

AC Surge Protection Devices

These are Surge Protection Devices (SPD) that prevent transitional impulsive overvoltage, conducted via the mains power supply, the earth network or signal networks, from damaging electronic command and control systems and electronic appliances in general. Series BY7 protection devices limit dangerous overvoltage to standard levels tolerated by the appliances intended for use in Overvoltage Category II or greater (impulsive overvoltage max. 2.5kV) in zone protected from overvoltage B and C (Zones 1 and 2) if the plant does not have a lightning arrester, in protection zone C (Zone 2) if the plant has a lightning arrester, and are SPD in Test Class II as required by standards IEC1024, IEC1312-1, EN50083-1 in force (see figure 1 the following pages)

Where and how to use them

In accordance with current standards, series BY7 surge protection devices must be installed on incoming power lines to electrical distribution and control and command boards for automation, in order to guarantee immunity to the transistors of the equipment contained, such as PLC, industrial PCs, power supplies, inverters, etc.. For command and control boards, generally in Overvoltage Category II according to IEC EN 644-1 to be compliant with EMC standards, maximum impulsive overvoltage applied to equipment must be below 2.5kV, as indeed is also required by EN61000-4-4, 4-5. If SPDs with residual overvoltage of less than 2.5kV, which can be withstood by equipment, are not installed on command and control boards, overvoltage may cause plant or machine failure or breakdown, with costs that certainly exceed the cost of the SPDs. Installation of SPDs is also required, in any case, in order to comply with EMC standards and CE marking of the board.

Performance

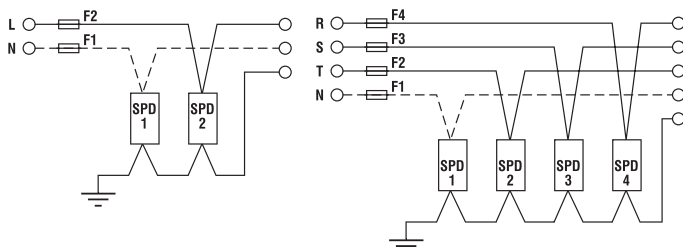
They consist of a wiring socket that can be assembled onto a DIN rail and a removable protection module that contains the discharge, making it easy to disconnect the SPD during insulation tests or for quick replacement at the end of its working life. They are able to withstand ten 20kA impulses of I_{sc} discharge current with impulse 8/20 and a single 40kA impulse, which is statistically very rare. As required by the product regulations on the SPDs, the BY7 series is equipped with an automatic thermal cut-off device able to disconnect the line transformer in the event of failure, providing an indication of the failure discharge visible on the front of the unit and via a clean contact. When, after numerous discharges and years of service the module has deteriorated, it can be rapidly replaced by removing it from its base socket and replacing it with another, identical one, without disconnecting the power supply.

Fuses and protection devices

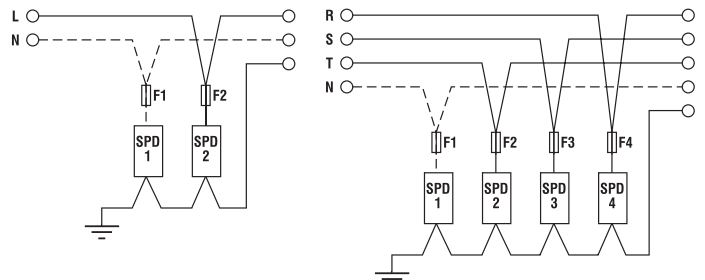
BY7 series overvoltage dischargers have an incorporated device that disconnects the transformer at the end of its working life (close to short circuit or short circuited). They must, however, be fitted with protection against short circuit current upstream and differential protection against indirect contact (generally already included in the installation). If installed downstream of highly sensitive differential protection devices, we recommend using the configuration with gas discharger (see layouts on the following pages). The diagrams below illustrate an example protection connection according to priority type.



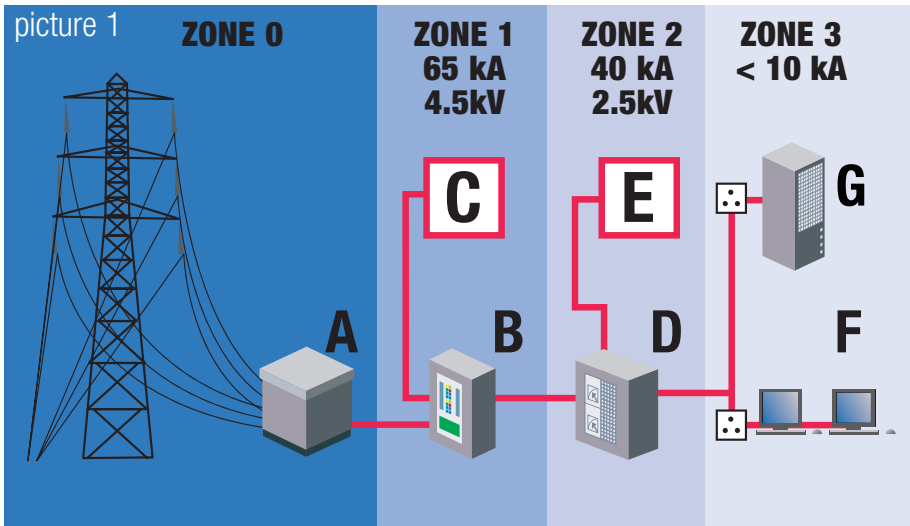
Protection takes priority



Continuity of services takes priority



Surge Protection Devices



Lightning protection zones

Zone 0 - Zone where items are subject to direct lightning strikes or where an unattenuated electromagnetic field occurs as a result of the strike.

Zone 1 - Zone where items are subject to low level direct lightning strikes. The conducted impulse lightning currents and/or switching surges are reduced compared with Zone 0.

Zone 2 - Remnants of lightning impulse currents and/or switching surges are reduced compared with Zone 1.

Zone 3 - Surges, caused by oscillation effects, magnetic field couplings and internal switching surges are reduced compared with Zone 2

A - Sub Station
B - Main distribution board
C - Heavy machinery
D - Local distribution board
E - Light machinery
F - Workstation
G - Equipment

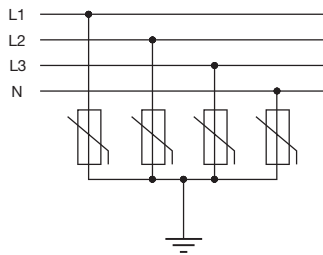
Example of connection for different networks

TN 3-phase system

No. 4 ISPD14440 +
 No. 1 screw jumper 9000394



BLOCK DIAGRAM

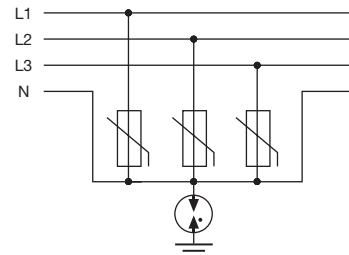


TT 3-phase system

No. 3 ISPD14440 +
 No. 1 ISPD1444G +
 No. 1 screw jumper 9000394



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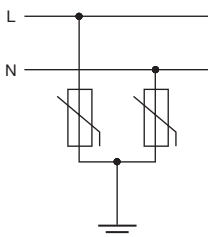


TN single phase system

No. 2 ISPD14275 +
 No. 1 screw jumper 9000392



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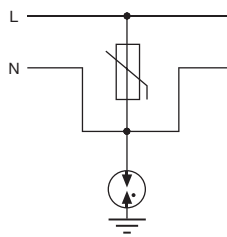


TT single phase system

No. 1 ISPD14275 +
 No. 1 ISPD1425G +
 No. 1 screw jumper 9000392



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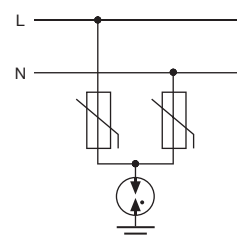


TT single phase system

No. 2 ISPD14275 +
 No. 1 ISPD1425G +
 No. 1 screw jumper 9000393

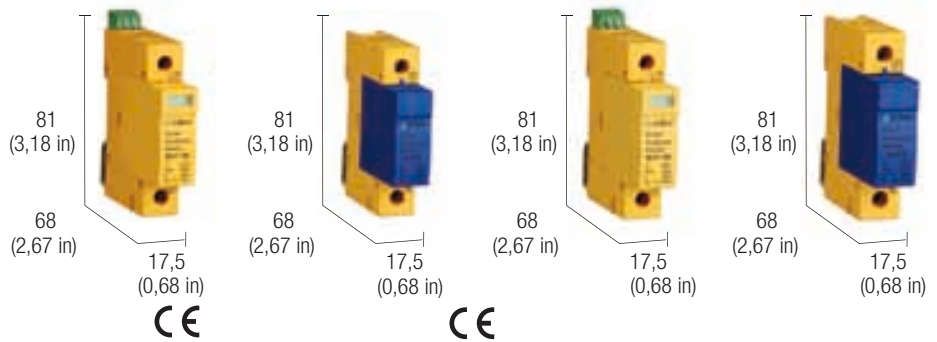


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Surge protection devices

- Rugged contacts
- Pluggable protection
- Efficiency status indicator on front panel
- Available screw jumpers for parallel connection



NOTES

(1) When the terminal protection disconnects the SPD, the contacts 11-14 open and contacts 11-12 close

BLOCK DIAGRAM



VERSIONS

Cod. ISPD14275

Cod. ISPD1425G

Cod. ISPD14440

Cod. ISPD1444G

BY7-40/1-275

BY7-NPE/40-275

BY7-40/1-440

BY7-NPE/40-440

ELECTRICAL TECHNICAL DATA

Category	II	II	II	II
Type of network systems	TN-S; TN-C; TT; IT	TN-S; TN-C; TT; IT	TN-S; TN-C; TT; IT	TN-S; TN-C; TT; IT
Technology	MOV (Metal Oxide Varistor)	GDT (Gas Discharge T)	MOV (Metal Oxide Varistor)	GDT (Gas Discharge Tube)
Rated voltage	Un 230 Vac	Un 230 Vac	Un 400 Vac	Un 400 Vac
Maximum continuous voltage	Uc 275 Vac	Uc 255 Vac	Uc 440 Vac	Uc 440 Vac
Voltage protection level	Up ≤ 1.200 V	Up ≤ 1.800 V	Up ≤ 2.000 V	Up ≤ 1.800 V
Normal discharge current (8/20)	In 20 kA	In 30 kA	In 20 kA	In 30 kA
Maximum discharge surge current (8/20)	I _{max} 40 kA	I _{max} 40 kA	I _{max} 40 kA	I _{max} 40 kA

GENERAL TECHNICAL DATA

Connection terminal	4 ... 25 mm ² fixed screw type			
Response time	t _a < 25 nS			
Operating temperature range	-40°C < T < 80°C			
Status display	Green OK / Red FAILURE	No	Green OK / Red FAILURE	No
Remote signal	SPDT 1 A/230 Vac (1)	No	SPDT 1 A/230 Vac (1)	No
Remote signal connection	1,5 mm ² pluggable 6 A - 120 V	No	1,5 mm ² pluggable 6 A - 120 V	No
Housing material	UL94V0	UL94V1	UL94V2	UL94V3
Protection degree	IP20	IP21	IP22	IP23
Colour	Yellow	Blue	Yellow	Blue
Packaging quantity	1	1	2	3
Approx. Weight	135 g	95 g	135 g	95 g
Mounting information	vertical on rail, without spacing between adjacent components			

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB			
Replacement varistor				
Screw type jumper	2 poles		Cod. 9000392 (BP2)	
	3 poles		Cod. 9000393 (BP3)	
	4 poles		Cod. 9000394 (BP4)	

Adjustable electronic overcurrent protection from 1...10 A / 24 Vdc



According to the new EN60204-1 Std. it is **compulsory** to protect wires on SELV-PELV lines against the effects of surges. The standard requires that surge protection devices on 24Vdc cut the fault off before the 24 Vdc control drops below 21.6 V, disconnecting power to controls and preventing the starting of emergency and safety functions.

