



Технические характеристики

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Monitoring relays

Earth Leakage

Types	DEA71	DEB71		
				
Dimensions HxWxD (mm) DIN-rail housing	81 x 35.5 x 67.2 [Mini-D]	81 x 35.5 x 67.2 [Mini-D]		
Function	Modular residual current monitoring relay, fixed I Δ n setting, warning output @60% I Δ n, Alarm @80% I Δ n, no delay. Operates with CTG series core balance transformers	Modular residual current monitoring relay, adjustable I Δ n setting, warning output @60% I Δ n, Alarm @80% I Δ n, leakage level LED bar, adjustable delay. Operates with CTG series core balance transformers		
Input specifications				
Measuring range I Δ n	30 mA	300 mA	30 mA to 5 A	300 mA to 30 A
Output specifications				
Type	2 x SPDT relay	2 x SPDT relay	2 x SPDT relay	2 x SPDT relay
Max. load AC1	5 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications				
Power supply	24 VAC to 240 VAC	24 VAC to 240 VAC	24 VAC to 240 VAC	24 VAC to 240 VAC
Approvals/Marks	CE - cULus	CE - cULus	CE - cULus	CE - cULus
References				
	DEA71DM24A003	DEB71DM24A5	DEB71DM24A5	DEB71DM24A5
	DEA71DM24A030	DEB71DM24A30	DEB71DM24A30	DEB71DM24A30





Monitoring relays

Current relays

Types	DIA 01 PIA 01	DIA 02	EIS H	DIA 53
				
Dimensions HxWxD (mm) DIN-rail housing Plug-in housing	80 x 22.5 x 99.5 [D] 80 x 36 x 94 [P]	80 x 22.5 x 99.5	56 x 22.5 x 49	81 x 17.5 x 67.2 [Mini-D]
Function	Over current monitoring relay. 1-phase AC / DC. Direct input or on CT 5 A. Setpoint adjustable. Hysteresis adjustable.	Load ON/OFF monitoring relay. 1-phase AC / DC. Direct input or on CT 5 A. Setpoint adjustable.	Load ON/OFF sensor. 1-phase AC Direct input and solid state output.	Over current monitoring relay. 1-phase AC. Setpoint adjustable. 2-wire connection. Reaction time < 50 ms for F versions. 12 mm hole for insulated current carrying wire.
Input specifications				
Measuring range	0.5 - 5 AAC/DC	2 mA - 5 AAC/DC	200 mA - 60 AAC [024] 400 mA - 60 AAC [230]	2 - 20 AAC [20 A] 5 - 50 AAC [50 A] 10 - 100 AAC [100 A]
Output specifications				
Type	1 x SPDT relay	1 x SPDT relay	Static output	Static output
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	1 A [024] 0.5 A [230]	
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	1 A [024] 0.5 A [230]	100 mA
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations		
General specifications				
Power supply	24-48 VAC/DC [D48] 115 / 230 VAC [B23]	24-48 VAC/DC [D48] 115 / 230 VAC [B23]	Powered by the measured current	40 VDC max. Powered by the measured current
Approvals/Marks	CE - UL - CSA	CE - cULus	CE - cURus - CSA	CE - UL - CSA
References				
	DIA01C D48 5A	DIA02C D48 5A	EISH 200MA 024	DIA53S 724 20A
	PIA01C D48 5A	DIA02C B23 5A	EISH 400MA 230	DIA53S 724 50A
	DIA01C B23 5A			DIA53S 724 100A
	PIA01C B23 5A			DIA53S 724 20A F
				DIA53S 724 50A F
				DIA53S 724 100A F

Monitoring relays

Current relays

Types	DIB 01 PIB 01	DIB 71	DIB 02 PIB 02	DIC 01 PIC 01
				
Dimensions HxWxD (mm)				
DIN-rail housing	80 x 22.5 x 99.5 [D]	81 x 35.5 x 67.2 [Mini-D]	80 x 22.5 x 99.5 [D]	80 x 45 x 99.5 [D]
Plug-in housing	80 x 36 x 94 [P]		80 x 36 x 94 [P]	80 x 36 x 94 [P]
Function	Over or under current monitoring relay. 1-phase AC / DC TRMS. Direct input or on CT 5 A. Setpoint adjustable. Hysteresis adjustable. Delay time adjustable. 12 mm hole for insulated current carrying wire [100 A]	Over or under current monitoring relay. 1-phase AC/DC TRMS. Direct input or on CT 5 A. Setpoint adjustable. Hysteresis adjustable. Delay time adjustable.	Over or under current monitoring relay. 1-phase AC/DC TRMS. Input on shunt or CT MI / MP. Setpoint adjustable. Hysteresis adjustable. Delay time adjustable.	Process signal monitoring relay. 1-phase AC/DC TRMS. Direct input, CT A82 or CT MI / MP. 2 setpoints separately adjustable. Hysteresis adjustable. 2 delay times separately adjustable.

Input specifications

Measuring range	0.1 - 5 mAAC/DC [5 MA] 1 - 50 mAAC/DC [50 MA] 10-500 mAAC/DC [500 MA] 0.1-5 AAC/DC [5 A] 1-10 AAC/DC [10 A] 2-100 AAC [100 A]	0.1 - 5 mAAC/DC [5 MA] 1 - 50 mAAC/DC [50 MA] 10 - 500 mAAC/DC [500 MA] 0.1 - 5 AAC/DC [5 A]	6 - 150 mVAC/DC 0.4 - 4 V _P	0.5 - 20 mAAC/DC 0.1 - 10 VAC/DC 0.4 - 4 V _P
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Output specifications

Type	1 x SPDT relay	1 x SPDT relay	1 x SPDT relay	1 x SPDT relay [P] 2 x SPDT relays [D]
Max. load AC1	8 A / 250 VAC	5 A / 250 VAC	8 A / 250 VAC	8 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations

General specifications

Power supply	24-48 VAC/DC [D48] 115 / 230 VAC [B23] 24 VDC / 24-240 VAC [M24]	24 / 48 VAC [B48] 115 / 230 VAC [B23]	24 - 48 VAC/DC [D48] 115 / 230 VAC [B23]	24 - 48 VAC/DC [D48] 115 / 230 VAC [B23]
Approvals/Marks	CE - cULus - CCC	CE - UL - CSA	CE - cULus	CE - UL - CSA




References

DIB01C... 5MA	DIB71C B48 5MA	DIB02C D48 150MV	DIC01D D48 AV0
DIB01C... 50MA	DIB71C B48 50MA	PIB02C D48 150MV	PIC01C D48 AV0
DIB01C... 500MA	DIB71C B48 500MA	DIB02C B23 150MV	DIC01D B23 AV0
DIB01C... 5A	DIB71C B48 5A	PIB02C B23 150MV	PIC01C B23 AV0
DIB01C... 10A	DIB71C B23 5MA		
DIB01C M24 100A	DIB71C B23 50MA		
PIB01C... 5MA	DIB71C B23 500MA		
PIB01C... 50MA	DIB71C B23 5A		
PIB01C... 500MA			
PIB01C... 5A			
PIB01C... 10A			

... = insert code for Power Supply




Monitoring relays

Voltage relays

Types	DUA 01 PUA 01	DUA 52	DUA 55
			
Dimensions HxWxD (mm)			
DIN-rail housing	80 x 22.5 x 99.5 [D]	81 x 17.5 x 67.2 [Mini-D]	81 x 17.5 x 67.2 [Mini-D]
Plug-in housing	80 x 36 x 94 [P]		
Function	Over current and voltage monitoring relay. 1-phase AC/DC or CT MI / MP. Setpoint adjustable. Hysteresis adjustable.	Under voltage monitoring relay for DC battery. Setpoint adjustable. Hysteresis adjustable. Measures its own power supply.	Over and under voltage monitoring relay. 1-phase (measures its own power supply) AC TRMS.
Input specifications			
Measuring range	2 - 500 VAC/DC 0.4 - 4 V _P	8 - 28 VDC [724] 38 - 58 VDC [748]	208 / 220 / 230 / 240 VAC
Output specifications			
Type	1 x SPDT relay	1 x SPDT relay	1 x SPDT relay
Max. load AC1	8 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications			
Power supply	24 - 48 VAC/DC [D48] 115 / 230 VAC [B23]	8 - 28 VDC [724] 38 - 58 VDC [748]	208 - 480 VAC
Approvals/Marks	CE - UL - CSA	CE - UL - CSA	CE - UL - CSA - CCC
References			
	DUA01C D48 500V	DUA52 C724	DUA55 CM44
	PUA01C D48 500V	DUA52 C748	
	DUA01C B23 500V		
	PUA01C B23 500V		




Monitoring relays

Voltage relays

Types	DUB 01 PUB 01	DUB 71	DUB 72
			
Dimensions HxWxD (mm)			
DIN-rail housing	80 x 22.5 x 99.5 [D]	81 x 35.5 x 67.2 [Mini-D]	90 x 35.8 x 63.2 [Mini-D]
Plug-in housing	80 x 36 x 94 [P]		
Function	Over or under voltage monitoring relay. 1-phase AC/DC TRMS. Setpoint adjustable. Hysteresis adjustable. Delay time adjustable.	Over or under voltage monitoring relay. 1-phase AC/DC TRMS. Setpoint adjustable. Hysteresis adjustable. Delay time adjustable.	Double under voltage monitoring relay. 24 VDC. 2 adjustable setpoints + hysteresis. 2 independent relay outputs.
Input specifications			
Measuring range	0.1 - 10 VAC/DC [10 V] 2-500 VAC/DC [500 V]	0.1 - 10 VAC/DC [10 V] 2-500 VAC/DC [500 V]	16 - 30 VDC
Output specifications			
Type	1 x SPDT relay	1 x SPDT relay	1 x SPST 3 A 1 x SPST 20 A
Max. load AC1	8 A / 250 VAC	5 A / 250 VAC	
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications			
Power supply	24-48 VAC/DC [D48] 115 / 230 VAC [B23]	24/48 VAC [B48] 115 / 230 VAC [B23]	24 VDC
Approvals/Marks	CE - cULus - CCC	CE - UL - CSA	CE- cULus - ISA Class I Div 2
References			
	DUB01C D48 10V	DUB71C B48 10V	DUB72D724EX
	DUB01C D48 500V	DUB71C B48 500V	
	PUB01C D48 10V	DUB71C B23 10V	
	PUB01C D48 500V	DUB71C B23 500V	
	DUB01C B23 10V		
	DUB01C B23 500V		
	PUB01C B23 10V		
	PUB01C B23 500V		




Monitoring relays

Voltage relays

Types	DUB 02 PUB 02	DUB 03 PUB 03	DUC 01 PUC 01
			
Dimensions HxWxD (mm)	80 x 22.5 x 99.5 [D]	80 x 22.5 x 99.5 [D]	80 x 45 x 99.5 [D]
DIN-rail housing	80 x 36 x 94 [P]	80 x 36 x 94 [P]	80 x 36 x 94 [P]
Plug-in housing			
Function	Over and under voltage monitoring relay. 1-phase (measures its own power supply) AC TRMS. Over and under voltage setpoints separately adjustable. Hysteresis adjustable. Delay time adjustable (ON/OFF).	Over or under voltage monitoring relay. 1-phase (measures its own power supply) AC/DC TRMS. Setpoint adjustable. Hysteresis adjustable. Delay time adjustable.	Over and under voltage monitoring relay. 1-phase AC/DC TRMS. 2 setpoints separately adjustable. Hysteresis adjustable. 2 delay functions separately adjustable.
Input specifications			
Measuring range	24/115/230 VAC	24/48/115/240 VAC/DC	2 - 500 VAC/DC [500 V]
Output specifications			
Type	1 x SPDT relay	1 x SPDT relay [P]	1 x SPDT relay [C] 2 x SPDT relay [D]
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	8 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications			
Power supply	24/115/230 VAC	12 - 240 VAC/DC	24 - 48 VAC/DC [D48] 115 / 230 VAC [B23]
Approvals/Marks	CE - cULus	CE - cULus	CE - UL - CSA
References			
	DUB02C T23	DUB03C W24	DUC01D D48 500V
	PUB02C T23	PUB03C W24	PUC01C D48 500V
			DUC01D B23 500V
			PUC01C B23 500V





Monitoring relays

3-phase voltage relays

Types	DPA 01 PPA 01	DPA 51 DPA 71	DPA52	DPA 03 PPA 03
				
Dimensions HxWxD (mm) DIN-rail housing	80 x 22.5 x 99.5 [D]	81 x 17.5 x 67.2 [Mini-D] 81 x 35.5 x 67.2 [Mini-D]	81 x 17.5 x 67.2 [Mini-D]	80 x 22.5 x 99.5 [D]
Plug-in housing	80 x 36 x 94 [P]			80 x 36 x 94 [P]
Function	Phase sequence, total and partial phase loss monitoring relay. 3-phase AC (measures its own power supply). Regenerated voltage detection.	Phase sequence, total and partial phase loss monitoring relay. 3-phase AC (measures its own power supply). Regenerated voltage detection.	Phase sequence, total and partial phase loss monitoring relay. 3-phase AC TRMS (measures its own power supply), switching power supply. Regenerated voltage detection.	Under voltage, phase sequence, total and partial phase loss monitoring relay. 3-phase AC TRMS (measures its own power supply). Regenerated voltage detection.
Input specifications				
Measuring range	208 - 240 VAC [M23] 208 - 415 VAC [P] [M44] 208 - 480 VAC [D] [M44] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 380 - 600 VAC [M60] 600 - 690 VAC [M69]	208 - 240 VAC [M23] 208 - 480 VAC [M44] 380 - 480 VAC [M48]	208 - 480 VAC	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 600 - 690 VAC [M69]
Output specifications				
Type	1 x SPDT relay [C] 1 x DPDT relay [D]	1 x SPDT relay [C] 1 x DPDT relay [D]	1 x SPDT relay	1 x SPDT relay
Max. load AC1	8 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC	8 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications				
Power supply	208 - 240 VAC [M23] 208 - 415 VAC [P] [M44] 208 - 480 VAC [D] [M44] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 380 - 600 VAC [M60] 600 - 690 VAC [M69]	208 - 240 VAC [M23] 208 - 480 VAC [M44] 380 - 480 VAC [M48]	208 - 480 VAC	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 600 - 690 VAC [M69]
Approvals/Marks	CE - UL - CSA	CE - UL - CSA	CE - cULus - CCC	CE - UL - CSA
References				
	DPA01D M23	DPA51C M44	DPA52CM44	DPA03C M23
	PPA01D M23	DPA71D M23		PPA03C M23
	DPA01C M44	DPA71D M48		DPA03C M48
	PPA01C M44			PPA03C M48
	DPA01D M48			DPA03C M69
	PPA01D M48			
	DPA01C M60			
	DPA01C M69			





Monitoring relays

3-phase voltage relays

Types	DPA 53	DPA 55	DPB 51	DPB52
				
Dimensions HxWxD (mm) DIN-rail housing	81 x 17.5 x 67.2 [Mini-D]	81 x 17.5 x 67.2 [Mini-D]	90 x 17.5 x 67.2 [Mini-D]	81 x 17.5 x 67.2 [Mini-D]
Function	Under voltage, phase sequence, total and partial phase loss monitoring relay. 3-phase AC TRMS (measures its own power supply). Regenerated voltage detection.	Over and under voltage, phase sequence, total and partial phase loss monitoring relay. 3-phase (measures its own power supply) AC TRMS. Two tolerance voltage windows. Regenerated voltage detection.	Over and under voltage, phase sequence, phase loss, neutral loss monitoring relay. 3-phase+N AC TRMS (measures its own power supply). Regenerated voltage detection 2 setpoints separately adjustable. Delay time adjustable.	Over and under voltage, phase sequence, phase loss monitoring 3-phase (measures its own power supply), switching power supply. Regenerated voltage detection. 2 setpoints separately adjustable. Delay time adjustable.
Input specifications				
Measuring range	208 - 240 VAC [M23] 380 - 480 VAC [M48]	208 - 480 VAC	208 - 480 VAC	208 - 480 VAC
Output specifications				
Type	1 x SPDT relay	1 x SPDT relay	1 x SPDT relay	1 x SPDT relay
Max. load AC1	5 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications				
Power supply	208 - 240 VAC [M23] 380 - 480 VAC [M48]	208 - 480 VAC	208 - 480 VAC	208 - 480 VAC
Approvals/Marks	CE - UL - CSA	CE - UL - CSA - CCC	CE - UL - CSA	CE - cULus - CCC
References				
	DPA53C M23 DPA53C M48	DPA55C M44	DPB51C M44	DPB52CM44

Monitoring relays

3-phase voltage relays

Types	DPB 01 PPB 01	DPB 02 PPB 02	DPC 01 PPC 01	DPC 71
				
Dimensions (mm) HxWxD	80 x 22.5 x 99.5 [D] 80 x 36 x 94 [P]	80 x 22.5 x 99.5 [D] 80 x 36 x 94 [P]	80 x 45 x 99.5 [D] 80 x 36 x 94 [P]	81 x 35.5 x 67.2 [D]
DIN-rail housing				
Plug-in housing				
Function	Over and under voltage, phase sequence, phase loss. 3-phase+N AC TRMS (measures its own power supply). N versions without phase sequence detection. Wide input voltage range, 50 Hz - 400 Hz [M44] 2 setpoints separately adjustable. Delay time adjustable.	Asymmetry, phase sequence, phase loss monitoring relay. 3-phase +N AC TRMS (measures its own power supply). Wide input voltage range, 50 Hz - 400 Hz [M44] Adjustable asymmetry. Delay time adjustable.	Over and under voltage, asymmetry and tolerance, phase sequence, phase loss monitoring relay. 3-phase+N AC TRMS (measures its own power supply), 50 Hz - 400 Hz mains. Setpoint separately adjustable by function.	Over and under voltage, asymmetry and tolerance, phase sequence, total and partial phase loss monitoring relay. 3-phase+N AC TRMS (measures its own power supply). Setpoints separately adjustable by function.

