

Monitoring Relays

Digital, True RMS 3-Phase, Multifunction

Type DPC72 B003



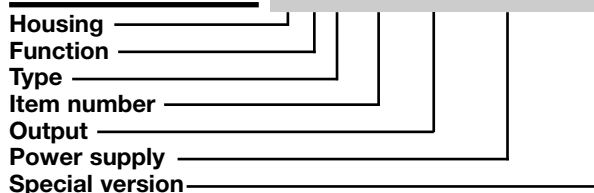
- Digital TRMS 3-phase over and under voltage, over and under frequency, phase sequence and phase loss monitoring relay
- Detects when all 3 phases are present and have the correct sequence
- Detects if all the 3-phase-phase voltages are within the set limits
- Detects if the system frequency is between the set limits
- Detects if the derivative frequency is below the absolute set limit
- Measures its own power supply voltage
- Front joystick configuration
- According to Italian ENEL DK 5940, certified from KEMA laboratory
- Istantaneous variables readout: 4 DGT
- Event counter and data logger
- Autotest function
- Last 10 events recording (date, time, cause)
- Output: 1 x 8 A relay DPDT
- RS485 serial port (MODBUS-RTU)
- LED indication for alarm status
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- Dimensions: 4-DIN modules

Product Description

Digital 3-phase line voltage monitoring relays for phase sequence, phase loss, over and under voltage, over and under frequency, derivative frequency. Joystick configuration and LCD data displaying.

ENEL DK 5940 preset set-point values compliant. Relays outputs and RS485 communication port. Recording of the last 10 events. Supply range from 380 to 415 VAC.

Ordering key **DPC 72 D M48 B003**



Type Selection

Mounting	Output	Communication port	Supply: 380 to 415 VAC
DIN-rail	DPDT	RS 485	DPC 72 D M48 B003

Input Specifications

Input L1, L2, L3	Terminals 55, 53, 51 Measures its own supply	Frequency derivative setpoints Range (absolute value) Step adjustment Preset value	0.1 to 1 Hz/s 0.1 Hz/s Monitoring not enabled
Voltage setpoints Lower setpoint	Range 320 to 400 VAC Step adjustment 1 VAC Preset value 320 VAC	Hysteresis Voltage Frequency Derivative frequency	20 VAC 0.1 Hz 0.020 Hz
Upper setpoint	Range 400 to 480 VAC Step adjustment 1 VAC Preset value 480 VAC	Display Type	LCD, h 7 mm 3 lines (1 x 8 DGT, 2 x 4 DGT)
Frequency setpoints System frequency	50 Hz	Istant. variables read-out Max. indication Min indication Overload/underload status Voltage and frequency	4 DGT 9999 0.000 EEE / -EEE indication when the value exceeds the max./min.measurement capacity
Lower setpoint	Range 48.5 to 49.8 Hz Step adjustment 0.1 Hz Preset value 49.7 Hz	Derivative frequency	EEE indication when the value exceeds the max measurement capacity
Upper setpoint	Range 50.0 to 51.5 Hz Step adjustment 0.1 Hz Preset value 50.3 Hz	Display refresh time	750 ms

Output Specifications

Relay output Terminals 11, 12, 13 / 8, 9, 10	1 x DPDT N.E. Voltage/frequency related (both outputs release in case of phase loss or wrong phase sequence)	RS485 Type	Multidrop, bidirectional (static and dynamic variables)
Relay contact ratings (AgSnO ₂)	μ	Connections	2-wire (terminals 31, 32, 33)
Resistive loads AC 1	8 A @ 250 VAC	Addresses	255, selectable
DC 12	5 A @ 24 VDC	Protocol	MODBUS/JBUS (RTU)
Small inductive loads AC 15	2.5 A @ 250 VAC	Data (bidirectional)	
DC 13	2.5 A @ 24 VDC	Dynamic	Reading only
Relay mechanical life	≥ 30 x 10 ⁶ operations	Static	Reading/writing
Relay electrical life	≥ 10 ⁵ operations (at 8 A, 250 V, cos φ = 1)	Data format	1 start bit, 8 data bit, 1 parity bit (even, odd or none (default) control), 1 stop bit
Relay operating frequency	≤ 7200 operations/h	Speed	9600 (default) or 4800 bit/s, selectable
		Driver input impedance	1/5 unit load, max. 160 devices on the same bus

Supply Specifications

Power supply Rated operational voltage through terminals: Delta Voltage:	Overvoltage cat. III (IEC 60664, IEC 60038) 55, 53, 51 380 to 415 VAC ± 15% 45 to 65 Hz
Rated operational power	8 VA Supplied by L2 and L3

Mode of Operation

Connected to the 3 power supply, DPC72 B003 operates when the frequency and the voltage of the mains are within the setpoints that are preset to be according to ENEL DK 5940 regulation.

Other settings are possible accessing to the customised programming. Every failure is detected through the DPDT output relay.