According to EN 60204-1 and EN 61131-1 and -2, surge protection devices on SELV-PELV lines must be able to disconnect shorts within 10ms and dangerous surges within 5s. The use of power supplies with high output surge capacity and precise and quick protection devices enables to cut faults off before 24V drops below 21.6V disconnecting power to controls.

Fuses and magneto-thermic switches on 24 Vdc lines do not have I / t features enabling to quickly and precisely cut faults off; moreover fuses may be replaced with different types thus altering the system's protection and safety.

The correct coordination of the circuitry into which the surge protection device is incorporated must take into account the line's total R: R connections + R wires + R protection + residual R of the damaged load. R total value must always enable that the protection device's tripping current may flow in the circuit; it is also important to avoid undersizing the protection device in order to prevent inconvenient trips due to the load's breakaway starting I, or oversizing it thus increasing t of intervention.

The whole circuitry made up of power supply, surge protection device, wires and connections must be designed so as to enable the safe interruption of surges within 5s before 24 Vdc drops below 21.6 Vdc. This condition may be met using Cabur's power supplies - series CSF and CSG - dimensioned to supply high output surge (>+50% of rat.I for >5s) and electronic surge protection devices with CEP System which are more precise and quicker than magneto-thermic switches and devices whose tripping t does not depend upon ambient T and may be reset with local or remote controls.

Features of protection devices

Mgts have two different intervention curves: Thermal and Magnetic. The magnetic relay trips exclusively in the event of a short with different I / t curves: thermal relays have all the same intervention curve, regardless of the mgt curve and in the event of a surge, they operate as described in figure 2: surge currents $1.13 \times I_n$ are cut in >1h and with surges $> 1.45 \times I_n$, the tripping takes place in a few minutes.

The disconnection of short currents is carried out by a magnetic relay whose tripping t goes from 0.01 to 0.1 sec, with very high currents which the power supply may not be able to supply; an mgt C5 used on DC has >70A safe tripping, a current that only power supplies with much higher rated I, i.e. 40A, may be able to supply (and not all of them) and that can not be supplied by 10A power supplies.

Using mgt as surge protection device, if the power supply has a surge I 1.2 times its rat. I, disconnection will take place in 20...60 min, while with 2.5 currents higher than rat.I it will take place between 25 sec. and 2 min., depending on amb.T., whose times are too long to ensure the stability of 24V, for protecting wires and the selectivity of protection devices. In the event of a failure - until the protection device trips - the power supply remains with a higher surge of $I_n \times 1.5 \times 5s$ and 24V drops below 21.6V leaving standard functions and most of all safety functions with no power supply.

Selectivity of protection devices

In the event of a surge or a short, only the damaged circuit is disconnected by its protection device with no repercussions on the supply of the other loads. This function is obtained with power supplies having high surge capacity and quick and precise protection devices.

CEP system - a smart system for current's control

CEP "recognizes" surges at their lowest and more precise stage and disconnects the damaged circuit as quickly as possible. For an excellent flexible use, the CEP system allows to set 10 tripping currents ranging from 1A to 10A in 1A steps and 3 intervention curves "Fast - Normal - Delayed" (see figure 3).

The protection status is displayed by two leds and by a remote alarm transistor output; the load may be activated / deactivated by pressing a button on the front (figure 5) or by the PLC remote control. The possibility of separately controlling single channels is useful during installation, because the various components may be separately activated and tested and - in big systems - the remote control may be used in order to gradually activate loads thus preventing simultaneous overloads when the system is started up. Another important features in terms of safety is the possibility of manually disconnecting the load, which means that even when protection devices are reset from the remote control, the load will remain inactive thus preventing dangerous situations.



figure 1



figure 3



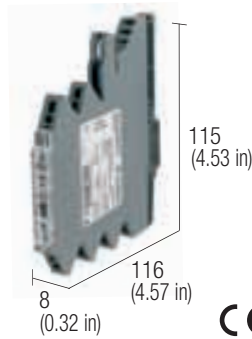
figure 4



figure 5

Programmable electronic overcurrent protection 1...10 A / 24 Vdc

- Programmable from 1 A to 10 A in 1 A steps
- 3 programmable characteristic curves
- Remote or local ON/OFF control
- Status signal with LED and remote signal
- Slide contact for the manual load disconnection
- Sealable front cover allows to protect the set up of the protection



- 1) sealable front cover
- 2) current selector
- 3) identification label
- 4) characteristic curve selector
- 5) ste/reset button

NOTES

The measures include the overall dimensions and the fixing to the guide.

(1) Version available upon request; for information call our sales department, local agent or representative

(2) 24 Vdc remote pulse switch the protection at falling edge. The pulse duration must be: ON = pulse > 1 s / OFF = pulse > 100 ms and < 800 ms

(3) The three standard intervention curves are described in the graphics; the C EP-D3 Version is also provided with a curve programmable through a software

VERSIONS

With overload indication

With status indication (ON/OFF/Overload)

With one wire bus

INPUT TECHNICAL DATA

Rated voltage

Rated current

Max system current

Protection

Remote control ON/OFF

OUTPUT TECHNICAL DATA

Rated voltage

Current min. / max.

Programmable characteristic curves

Switch ON capacity

Status indication

Status display

GENERAL TECHNICAL DATA

Operating temperature range

Input/output isolation

Protection degree

Reference Standards

Connection terminal

Housing material

Approx. weight

Mounting information

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

Mounting rail type according to IEC60715/G32

Distribution kit (terminal + end bracket)

Distribution rail (busbar)

Insulation cover for distribution rail

Plug-in jumper

red
blue

Marking tag

BLOCK DIAGRAM

Cod. XCEPD1	Cod. XCEPD2	Cod. XCEPD3
CEP-D1 (1)	CEP-D2	CEP-D3
24 Vdc (range 18...32 Vdc) 10 A dc max. 40 A dc with CEP-RCC copper rail Internal against reverse polarity		
24 Vdc external pulse		24 Vdc external pulse and by software (2)
24 Vdc (voltage drop <170 mV @ Un / In) 1...10 A dc programmable in 10 step of 1 A slow, medium, fast 10.000 µF green LED: fixed = ok, flashing = lout at 90% of the nominal, red LED: fixed = output manually switched off, slow flashing = overcurrent, quick flashing = error open collector transistor (overcurrent status) open collector transistor (ON/OFF status) open collector transistor (programmable status)		
-25...+60°C, derating I _{max} 8 A over 40°C		
3 kVac / 60 s SELV output		
IP 20 IEC 529, EN60529		
EN60950-1, EN61131-1, EN61131-2, EN60898, EN60947-4-1, EN50081		
0.25...2.5 mm ² fixed screw type		
PA 6.6 (UL94V-0, NFF I2, F2)		
120 g (4.24 oz)		
vertical on rail, adjacent without gap, we recommend the use of end brackets		
PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB		
CEP-SS	(cod. XCEPSS)	
CEP-RCC	(cod. XCEPRCC)	
CEP-RCP	(cod. XCEPRCP)	
CEP-BCR	(cod. XCEPBCR)	(8 poles)
CEP-BCB	(cod. XCEPBCB)	(8 poles)
CEP-MTW	(cod. XCEPMTW)	(table with 50 tags)



CEP-BCR and CEP-BCB



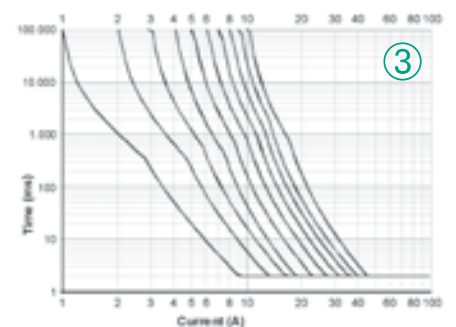
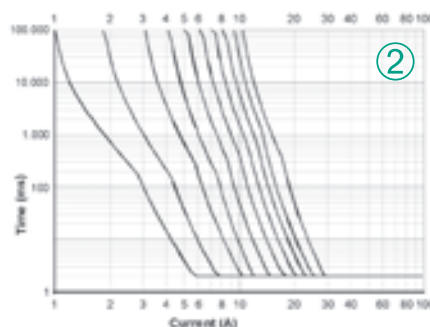
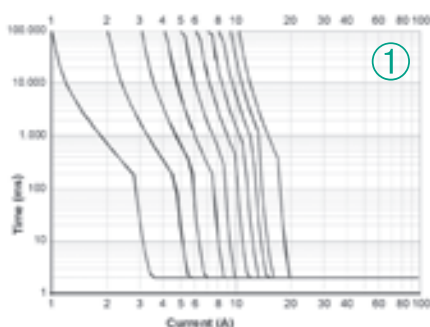
CEP-MTW



CEP-SS

Intervention curves:

- 1) fast
- 2) medium
- 3) slow



EMI filters quick selection table

These tables allow you to quickly select only the items, then check if all product's technical data meet your application requirements.