Input specifications

Measuring range	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 208 - 480 VAC [M44]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 208 - 480 VAC [M44]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 600 - 690 VAC [M69] Frequency 50 - 60 Hz 100 - 115 VAC [M11 400Hz] 208 - 240 VAC [M23 400Hz] 380 - 415 VAC [M48 400Hz] 440 - 480 VAC [M49 400Hz] 600 - 690 VAC [M69 400Hz] 208 - 690 VAC [M44] Frequency 50 - 400 Hz	208 - 240 VAC [M23] 380 - 480 VAC [M48]
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Output specifications

Type	1 x SPDT relay	1 x SPDT relay	2 x SPDT relays	2 x SPDT relays
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	8 A / 250 VAC	5 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations

General specifications

Power supply	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] [W] 208 - 480 VAC [M44]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] [W] 208 - 480 VAC [M44]	100 - 115 VAC [M11] 208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 440 - 480 VAC [M49] 600 - 690 VAC [M69] 208 - 690 VAC [M44]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48]
Approvals/Marks	CE - cULus - CCC	CE - cULus - CCC	CE - cULus - CCC - RINA	CE - UL - CSA

References

DPB01C M23	DPB02C M23	DPC01D M23	DPC71D M23
PPB01C M23	PPB02C M23	PPC01D M23	DPC71D M48
DPB01C M23 N	DPB02C M44	DPC01D M44	
PPB01C M23 N	PPB02C M44	DPC01D M48	
DPB01C M44	DPB02C M48	PPC01D M48	
PPB01C M44	PPB02C M48	DPC01D M69	
DPB01C M48		DPC01D M11 400HZ	
PPB01C M48		DPC01D M23 400HZ	
DPB01C M48 W4		DPC01D M48 400HZ	
PPB01C M48 W4		DPC01D M49 400HZ	
DPB01C M48 N		DPC01D M69 400HZ	
PPB01C M48 N			
DPB01C M48 N W4			
PPB01C M48 N W4			

Monitoring relays

3-phase multifunction voltage relays

Interface protection relays

Types

DPC 02

DPD 02

PI-DIN



Dimensions HxWxD (mm)	80 x 45 x 99.5 [D]	80 x 22.5 x 99.5	90 x 71.6 x 66.3
Description	Over and under voltage, over and under frequency, phase sequence, phase loss monitoring relay. 3-phase+N AC TRMS (measures its own power supply). Setpoints separately adjustable. Separately adjustable delay times. Adjustable frequency range.	Over and under voltage, over and under frequency, asymmetry detection, phase loss and phase sequence monitoring relay. NFC communication 3-phase / 3-phase+N AC TRMS (measures its own power supply). Digital settings, setpoints separately adjustable. Separately adjustable delay times. Adjustable frequency range.	1- or 3-phase systems monitoring relay interface protection.

Measuring input

Voltage range	208 - 240 VAC [M23] 380 - 415 VAC [M48] 440 - 480 VAC [M49] 600 - 690 VAC [M69] 208 - 690 VAC [M44]	208 VAC - 480 VAC	230 V _{LN} , 400 V _{LL}
Frequency range	50 / 60 Hz	50 - 400 Hz	47.5 to 51.5 Hz
Display			LCD, 2 lines 4 dgt, 1 line 8 dgt

Signal inputs

VDE-AR-N-4105			2 digitals
CEI 0-21			4 digitals

Output specifications

Type	2 x SPDT relays	2 x SPDT relays	2 x SPDT relays
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	8 A @ 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
Serial communication protocol			RS485
Protocol			Modbus RTU




General specifications

Power supply	208 - 240 VAC [M23] 308 - 415 VAC [M48] 440 - 480 VAC [M49] 600 - 690 VAC [M69] 208 - 690 VAC [M44]	208 VAC - 480 VAC	115..230 VCA -20% +15% (48..62 Hz) Option 24 VDC -20% +10%
Approvals/Marks	CE - cULus - CCC - RINA	CE - cULus - CCC - RINA	CE - VDE-AR-N4105:2018 - CEI-0-21 - ER-G98-Issue-1-Am-1 - ER-G99-Issue-1-Am-3 - Dansk Energi

References




	DPC02D M23	DPD02D M44	
	DPC02D M48	DPD02D M44B	
	DPC02D M44		
	DPC02D M49		
	DPC02D M69		
CEI 0-21 (AC aux power)			PIDIN0021HI4R2S1XX
CEI 0-21 (DC aux power)			PIDIN0021LI4R2S1XX
VDE-AR-N 4105:2018; CEI 0 - 21; ER G98 Issue 1 Am 1; ER G99 Issue 1 Am 3; Dansk Energi (AC aux power)			PIDIN0126HI2R2S1XX
VDE-AR-N 4105:2018; CEI 0 - 21; ER G98 Issue 1 Am 1; ER G99 Issue 1 Am 3; Dansk Energi (DC aux power)			PIDIN0126LI2R2S1XX

Monitoring relays





	Frequency relays		Cosφ relays
Types	DFB 01 PFB 01	DFC 01	DWA 01 PWA 01
			
Dimensions HxWxD (mm) DIN-rail housing Plug-in housing	80 x 22.5 x 99.5 [D] 80 x 36 x 94 [P]	80 x 45 x 99.5 [D]	80 x 22.5 x 99.5 [D] 80 x 36 x 94 [P]
Function	Frequency monitoring relay. 1-phase AC (measures its own power supply). 2 setpoints separately adjustable. Delay time adjustable.	Frequency monitoring relay. 1-phase AC (measures its own power supply). 2 setpoints separately adjustable. 2 separately adjustable delay times. 2 separate relay outputs.	Cosφ monitoring relay. 1- or 3-phase AC (measures its own power supply). Direct input or through external CT. Power ON delay adjustable.
Input specifications			
Measuring range	50 / 60 Hz	50 / 60 Hz	cosφ: 0.1-0.99
Output specifications			
Type	1 x SPDT relay	2 x SPDT relay	1 x SPDT relay
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	8 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications			
Power supply	24 - 240 VAC	24 - 48 VAC [B48] 115 - 230 VAC [B23]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48]
Approvals/Marks	CE - UL - CSA	CE - UL - CSA	CE - UL - CSA
References			
	DFB01C M24	DFC01D B48	DWA01C M23 5A
	PFB01C M24	DFC01D B23	PWA01C M23 5A
			DWA01C M48 5A
			PWA01C M48 5A

Monitoring relays

Power and power factor relays

Types	DWB 01 PWB 01	DWB 02 PWB 02	DWB 03 PWB 03
			
Dimensions HxWxD (mm)	80 x 45 x 99.5 [D] 80 x 36 x 94 [P]	80 x 45 x 99.5 [D] 80 x 36 x 94 [P]	80 x 45 x 99.5 [D] 80 x 36 x 94 [P]
DIN-rail housing			
Plug-in housing			
Function	Power factor monitoring relay. 1- or 3-phase (measures its own power supply) AC TRMS. Direct input or through external CT. 2 separately adjustable setpoints. Delay time adjustable. Power ON delay adjustable.	Active power monitoring relay. 1- or 3-phase (measures its own power supply) AC TRMS. Direct input or through external CT. 2 separately adjustable setpoints. Delay time adjustable. Power ON delay adjustable.	Active power, with power direction, monitoring relay. 1- or 3-phase AC TRMS (measures its own power supply). Direct input or through external CT. 2 separately adjustable setpoints. Delay time adjustable. Power ON delay adjustable.
Input specifications			
Measuring range	Power factor: 0.1 - 0.99	208 - 690 VAC 0.5 - 5 AAC 1 - 10 AAC 0.4 - 4 Vp	208 - 690 VAC 0.5 - 5 AAC 1 - 10 AAC 0.4 - 4 Vp
Output specifications			
Type	1 x SPDT relays	1 x SPDT relays	1 x SPDT relays
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	8 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations
General specifications			
Power supply	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 600 - 690 VAC [M69]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 600 - 690 VAC [M69]	208 - 240 VAC [M23] 380 - 415 VAC [P] [M48] 380 - 480 VAC [D] [M48] 600 - 690 VAC [M69]
Approvals/Marks	CE - UL - CSA	CE - UL - CSA	CE - UL - CSA
References			
	DWB01C M23 10A	DWB02C M23 10A	DWB03C M23 10A
	PWB01C M23 10A	PWB02C M23 10A	PWB03C M23 10A
	DWB01C M48 10A	DWB02C M48 10A	DWB03C M48 10A
	PWB01C M48 10A	PWB02C M48 10A	PWB03C M48 10A
	DWB01C M69 10A	DWB02C M69 10A	DWB03C M69 10A

Monitoring relays

	Motor thermistor relays			Pump alternating relays
Types	DTA 01 / PTA 01 DTA 02 / PTA 02	DTA 71 DTA 72	DTA 04	DLA 71 DLA 73
				
Dimensions HxWxD (mm)				
DIN-rail housing	80 x 22.5 x 99.5	81 x 35.5 x 67.2 [Mini-D]	80 x 22.5 x 99.5	81 x 35.5 x 67.2 [Mini-D]
Plug-in housing	80 x 36 x 94			
Function	Motor Thermistor relays. PTC insulated input. Automatic set-point. Short circuit detection. Latch, test and reset function [DTA02, PTA02].	Motor Thermistor relays. PTC insulated input. Automatic set-point. Short circuit and Open Circuit detection. Automatic Reset [DTA71] Auto or Manual reset, local or remote, test and ready for reset functions [DTA72].	Motor Thermistor relays. PTC insulated input. Automatic set-point. Short circuit and Open Circuit detection. Automatic or manual Reset, test, ready for reset functions.	Pump alternating relay. For 2 or 3 pumps. Differential or sequential mode. Automatic rotation of the pumps. Output relay managed by one independent input contact [DLA73].

Output specifications

Type	1 x SPDT relay or 1 x SPST relay	1 x SPDT relay [DTA71] 2 x SPDT relay [DTA72]	2 x SPST relays	2 x SPST relay [DLA71] [2P] 3 x SPST relay [DLA71] [3P] 3 x SPST relay [DLA73]
Max. load AC1	8 A / 250 VAC	8 A / 250 VAC	8 A / 250 VAC	5 A / 250 VAC
Max. load DC12	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC	5 A / 24 VDC
Electrical life	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations	>1 x 10 ⁵ operations

General specifications

Power supply	24 - 48 VAC/DC [D48] 115 VAC [115] 230 VAC [230]	24 - 240 VAC/DC	24 - 240 VAC/DC	24 / 48 VAC [B48] 115 / 230 VAC [B23]
Approvals/Marks	CE - UL - CSA	CE - cULus	CE - cULus	CE - UL - CSA

References

DTA01C D48	DTA71CM24	DTA04DM24	DLA71D B48 2P
DTA01C 115	DTA72DM24		DLA71T B48 3P
DTA01C 230			DLA71D B23 2P
DTA02C D48			DLA71T B23 3P
DTA02C 115			DLA73T B23 2P
DTA02C 230			DLA73T B48 2P
PTA01C D48			
PTA01C 115			
PTA01C 230			
PTA02C D48			
PTA02C 115			
PTA02C 230			

Monitoring Relays

3-Phase Max. and Min. Current Control

Type H 475

CARLO GAVAZZI



- 3-phased current metering relay
- Measures on current with 3-phased current metering transformers, type A74-.. ...
- Measures if all 3-phase currents are within set limits
- Upper and lower limits separately adjustable
- Output: 10 A SPDT relay
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- H4-housing
- LED-indication for power supply and output ON
- AC power supply 2-phases

Product Description

3-phase current metering relay with separate setting of upper and lower current level. For DIN-rail mounting. Often used where a certain applica-

tion such as a large mixer has to be kept within a set current value in order not to overload the system.

Ordering Key

H 475 156 230

Housing _____
 Type _____
 Output _____
 Power supply _____

Type Selection

Plug	Output	Supply: 115 VAC	Supply: 230 VAC	Supply: 400 VAC
Screw terminals	SPDT	H 475 156 115	H 475 156 230	H 475 156 400

Input Specifications

Input from current transformers	A74-.. ... Terminal 5 red, phase L1 Terminal 6 white, phase L2 Terminal 7 yellow, phase L3 Terminal 8 black
Input voltage	0.4-4 V _p

Supply Specifications

Power supply AC types	Overvoltage cat. III (IEC 60664) (IEC 60038)
Rated operational voltage	115 VAC ±15%, 45 to 65 Hz
Through term. 22 & 24	115 230 400
Voltage interruption	230 400
Dielectric voltage	2 kVAC (rms) (supply/elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μs) (line/neutral) (line/line), no direct connection to electronics
Rated operational power	2.5 VA

Output Specifications

Output	SPDT relay
Rated insulation voltage	250 VAC (rms) (cont./elect.)
Contact ratings (AgCdO)	μ (micro gap)
Resistive loads	AC 1 10 A/250 VAC (2500 VA) DC 1 1 A/250 VDC (250 W) or 10 A/25 VDC (250 W)
Small inductive loads	AC 15 2.5 A/230 VAC DC 13 5 A/24 VDC
Mechanical life	≥ 30 x 10 ⁶ operations
Electrical life	AC 1 ≥ 2.5 x 10 ⁵ operations (at max. load)
Operating frequency	≤ 7200 operations/h
Dielectric strength	Dielectric voltage ≥ 2 kVAC (rms) (cont./elect.) Rated impulse withstand volt. 4 kV (1.2/50 μs) (cont./elect.) (IEC 60664)



General Specifications

Reaction time	$\tau = 0.2$ s, worst case reaction time may be up to $5 \times \tau$
Indication for Power supply ON Output ON	LED, green LED, red
Environment Degree of protection Pollution degree Operating temperature Storage temperature	(IEC 60947-1) IP 20 B/front IP40 D (IEC 60529) 3 (IEC 60664) -20° to +50°C (-4° to +122°F) -50° to +85°C (-58° to +185°F)
Weight	300 g
CE Marking	Yes

Range Setting

Measuring range
3-phased current metering transformers measure in the following 4 ranges:

A 74-10 5 = 0.5 - 5 A
A 74-10 20 = 2 - 20 A
A 74-11 100 = 10 - 100 A
A 74-11 500 = 50 - 500 A

Range setting
Left potentiometer:
Lower limit. From 8 to 98% of nominal max. value for the current metering transformer employed.

Right potentiometer:
Upper limit. From 10 to 100% of nominal max. value for the current transformer employed.
If the lower limit is set above the upper limit, the output relay releases and cannot be activated before the lower limit is set lower than the upper limit.