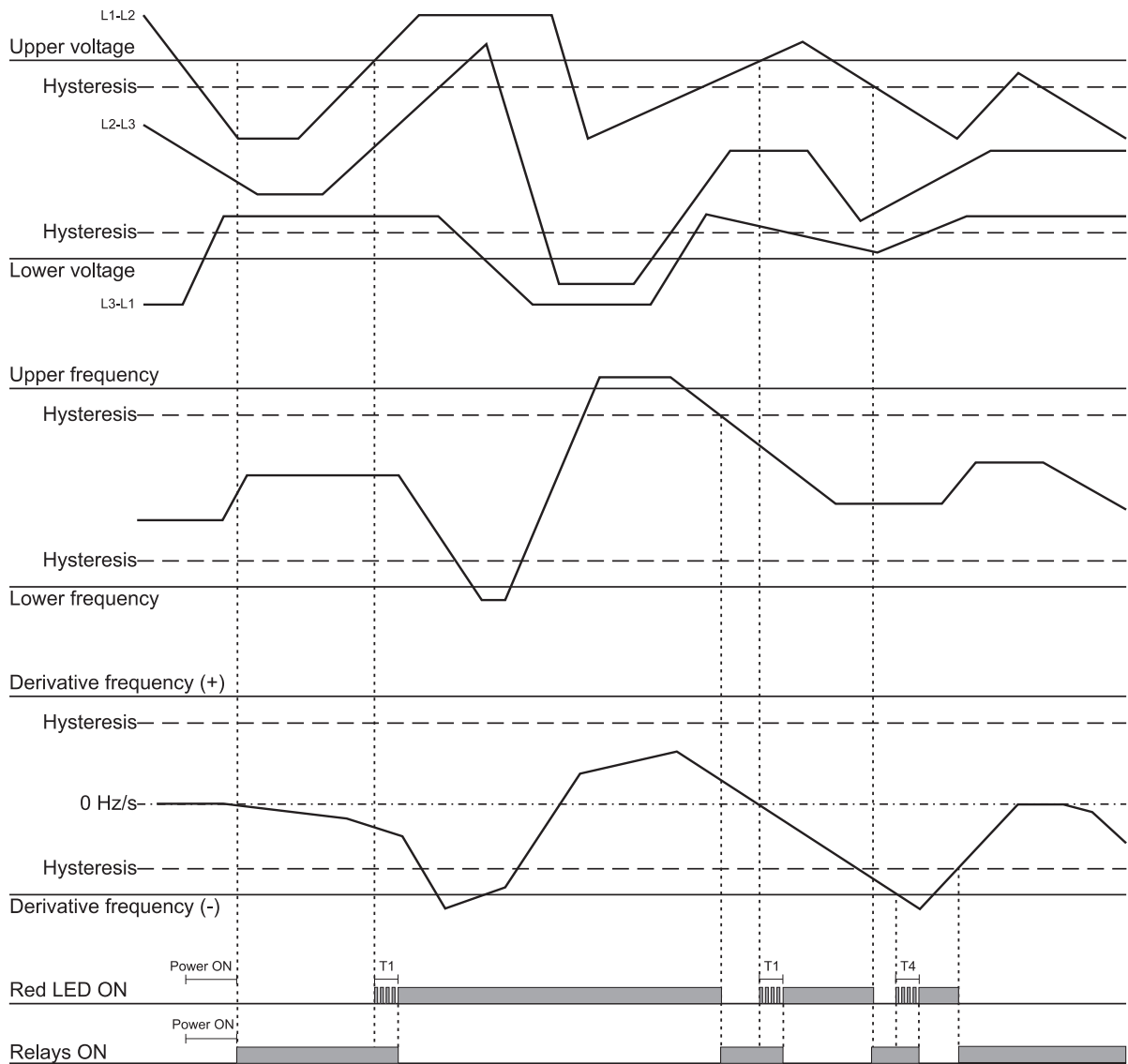
General Specifications

Timings Power ON delay (T0)		Accuracy (Display + RS 485)	(@25 °C ±5 °C, R.H. < 60%, 45 to 65 Hz)
Range	1 to 6 s	Voltage	± (0.5 % RDG + 1 DGT)
Step adjustment	1 s	Frequency	± 0.01 Hz (45 to 65 Hz)
Preset value	1 s	Derivative frequency	± 0.01 Hz/s (45 to 65 Hz)
Upper (T1) and lower (T2) voltage delay on alarm		Temperature drift	< 200 ppm/°C
Range	0.05 to 1 s	Insulation	
Step adjustment	0.05 s	Input to relays output	4 kV (1.2/50 μs), ≥ 2 kVAC (rms)
Preset value	0.05 s	Input to RS485 port	4 kV (1.2/50 μs), ≥ 2 kVAC (rms)
Upper (T3) and lower (T4) frequency delay on alarm		RS485 port to relays output	4 kV (1.2/50 μs), ≥ 2 kVAC (rms)
Range	0.05 to 1 s	LED indication	Red LED
Step adjustment	0.05 s	Flashing 5 Hz	During voltage, frequency and derivative frequency delay ON alarm times
Preset value	0.05 s	Flashing 10 Hz	For wrong phase sequence connection (note: the device is provided with the phase sequence monitoring not enabled)
Derivative frequency delay on alarm (T5)		Steady	During alarm status (DPDT output released)
Range	0.05 to 1 s	Environment	(EN 60529)
Step adjustment	0.05 s	Degree of protection	
Preset value	0.05 s (if the monitoring is enabled)	Front	IP50
Incorrect phase sequence or total phase loss Alarm ON delay	< 50 ms ± 15 ms (if the monitoring is enabled, no other adjustment is allowed)	Screw terminals	IP20
		Pollution degree	3
		Operating temperature	
		8A output	-20 to +50°C, R.H. < 95%
		5A output	-20 to +60°C, R.H. < 95%
		Storage temperature	-30 to +80°C, R.H. < 95%