3-phase filter without neutral wire 400-480 Vac

Current	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)						Cat. No.	Page
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz		
7 A	20	60	60	60	50	35	25	60	65	60	55	40	XFTDV07ST2	68
16 A	15	50	55	60	50	35	25	55	60	60	55	40	XFTDV16ST2	68
30 A	15	50	55	60	50	35	25	55	60	60	55	40	XFTDV30ST2	68
42 A	55	70	70	45	35	20	45	45	45	45	45	30	XFTDV42ST2	68
55 A	15	55	55	55	50	35	25	55	60	60	50	40	XFTDV55ST2	68
75 A	15	55	55	55	50	30	20	50	50	50	55	40	XFTDV75ST2	68
100 A	35	50	45	25	15	7	30	35	35	35	30	7	XFTDV100ST2	68
150 A	20	30	40	45	40	30	30	40	40	45	40	25	XF150TDS84C	69
180 A	20	30	40	45	40	30	30	40	40	45	40	25	XF180TDS84C	69
200 A	55	60	55	30	20	–	45	30	25	10	10	5	XF200TDDS84C	70
300 A	30	30	23	10	8	5	35	30	25	14	10	5	XF300TDS84C	71
400 A	30	30	20	10	5	2	30	30	20	10	8	2	XF400TDS84C	71

3-phase filter with neutral wire 400-480 Vac

Current	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)						Cat. No.	Page
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz		
10 A	10	20	20	20	30	25	10	20	25	25	30	30	XF10TYG9	73
16 A	25	50	50	50	45	30	35	55	60	60	40	30	XF16TYT2	72
20 A	10	15	20	35	40	25	10	15	20	20	25	20	XF20TYS9	73
25 A	25	50	50	50	45	30	35	55	60	60	40	30	XF25TYT2	72
36 A	25	50	50	50	40	25	30	50	55	50	40	30	XF36TYT2	72
50 A	25	45	45	40	40	25	30	50	50	40	40	30	XF50TYT2	72
100 A	10	20	25	30	30	20	30	40	40	35	35	25	XF100TYT2	72

Single-cell single-phase filter 120-250 Vac

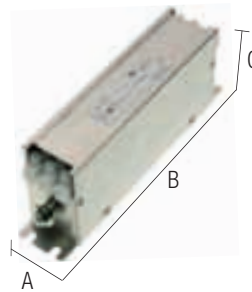
Current	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)						Cat. No.	Page
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz		
3 A	20	30	35	45	50	45	7	35	50	45	45	45	XF03DKBG5B	74
6 A	15	20	25	40	45	45	10	20	45	45	50	45	XF06DKBG5B	74
12 A	10	20	22	35	45	40	10	20	40	45	45	45	XF12DKBG5B	74
16 A	10	18	20	35	45	30	10	18	40	40	40	35	XF16DKCG5B	74
20 A	10	18	20	30	35	35	10	12	35	35	40	40	XF20DKCG5B	74
30 A	10	25	30	45	50	35	12	40	50	50	50	45	XF30DKCS5B	74

Double-cell single-phase filter 120-250 Vac

Current	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)						Cat. No.	Page
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz		
3 A	45	60	60	55	45	45	12	45	45	45	45	45	XF03DPCG5C	75
6 A	30	50	60	55	50	35	8	45	45	45	45	45	XF06DPCG5C	75
12 A	15	25	35	55	55	35	12	40	40	35	35	40	XF12DPCG5C	75
16 A	20	35	45	60	50	35	12	40	40	45	45	50	XF16DPCG5C	75
20 A	15	40	45	50	50	40	12	45	45	45	35	50	XF20DPCG5C	75
30 A	10	30	35	55	45	30	18	45	50	40	40	40	XF30DPCG5C	75

3-phase filter without neutral TDV series

- Models from 7 to 130 A
- High attenuation from 50 kHz to 30 MHz
- High attenuation also with long cables
- Minimum space on the panel

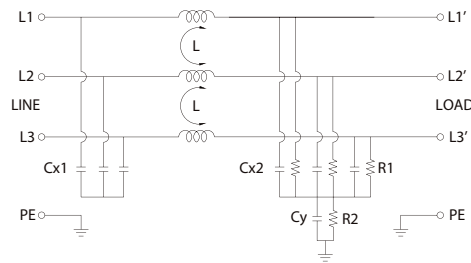


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

(1) According to EN60950 insulation tests on input side must be made only with DC instruments.

BLOCK DIAGRAM



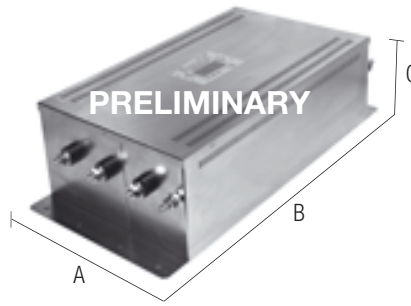
VERSIONS			Dimensions			Weight
Rated current	Type	Cat. No.	A	B	C	(kg)
7 A	F 07 TDV ST2	XFTDV07ST2	42 (1,65 in)	192 (7,56 in)	72 (2,84 in)	
16 A	F 16 TDV ST2	XFTDV16ST2	47 (1,85 in)	252 (9,93 in)	72 (2,84 in)	
30 A	F 30 TDV ST2	XFTDV30ST2	52 (2,05 in)	272 (10,72 in)	87 (3,43 in)	
42 A	F 42 TDV ST2	XFTDV42ST2	52 (2,05 in)	312 (12,29 in)	87 (3,43 in)	
55 A	F 55 TDV ST2	XFTDV55ST2	87 (3,43 in)	252 (9,93 in)	92 (3,62 in)	
75 A	F 75 TDV ST2	XFTDV75ST2	92 (3,62 in)	272 (10,72 in)	137 (5,4 in)	
100 A	F 100 TDV ST2	XFTDV100ST2	90 (3,55 in)	270 (10,64 in)	150 (5,91 in)	

GENERAL TECHNICAL DATA	
Rated voltage	480 Vac ± 10%
Rated current	see versions table
Frequency	50...60 Hz
Leakage current at 480 Vac 60 Hz	30 mA
Operating temperature range	-25...+85°C
Insulation L/L	1.45 KVdc / 60 s (1)
Insulation L/PE	2.25 KVdc / 60 s (1)
Overvoltage category/Pollution degree	—
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	screw terminals
Housing material	metal
Approx. weight	see versions table
Mounting information	on the panel with screws

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 07 TDV ST2	20	60	60	60	50	35	25	60	65	60	55	40
F 16 TDV ST2	15	50	55	60	50	35	25	55	60	60	55	40
F 30 TDV ST2	15	50	55	60	50	35	25	55	60	60	55	40
F 42 TDV ST2	55	70	70	45	35	20	45	45	45	45	45	30
F 55 TDV ST2	15	55	55	55	50	35	25	55	60	60	50	40
F 75 TDV ST2	15	55	55	55	50	30	20	50	50	50	55	40
F 100 TDV ST2	35	50	45	25	15	7	30	35	35	35	30	7

3-phase filter without neutral TDS series

- Models from 150 to 180 A
- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables

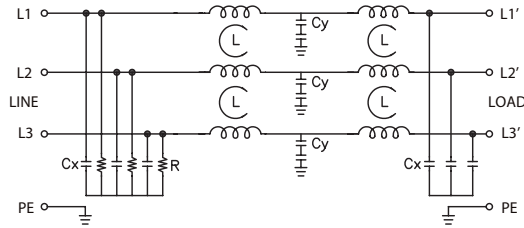


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

- (1) Version available upon request; for information call our sales department, local agent or representative
 (2) According to EN60950 insulation tests on input side must be made only with DC instruments.

BLOCK DIAGRAM

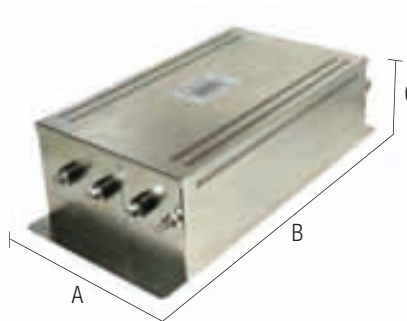


VERSIONS			Dimensions			Weight
Rated current	Type	Cat. No.	A	B	C	(kg)
150 A	F 150 TDS 84C	XF150TDS84C (1)	202 (7,96 in)	390 (15,37 in)	122 (4,81 in)	
180 A	F 180 TDS 84C	XF180TDS84C (1)	202 (7,96 in)	390 (15,37 in)	122 (4,81 in)	
GENERAL TECHNICAL DATA						
Rated voltage	480 Vac \pm 10%					
Rated current	see versions table					
Frequency	50...60 Hz					
Leakage current at 480 Vac 60 Hz	500 mA					
Operating temperature range	-25...+85°C					
Insulation line/line	1 KVdc / 60 s (2)					
Insulation line/PE	1 KVdc / 60 s (150A) – 2.25 KVdc / 60 s (180A) (2)					
Overvoltage category/Pollution degree	—					
Protection degree	IP 20 IEC 529, EN60529					
Connection terminal	with screw bolts					
Housing material	metal					
Approx. weight	see versions table					
Mounting information	on the panel with screws					

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 150 TDS 84C	20	30	40	45	40	30	30	40	40	45	40	25
F 180 TDS 84C	20	30	40	45	40	30	30	40	40	45	40	25

3-phase filter without neutral serie TDDS

- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables



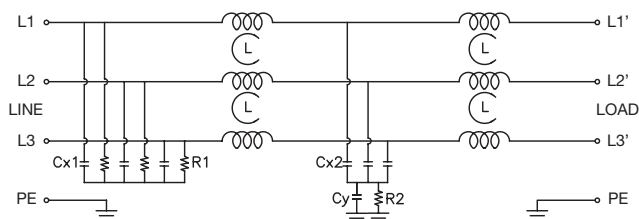
NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

(1) Version available upon request; for information call our sales department, local agent or representative

(2) According to EN60950 insulation tests on input side must be made only with DC instruments.

BLOCK DIAGRAM



VERSIONS

Rated current	Type	Cat. No.
200 A	F 200 TDDS 84C	XF200TDDS84C (1)

Dimensions

A	B	C
240 (9,46 in)	477 (18,79 in)	140 (5,52 in)

Weight

(kg)

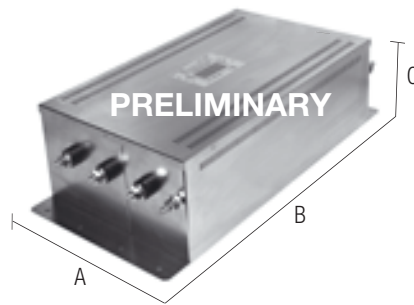
GENERAL TECHNICAL DATA

Rated voltage	480 Vac \pm 10%
Rated current	200 A
Frequency	50...60 Hz
Leakage current at 480 Vac 60 Hz	500 mA
Operating temperature range	-25...+85°C
Insulation line/line	1 KVdc / 60 s (2)
Insulation line/PE	1.8 KVdc / 60 s (2)
Overvoltage category/Pollution degree	—
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	with screw bolts
Housing material	metal
Approx. weight	see versions table
Mounting information	on the panel with screws

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 200 TDDS 84C	55	60	55	30	20	/	45	30	25	10	10	5

3-phase filter without neutral TDSS series

- Models from 300 to 600 A
- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables

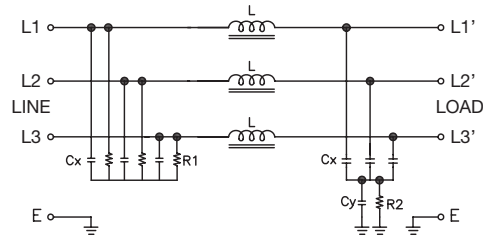


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

- (1) Version available upon request; for information call our sales department, local agent or representative
 (2) According to EN60950 insulation tests on input side must be made only with DC instruments.

