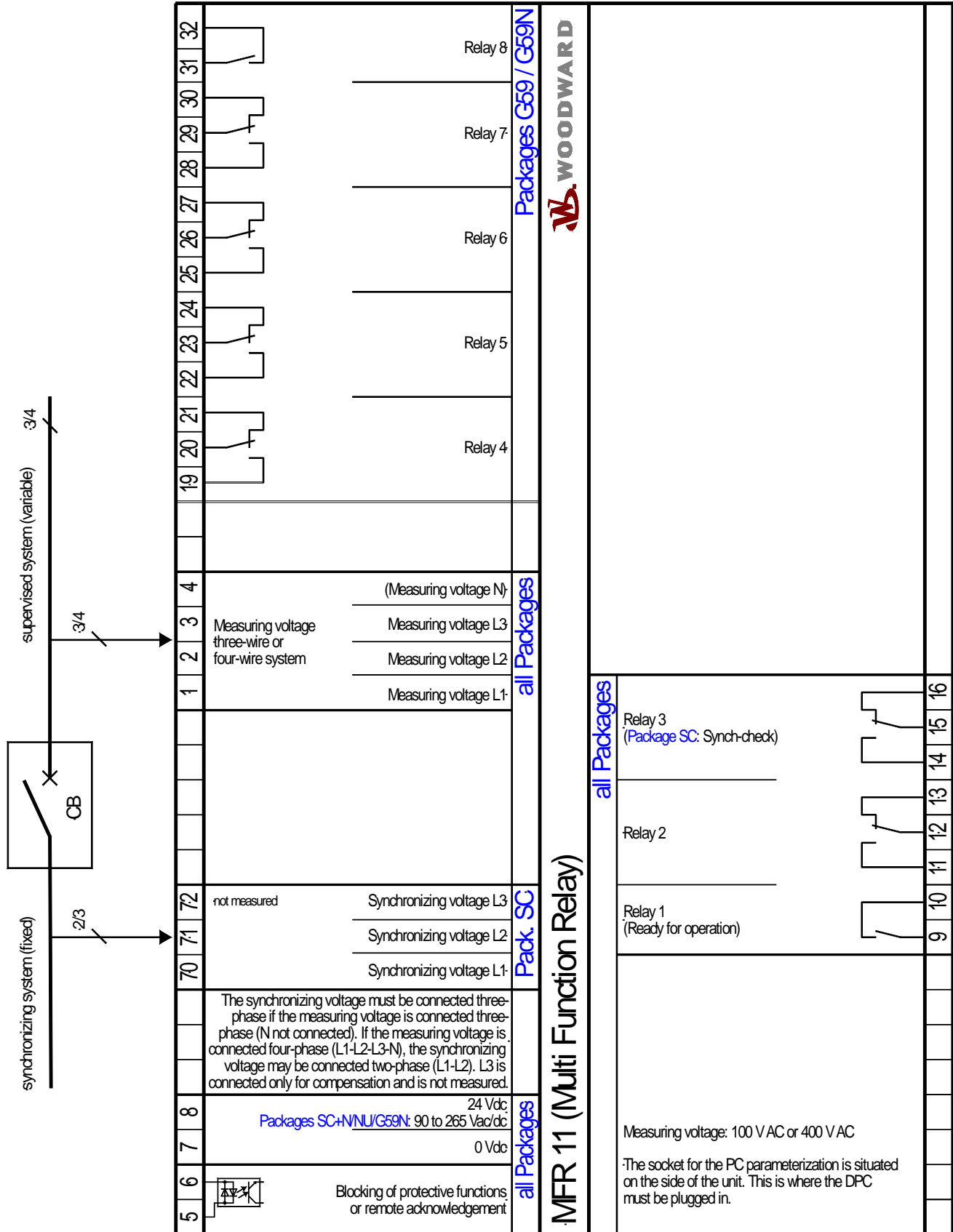
Accuracy Class 1
 Power supply 24 Vdc (18 to 30 Vdc)
 Packages NU / G59N / SC+N: 90 to 265 Vac/dc
 Intrinsic consumption max. 12 W
 Ambient temperature -20 to 70 °C
 Ambient humidity 95 %, non-condensing
Voltage Rated Δ/D : [1] 66/115 Vac [4] 230/400 Vac
 Maximum value (V_{max}): [1] 150 Vac [4] 300 Vac
 Rated voltage $V_{ph-ground}$: [1] 150 Vac [4] 300 Vac
 Rated surge voltage: [1] 2.5 kV [4] 4.0 kV
 Linear measuring range up to $1.3 \times V_{rated}$
 Measuring frequency 50/60 Hz (40 to 70 Hz)
 Input resistance [1] 0.21 MW, [4] 0.7 MW
 Max. power consumption per path < 0.15 W
Discrete inputs isolated
 Input range 18 to 250 Vac or dc
 Input resistance approx. 68 kW