General Specifications (cont.)

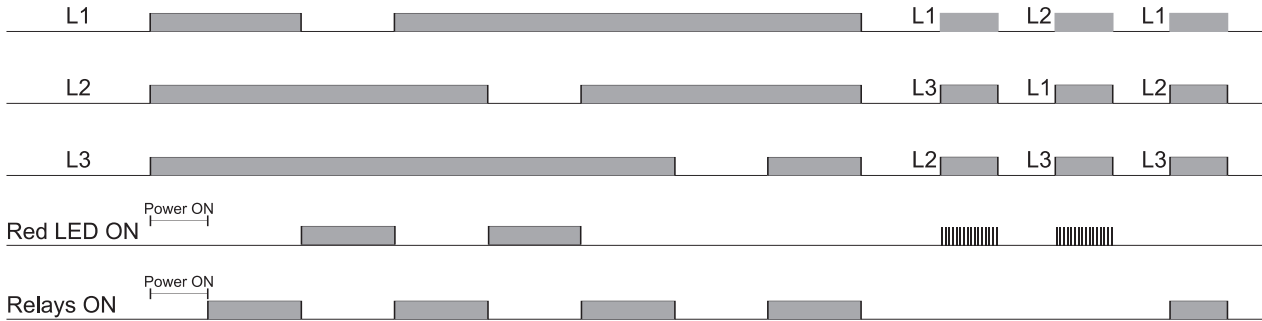
Housing		CE Marking	Yes
Dimensions	71.6 x 90 x 66.3 mm	LVD	According to EN 61010-1
Material	PA66	EMC	Electromagnetic Compatibility
Weight	Approx. 300 g	Immunity	According to EN 61000-6-2
Screw terminals		Emissions	According to EN 61000-6-3
Tightening torque	Min 0.4 Nm, Max. 0.8 Nm	Other references	ENEL DK 5940

Operation Diagrams

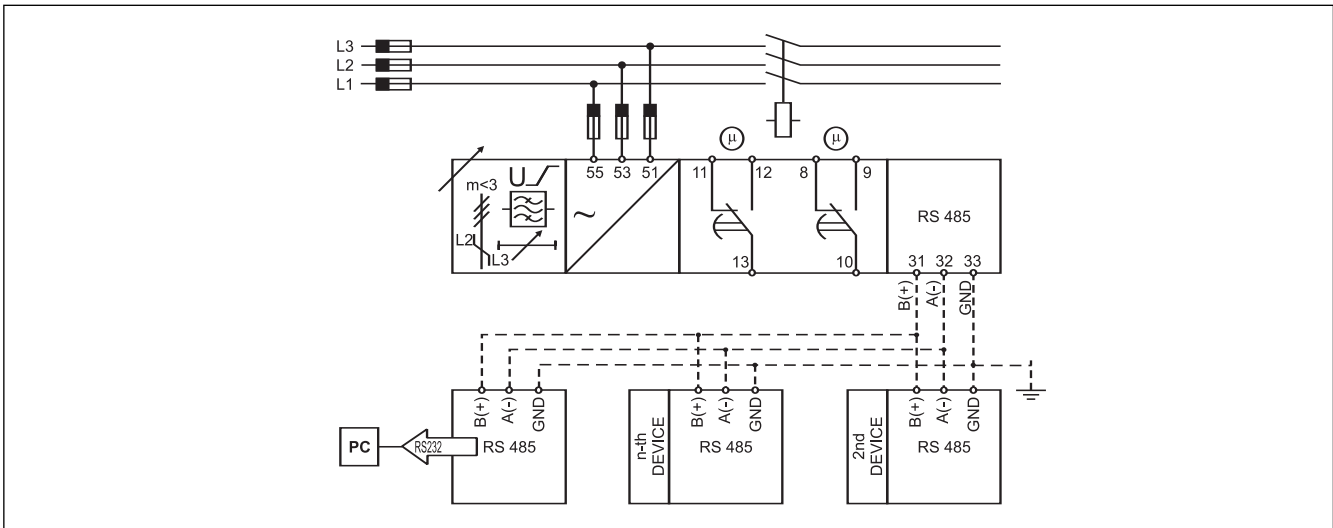


Operation Diagrams (Cont.)

Phase sequence, total phase loss



Wiring Diagram



Dimensions