BLOCK DIAGRAM

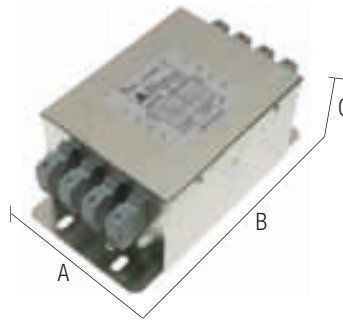


VERSIONS			Dimensions			Weight
Rated current	Type	Cat. No.	A	B	C	(kg)
300 A	F 300 TDSS 84C	XF300TDSS84C (1)	242 (9,53 in)	525 (20,69 in)	142 (5,59 in)	
400 A	F 400 TDSS 84C	XF400TDSS84C (1)	242 (9,53 in)	525 (20,69 in)	142 (5,59 in)	
GENERAL TECHNICAL DATA						
Rated voltage	480 Vac ± 10%					
Rated current	see versions table					
Frequency	50...60 Hz					
Leakage current at 480 Vac 60 Hz	1000 mA					
Operating temperature range	-25...+85°C					
Insulation line/line	0.6 KVdc / 60 s				(2)	
Insulation line/PE	1 KVdc / 60 s				(2)	
Overvoltage category/Pollution degree	—					
Protection degree	IP 20 IEC 529, EN60529					
Connection terminal	with flat plug					
Housing material	metal					
Approx. weight	see versions table					
Mounting information	on the panel with screws					

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 300 TDSS 84C	30	40	40	25	20	15	40	40	50	35	30	20
F 400 TDSS 84C	25	35	30	20	20	10	40	35	35	20	15	10

3-phase filter with neutral serie TYT

- Models from 16 to 100 A
- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables

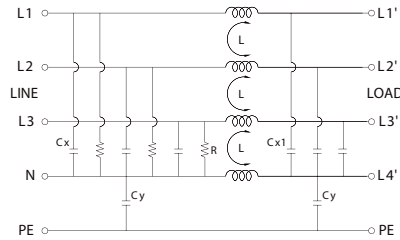


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

(1) According to EN60950 insulation tests on input side must be made only with DC instruments.

BLOCK DIAGRAM



VERSIONS

Rated current	Type	Cat. No.
16 A	F 16 TYT2	XF16TYT2
25 A	F 25 TYT2	XF25TYT2
36 A	F 36 TYT2	XF36TYT2
50 A	F 50 TYT2	XF50TYT2
100 A	F 100 TYT2	XF100TYT2

Dimensions

A	B	C	Weight (kg)
107 (4,22 in)	191,5 (7,55 in)	82 (3,23 in)	
107 (4,22 in)	191,5 (7,55 in)	82 (3,23 in)	
107 (4,22 in)	191,5 (7,55 in)	82 (3,23 in)	
124 (4,89 in)	194 (7,64 in)	104 (4,1 in)	
162 (6,38 in)	252 (9,93 in)	132 (5,2 in)	

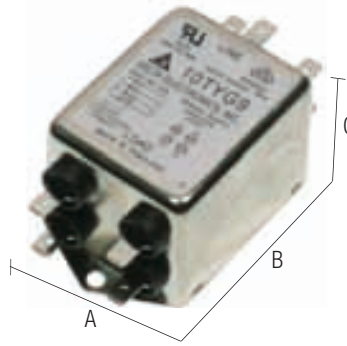
GENERAL TECHNICAL DATA

Rated voltage	440 Vac \pm 10%
Rated current	see versions table
Frequency	50...60Hz
Leakage current at 480 Vac 60 Hz	3 mA
Operating temperature range	-25...+85°C
Insulation line/line	1.45 KVdc / 60 s (1)
Insulation line/PE	2.25 KVdc / 60 s (1)
Overvoltage category/Pollution degree	—
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	screw terminals
Housing material	metal
Approx. weight	see versions table
Mounting information	on the panel with screws

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 16 TYT2	25	50	50	50	45	30	35	55	60	60	40	30
F 25 TYT2	25	50	50	50	45	30	35	55	60	60	40	30
F 36 TYT2	25	50	50	50	40	25	30	50	55	50	40	30
F 50 TYT2	25	45	45	40	40	25	30	50	50	40	40	30
F 100 TYT2	10	20	25	30	30	20	30	40	40	35	35	25

Compact 3-phase filter with neutral TY series

- Models from 10 to 20 A
- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables
- Excellent quality/price/performance ratio

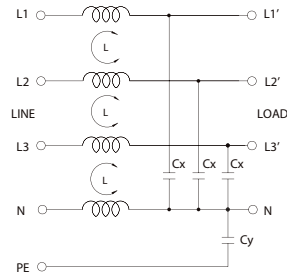


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

(1) According to EN60950 insulation tests on input side must be made only with DC instruments.

BLOCK DIAGRAM



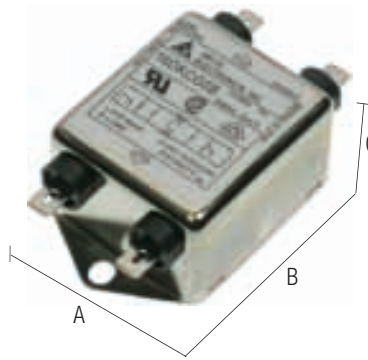
VERSIONS			Dimensions			Weight
Rated current	Type	Cat. No.	A	B	C	(kg)
10 A	F 10 TYG9	XF10TYG9	50 (1,97 in)	85 (3,35 in)	44 (1,73 in)	
20 A	F 20 TYS9	XF20TYS9	50 (1,97 in)	97 (3,82 in)	44 (1,73 in)	

GENERAL TECHNICAL DATA	
Rated voltage	440 Vac ± 10%
Rated current	see versions table
Frequency	50...60Hz
Leakage current at 480 Vac 60 Hz	0.5 mA
Operating temperature range	-25...+85°C
Insulation line/line	1.45 KVdc / 60 s (1)
Insulation line/PE	2.25 KVdc / 60 s (1)
Overvoltage category/Pollution degree	—
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	with flat plug (10 A) and with screw terminals (20 A)
Housing material	metal
Approx. weight	see versions table
Mounting information	on the panel with screws

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 10T YG9	10	20	20	20	30	25	10	20	25	25	30	30
F 20 TYS9	10	15	20	20	25	20	10	15	20	20	25	20

Single-cell single-phase filter DK series

- Models from 3 to 30 A
- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables
- Minimum space on the panel

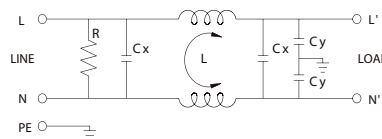


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

- (1) 0.25 mA @ 115 Vac e 0.45 mA @ 250 Vac for models from 3...20 A - 1 mA @ 115 Vac e 2 mA @ 250 Vac for the model of 30 A.
- (2) According to EN60950 insulation tests on input side must be made only with DC instruments.
- (3) With flat plug for models from 3...20 A – with screw bolt for the model from 30 A.

BLOCK DIAGRAM



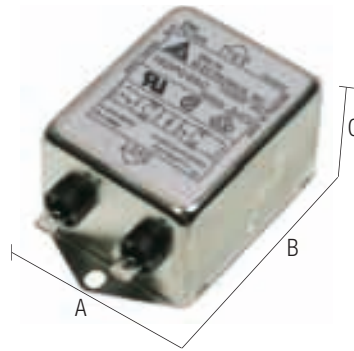
VERSIONS			Dimensions			Weight
Rated current	Type	Cat. No.	A	B	C	(kg)
3 A	F 03 DK BG5B	XF03DKBG5B	64,5 (2,54 in)	34 (1,34 in)	30 (1,18 in)	
6 A	F 06 DK BG5B	XF06DKBG5B	64,5 (2,54 in)	34 (1,34 in)	30 (1,18 in)	
12 A	F 12 DK BG5B	XF12DKBG5B	64,5 (2,54 in)	34 (1,34 in)	30 (1,18 in)	
16 A	F 16 DK CG5B	XF16DKCG5B	45,5 (1,79 in)	71,5 (2,82 in)	30 (1,18 in)	
20 A	F 20 DK CG5B	XF20DKCG5B	51,8 (2,04 in)	84,8 (3,34 in)	30 (1,18 in)	
30 A	F 30 DK CS5B	XF30DKCS5B	56,5 (2,23 in)	114 (4,49 in)	46,4 (1,83 in)	

GENERAL TECHNICAL DATA	
Rated voltage	115–250 Vac ± 10%
Rated current	see versions table
Frequency	50...60 Hz
Leakage current at 480 Vac 60 Hz	0.25...1 mA / 0.45...2 mA (1)
Operating temperature range	-25...+85°C
Insulation line/line	1.45 KVdc / 60 s (2)
Insulation line/PE	2.25 KVdc / 60 s (2)
Overvoltage category/Pollution degree	—
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	with flat plug (from 3 to 20 A) / with screw bolt (30 A) (3)
Housing material	metal
Approx. weight	see versions table
Mounting information	on the panel with screws

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 03 DK BG5B	20	30	35	45	50	45	7	35	50	45	45	45
F 06 DK BG5B	15	20	25	40	45	45	10	20	45	45	50	45
F 12 DK BG5B	10	20	22	35	45	40	10	20	40	45	45	45
F 16 DK CG5B	10	18	20	35	45	30	10	18	40	40	40	35
F 20 DK CG5B	10	18	20	30	35	35	10	12	35	35	40	40
F 30 DK CS5B	10	25	30	45	50	35	12	40	50	50	50	45

Double-cell single-phase filter DP series

- Models from 3 to 30 A
- High attenuation from 150 kHz to 30 MHz
- High attenuation also with long cables
- Minimum space on the panel

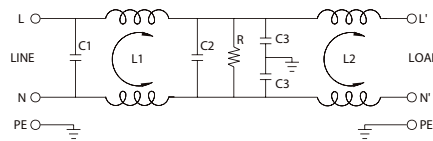


NOTES

Dimensions and diagrams are indicative, for more details see the products data sheet.

- (1) 0.25 mA @ 115 Vac e 0.45 mA @ 250 Vac for models from 3...20 A - 1 mA @ 115 Vac e 2 mA @ 250 Vac for the model of 30 A.
- (2) According to EN60950 insulation tests on input side must be made only with DC instruments.
- (3) With flat plug for models from 3...20 A – with screw bolt for the model from 30 A.