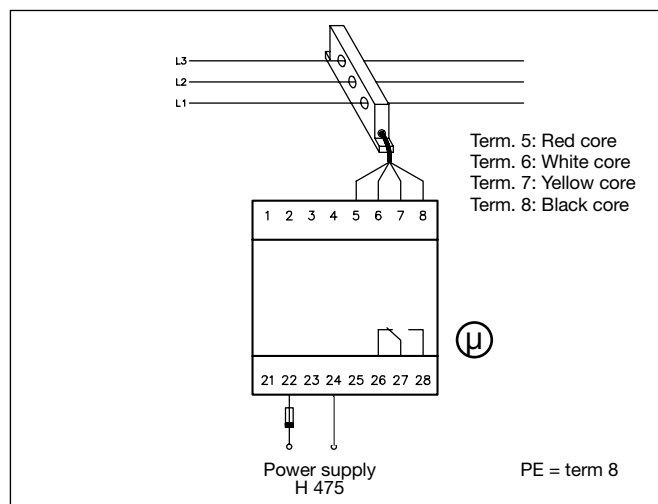
Hysteresis
Max. limit: - 2%
Min. limit: + 2%

Mode of Operation

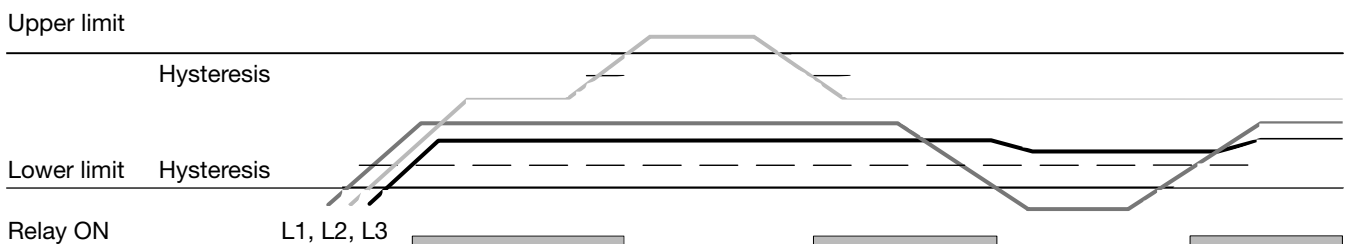
The relay requiring 2-phased power supply is used with one of the 3-phased current metering transformers, types A 74-10 5, A 74-10 20, A 74-11 100, A 74-11 500. When the supply voltage is applied the relay operates, provided the current flowing in all 3-phase cables exceeds the minimum current of the transformers and phase cables must be drawn through the transformer from the same side.

When the power supply is applied the relay operates when all 3-phase currents are within the set levels, and releases when one or more phase-phase currents exceed the upper set level or drop below the set level. The relay operates again when all 3-phase currents are within the set levels. Hysteresis on operate is approx. 2%. The phase sequence through the current metering transformer is arbitrary.

Wiring Diagram

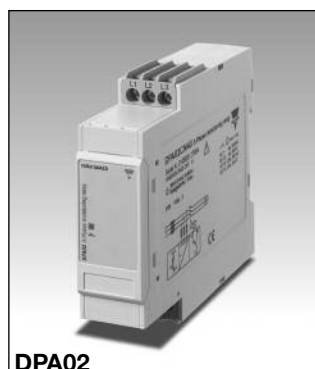


Operation Diagram



Monitoring Relays 3-Phase Sequence Types DPA02, PPA02

CARLO GAVAZZI



DPA02



PPA02

- 3-Phase monitoring relays for phase sequence
- Measure their own power supply
- Power supply range: 208 to 240 and 380 to 415 VAC ($\pm 15\%$)
- Output 8 A SPDT relay normally energized
- For mounting on DIN-rail in accordance with DIN/EN 50 022 or Plug-in module
- 22.5 mm Euronorm housing (DPA02) or 36 mm Plug-in module (PPA02)
- LED indication for relay ON

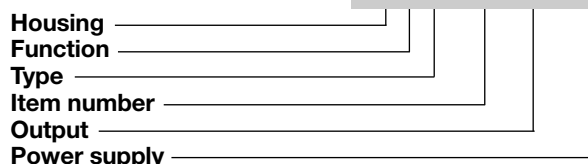
Product Description

3-phase relay for detection of incorrect phase sequence. Supply range from 208 to 240 and 380 to 415 VAC

covered by two multi voltage relays. For mounting on DIN-rail or Plug-in module.

Ordering Key

DPA 02 C M40



Type Selection

Mounting	Output	Supply: 208-240 VAC	Supply: 380-415 VAC
		DIN-rail	SPDT
Plug-in	SPDT	PPA 02 C M23	PPA 02 C M40

Input Specifications

Input L1, L2, L3	DPA02: Terminals L1, L2, L3 PPA02: Terminals 5, 6, 7 Measure their own supply
Measuring ranges 208 to 240 VAC 380 to 415 VAC	177 to 275 VAC 323 to 475 VAC

Supply Specifications

Power supply Rated operational voltage through terminals: L1, L2, L3 (DPA02) 5, 6, 7 (PPA02)	Overvoltage cat. III (IEC 60664, IEC 60038)
M23:	208 to 240 VAC $\pm 15\%$, 45 to 65 Hz
M40:	380 to 415 VAC $\pm 15\%$, 45 to 65 Hz
Rated operational power	5 VA @ 230 VAC, 50 Hz (M23) $\leq 6,5$ VA @ 230 VAC, 60 Hz (M23) 8 VA @ 400 VAC, 50 Hz (M40) $\leq 8,5$ VA @ 400 VAC, 60 Hz (M40) Supplied by L2 and L3

Output Specifications

Output	SPDT relay, N.E.
Rated insulation voltage	250 VAC
Contact ratings (AgSnO₂)	μ
Resistive loads	AC 1 8 A @ 250 VAC DC 12 5 A @ 24 VDC
Small inductive loads	AC 15 2.5 A @ 250 VAC DC 13 2.5 A @ 24 VDC
Mechanical life	$\geq 30 \times 10^6$ operations
Electrical life	$\geq 10^5$ operations (at 8 A, 250 V, $\cos \varphi = 1$)
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	≥ 2 kVAC (rms)
Rated impulse withstand volt.	4 kV (1.2/50 μ s)

General Specifications

Reaction time		
Alarm ON delay		< 100 ms
Alarm OFF delay		< 100 ms
Indication for Relay ON		LED, yellow
Environment		(EN 60529)
Degree of protection		IP 20
Pollution degree		3 (DPA02), 2 (PPA02) (IEC 60664)
Operating temperature		
@ Max. voltage, 50 Hz		-20 to 60°C, R.H. < 95%
@ Max. voltage, 60 Hz		-20 to 50°C, R.H. < 95%
Storage temperature		-30 to 80°C, R.H. < 95%
Housing		
Dimensions	DPA02	22.5 x 80 x 99.5 mm
	PPA02	36 x 80 x 94 mm
Material		PA66 or Noryl

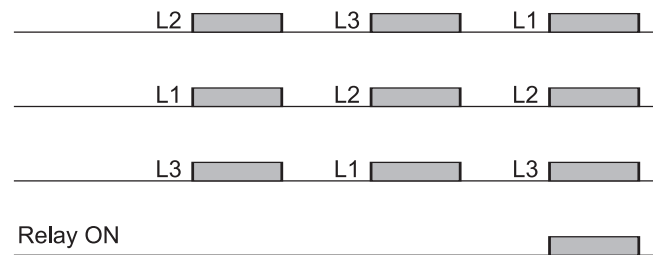
Weight	Approx. 100 g
Screw terminals	
Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Product standard	EN 60947-5-1
Approval	CSA CCC (GB14048.5) only DPA
CE Marking	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC
EMC Immunity Emissions	According to EN 61000-6-2 According to EN 61000-6-3

Mode of Operation

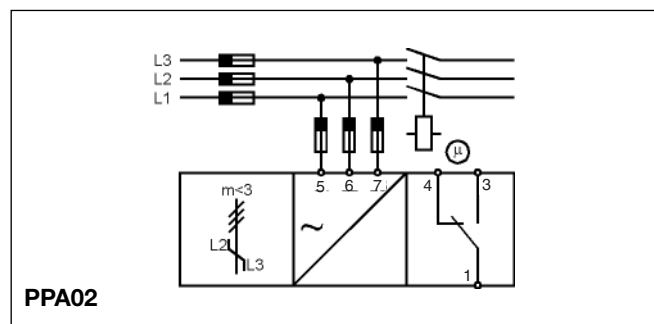
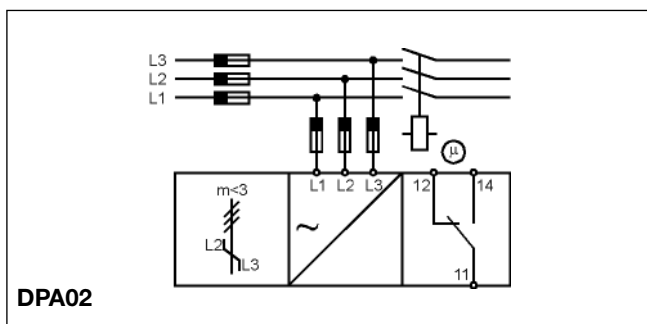
DPA02 and PPA02 monitor their own 3-phase power supply. The relay operates when the phase sequence is correct.

Example
The relay monitors the mains' phase sequence.

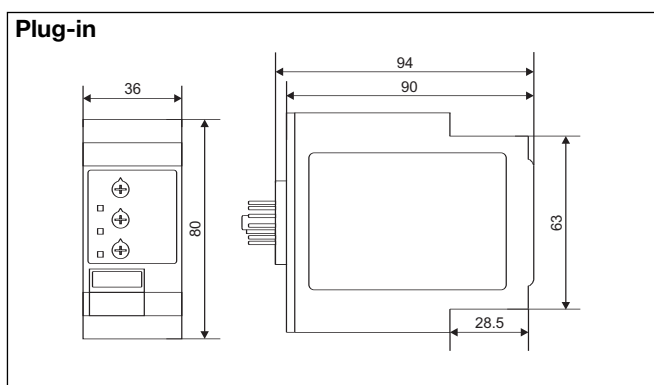
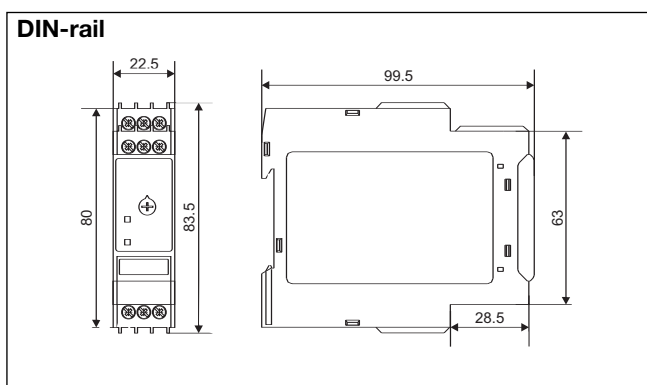
Operation Diagram



Wiring Diagrams

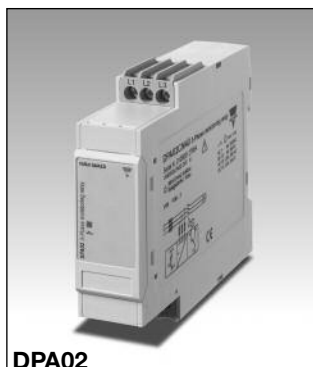


Dimensions



Monitoring Relays 3-Phase Sequence Types DPA02, PPA02

CARLO GAVAZZI



DPA02



PPA02

- 3-Phase monitoring relays for phase sequence
- Measure their own power supply
- Power supply range: 208 to 240 and 380 to 415 VAC ($\pm 15\%$)
- Output 8 A SPDT relay normally energized
- For mounting on DIN-rail in accordance with DIN/EN 50 022 or Plug-in module
- 22.5 mm Euronorm housing (DPA02) or 36 mm Plug-in module (PPA02)
- LED indication for relay ON

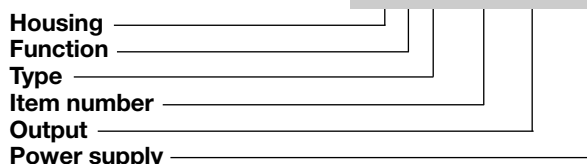
Product Description

3-phase relay for detection of incorrect phase sequence. Supply range from 208 to 240 and 380 to 415 VAC

covered by two multi voltage relays. For mounting on DIN-rail or Plug-in module.

Ordering Key

DPA 02 C M40



Type Selection

Mounting	Output	Supply: 208-240 VAC	Supply: 380-415 VAC
DIN-rail	SPDT	DPA 02 C M23	DPA 02 C M40
Plug-in	SPDT	PPA 02 C M23	PPA 02 C M40

Input Specifications

Input L1, L2, L3	DPA02: Terminals L1, L2, L3 PPA02: Terminals 5, 6, 7 Measure their own supply
Measuring ranges 208 to 240 VAC 380 to 415 VAC	177 to 275 VAC 323 to 475 VAC

Supply Specifications

Power supply Rated operational voltage through terminals: L1, L2, L3 (DPA02) 5, 6, 7 (PPA02)	Overvoltage cat. III (IEC 60664, IEC 60038)
M23:	208 to 240 VAC $\pm 15\%$, 45 to 65 Hz
M40:	380 to 415 VAC $\pm 15\%$, 45 to 65 Hz
Rated operational power	5 VA @ 230 VAC, 50 Hz (M23) $\leq 6,5$ VA @ 230 VAC, 60 Hz (M23) 8 VA @ 400 VAC, 50 Hz (M40) $\leq 8,5$ VA @ 400 VAC, 60 Hz (M40) Supplied by L2 and L3

Output Specifications

Output	SPDT relay, N.E.
Rated insulation voltage	250 VAC
Contact ratings (AgSnO₂)	μ
Resistive loads	AC 1 8 A @ 250 VAC DC 12 5 A @ 24 VDC
Small inductive loads	AC 15 2.5 A @ 250 VAC DC 13 2.5 A @ 24 VDC
Mechanical life	$\geq 30 \times 10^6$ operations
Electrical life	$\geq 10^5$ operations (at 8 A, 250 V, $\cos \varphi = 1$)
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	≥ 2 kVAC (rms)
Rated impulse withstand volt.	4 kV (1.2/50 μ s)

General Specifications

Reaction time		
Alarm ON delay		< 100 ms
Alarm OFF delay		< 100 ms
Indication for Relay ON		LED, yellow
Environment		(EN 60529)
Degree of protection		IP 20
Pollution degree		3 (DPA02), 2 (PPA02) (IEC 60664)
Operating temperature		
@ Max. voltage, 50 Hz		-20 to 60°C, R.H. < 95%
@ Max. voltage, 60 Hz		-20 to 50°C, R.H. < 95%
Storage temperature		-30 to 80°C, R.H. < 95%
Housing		
Dimensions	DPA02	22.5 x 80 x 99.5 mm
	PPA02	36 x 80 x 94 mm
Material		PA66 or Noryl

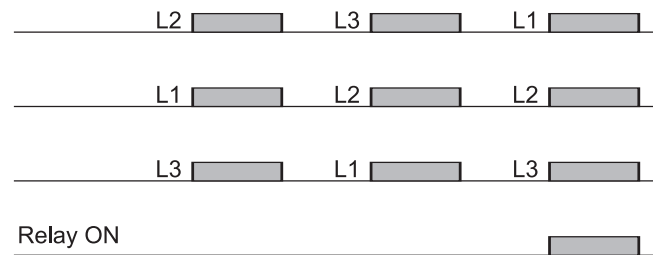
Weight	Approx. 100 g
Screw terminals	
Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Product standard	EN 60947-5-1
Approval	CSA CCC (GB14048.5) only DPA
CE Marking	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC
EMC Immunity Emissions	According to EN 61000-6-2 According to EN 61000-6-3

Mode of Operation

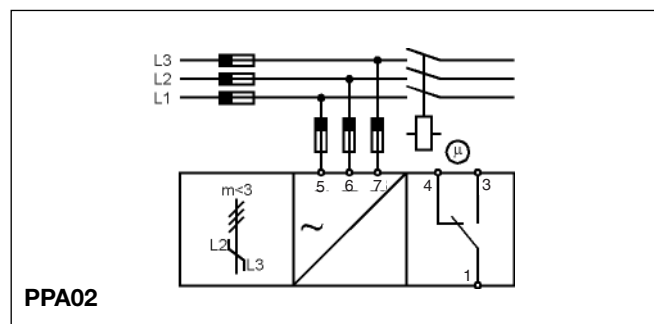
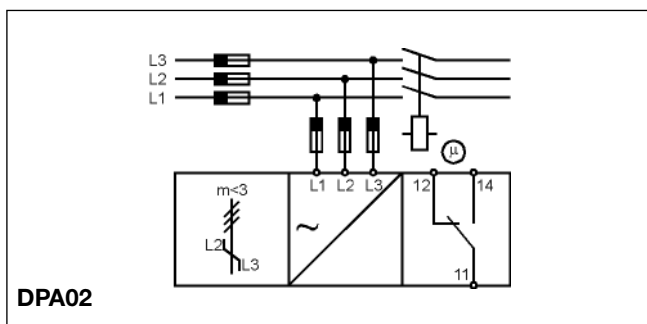
DPA02 and PPA02 monitor their own 3-phase power supply. The relay operates when the phase sequence is correct.