Relay outputs isolated
 Contact material AgCdO
 Load (GP) 24 Vdc@2 Adc, 250 Vac@2 Aac
 Pilot duty (PD) 24 Vdc@1 Adc
Housing Type APRANORM DIN 43 700
 Dimensions 96×72×130 mm
 Front cutout 91×67 mm
 Connection screw/plug terminals depending on connector 1.5 mm² or 2.5 mm²
 Front insulating surface
 Protection system IP 21
 Weight depending on version, approx. 800 g
Disturbance test (CE) tested according to applicable EN guidelines
Listings UL/cUL listed (note: max. voltages apply) for ordinary loc., file E231544
Approvals GL (Germanischer Lloyd)

DIMENSIONS



WIRING DIAGRAM



Subject to technical modifications.

International
 Woodward
 PO Box 1519
 Fort Collins CO, USA
 80522-1519
 1000 East Drake Road
 Fort Collins CO 80525
 Ph: +1 (970) 498-3634
 Fax: +1 (970) 498-3058
 email:
 SalesPGD_NAandCA@woodward.com

Europe
 Woodward GmbH
 Handwerkstrasse 29
 70565 Stuttgart, Germany
 Ph: +49 (0) 711 789 54-510
 Fax: +49 (0) 711 789 54-101
 email:
 SalesPGD_EMEA@woodward.com

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For more information contact:

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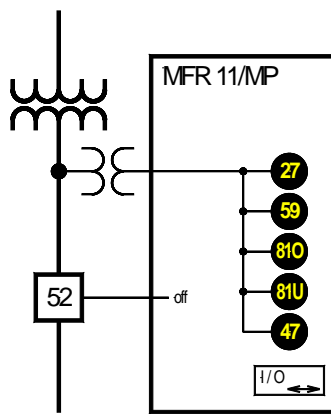
FEATURES OVERVIEW

		MFR 11						
ANSI		MP	NU	VDEW	G59	G59N	SC	SC+N
Measuring/Display								
Voltage		ü	ü	ü	ü	ü	ü	ü
Voltage (2 nd input for synch-check)							ü	ü
Accessories								
Configuration via PC #1		ü	ü	ü	ü	ü	ü	ü
Protection								
Overvoltage	59	ü	ü	ü	ü	ü	ü	ü
Undervoltage	27	ü	ü	ü	ü	ü	ü	ü
Overfrequency	81O	ü	ü	ü	ü	ü	ü	ü
Underfrequency	81U	ü	ü	ü	ü	ü	ü	ü
Voltage asymmetry	47	ü	ü	ü	ü	ü	ü	ü
vector/phase shift (dj /dt)	78			ü	ü	ü		
df/dt (ROCOF)	81RL				ü	ü		
Function								
Synch-check	25						ü	ü
Zero voltage monitoring: dead bus start (close CB to dead busbar)							ü	ü
I/O's								
Output relays (configurable)	74	3	3	3	8	8	3	3
Power Supply								
24 Vdc		ü		ü	ü		ü	
90 to 265 Vac/dc			ü			ü		ü
Listings/Approvals								
CE marked		ü	ü	ü	ü	ü	ü	ü
UL/cUL listed		ü		ü	ü		ü	
GL (Marine)		ü		ü	ü		ü	
Product Number P/N								
Measuring inputs 110 Vac		5448-884	LR20610	8441-1003	5448-885	8441-1004	8441-1005	8441-1110
Measuring inputs 400 Vac		8441-1023	8441-1027	8441-1049	LR20406	8441-1103	8441-1097	8441-1111

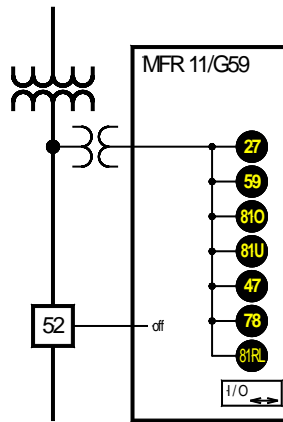
#1 Cable incl. software necessary (DPC, Product Number P/N 5417-557)

TYPICAL APPLICATIONS

MFR 11/MP



MFR 11/G59



MFR 11/SC