BLOCK DIAGRAM



VERSIONS			Dimensions			Weight
Rated current	Type	Cat. No.	A	B	C	(kg)
3 A	F 03 DP CG5C	XF03DPCG5C	84,8 (3,34 in)	75 (2,96 in)	52 (2,05 in)	
6 A	F 06 DP CG5C	XF06DPCG5C	152,9 (6,02 in)	143 (5,63 in)	51,3 (2,02 in)	
12 A	F 12 DP CG5C	XF12DPCG5C	84,8 (3,34 in)	75 (2,96 in)	52 (2,05 in)	
16 A	F 16 DP CG5C	XF16DPCG5C				
20 A	F 20 DP CG5C	XF20DPCG5C	56,5 (2,23 in)		46,4 (1,83 in)	
30 A	F 30 DP GS5C	XF30DPGS5C				

GENERAL TECHNICAL DATA	
Rated voltage	115–250 Vac ± 10%
Rated current	see versions table
Frequency	50...60 Hz
Leakage current at 480 Vac 60 Hz	0.25...1 mA / 0.45...2 mA (1)
Operating temperature range	-25...+85°C
Insulation line/line	1.45 KVdc / 60 s (2)
Insulation line/PE	2.25 KVdc / 60 s (2)
Overvoltage category/Pollution degree	—
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	with flat plug (from 3 to 20 A) / with screw bolt (30 A) (3)
Housing material	metal
Approx. weight	see versions table
Mounting information	on the panel with screws

Type	Common mode (L / PE) attenuation (dB)						Differential mode (L / L) attenuation (dB)					
	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz	0.15 MHz	0.5 MHz	1 MHz	5 MHz	10 MHz	30 MHz
F 03 DP CG5C	45	60	60	55	45	45	12	45	45	45	45	45
F 06 DP CG5C	30	50	60	55	50	35	8	45	45	45	45	45
F 12 DP CG5C	15	25	35	55	55	35	12	40	40	35	35	40
F 16 DP CG5C	20	35	45	60	50	35	12	40	40	45	45	50
F 20 DP CG5C	15	40	45	50	50	40	12	45	45	40	35	50
F 30 DP GS5C	10	30	35	55	45	30	18	45	50	40	40	40

Analog converters

Applications of analog converters and galvanic isolation

These convert electric signals generated by sensors for measuring physical quantities such as: temperature (RTD thermocouples and PT100 thermal resistors), frequency (proximity, contacts, photoelectric cells), current (HV, Hall sensors), resistance (potentiometers), voltage, pressure, level etc., into standardised electrical signals, adapting them to the I/O of industrial PLC's, DCS's, and PC's (control), or they convert a given analog signal into a different one, adapting it to the inputs/outputs of the control, or allow remote transmission of the signal without interference via galvanic isolation (Fig. 1).

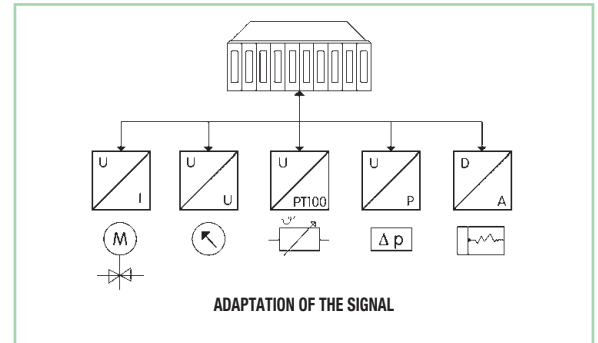


fig. 1

Adaptation between sensor output signal and control input signal

physical quantity measured	sensor output	converter input		converter output	
Temperature	Normally one of the signals indicated in the next column	0 – 60 mV	±60 mV	0 – 5 V	±5 V
Frequency		0 – 100 mV	±100 mV	0 – 10 V	±10 V
Current		0 – 500 mV	±500 mV	0 – 20 mA	±20 mA
Resistance		0 – 1 V	±1 V	4 – 20 mA	
Voltage		0 – 5 V	±5 V		
Pressure		0 – 10 V	±10 V		
Level measurement		0 – 5 mA	±5 mA		
		0 – 10 mA	±10 mA		
		0 – 20 mA	±20 mA		
		0 – 20 mA			

Remote transmission of the signal

The voltage signals reach a max. distance of 10-20 m, beyond this they lose reliability and become very sensitive to earth and induced interference for this reason, in order to transmit at a distance more than 20 m, a voltage signal must be converted into a current signal and galvanically isolated. (Fig. 2).

Current signals exceed 300 m of transmission distance and are less sensitive to induced interference. In order to transmit a current signal at a distance galvanic isolation is required.

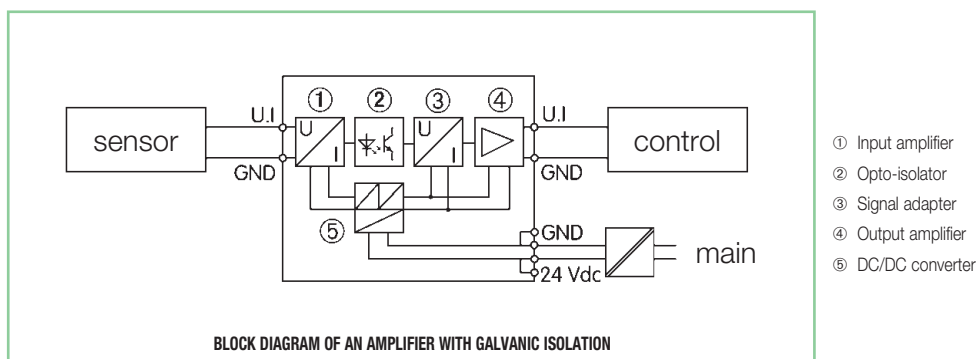


fig. 2

Galvanic isolation of the signal:

- electrically isolates and separates the circuit of the sensor from the control and power supply circuits. Thus each circuit operates with reference to its own zero potential which, being isolated from other circuits, cannot be altered by differences in potential always present between different earth references (Figs. 3).

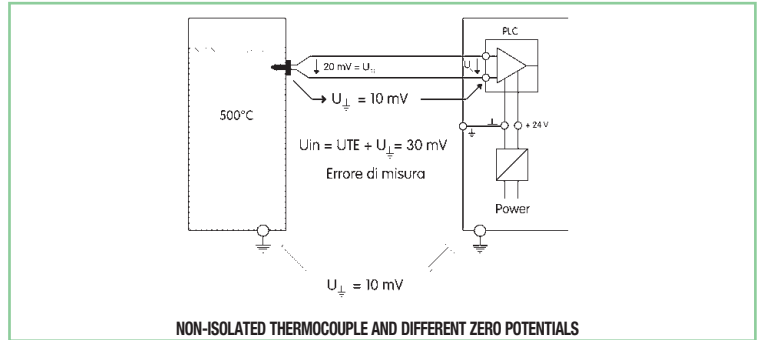


fig. 3

- isolates and separates the various zero potentials between power supply, control and sensors/actuators;
- allows transmission of the signal without errors or interference and with greater reliability;
- the higher the isolation (in KV), the greater the security of transmission where there are zero potentials, electromagnetic interference, transients (lightning, discharges etc.) (Fig. 4).

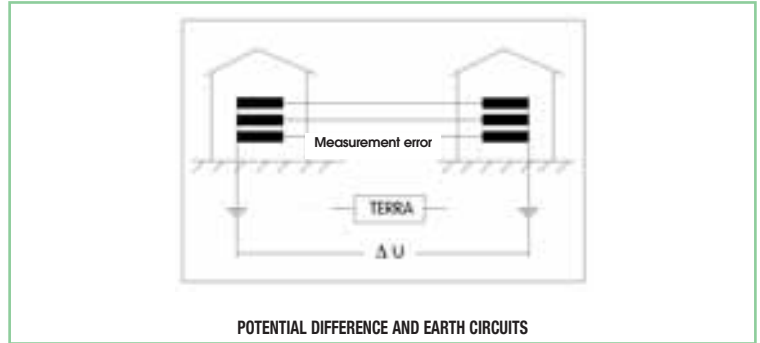


fig. 4

Galvanic isolation is necessary when:

- the distance between control and sensor/actuator is more than 20 m;
- the earth references are different;
- the zero potentials are high, or potentially high in the case of discharges or earth dispersed currents;
- electromagnetic interference is present;
- the signal cables are wired in conduits with power cables (Fig. 5).

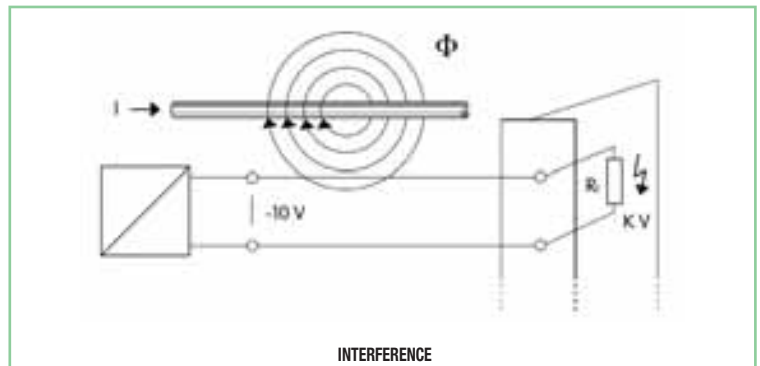


fig. 5

Series and parallel connection of the analogue converter

- To achieve redundancy of a signal or just to duplicate it, you can connect the input of more analogue converters to a single sensor.
- In case of current signals, the input of the converters must be connected in series (Fig. 6).

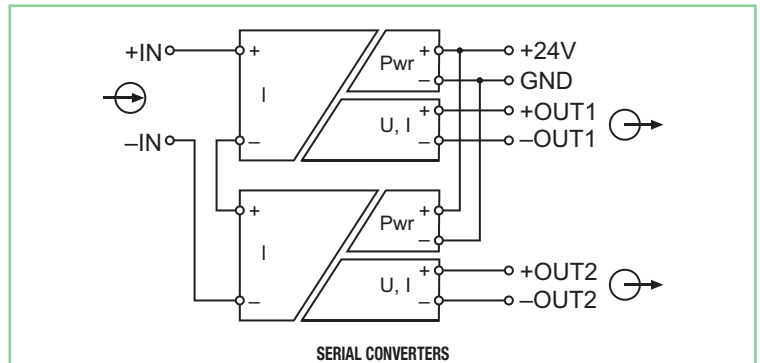


fig. 6

- In case of voltage signals, the input of the converters must be connected in parallel (Fig. 7).