Example
The relay monitors the mains' phase sequence.

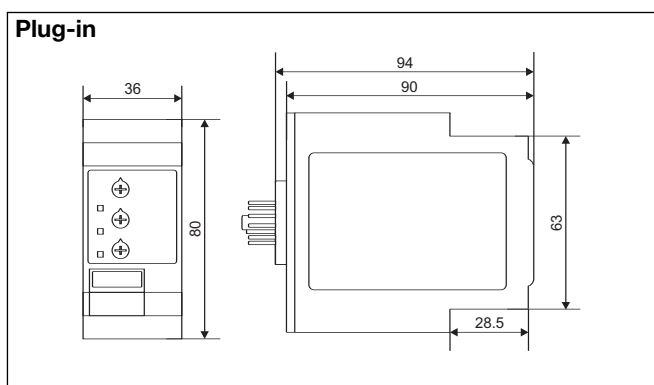
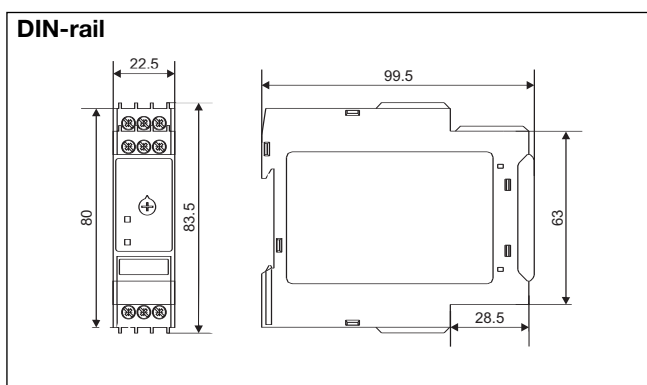
Operation Diagram



Wiring Diagrams



Dimensions



Current and Voltage Controls Current Transformer, 3-Phase Types A 74-10, A 74-11

CARLO GAVAZZI



- 3-phase current metering transformers for use with current control relays
- Measuring ranges:
A 74-10 5: 0.5 - 5 AAC
A 74-10 20: 2 - 20 AAC
A 74-11 100: 10 - 100 AAC
A 74-11 500: 50 - 500 AAC

Product Description

3-phase current transformer measures on all three phases. Output voltage proportional to measured amplitude of the rms-value of the normal phase current.

Ordering Key

A 74-10 5

Type _____
Input current _____

Type Selection

Input current	Type no.
5 AAC	A 74-10 5
20 AAC	A 74-10 20
100 AAC	A 74-11 100
500 AAC	A 74-11 500

Input Specifications

	A 74-10 5	A 74-10 20	A 74-11 100	A 74-11 500
Current range	0.5 - 5 AAC	2 - 20 AAC	10 - 100 AAC	50 - 500 AAC
Max. current (continuously)	20 AAC	50 AAC	250 AAC	750 AAC
Max. overload current (t = 30 s)	40 AAC	85 AAC	325 AAC	1000 AAC
Rated insulation voltage Input-output	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}
Overvoltage category	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)
Dielectric strength Dielectric voltage Rated impulse withstand volt.	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)
Power consumption	< 0.1 W@5 A	< 0.25 W@20 A	< 1.5 W@100 A	< 21 W@1500 A

Output Specifications

	A 74-10 5	A 74-10 20	A 74-11 100	A 74-11 500
Output voltage (T _A = 20°C = 68°F, R _L = 9.5 kΩ)	0.4 - 4 V _p	0.4 - 4 V _p	0.4 - 4 V _p	0.4 - 4 V _p
Output impedance	< 700 Ω	< 200 Ω	< 40 Ω	< 10 Ω
Tolerance of output voltage @ rated input current	± 5%	± 5%	± 5%	± 5%
Temperature variation	± 0.1% per °C	± 0.1% per °C	± 0.1% per °C	± 0.1% per °C
Rated insulation voltage (cable)	250 VAC _{rms}	250 VAC _{rms}	250 VAC _{rms}	250 VAC _{rms}



General Specifications

Pollution degree	3 (IEC 60664)	
Ambient temperature	- 20 to + 60°C (- 4 to + 140°F)	
Housing		
Dimensions	A74-10	120 x 45 x 16 mm
	A74-11	150 x 114 x 23
Material	ABS	
Weight	A 74-10	200 g
	A 74-11	750 g
Connection cable	2 m PVC, 4 x 0.4 mm ²	
Approval	UL	
CE Marking	Yes	

Mode of Operation

The current metering transformer is connected to the current control relays H 475 as follows:

Red core to term. 5 - U₁.
White core to term. 6 - U₂.
Yellow core to term. 7 - U₃.
Black core to term. 8. (starpoint - neutral).

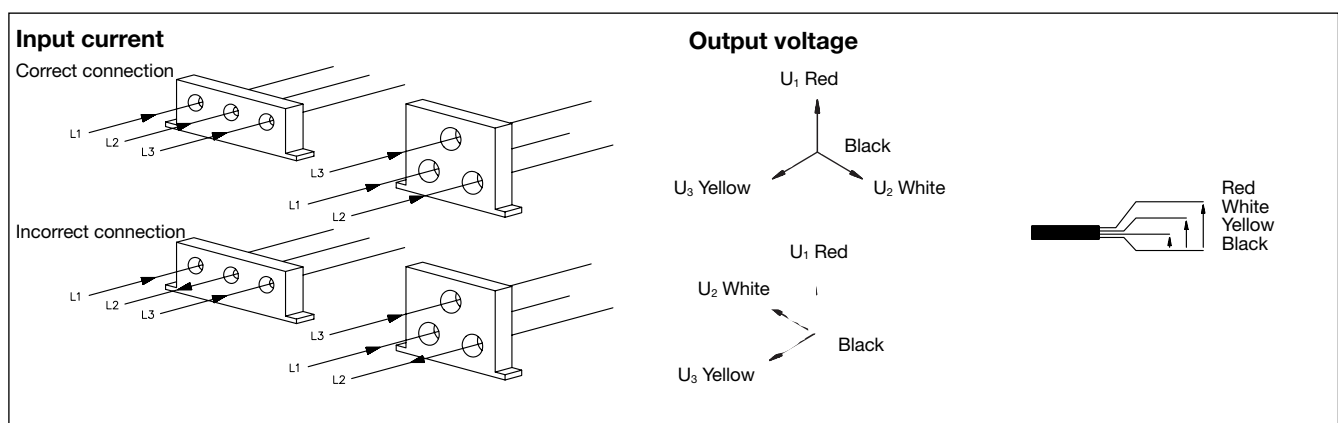
The metered conductor is drawn through the central hole of the current metering transformer. Drawing the con-

ductor through the hole several times makes it possible to meter currents below the nominal range.

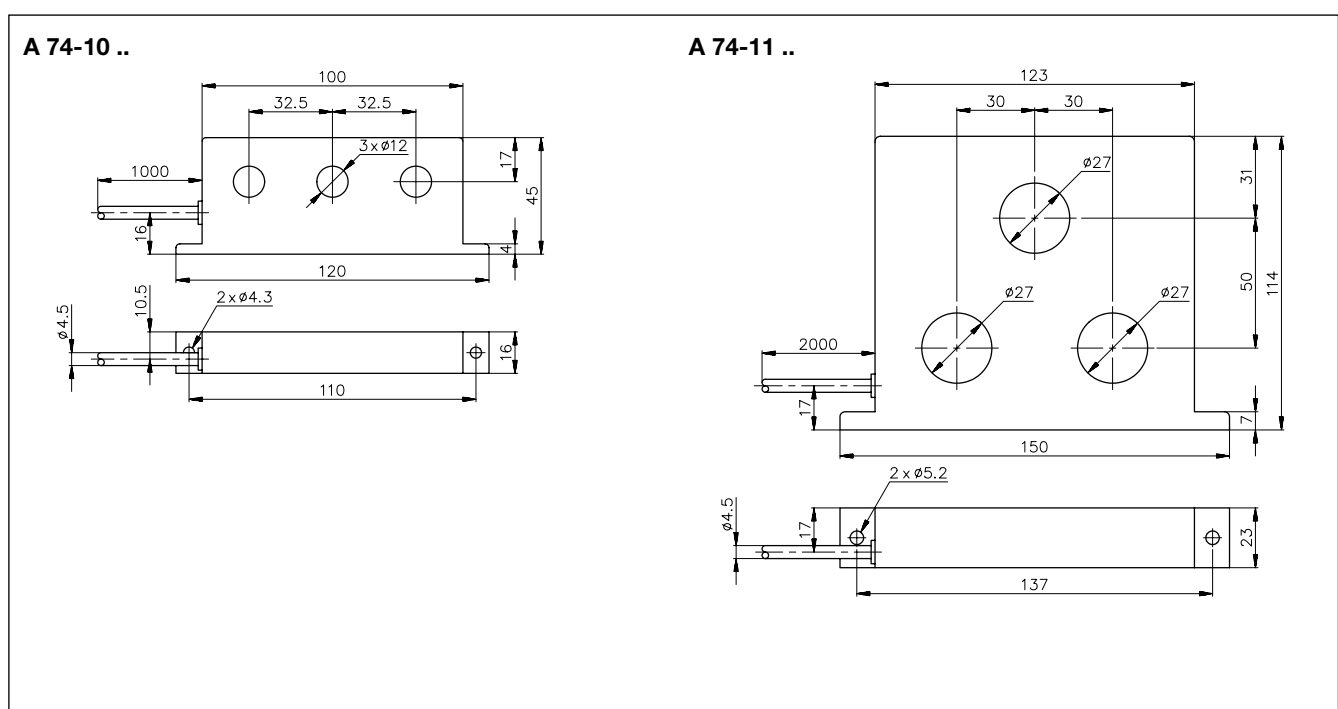
If the conductor is drawn through the central hole e.g. 5 times, the metering transformer will register 50 A when the current in the conductor is 10 A.

In amplitude and phase the output voltage is proportional to the phase current metered.

Wiring Diagrams



Dimensions



Monitoring Relays True RMS AC Current Transformer Types A 82-10, A 82-20, A 82-30

CARLO GAVAZZI



- 5 types of input:
 - 0 - 25 AAC
 - 0 - 50 AAC
 - 0 - 100 AAC
 - 0 - 250 AAC
 - 0 - 500 AAC
- Output:
 - A 82-10: 0 - 20 mADC (source)
 - A 82-20: 4 - 20 mADC (sink)
 - A 82-30: 0 - 10 VDC
- Easy interface to PLC or setpoint relays

Product Description

True RMS AC current metering transformer for 25, 50, 100, 250 or 500 AAC. Output current in accordance with IEC 60381-1 (A 82-10, A 82-20) or output voltage in accordance with IEC 60381-2 (A 82-30). A 82-10 and A 82-20 can be used with relays DIB01, PIB01, DIC01 or PIC01.

A 82-30 can be used with DUB01, PUB01, DUB71, DUC01 or PUC01. All units can be directly connected to a PLC. Power supply ON is indicated by a green LED on the side of the housing.

Ordering Key

A 82-10 50

Type _____
Output _____
Input current _____

Type Selection

Input current	Output	Type no.
25 AAC	0 - 20 mA	A 82-10 25
50 AAC	0 - 20 mA	A 82-10 50
100 AAC	0 - 20 mA	A 82-10 100
250 AAC	0 - 20 mA	A 82-10 250
500 AAC	0 - 20 mA	A 82-10 500
25 AAC	4 - 20 mA	A 82-20 25
50 AAC	4 - 20 mA	A 82-20 50
100 AAC	4 - 20 mA	A 82-20 100
250 AAC	4 - 20 mA	A 82-20 250
500 AAC	4 - 20 mA	A 82-20 500
25 AAC	0 - 10 V	A 82-30 25
50 AAC	0 - 10 V	A 82-30 50
100 AAC	0 - 10 V	A 82-30 100
250 AAC	0 - 10 V	A 82-30 250
500 AAC	0 - 10 V	A 82-30 500

Input Specifications

	A 82-10/20/30 25	A 82-10/20/30 50	A 82-10/20/30 100	A 82-10/20/30 250	A 82-10/20/30 500
Current range	0 - 25 AAC	0 - 50 AAC	0 - 100 AAC	0 - 250 AAC	0 - 500 AAC
Max. current (continuously)	600 AAC	600 AAC	600 AAC	600 AAC	600 AAC
Max. overload current (t = 30 s)	3000 AAC	3000 AAC	3000 AAC	3000 AAC	3000 AAC
Rated insulation voltage Input - output	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}
Overvoltage category	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)
Dielectric strength Dielectric voltage Rated impulse withstand volt.	6 kVAC _{rms} 12 kV (1.2/50 µs)	6 kVAC _{rms} 12 kV (1.2/50 µs)	6 kVAC _{rms} 12 kV (1.2/50 µs)	6 kVAC _{rms} 12 kV (1.2/50 µs)	6 kVAC _{rms} 12 kV (1.2/50 µs)



Output Specifications

Rated insulation voltage (cable)	250 VAC _{rms}	
Output	A 82-10	0 - 20 mADC
	A 82-20	4 - 20 mADC
	A 82-30	0 - 10 VDC
Power supply (loop voltage)	A 82-10, A 82-20 10 - 40 VDC	
	A 82-30 18 - 40 VDC	
Tolerance of output current @ 50 Hz	A 82-10	±2%
	A 82-20	± 2%
Tolerance of output voltage @ 50 Hz	A 82-30	±2%
Temperature variation	±400 ppm/°C	
Frequency range	40 Hz -1 kHz	
Frequency variation	10 ppm/Hz	
Maximum output current	A 82-10, A 82-20 30 mADC	
Maximum output voltage	A 82-30	15 VDC
Minimum output load	A 82-30	10 kΩ

General Specifications

Power ON delay	< 2 s
Reaction time	T < 200 ms
Indication for Power supply ON	LED, green
Environment	
Degree of protection	IP 40
Pollution degree	3 (IEC 60664)
Operating temperature	-20° to 50°C (-4° to +122 °F)
Housing	
Dimensions	95 x 67.5 x 20 mm
Material	ABS
Weight	
A 82-10, A 82-30	300 g
A 82-20	270 g
Connection cable	
A 82-10, A 82-30	2 m, 3 x 0.25 mm ²
A 82-20	2 m, 2 x 0.25 mm ²
Approval	cURus
CE marking	Yes
EMC	
Immunity	Electromagnetic Compatibility According to EN 61000-6-1 (tolerance of output current/voltage: ± 2%) According to EN 61000-6-2 (tolerance of output current/voltage: ± 5%)
Emission	According to EN 61000-6-3

Mode of Operation

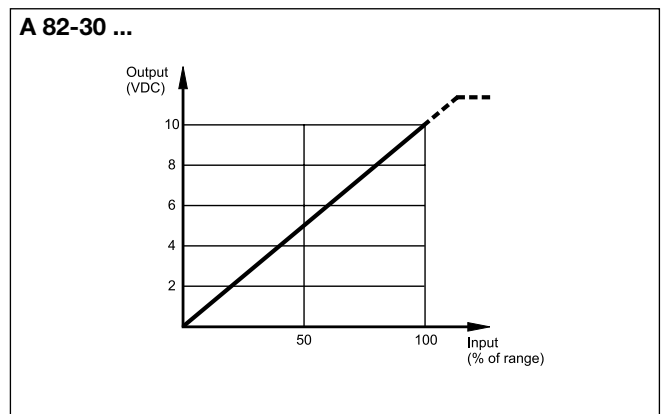
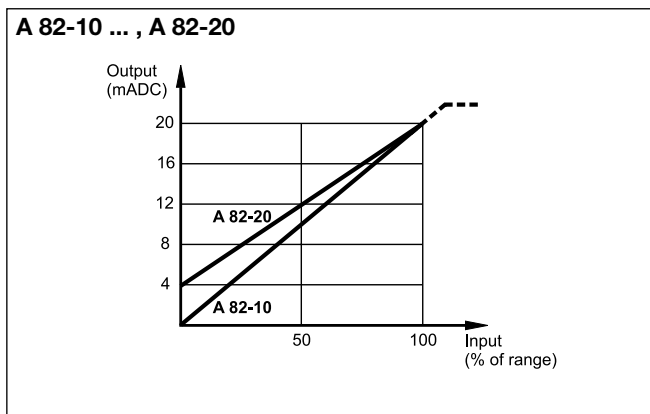
A 82-10 and A 82-20 are true RMS current metering transformers with standard source/sink output 0-20 mA / 4-20 mA, whereas A 82-30 is a metering transformer with 0-10 VDC output voltage. This makes them very useful as an AC current inter-

face to a PLC with mADC or VDC input. Used with relays DIB01, PIB01, DIC01, PIC01 (A 82-10, A 82-20) or DUB01, PUB01, DUB71, DUC01, PUC01 (A 82-30), one or more setpoints can monitor the current and signal alarm.