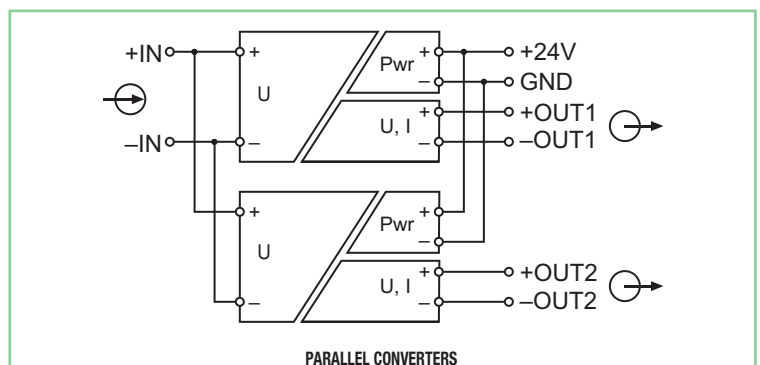


fig. 7

Analog converters selection table

These tables allow you to quickly select only the items, then check if all product's technical data meet your application requirements.

Analog converters and isolators

Input	Output	Isolation	Power supply	Notes	Type	Cat. No.	Page
0...60 / 0...100 / 0...500 mV ±60 / ±100 / ±500 mV 0...1 / 0...2 / 0...5 / 0...10 V ±1 / ±2 / ±5 / ±10 V 0...5 / 0...10 / 0...20 / 4...20 mA ±5 / ±10 / ±20 mA	0...5 / 0...10 / ±5 / ±10 V 0...20 / 4...20 / ±20 mA	3 ways	24 Vdc	(1) (4)	CA-PI/PO1	XSSAPIPO1	81
0...60 / 0...100 / 0...300 / 0...500 mV 0...1 / 0...10 / 0...20 / 2...20 V 0...5 / 0...10 / 0...20 / 4...20 / ±5 / ±20 mA	0...10 V 0...20 / 4...20 mA	3 ways	24 Vac/dc	(1) (4)	CWUAA 6-0516	X756516	82
0...60 / 0...100 / 0...300 / 0...500 mV 0...1 / 0...10 / 0...20 / 2...20 V 0...5 / 0...10 / 0...20 / 4...20 / ±5 / ±20 mA	0...10 V 0...20 / 4...20 mA	3 ways	24...240 Vac/dc	(1) (5)	CWUAA 6-0517	X756517	82
0...10 V 0...20 / 4...20 mA	0...10 V 0...20 / 4...20 mA	3 ways	24 Vac/dc	(1) (4)	CWNAA 7-0539	X756539	83
0...10 V 0...20 / 4...20 mA	0...10 V 0...20 / 4...20 mA	3 ways	24...240 Vac/dc	(1) (5)	CWNAA 6-0510	X756510	83
0...10 V	0...10 V	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0530	X756530	84
0...10 V	0...20 mA	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0531	X756531	84
0...10 V	4...20 mA	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0532	X756532	84
0...20 mA	0...10 V	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0533	X756533	85
0...20 mA	0...20 mA	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0534	X756534	85
0...20 mA	4...20 mA	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0535	X756535	85
4...20 mA	0...10 V	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0536	X756536	86
4...20 mA	0...20 mA	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0537	X756537	86
4...20 mA	4...20 mA	3 ways	24 Vac/dc	(2) (4)	CWAA 6-0538	X756538	86
0...20 / 4...20 mA	0...20 / 4...20 mA	2 ways	—	(4)	CWPAA 7-0526	X756526	87
0...20 / 4...20 mA	0...20 / 4...20 mA	2 ways	—	(3) (4)	CWPAA 7-0527	X756527	87
-30...+30 V / -50...+50 mA / -5...+5 A	0...20 / 4...20 mA	3 ways	24 Vdc	(6) (7)	LCONALSFDT	X756360	88

- Notes**
- (1) programmable input and output signal via DIP switches
 - (2) single range input and output signal (not programmable), articles generally not in stock but available upon request, for info please contact our sales department
 - (3) two channels version
 - (4) 1.5 KVac / 60 s two way isolation (input / output) or 1.5 KVac / 60 s three way isolation (input / output / supply)
 - (5) 4 KVac / 60 s three way isolation (input / output / supply)
 - (6) Input and Output signal range programmable via dip-switch and software
 - (7) 2.5 KVac / 60 three way isolation (input / output / supply)

Analog converters selection table

These tables allow you to quickly select only the items, then check if all product's technical data meet your application requirements.

Current converter

Input	Output	Isolation	Power supply	Notes	Type	Cat. No.	Page
0...50 A ac	adjustable threshold 1...30 A	2 ways	24 Vdc	(3) (4)	CCIS-2	XCCIS2	93
0...1 A ac/dc	0...10 V 0...20 / 4...20 mA	2 ways	24 Vdc	(2)	WAA 7-0540	X756540	94
0...5 A ac/dc	0...10 V 0...20 / 4...20 mA	2 ways	24 Vdc	(2)	WAA 7-0541	X756541	94
0...10 A ac/dc	0...10 V 0...20 / 4...20 mA	2 ways	24 Vdc	(2)	WAA 7-0542	X756542	94

Notes

(1) single I/O version

(2) three programmable output signals

(3) open collector threshold output

(4) threshold output with one changeover relay

Programmable frequency to analog signal converters

Input	Output	Isolation	Power supply	Notes	Type	Cat. No.	Page
0...28.8 kHz (21 ranges)	0...10 V 0...20 / 4...20 mA	2 ways	24 Vac/dc	(1)	CWNFA 6-0524	X756524	97

Auxiliary power supply for sensors and potentiometers

Input	Output	Isolation	Power supply	Notes	Type	Cat. No.	Page
24 Vdc	10 Vdc	2 Vie			CWCV 7-6184	X766184	98

NPN and PNP signal polarity inverter

Input	Output	Isolation	Power supply	Notes	Type	Cat. No.	Page
NPN (17...30 Vdc)	PNP				CI-NPN/PNP	XNPNPNP	99
PNP (17...30 Vdc)	NPN				CI-NPN/PNP	XNPNPNP	99

Analog converters selection table

These tables allow you to quickly select only the items, then check if all product's technical data meet your application requirements.

Converters for temperature sensors

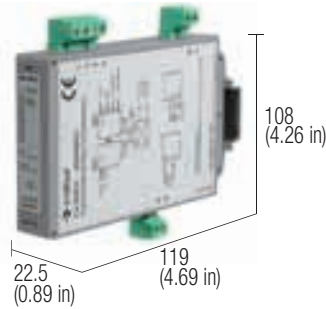
Sensor Type	Input	Output	Isolation	Power supply	Notes	Type	Cat. No.	Page
PT100 e PT1000 (2, 3, 4 wires), Thermocouples B, C, E, J, K, N, R, S, T, Potentiometers 0-600 kOhm	Programmable -200...+2400°C (-328...+4352°F) according to sensor type	0...10 V / -10...+10 V 0...20 mA / 4...+20 mA	3 ways	24 Vdc	(1) (2)	LCONTADFDT	X756340	89
PT100 e PT1000 (2, 3, 4 wires), Thermocouples B, C, E, J, K, N, R, S, T, Potentiometers 0-600 kOhm	Programmable -200...+2400°C (-328...+4352°F) according to sensor type	2 thresholds (NO contacts)	3 ways	24 Vdc	(2)	LCONTLSFDT	X756370	90
PT100 3 wire (RTD)	-50...+50°C (-58...+122°F) -50...+100°C (-58...+212°F) -50...+150°C (-58...+302°F) 0...+100°C (+32...+212°F) 0...+150°C (+32...+302°F) 0...+200°C (+32...+392°F) 0...+300°C (+32...+572°F) 0...+400°C (+32...+752°F)	0...10 V 0...20 / 4...20 mA	3 ways	24 Vac/dc	(2)	CWPT 6-0816	X756816	91
PT100 3 wire (RTD)	-50...+50°C (-58...+122°F) -50...+100°C (-58...+212°F) -50...+150°C (-58...+302°F) 0...+100°C (+32...+212°F) 0...+150°C (+32...+302°F) 0...+200°C (+32...+392°F) 0...+300°C (+32...+572°F) 0...+400°C (+32...+752°F)	0...10 V 0...20 / 4...20 mA	3 ways	24...240 Vac/dc	(2)	CWPT 6-0817	X756817	91
Thermocouples J (FeCuNi) and K (NiCrNi)	-50...+200°C (-58...+392°F) -50...+350°C (-58...+662°F) 0...+200°C (+32...+392°F) 0...+400°C (+32...+752°F) 0...+600°C (+32...+1112°F) 0...+800°C (+32...+1472°F) 0...+1000°C (+32...+1832°F) 0...+1200°C (+32...+2192°F)	0...10 V 0...20 / 4...20 mA	3 ways	24 Vac/dc	(2)	CWTH 6-0844	X756844	92
Thermocouples J (FeCuNi) and K (NiCrNi)	-50...+200°C (-58...+392°F) -50...+350°C (-58...+662°F) 0...+200°C (+32...+392°F) 0...+400°C (+32...+752°F) 0...+600°C (+32...+1112°F) 0...+800°C (+32...+1472°F) 0...+1000°C (+32...+1832°F) 0...+1200°C (+32...+2192°F)	0...10 V 0...20 / 4...20 mA	3 ways	24...240 Vac/dc	(2)	CWTH 6-0847	X756847	92

Notes

- (1) programmable input and output signals via software
- (2) programmable input and output signals via dip-switch

Programmable analog signal converter

- 19 input scales
- 7 output scales
- 1 SPST (NO) alarm contact
- IN/OUT isolation >3 KVac
- Auxiliary supply output for loop-powered sensors
- Input for potentiometer

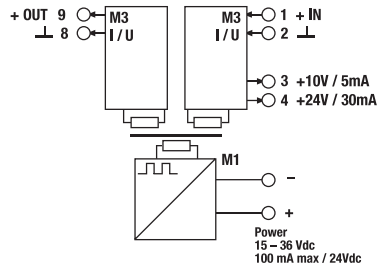


NOTES

The dimensions includes the terminal blocks and the DIN clamp.

(1) The modules in stock are programmed and calibrated with with 0...10 V and 0...10 V output. Modules programmed and calibrated for all other possible configurations can be supplied on request.