The metered conductor is drawn through the central hole of the current metering transformer. It is possible to meter currents below the nominal range by drawing the conductor through the hole several times. If the conductor is drawn through

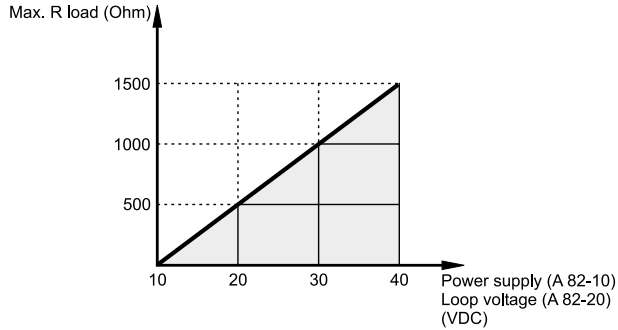
the central hole e.g. 5 times, the transformer will register 50 A when the current in the conductor is 10 A.

Input/Output Curve



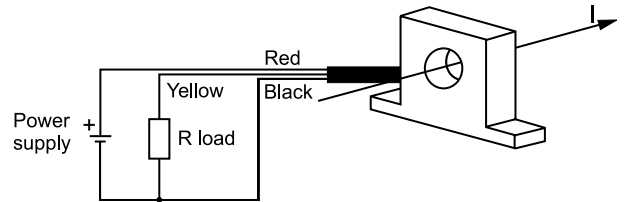
Resistance/Voltage Curve

A 82-10 ... , A 82-20
 (max. load resistance vs Power supply - Loop voltage)



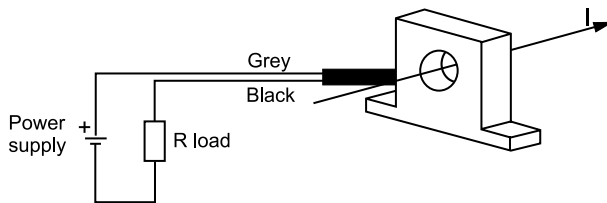
Wiring Diagrams

A 82-10 ... (source)

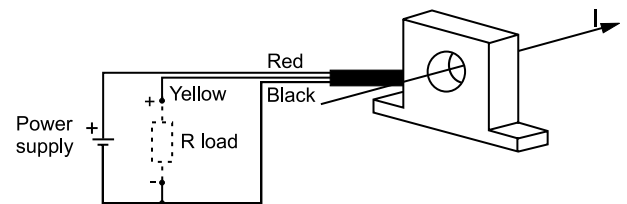


Wiring Diagrams (cont.)

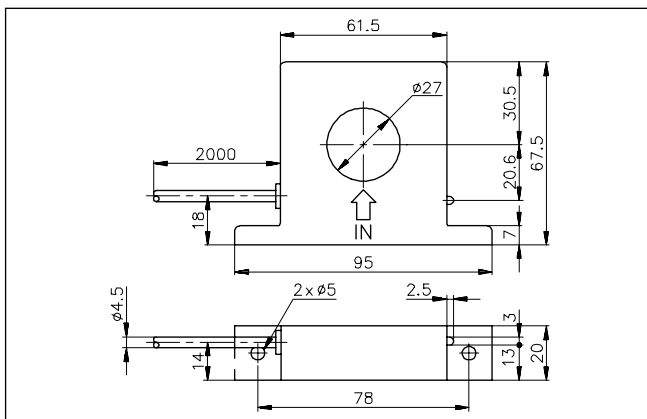
A 82-20 ... (sink)



A 82-30 ...



Dimensions



CTG



Core balance transformer



Benefits

- High sensitivity.
- Wide range.
- Easy installation.

Description

CTG is a family of "core balance transformers". These devices detect the difference in the current flow on the lines running through the coil. They work on either single phase or three-phase mains.

When the vectorial sum of the current flowing to the load and the one flowing on the NEUTRAL cable (if present) is different from "0" (zero), a current on the CT secondary circuit is generated.

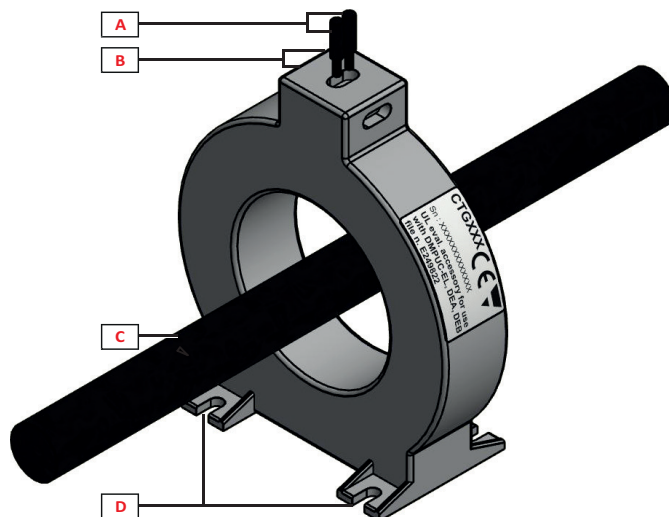
The current difference is usually caused by a leak which may cause an hazard.

The output signal can be used by a residual current monitoring device which will disconnect the monitored load or send an alarm signal.

Applications

CTGs are used for detecting current leaks, potentially hazardous, on electric loads. Typically on electric motors, pumps or devices installed in metallic structures. They are approved to be used in conjunction with Carlo Gavazzi DEA71 and DEB71 earth leakage monitoring relays.

Structure



Element	Component	Function
A	Terminals	CT secondary, connection cables
B	Terminals screws	CT secondary, tightening screws
C	Monitored line	Monitored mains line Multi wire cable: - Single phase: Line + Neutral - Three Phase: L1, L2, L3 or L1, L2, L3 +N Important Note: Do not route earth wire through the CTG
D	Fixing flange	Panel mount fixing flange (CTG035 also with DIN rail adapter)

Features

General

Protection degree	IP20
Weight (packaging included)	CTG035: Approx. 80 g CTG050: Approx. 100 g CTG070: Approx. 125 g CTG120: Approx. 235 g CTG160: Approx. 1220 g CTG210: Approx. 1860 g
Dimensions (mm) (WxHxD)	CTG035: 64 x 74 x 20 mm CTG050: 87 x 98 x 20 mm CTG070: 105 x 117 x 20 mm CTG120: 155 x 170 x 20 mm CTG160: 241 x 254 x 33 mm CTG210: 290 x 304 x 33 mm
Internal diameter	CTG035: 35mm CTG050: 50mm CTG070: 70mm CTG120: 120mm CTG160: 161mm CTG210: 210mm

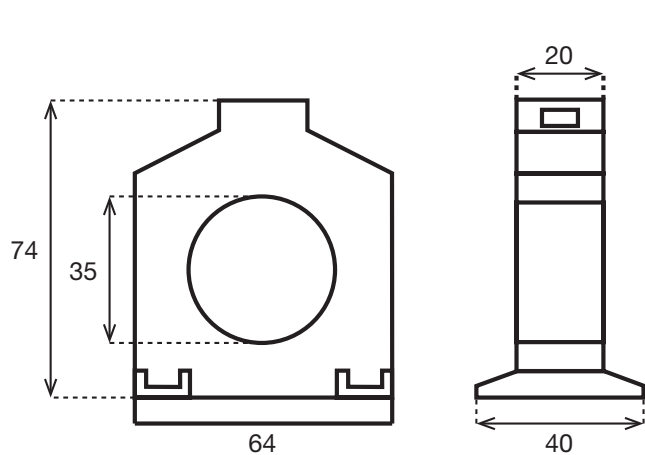


Fig. 1 CTG035

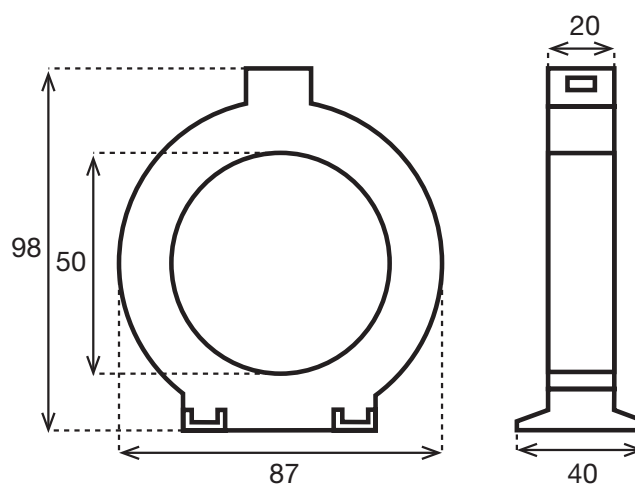


Fig. 2 CTG050

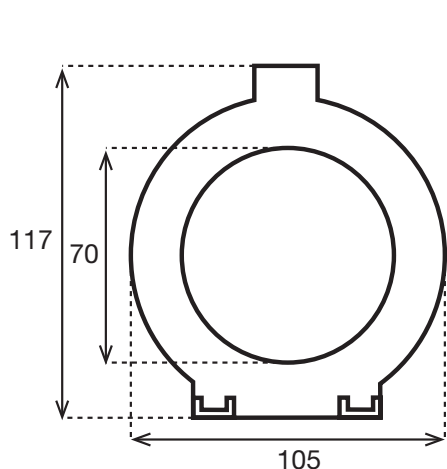


Fig. 3 CTG070

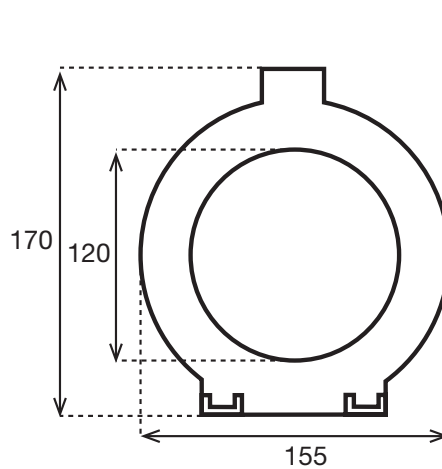


Fig. 4 CTG120

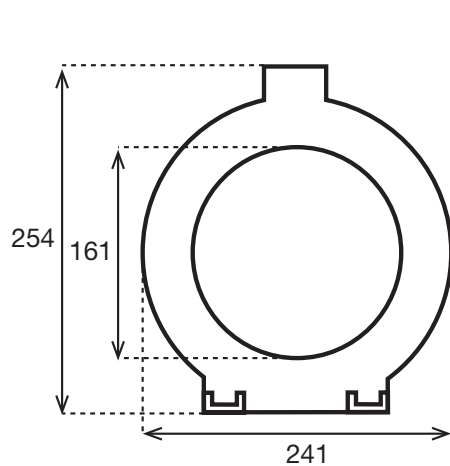


Fig. 5 CTG160

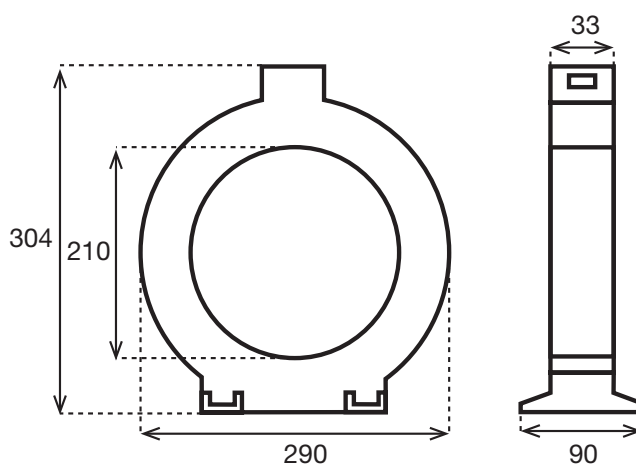


Fig. 6 CTG210

Environmental

Operating temperature	-5°C to +50°C (+23°F to 122°F)
Storage temperature	-5°C to +50°C (+23°F to 122°F)
Relative humidity	<95%

Compatibility and conformity

Standard compliance	According to IEC 61869-2
Approvals	cUL (when used in conjunction with Carlo Gavazzi devices: DEA71, DEB71 or DMPUC-EL)
CE-marking	Complies to European Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU

Input/Output

Current transformer ratio	1000/1
Operating frequency	50-60 Hz
Max. system voltage	720 VAC
Rated insulation level	3 kV AC
Nominal current (In)	80A (CTG035) 100A (CTG050) 160A (CTG070) 250A (CTG120) 320A (CTG160) 400A (CTG210)
Short-term thermal current (I_{th})	50 x I _n
Dynamic current (I_{dyn})	2.5 x I _{th}
Overload current	480A (CTG035) 600A (CTG050) 960A (CTG070) 1500A (CTG120) 1920A (CTG160) 2400A (CTG210)

Connections

Primary connection	Single phase or 3 phase mains, pass through
Secondary connection	Screw type 2 x 2.5mm ²

Type selection

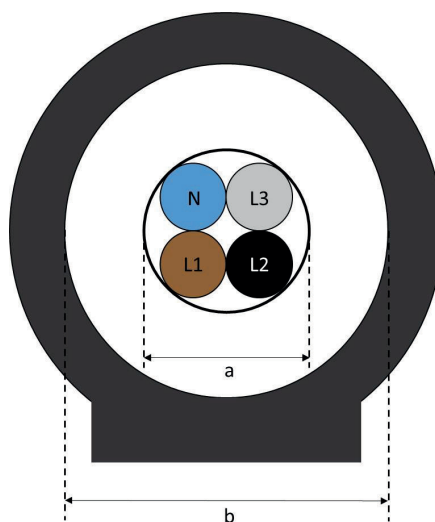


Fig. 7 Selection

Select the correct CTG size according to mains cable dimension: referring to fig. 7 the dimension of CTG shall be: $b \geq 1.5 * a$.

References

Further reading

Information	Document	Where to find it
DEA71 Datasheet	dea71_ds.pdf	http://www.productselection.net/PDF/UK/dea71_ds.pdf
DEB71 Datasheet	deb71_ds.pdf	http://www.productselection.net/PDF/UK/deb71_ds.pdf
DEA/DEB/CTG Instruction manual	dea_deb_im.pdf	http://www.productselection.net/manuals/UK/dea_deb_im.pdf
2D drawings	2D_CTG.zip	http://www.productselection.net/dxf/2D_ctg.zip
3D drawings	3D_CTG.zip	http://www.productselection.net/dxf/3D_ctg.zip

Order code



Complete the code entering the corresponding option instead of

Code	Option	Description
CTG	-	Core balance transformer
<input type="checkbox"/>	035	35 mm Internal diameter
	050	50 mm Internal diameter
	070	70 mm Internal diameter
	120	120 mm Internal diameter
	160	160 mm Internal diameter
	210	210 mm Internal diameter

Monitoring Relays AC Current Transformer Type E 83-20-50

CARLO GAVAZZI



- 7 input ranges in one unit:
 - 0 - 5 AAC
 - 0 - 10 AAC
 - 0 - 15 AAC
 - 0 - 20 AAC
 - 0 - 25 AAC
 - 0 - 30 AAC
 - 0 - 50 AAC
- Output 4-20 mADC
- Easy interface to PLC or setpoint relays
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 22.5 mm small Euronorm housing

Product Description

Small AC current metering transformer with 7 knob selectable ranges. Output from the transformer is 4-20 mADC in accordance with IEC 60381-1. Can be used with relays DIB01, PIB01, DIC01 or PIC01 or directly connected to a PLC.

Power supply ON is indicated by a green LED. 12 mm hole for isolated current carrying wire makes it suitable for most applications. For mounting on DIN-rail or directly on surface by screws.

Ordering Key

E 83-20 50

Type _____
 Output _____
 Input current (highest range) _____

Type Selection

Input current	Output current	Switch position	Type no.
0- 5 AAC	4 - 20 mA	5	E83-20 50
0-10 AAC	4 - 20 mA	10	E83-20 50
0-15 AAC	4 - 20 mA	15	E83-20 50
0-20 AAC	4 - 20 mA	20	E83-20 50
0-25 AAC	4 - 20 mA	25	E83-20 50
0-30 AAC	4 - 20 mA	30	E83-20 50
0-50 AAC	4 - 20 mA	50	E83-20 50

Input Specifications

Current range	0 - 5 AAC	0 - 10 AAC	0 - 15 AAC	0 - 20 AAC
Max. current (continuously)	100 AAC	100 AAC	100 AAC	100 AAC
Max. overload current (t = 30 s)	300 AAC	300 AAC	300 AAC	300 AAC
Overvoltage category	III (IEC 60664)	III (IEC 60664)	III (IEC 60664)	III (IEC 60664)
Frequency range	40 Hz - 1 kHz	40 Hz - 1 kHz	40 Hz - 1 kHz	40 Hz - 1 kHz
Current range	0 - 25 AAC	0 - 30 AAC	0 - 50 AAC	
Max. current (continuously)	100 AAC	100 AAC	100 AAC	
Max. overload current (t = 30 s)	300 AAC	300 AAC	300 AAC	
Overvoltage category	III (IEC 60664)	III (IEC 60664)	III (IEC 60664)	
Frequency range	40 Hz - 1 kHz	40 Hz - 1 kHz	40 Hz - 1 kHz	

Output Specifications

Output current (sink)	4-20 mADC
Maximum output current	30 mADC
Tolerance of output current @ 50 Hz	± 2%
Temperature variation	± 400 ppm/°C
Frequency variation	10 ppm/Hz
Power supply (loop voltage)	10-40 VDC

General Specifications

Power ON delay	< 2 s
Reaction time	T < 200 ms
Indication for Power supply ON	LED, green
Environment	
Degree of protection	IP 20
Pollution degree	3
Operating temperature	-20° to +50°C (-4° to +122°F)
Housing	
Dimensions	22.5 x 56 x 49 mm
Material	ABS
Weight	70 g
Approval	UL
CE Marking	Yes
EMC	
Immunity	Electromagnetic Compatibility According to EN 61000-6-1 (tolerance of output current: ± 2%) According to EN 61000-6-2 (tolerance of output current: ± 5%)
Emission	According to EN 61000-6-3

Mode of Operation

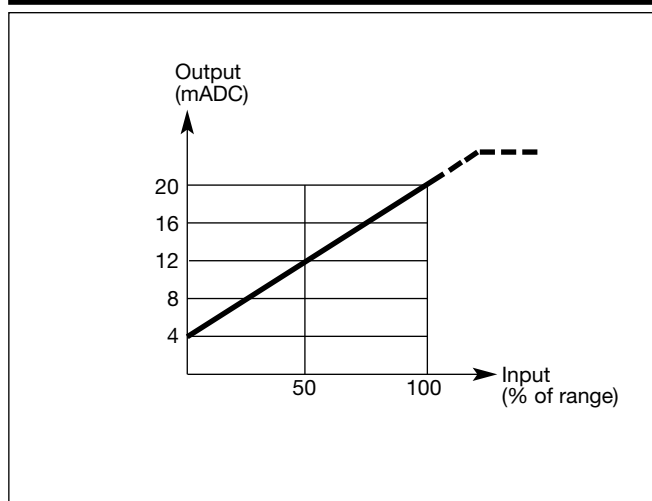
The E 83-20 is a small AC current metering transformer with standardized 4-20 mADC output. This makes it very useful as an AC current interface to a PLC with 4-20 mADC input. Used with relays DIB01, PIB01, DIC01 or PIC01, one

or more setpoints can monitor the current and signal alarm. In the 5 A range the E 83-20 is often used as a 4-20 mADC signal converter for larger standard AC current transformers with 5 AAC secondary output.

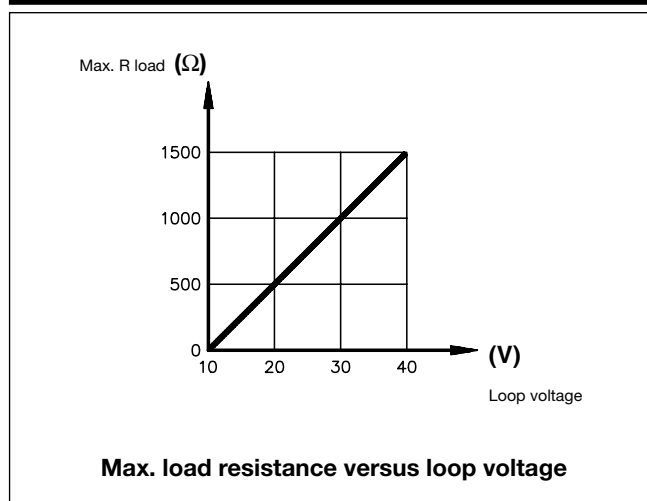
The metered conductor is drawn through the central hole of the current metering transformer. It is possible to measure currents below the nominal range by drawing the conductor through the hole several times. If the conductor is drawn through

the central hole e.g. 5 times, the transformer will register 5 AAC when the current in the conductor is 1 AAC.

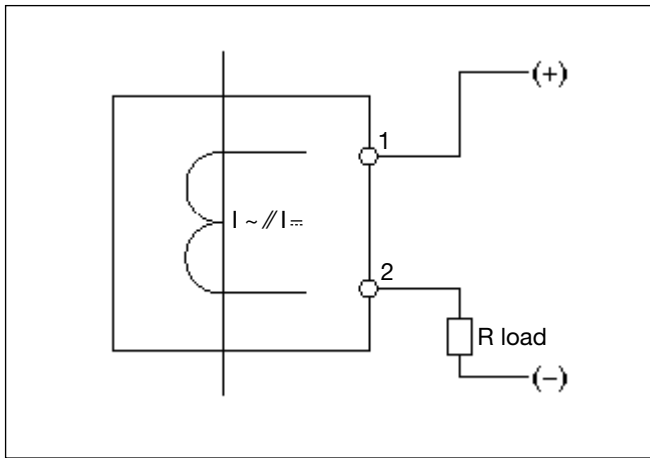
Input/Output Curve



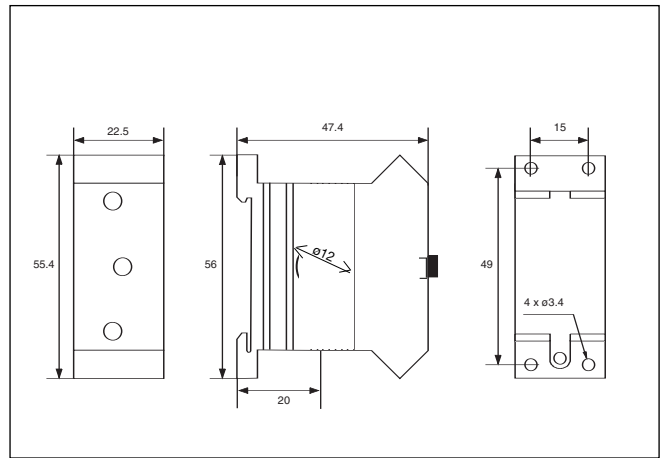
Resistance/Voltage Curve



Wiring Diagram

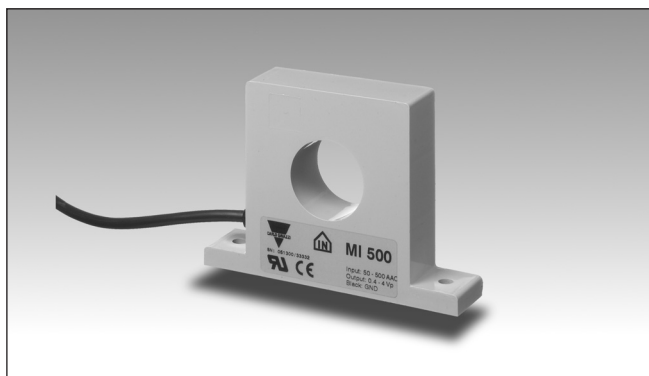


Dimensions



Monitoring Relays Current Transformer, 1-Phase AC Types MI 5, MI 20, MI 100, MI 500

CARLO GAVAZZI



- 1-phase current metering transformer for use with control relays types: DUA01, PUA01, DIB02, PIB02, DIC01, PIC01, DWA01, PWA01, DWB01, PWB01, DWB02, PWB02, DWB03, PWB03, S 180, H 479
- Measuring ranges:
 - MI 5: 0.5 - 5 AAC
 - MI 20: 2 - 20 AAC
 - MI 100: 10 - 100 AAC
 - MI 500: 50 - 500 AAC

Product Description

AC current transformers for 5, 20, 100, 500 AAC. Output voltage (0.4 - 4 V_p) is proportional to measured current.

Ordering Key

MI 500

Type _____
Input current _____

Type Selection

Input current	Type no.
5 AAC	MI 5
20 AAC	MI 20
100 AAC	MI 100
500 AAC	MI 500

Input Specifications

	MI 5	MI 20	MI 100	MI 500
Current range	0.5 - 5 AAC	2 - 20 AAC	10 - 100 AAC	50 - 500 AAC
Max. current (continuously)	20 AAC	50 AAC	250 AAC	750 AAC
Max. overload current (t = 30 s)	40 AAC	85 AAC	325 AAC	1000 AAC
Frequency range	40 Hz-1 kHz	40 Hz-1 kHz	40 Hz-1 kHz	40 Hz-1 kHz
Rated insulation voltage Input-output	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}
Overtoltage category	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)
Dielectric strength Dielectric voltage Rated impulse withstand volt.	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)
Power consumption	< 100 mW/5 A	< 100 mW/20 A	< 0.5 W/100 A	< 6 W/500 A

Output Specifications

	MI 5	MI 20	MI 100	MI 500
Output Voltage (T _A = 20°C, R _L = 9.5 kΩ)	0.4 - 4 V _p	0.4 - 4 V _p	0.4 - 4 V _p	0.4 - 4 V _p
Output impedance	< 700 Ω	< 200 Ω	< 40 Ω	< 10 Ω
Tolerance of output voltage @ rated input current	± 5%	± 5%	± 5%	± 5%
Temperature variation	± 0.1% per °C	± 0.1% per °C	± 0.1% per °C	± 0.1% per °C
Rated insulation voltage (cable)	250 VAC _{rms}	250 VAC _{rms}	250 VAC _{rms}	250 VAC _{rms}

General Specifications

Pollution degree		3 (IEC 60664)
Ambient temperature		- 20° to + 60°C (- 4° to + 140°F)
Housing		
Dimensions	MI 5, MI 20	52 x 45 x 16 mm
	MI 100, MI 500	95 x 67.5 x 20 mm
Material		ABS
Weight		
	MI 5, MI 20	70 g
	MI 100, MI 500	270 g
Connection cable		
	MI 5, MI 20	1 m, 2 x 0.25 mm ²
	MI 100, MI 500	2 m, 2 x 0.25 mm ²
Approval		UL
CE-marking		Yes

Mode of Operation

The metered conductor is drawn through the central hole of the current metering transformer. Drawing the conductor through the hole several times makes it possible to meter currents below the nominal range.

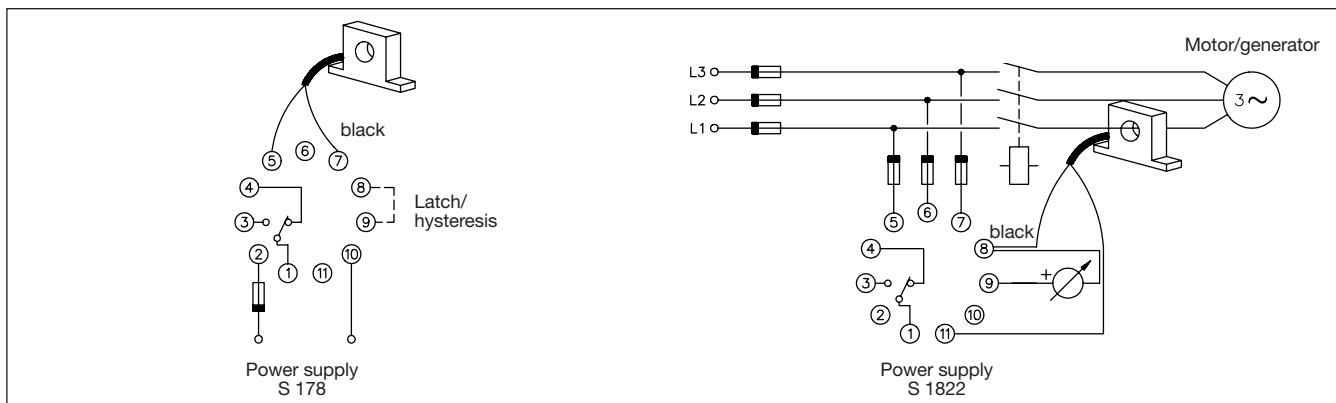
If the conductor is drawn through the central hole e.g. 5 times, the metering transformer will register 50 A when

the current in the conductor is 10 A.

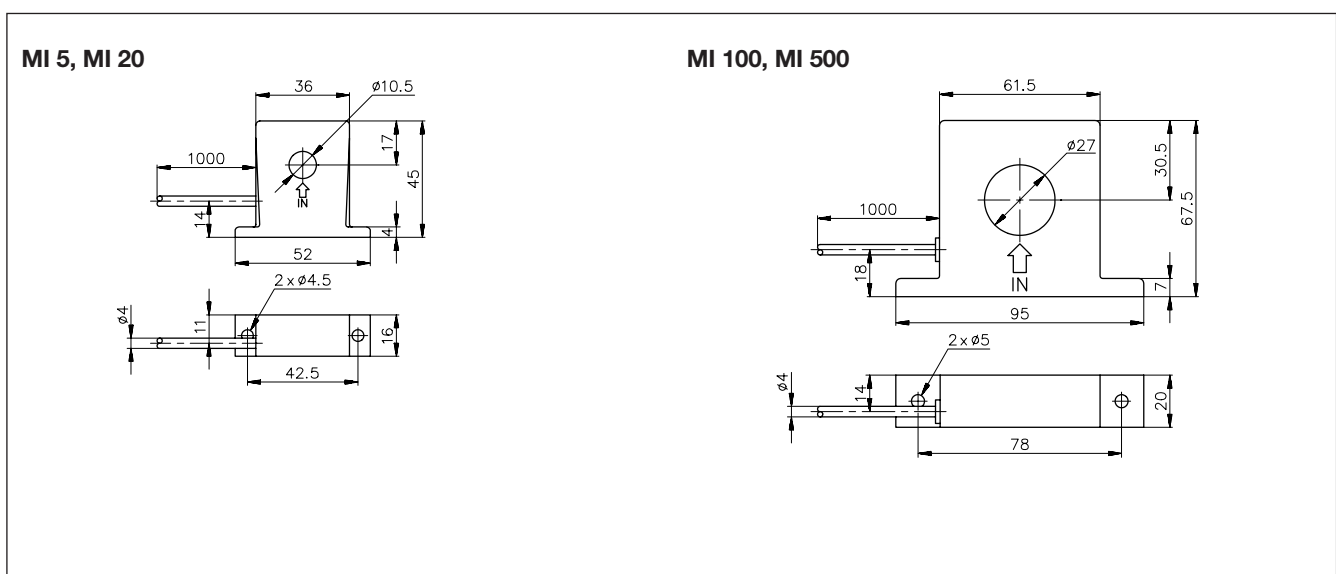
In amplitude and phase the output voltage is proportional to the phase current metered.

4 V_p will then be equal to the rms-value of the nominal phase current.

Wiring Diagrams

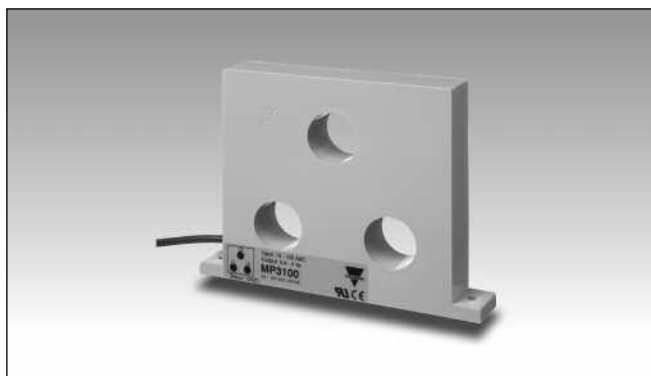


Dimensions



Monitoring Relays Current Transformer, 3-Phase Types MP 3005, MP 3020, MP 3100, MP 3500

CARLO GAVAZZI



- 4 types of input:
 - 0.5 - 5 A
 - 2 - 20 A
 - 10 - 100 A
 - 50 - 500 A
- For use in connection with control relays types e.g. DIB02, PIB02, DUA01, PUA01

Product Description

3-phase current transformers for 5, 20, 100 or 500 AAC. Output voltage (0.4 - 4 V_p) is proportional to measured current.