BLOCK DIAGRAM



VERSIONS

Cat. No. XCAPI03

CAPI03

INPUT TECHNICAL DATA

Input signal (1)	19 programmable ranges (see Table 1)
Impedance voltage / current mode	1 M Ω / 50 Ω
Max. input voltage	15 V
Max. input current	30 mA

19 programmable ranges (see Table 1)
1 M Ω / 50 Ω
15 V
30 mA

OUTPUT TECHNICAL DATA

Output signal (1)	7 programmable ranges (see Table 2)
Applicable load (voltage / current model)	≥ 10 K Ω / ≤ 500 Ω
Max. output voltage	12 V
Max. output current	25 mA

7 programmable ranges (see Table 2)
≥ 10 K Ω / ≤ 500 Ω
12 V
25 mA

GENERAL TECHNICAL DATA

Supply voltage	15...36 Vdc
Rated current	100 mA max. @ 24 Vdc
Auxiliary DC feed output max. current	10 Vdc 5 mA / 24 Vdc 30 mA
Gain error	< 0.1% FS
Offset error	< 0.05% FS
Linearity error	< 0.1% FS
Zero adjustment / Span adjustment	$\pm 10\%$ FS
Transmission frequency	400Hz...1kHz according to full-scale
Rise time	150 mV / μ s
Bandwidth	1 kHz @ -6 dB
Phase delay	< 10 μ s
I/O / supply isolation	> 3 KVac / 60 s
Continuous voltage isolation	800 Vac max.
Reference Standard	IEC 664-1, DIN VDE0110.1
Overvoltage category/Pollution degree	III / 2
Operating temperature range	-10... +65°C
Δ T	5°C
Protection degree	IP 20 IEC 529, EN60529
ECM standards	EN 50081-2, EN 50082-2
Connection terminal	2.5 mm ² pluggable screw type (14 AWG)
Housing material	polyamide UL94V-0
Approx. weight	150 g (5.29 oz)
Mounting information	vertical on rail, allow 5 mm spacing between adjacent component

15...36 Vdc
100 mA max. @ 24 Vdc
10 Vdc 5 mA / 24 Vdc 30 mA
< 0.1% FS
< 0.05% FS
< 0.1% FS
$\pm 10\%$ FS
400Hz...1kHz according to full-scale
150 mV / μ s
1 kHz @ -6 dB
< 10 μ s
> 3 KVac / 60 s
800 Vac max.
IEC 664-1, DIN VDE0110.1
III / 2
-10... +65°C
5°C
IP 20 IEC 529, EN60529
EN 50081-2, EN 50082-2
2.5 mm ² pluggable screw type (14 AWG)
polyamide UL94V-0
150 g (5.29 oz)
vertical on rail, allow 5 mm spacing between adjacent component

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
Mounting rail type according to IEC60715/G32	—
Plug-in jumper	red
	white
	blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

—
—
—

TABLE 1 - INPUT SELECTION TABLE

INPUT RANGE		SW1 (INPUT)							
UNIPOLAR	BIPOLAR	1	2	3	4	5	6	7	8
0 - 60 mV	± 60 mV								
0 - 100 mV	± 100 mV		•						
0 - 500 mV	± 500 mV			•					
0 - 1 V	± 1 V				•				
0 - 2 V	± 2 V						•		
0 - 5 V	± 5 V			•	•	•	•		
0 - 10 V	± 10 V								•
0 - 5 mA	± 5 mA	•		•					
0 - 10 mA	± 10 mA	•			•				
0 - 20 mA	± 20 mA	•						•	
4 - 20 mA	—	•							•

TABLE 2 - OUTPUT SELECTION TABLE

OUTPUT RANGE	INPUT TYPE	SW2 (OUTPUT)								SW3	
		1	2	3	4	5	6	7	8		
0 - 5 V	UNIP.	X									U
	BIP.	X	•	•				•	•		U
± 5 V	UNIP.	X			•						U
	BIP.	X		•				•			U
0 - 10 V	UNIP.	X		•							U
	BIP.	X	•	•					•		U
± 10 V	UNIP.	X			•						U
	BIP.	X		•							U
0 - 20 mA	UNIP.	X		•				X			I
	BIP.	X	•	•				X	•		I
± 20 mA	UNIP.	X		•				X			I
	BIP.	X		•				X			I
4 - 20 mA	UNIP.	X				•	•	X			I
	BIP.	X	•			•	•	X	•		I

• = ON
= OFF
X = ANY

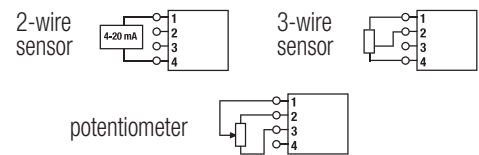
INPUT STAGE

The module can manage single-pole and two-pole inputs, choosing from among the ranges (see Table 1):

- 0...60 mV ± 60 mV
- 0...100 mV ± 100 mV
- 0...500 mV ± 500 mV
- 0...1 V ± 1 V
- 0...5 V ± 5 V
- 0...10 V ± 10 V
- 0...5 mA ± 5 mA
- 0...10 mA ± 10 mA
- 0...20 mA ± 20 mA
- 4...20 mA

The input stage provides two auxiliary supply outputs, for feeding loop powered sensor and potentiometer directly from the module (10V e 24V).

Example of connection:



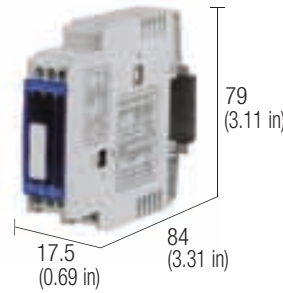
OUTPUT STAGE

The module supplies in output single-pole and two-pole signals with the following ranges (see Table 2):

- 0...5 V ± 5 V
- 0...10 V ± 10 V
- 0...20 mA ± 20 mA
- 4...20 mA

Programmable analog signal converters

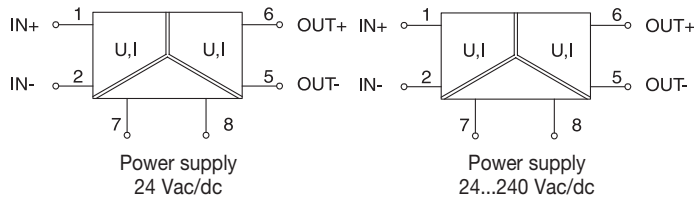
- 3 ways galvanic isolation
- 14 programmable input range
- 3 programmable output range
- Simple programming
- Available version with 24-240 Vac/dc supply voltage



NOTES

The dimensions includes the DIN clamp.
 (1) Adjustable via rotary-switch
 (2) Adjustable via dip-switch
 (3) range 16.8...30 Vdc / 19.2...28.8 Vac
 (4) range 16.8...264 Vdc / 19.2...264 Vac
 (5) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

24 Vac/dc supply voltage
24-240 Vac/dc supply voltage

Cat. No. X756516

CWUAA 6-0516

Cat. No. X756517

CWUAA 6-0517

INPUT TECHNICAL DATA

Input signal (1)
 Input resistance

0...60 / 0...100 / 0...300 / 0...500 mV
0...1 / 0...10 / 0...20 / 2...20 V
0...5 / 0...10 / 0...20 / 4...20 / ±5 / ±20 mA
 330 KΩ with input voltage
 100 Ω with input current

0...60 / 0...100 / 0...300 / 0...500 mV
0...1 / 0...10 / 0...20 / 2...20 V
0...5 / 0...10 / 0...20 / 4...20 / ±5 / ±20 mA
 330 KΩ with input voltage
 100 Ω with input current

OUTPUT TECHNICAL DATA

Output signal (2)
 Applicable load

0...10 V
0...20 / 4...20 mA
 >1 KΩ with output voltage
 <400 Ω with output current

0...10 V
0...20 / 4...20 mA
 >1 KΩ with output voltage
 <400 Ω with output current

GENERAL TECHNICAL DATA

Supply voltage
 Rated current
 Accuracy
 Transmission frequency
 Temperature coefficient
 Isolation
 ECM standards
 Reference Standard
 Overvoltage category/Pollution degree
 Protection degree
 Operating temperature range
 Connection terminal
 Housing material
 Approx. weight
 Mounting information

24 Vac/dc (3)
 ≤ 35 mA ± 10% @ 24 Vdc
 0.1% @ 23°C FS
 < 30 Hz
 0.02% / K FS
 1.5 kVac / 60 s (5)
 EN 50081-2, EN 50082-2
 IEC 664-1, DIN VDE
III / 2
 IP 20 IEC 529, EN60529
 -25...+60°C
 2.5 mm² fixed screw type
 Noryl UL94V-0
 65 g (2.29 oz)
 vertical on rail adjacent without gap

24-240 Vac/dc (4)
 ≤ 35 mA ± 10% @ 24 Vdc
 0.1% @ 23°C FS
 < 30 Hz
 0.02% / K FS
 4 kVac / 60 s (5)
 EN 50081-2, EN 50082-2
 IEC 664-1, DIN VDE
III / 2
 IP 20 IEC 529, EN60529
 -25...+60°C
 2.5 mm² fixed screw type
 Noryl UL94V-0
 75 g (2.65 oz)
 vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5
 Mounting rail type according to IEC60715/G32
 Plug-in jumper
 (16 poles, 16 A)

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

red
 white
 blue

APPLICATIONS

Multifunction converters can be used to convert and isolate the most common standard analog signals; the input of the modules can be set up into 14 signal ranges and the output can be set for up to 3 most important analog ranges. The set up is possible by simply switching the position of a dip switch on the side of the module.

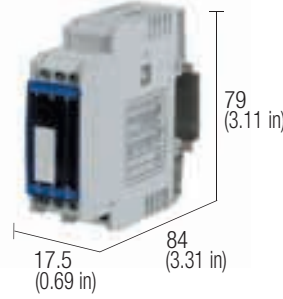
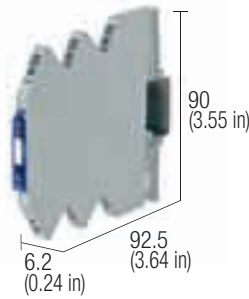
The many different input / output combinations offered by multifunctions modules allows to reduce inventory for both new and replacement products and provides many signal conversion solutions.

The "3 ways" galvanic isolation assures total isolation between input, output and supply input; this feature, and the "self calibrating signal circuitry", gives excellent accuracy without any manual adjustment.

If a single signal must provide several output channels it is possible to use many modules connecting their inputs in parallel as long as the signal is voltage, or in series when signal is current.