Ordering Key

MP 3005

Type _____
Input current _____

Type Selection

Input current	Type no.
5 A	MP 3005
20 A	MP 3020
100 A	MP 3100
500 A	MP 3500

Input Specifications

	MP 3005	MP 3020	MP 3100	MP 3500
Current range	0.5 - 5 AAC	2 - 20 AAC	10 - 100 AAC	50 - 500 AAC
Max. current (continuously)	20 AAC	50 AAC	150 AAC	500 AAC
Frequency range	40 Hz-1 kHz	40 Hz-1 kHz	40 Hz-1 kHz	40 Hz-1 kHz
Rated insulation voltage Input-output	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}	1000 VAC _{rms}
Overvoltage category	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)	IV (IEC 60664)
Dielectric strength Dielectric voltage Rated impulse withstand volt.	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)	6 kVAC _{rms} 12 kV (1.2/50 μs)
Power consumption	< 300 mW @ 5 A	< 300 mW @ 20 A	< 2 W @ 100 A	< 21 W @ 500 A

Output Specifications

	MP 3005	MP 3020	MP 3100	MP 3500
Output voltage (in connection with SM 115)	0.4 - 4 V _p	0.4 - 4 V _p	0.4 - 4 V _p	0.4 - 4 V _p
Rated insulation voltage (cable)	250 VAC _{rms}	250 VAC _{rms}	250 VAC _{rms}	250 VAC _{rms}



General Specifications

	MP 3005	MP 3020	MP 3100	MP 3500
Pollution degree	3 (IEC 60664)	3 (IEC 60664)	3 (IEC 60664)	3 (IEC 60664)
Ambient temperature	- 20° to + 60°C (- 4° to + 140°F)	- 20° to + 60°C (- 4° to + 140°F)	- 20° to + 60°C (- 4° to + 140°F)	- 20° to + 40°C (- 4° to + 104°F) (max. amb. temp for < 200 A is + 60°C (+140°F))
Housing				
Dimensions	120 x 45 x 16 mm	120 x 45 x 16 mm	150 x 114 x 23 mm	150 x 114 x 23 mm
Material	ABS	ABS	ABS	ABS
Weight	200 g	200 g	750 g	750 g
Connection cable	2 m, 2 x 0.25 mm ²	2 m, 2 x 0.25 mm ²	2 m, 2 x 0.25 mm ²	2 m, 2 x 0.25 mm ²
Approvals	UL	UL	UL	UL
CE-marking	Yes	Yes	Yes	Yes

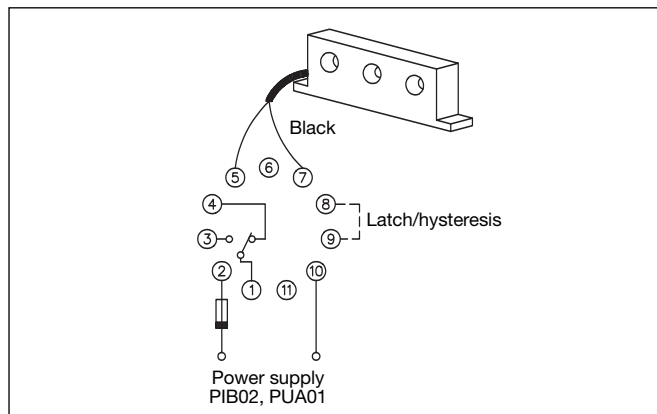
Mode of Operation

The output voltage is proportional to the highest current value in the 3 conductors which are drawn through the holes of the current metering transformer.

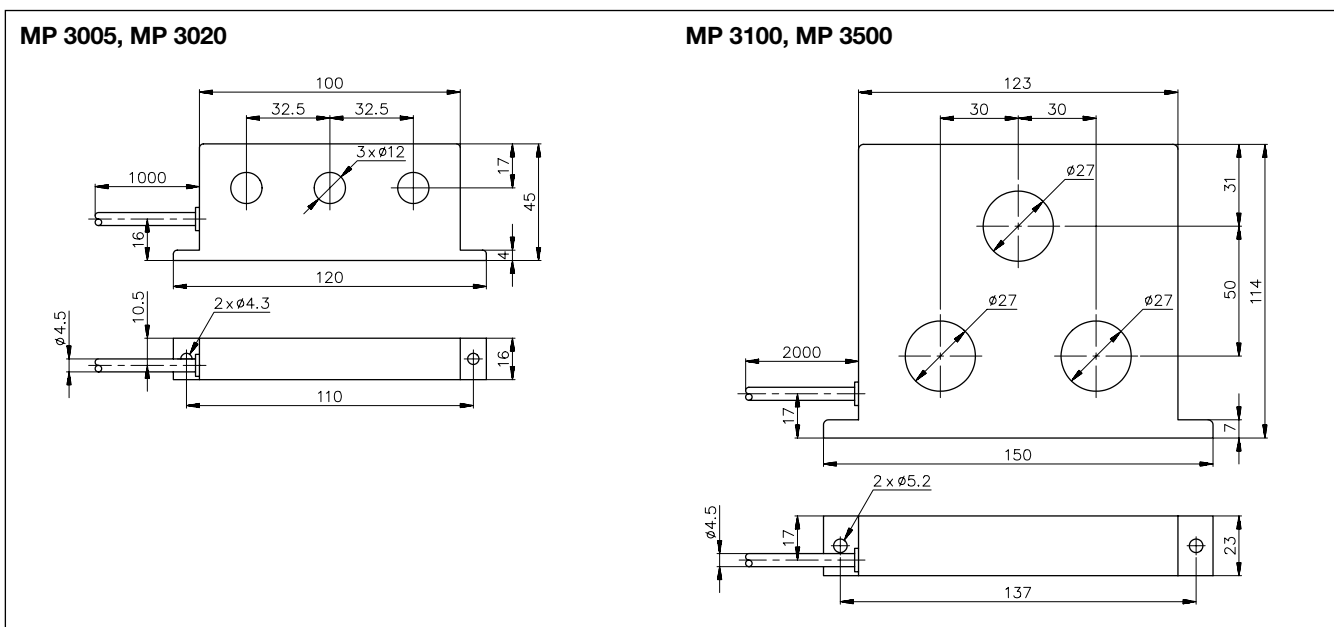
This makes it possible to use the current metering transformers, e.g. type MP 3005, for measuring far below the nominal range.

By drawing each conductor several times through the hole, the output voltage is multiplied by the number of times each conductor is drawn through the hole.

Wiring Diagram

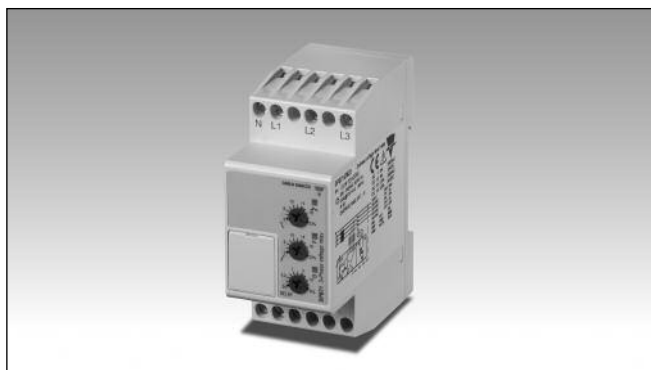


Dimensions



Monitoring Relays True RMS 3-Phase, 3-Phase+N, Multi-function Type DPB71

CARLO GAVAZZI



- TRMS 3-phase over and under voltage, phase sequence and phase loss monitoring relay
- Detects when all 3 phases are present and have the correct phase sequence
- Detects if all the 3-phase-phase or phase-neutral voltages are within the set limits
- Upper and lower limits separately adjustable
- Measures its own power supply
- Selection of measuring range by DIP-switches
- Adjustable voltage on relative scale
- Adjustable delay function (0.1 to 30 s)
- Output: 5 A SPDT relay N.E.
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 35.5 mm DIN-rail housing
- LED indication for relay, alarm and power supply ON

Product Description

3-phase or 3-phase+neutral line voltage monitoring relay for phase sequence, phase loss, over and under voltage (separately adjustable set points) with built-in time delay function.

Supply ranges from 208 to 480 VAC covered by two multivoltage relays. 35.5 mm wide housing suitable both for back and front panel mounting.

Ordering Key

DPB 71 C M23

Housing _____
 Function _____
 Type _____
 Item number _____
 Output _____
 Power supply _____

Type Selection

Mounting	Output	Supply: 208 to 240 VAC	Supply: 380 to 480 VAC
DIN-rail	SPDT	DPB 71 C M23	DPB 71 C M48

Input Specifications

Input L1, L2, L3, N	Terminals L1, L2, L3, N Measures its own supply
Note: Connect the neutral only if it is intrinsically at the star centre	
Measuring ranges 208 to 240 Δ VAC 380 to 480 Δ VAC	177 to 275 Δ VAC 323 to 550 Δ VAC
Ranges Upper level Lower level	+2 to +22% of the nominal voltage -22 to -2% of the nominal voltage
Note: The input voltage must not exceed the maximum rated voltage or drop below the minimum rated voltage reported above.	
Hysteresis Set points from 2 to 5% Set points from 5 to 22%	1% 2%

Output Specifications

Output Rated insulation voltage	SPDT relay 250 VAC
Contact ratings (AgSnO₂) Resistive loads AC 1 DC 12 Small inductive loads AC 15 DC 13	μ 5 A @ 250 VAC 5 A @ 24 VDC 2.5 A @ 250 VAC 2.5 A @ 24 VDC
Mechanical life	≥ 30 x 10 ⁶ operations
Electrical life	≥ 10 ⁵ operations (at 5 A, 250 V, cos φ = 1)
Operating frequency	≤ 7200 operations/h
Dielectric strength Dielectric voltage Rated impulse withstand volt.	2 kVAC (rms) 4 kV (1.2/50 μs)

Supply Specifications

Power supply Rated operational voltage through terminals: M23 - Delta Voltage: M48 - Delta Voltage: M48 - Star Voltage:	Overvoltage cat. III (IEC 60664, IEC 60038) L1, L2, L3, N 208 to 240 VAC ± 15% 45 to 65 Hz 380 to 480 VAC ± 15% 45 to 65 Hz 220 to 277 VAC ± 15% 45 to 65 Hz
Rated operational power DPB71CM23 DPB71CM48	13 VA @ 230 ΔVAC, 50 Hz 13 VA @ 400 ΔVAC, 50 Hz Supplied by L1 and L3

General Specifications

Power ON delay	1 s ± 0.5 s or 6 s ± 0.5 s	Environment	
Reaction time Incorrect phase sequence or total phase loss Voltage level	< 200 ms (input signal variation from -20% to +20% or from +20% to -20% of set value)	Degree of protection	IP 20
Alarm ON delay	< 200 ms (delay < 0.1 s)	Pollution degree	3
Alarm OFF delay	< 200 ms (delay < 0.1 s)	Operating temperature	-20 to 60°C, R.H. < 95%
Accuracy	(15 min warm-up time)	Storage temperature	-30 to 80°C, R.H. < 95%
Temperature drift	± 1000 ppm/°C	Housing	
Delay ON alarm	± 10% on set value ± 50 ms	Dimensions	35.5 x 81 x 67.2 mm
Repeatability	± 0.5% on full-scale	Material	PA66 o Noryl
Indication for		Weight	Approx. 100 g
Power supply ON	LED, green	Screw terminals	
Alarm ON	LED, red (flashing 2 Hz during delay time)	Tightening torque	Max. 0.5 Nm according to IEC 60947
Output relay ON	LED, yellow	Product standard	EN 60947-5-1
		Approvals	UL, CSA CCC (GB14048.5)
		CE Marking	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC
		EMC	
		Immunity	According to EN 61000-6-2
		Emissions	According to EN 61000-6-3

Mode of Operation

Connected to the 3 phases (and neutral) DPB71 operates when all 3 phases are present at the same time, the phase sequence is correct and the phase-phase (or phase-neutral) voltage levels are within set limits.

If one or more phase-phase or phase-neutral voltages exceeds the upper set level

or drops below the lower set level, the red LED starts flashing 2 Hz and the output relay releases after the set time period. If the phase sequence is wrong or one phase is lost, the output relay releases immediately. Only 200 ms delay occurs. The failure is indicated by the red LED flashing 5 Hz during the alarm condition.

Example 1

(mains network monitoring)
The relay monitors over and under voltage, phase loss and correct phase sequence.

Example 2

(load monitoring)
The relay releases in case of interruption of one or more phases, when one or more voltages drop below the lower set level or exceed the upper set level.

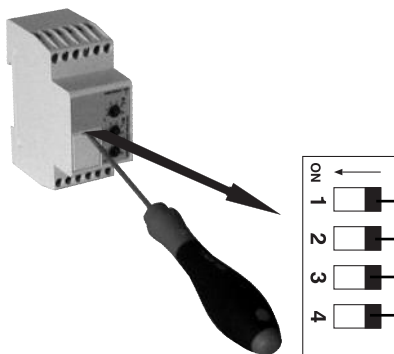
Function/Range/Level and Time Delay Setting

Adjust the input range setting the DIP switches 3 and 4 as shown below. Select the desired function setting the DIP switches 1 and 2 as shown below. To access the DIP switches open the grey plastic cover

as shown below.

Selection of level and time delay:

Upper knob: Setting of lower level on relative scale.
Lower knob: Setting of delay on alarm time on absolute scale (0.1 to 30 s).



Centre knob:

Setting of upper level on relative scale.

Power ON delay

ON: 6 s ± 0.5 s
OFF: 1 s ± 0.5 s

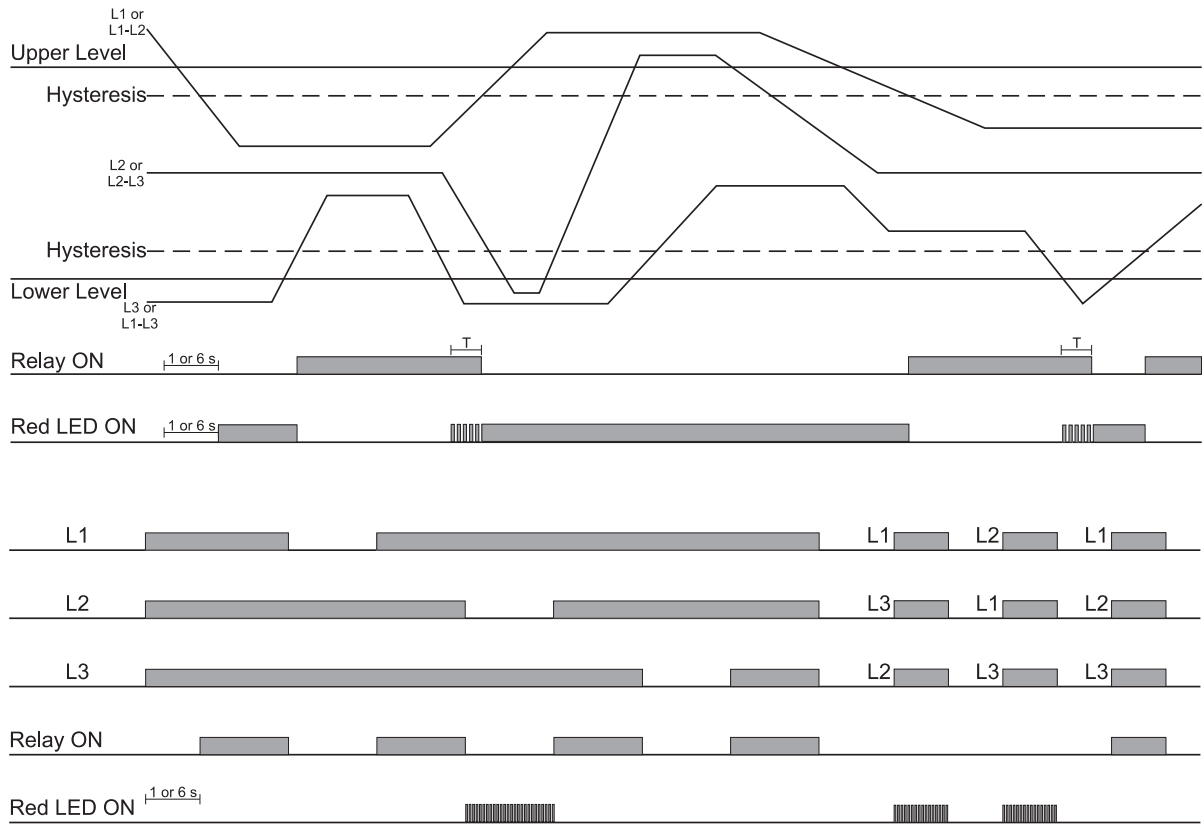
Monitored voltage

ON: Phase-Neutral
OFF: Phase-Phase

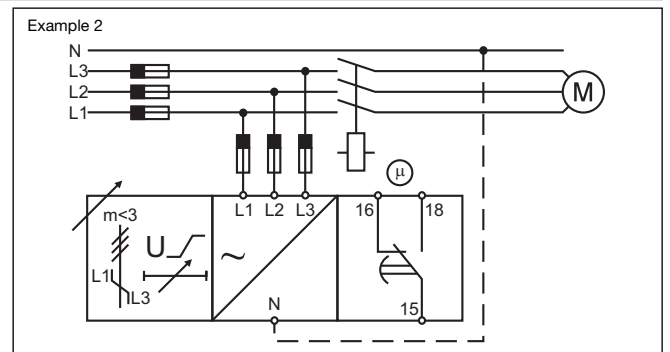
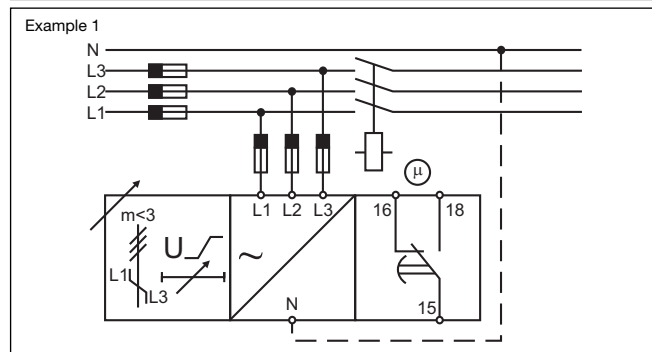
Measuring range

SW3	ON	ON	OFF	OFF
SW4	ON	OFF	ON	OFF
M23 Ph-Ph Voltage	208 VAC	220 VAC	230 VAC	240 VAC
M48 Ph-Ph Voltage	380 VAC	400 VAC	415 VAC	480 VAC
M48 Ph-N Voltage	220 VAC	230 VAC	240 VAC	277 VAC

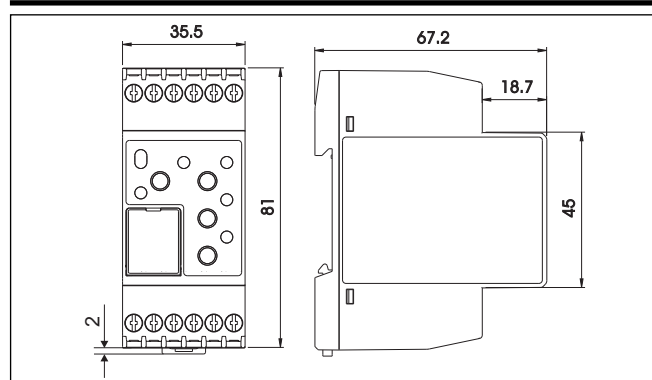
Operation Diagrams



Wiring Diagrams



Dimensions



Monitoring Relays Surge Arresters for PV system Type DSF D

CARLO GAVAZZI



- Type 2 (class C) according to EN61643-11 (VDE 0675, part 6-11)
- Approved UL1449 3rd Edition
- Complies with IEC-61643-1, VTE C 61-740-51
- Do not require backup fuse up to 200kArms (UL 1449 3rd Ed.)
- Innovative technology to prevent dangerous failures in case of temporary overvoltages
- Suitable for unstable networks where sustained overvoltages may persist for some minutes or longer
- Plug-in cartridges
- Optical indication of exhausted cartridges (red window)
- Voltage-free contact, for remote function monitoring
- Including thermal and dynamic separating device
- Assembled unit ready for mounting
- Marked connections
- For DIN-rail mounting

Product Description

DSF D is a Type 2 (Class C) surge arrester according to EN 61643-11 (VDE 0675, part 6-11) and UL1449 3rd edition suitable for protecting DC systems from transient overvoltage due to both indirect atmospheric discharges and switching actions. It is available both in 2-pole or 3-pole configurations, allowing both differential and common mode protection. The control windows (no/red indication) and the contact allow both a local and a remote monitoring of the

status of the plug-in cartridges, warning the operator about the need to promptly replace the cartridges themselves. In installation without external LPS (Lightning Protection System) or where the distance between the LPS elements and the solar panel frames is >50cm, DSF can be used in the DC side of photovoltaic generation plants, and can be installed on a DIN-rail in every commercially available distribution box.

Ordering Key

DSF 53 C D 1200 PV

Description	Code
Mounting	
DIN-rail	D
Function	
Surge arresters	S
Type	
Type 2 (class C) "Fuseless"	F
Cartridge dimensions	
17.5 mm	5
Configuration	
2-pole	2
3-pole	3
Contact	
None	X
1 (relay)	C
Network	
DC	D
Range	
600 VDC	600
1000 VDC	1000
1200 VDC	1200
Application	
Photovoltaic system	PV

Type Selection

Code	Description	Max. cont. operating voltage	Output relay	Cartridge
DSF52CD600PV	2-pole surge arrester for PV installations	600 VDC	SPDT	2x DS0600F
DSF52XD1000PV	2-pole surge arrester for PV installations	1000 VDC	NO	2x DS1000F
DSF52CD1000PV	2-pole surge arrester for PV installations	1000 VDC	SPDT	2x DS1000F
DSF53XD1200PV	3-pole (Y) surge arrester for PV installations	1200 VDC	NO	3x DS0600F
DSF53CD1200PV	3-pole (Y) surge arrester for PV installations	1200 VDC	SPDT	3x DS0600F

Product specifications

Max. continuous operating voltage DC DSF52CD600PV DSF52xD1000PV DSF53xD1200PV	U_c 600 VDC 1000 VDC 1200 VDC	Voltage protection level DSF52CD600PV DSF52xD1000PV DSF53xD1200PV	U_p < 2.2 kV < 2.8 kV < 4.4 kV
SPD (Surge Protection Device) according to EN 61643-11 DSF5xCDxxxxPV	Type 2	Response time DSF5xxDxxxx	t_a < 25 ns
SPD (Surge Protection Device) according to IEC 61643-1 DSF5xCDxxxxPV	Class II	Protection fuse size (UL 1449 3rd Ed.) DSF5xxDxxxx	Not required up to 200 kA rms
LPZ (Lightning Protection Zone) DSF5xCDxxxxPV	1 --> 2	Follow current DSF5xxDxxxx	No
Nominal discharge surge current (8/20) DSF52CD600PV DSF52xD1000PV DSF53xD1200PV DSF52CD600PV DSF52xD1000PV DSF53xD1200PV	I_n + or - to PE 20 kA 12.5 kA 20 kA + and - to PE 40 kA 25 kA 20 kA	Short-circuit withstand current (data for AC applications according to EN 61643-11) DSF5xxDxxxx	25kA/50Hz
Max. discharge surge current (8/20) DSF52CD600PV DSF52xD1000PV DSF53xD1200PV DSF52CD600PV DSF52xD1000PV DSF53xD1200PV	I_{max} + or - to PE 40 kA 25 kA 40 kA + and - to PE 80 kA 50 kA 40 kA	Front window DSF5xxDxxxx	No indication: working cartridge. Red: exhausted cartridge (to be replaced)
		Operating temperature DSF5xxDxxxx	-40 to +80 °C

Output Specifications

Output DSF5xCDxxxxPV Rating	SPDT AC: 250V/0.5A 125V/3A	Cable cross-section area Terminal torque	max 1.5 mm ² 0.25 Nm max
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General Specifications

Protection degree	IP 20	Approvals degree UL 94 V-0 CE, UL1449 3 rd Edition
Dimensions DSF52CD600PV DSF52xD1000PV DSF53xD1200PV	36 x 90 x 72 mm 36 x 90 x 72 mm 54 x 90 x 72 mm	
Screw terminals Cable cross-section area Terminal torque	25 mm ² (stranded) 35 mm ² (solid) 4.5 Nm max	
Housing material	Thermoplastic, extinguishing	

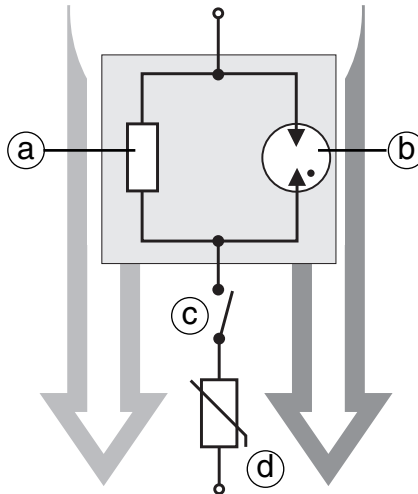
No backup-fuse technology

Long duration overvoltage path

The arrester is activated in the event of electric power system failure. The voltages are much lower than transient voltages but substantially more destructive. The system is composed of a current limiter and a varistor. In the event of increased voltage level the current limiter circuit limits the current through the varistor. When the normal condition is re-established (rated line voltage), the surge arrester continues to perform its normal function.

Transient (short duration) overvoltage path

The arrester is activated at the occurrence of instantaneous high voltage surges lasting only a few microseconds. Such condition states are experienced at switching operations and atmospheric discharges. The system is composed of a gas tube surge arrester and a varistor. Both components have a very short response time which is reflected in a low protective residual voltage level. This provides an efficient protection of sensitive electronic devices.



a) Current limiter b) Gas tube c) Thermal disconnecter d) Varistor

Installation notes

Protection distance

- If DSF is installed less than 10 m from the device to be protected, the distance can be ignored.
- If DSF and its connection wires have a total protection level $U_{p/f}$ (U_{prot}) $< 0.5 U_w$, where U_w is the breaking voltage of the device to be

protected, the distance can be neglected.

- If the protection distance is longer than 10 m, the real protection distance ℓ_{po} can be calculated by the following formula:

$$\ell_{po} = (U_w - U_{p/f}) / K \text{ [m]}$$

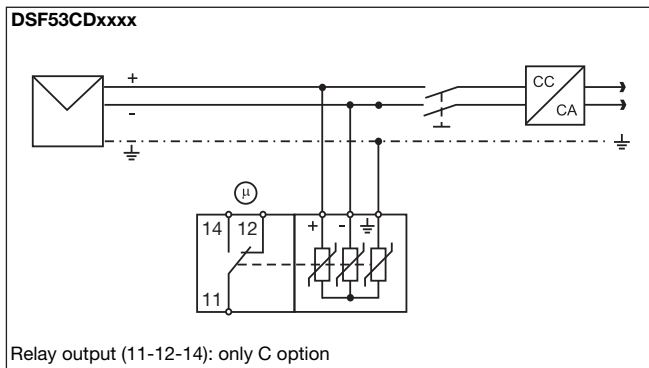
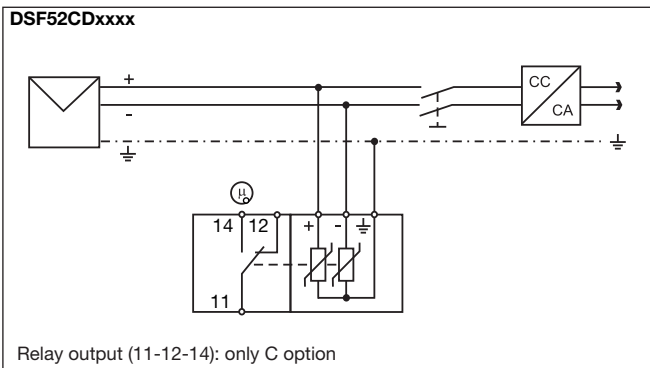
with $K = 25 \text{ V/m}$.

Protection against over-currents and indirect contacts

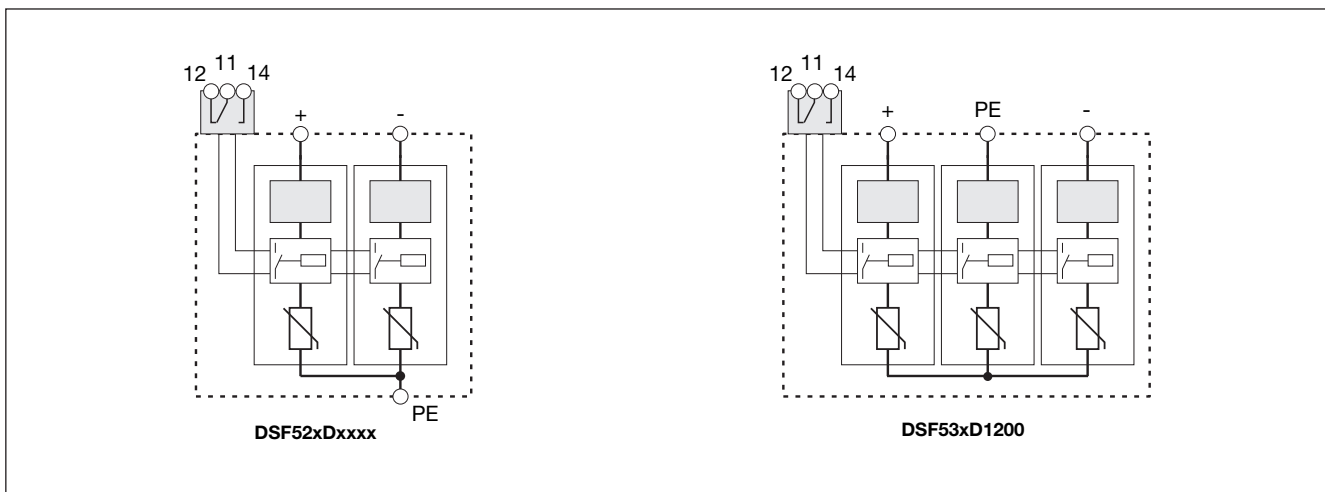
DSF can be installed without further integrative protections even if a general circuit breaker/fuses with nominal current $> 125 \text{ kA}$ is installed and if in the DSF installation point the short circuit current

is $> 25 \text{ kA}$ (but $< 200 \text{ kArms}$). No protection fuses are needed for backup protection.

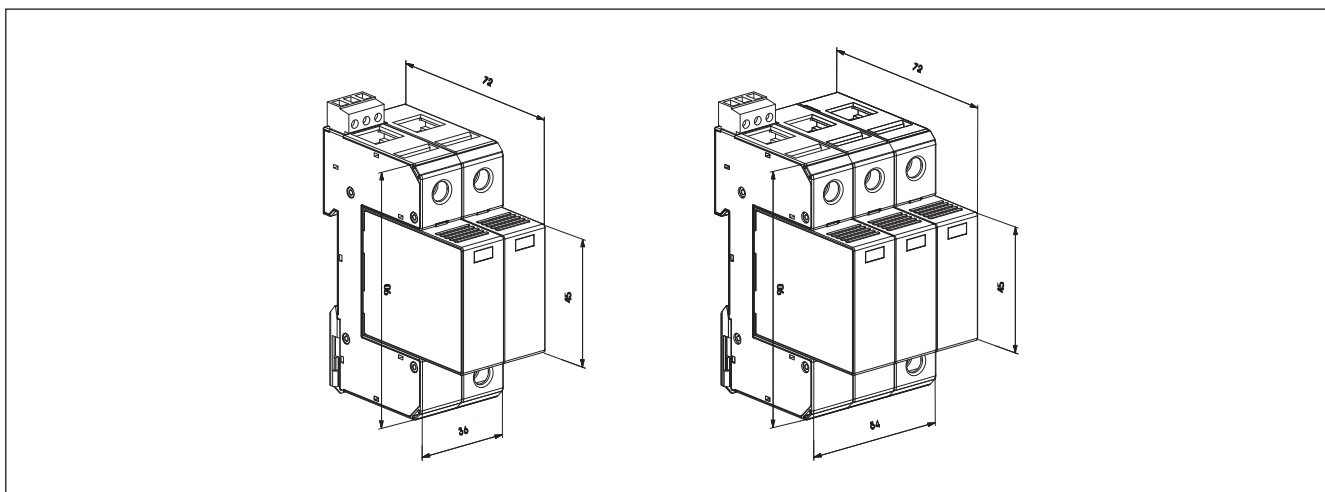
Wiring Diagrams



Connection Diagrams



Dimensions



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