Programmable analog signal converters

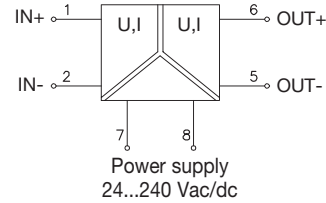
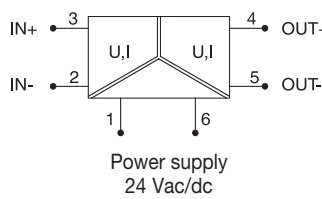
- 1.5 KV, 3 ways, IN/OUT/supply voltage isolation
- 3 programmable input range
- 3 programmable output range
- Simple programming and self calibrating
- Available version with 24-240 Vac/dc supply voltage



NOTES

The dimensions includes the DIN clamp.
 (1) range 16.8...30 Vdc / 19.2...28.8 Vac
 (2) range 16.8...264 Vdc / 19.2...264 Vac
 (3) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

24 Vac/dc supply voltage
24-240 Vac/dc supply voltage

Cat. No. X756539

Cat. No. X756510

CWNAA-7-0539

CWNAA-6-0510

INPUT TECHNICAL DATA

Input signal

0...10 V

0...10 V

Input resistance

0...20 / 4...20 mA
 330 K Ω with input voltage
 100 Ω with input current

0...20 / 4...20 mA
 330 K Ω with input voltage
 100 Ω with input current

OUTPUT TECHNICAL DATA

Output signal

0...10 V

0...10 V

Applicable load

0...20 / 4...20 mA
 >1 K Ω with output voltage
 <400 Ω with output current

0...20 / 4...20 mA
 >1 K Ω with output voltage
 <400 Ω with output current

GENERAL TECHNICAL DATA

Supply voltage

24 Vac/dc (1)

24-240 Vac/dc (2)

Rated current

$\leq 35 \text{ mA} \pm 10\% @ 24 \text{ Vdc}$

$\leq 35 \text{ mA} \pm 10\% @ 24 \text{ Vdc}$

Accuracy

0.1% @ 23°C FS

0.1% @ 23°C FS

Transmission frequency

< 30 Hz

< 30 Hz

Temperature coefficient

0.02% / K FS

0.02% / K FS

Isolation

1.5 kVac / 60 s (3)

4 kVac / 60 s (3)

ECM standards

EN 61000-6-2, EN 61000-6-4

EN 50081-2, EN 50082-2

Reference Standard

IEC 664-1, DIN VDE

IEC 664-1, DIN VDE

Overtoltage category/Pollution degree

III / 2

III / 2

Protection degree

IP 20 IEC 529, EN60529

IP 20 IEC 529, EN60529

Operating temperature range

-25...+60°C

-25...+60°C

Connection terminal

2.5 mm² fixed screw type

2.5 mm² fixed screw type

Housing material

Noryl UL94V-0

Noryl UL94V-0

Approx. weight

40 g (1.41 oz)

75 g (2.65 oz)

Mounting information

vertical on rail adjacent without gap

vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

Mounting rail type according to IEC60715/G32

Plug-in jumper

red

(16 poles, 16 A)

white

blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

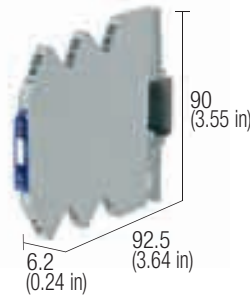
CWBK 7-0802 Cat. No. X766802

CWBK 7-0803 Cat. No. X766803

CWBK 7-0804 Cat. No. X766804

Analog signal converters

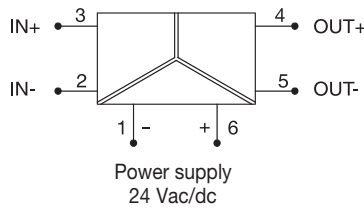
- 1.5 KV, 3 ways, IN/OUT/supply voltage isolation
- Fixed value
- Compact dimension, 6.2 mm pitch



NOTES

The dimensions includes the DIN clamp.
 (1) range 16.8...30 Vdc / 19.2...28.8 Vac
 (2) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

IN: 0...10 V / OUT: 0...10 V

IN: 0...10 V / OUT: 0...20 mA

IN: 0...10 V / OUT: 4...20 mA

INPUT TECHNICAL DATA

Input signal

Input resistance

OUTPUT TECHNICAL DATA

Output signal

Applicable load

GENERAL TECHNICAL DATA

Supply voltage

Rated current

Accuracy

Transmission frequency

Temperature coefficient

Isolation

ECM standards

Reference Standard

Overvoltage category/Pollution degree

Protection degree

Operating temperature range

Connection terminal

Housing material

Approx. weight

Mounting information

Cat. No. X756530

Cat. No. X756531

Cat. No. X756532

CWAA 7-0530

CWAA 7-0531

CWAA 7-0532

0...10 V

330 K Ω

0...10 V

330 K Ω

0...10 V

330 K Ω

0...10 V

>1 K Ω

0...20 mA

<400 Ω

4...20 mA

<400 Ω

24 Vac/dc (1)

≤ 13 mA $\pm 10\%$

0.1% @ 23°C FS

< 30 Hz

0.02% / K FS

1.5 KVac / 60 s (2)

EN 61000-6-2, EN 61000-6-4

IEC 664-1, DIN VDE

III / 2

IP 20 IEC 529, EN60529

-25...+60°C

2.5 mm² fixed screw type

PPE

40 g (1.41 oz)

vertical on rail adjacent without gap

24 Vac/dc (1)

≤ 13 mA $\pm 10\%$

0.1% @ 23°C FS

< 30 Hz

0.02% / K FS

1.5 KVac / 60 s (2)

EN 61000-6-2, EN 61000-6-4

IEC 664-1, DIN VDE

III / 2

IP 20 IEC 529, EN60529

-25...+60°C

2.5 mm² fixed screw type

PPE

40 g (1.41 oz)

vertical on rail adjacent without gap

24 Vac/dc (1)

≤ 13 mA $\pm 10\%$

0.1% @ 23°C FS

< 30 Hz

0.02% / K FS

1.5 KVac / 60 s (2)

EN 61000-6-2, EN 61000-6-4

IEC 664-1, DIN VDE

III / 2

IP 20 IEC 529, EN60529

-25...+60°C

2.5 mm² fixed screw type

PPE

40 g (1.41 oz)

vertical on rail adjacent without gap

APPLICATIONS

These converters can be used to convert and isolate the most common standard analog signals; each model is designed for a single input output signal function, and they are the right solution in applications where many modules handling the same signal are used, where they allow a large cost reduction compared with multi function modules. These modules are provided with 3 ways galvanic isolation between input output and supply voltage. If a single signal must provide several output channels it is possible to use many modules connecting their inputs in parallel as long as the signal is voltage, or in series when the signal is current.

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

Mounting rail type according to IEC60715/G32

Plug-in jumper

(16 poles, 16 A)

red

white

blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

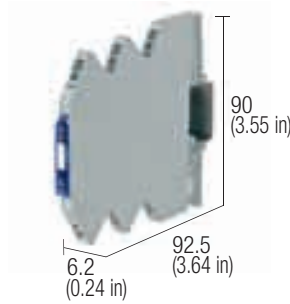
CWBK 7-0802 Cat. No. X766802

CWBK 7-0803 Cat. No. X766803

CWBK 7-0804 Cat. No. X766804

Analog signal converters

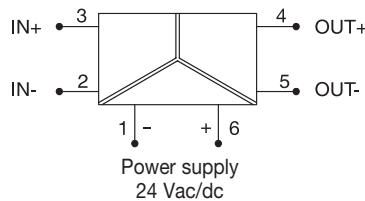
- 1.5 KV, 3 ways, IN/OUT/supply voltage isolation
- Fixed value
- Compact dimension, 6.2 mm pitch



NOTES

The dimensions includes the DIN clamp.
 (1) range 16.8...30 Vdc / 19.2...28.8 Vac
 (2) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

IN: 0...20 mA / OUT: 0...10 V
IN: 0...20 mA / OUT: 0...20 mA
IN: 0...20 mA / OUT: 4...20 mA

INPUT TECHNICAL DATA

Input signal
 Input resistance

OUTPUT TECHNICAL DATA

Output signal
 Applicable load

GENERAL TECHNICAL DATA

Supply voltage
 Rated current
 Accuracy
 Transmission frequency
 Temperature coefficient
 Isolation
 ECM standards
 Reference Standard
 Overvoltage category/Pollution degree
 Protection degree
 Operating temperature range
 Connection terminal
 Housing material
 Approx. weight
 Mounting information

Cat. No. X756533

Cat. No. X756534

Cat. No. X756535

CWAA 7-0533

CWAA 7-0534

CWAA 7-0535

0...20 mA

0...20 mA

0...20 mA

100 Ω

100 Ω

100 Ω

0...10 V

0...20 mA

4...20 mA

>1 KΩ

<400 Ω

<400 Ω

24 Vac/dc (1)

24 Vac/dc (1)

24 Vac/dc (1)

≤ 13 mA ± 10%

≤ 13 mA ± 10%

≤ 13 mA ± 10%

0.1% @ 23°C FS

0.1% @ 23°C FS

0.1% @ 23°C FS

< 30 Hz

< 30 Hz

< 30 Hz

0.02% / K FS

0.02% / K FS

0.02% / K FS

1.5 kVac / 60 s (2)

1.5 kVac / 60 s (2)

1.5 kVac / 60 s (2)

EN 61000-6-2, EN 61000-6-4

EN 61000-6-2, EN 61000-6-4

EN 61000-6-2, EN 61000-6-4

IEC 664-1, DIN VDE

IEC 664-1, DIN VDE

IEC 664-1, DIN VDE

III / 2

III / 2

III / 2

IP 20 IEC 529, EN60529

IP 20 IEC 529, EN60529

IP 20 IEC 529, EN60529

-25...+60°C

-25...+60°C

-25...+60°C

2.5 mm² fixed screw type

2.5 mm² fixed screw type

2.5 mm² fixed screw type

PPE

PPE

PPE

40 g (1.41 oz)

40 g (1.41 oz)

40 g (1.41 oz)

vertical on rail adjacent without gap

vertical on rail adjacent without gap

vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5
 Mounting rail type according to IEC60715/G32

Plug-in jumper
 (16 poles, 16 A)

red
 white
 blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

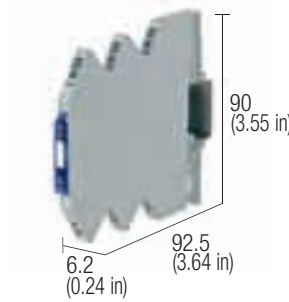
—
 CWBK 7-0802 Cat. No. X766802
 CWBK 7-0803 Cat. No. X766803
 CWBK 7-0804 Cat. No. X766804

APPLICATIONS

These converters can be used to convert and isolate the most common standard analog signals; each model is designed for a single input output signal function, and they are the right solution in applications where many modules handling the same signal are used, where they allow a large cost reduction compared with multi function modules. These modules are provided with 3 ways galvanic isolation between input output and supply voltage. If a single signal must provide several output channels it is possible to use many modules connecting their inputs in parallel as long as the signal is voltage, or in series when the signal is current.

Analog signal converters

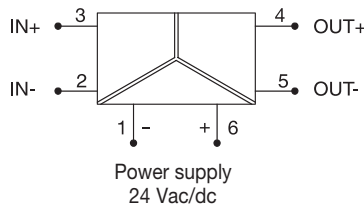
- 1.5 KV, 3 ways, IN/OUT/supply voltage isolation
- Fixed value
- Compact dimension, 6.2 mm pitch



NOTES

The dimensions includes the DIN clamp.
 (1) range 16.8...30 Vdc / 19.2...28.8 Vac
 (2) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

IN: 4...20 mA / OUT: 0...10 V
IN: 4...20 mA / OUT: 0...20 mA
IN: 4...20 mA / OUT: 4...20 mA

INPUT TECHNICAL DATA

Input signal
 Input resistance

OUTPUT TECHNICAL DATA

Output signal
 Applicable load

GENERAL TECHNICAL DATA

Supply voltage
 Rated current
 Accuracy
 Transmission frequency
 Temperature coefficient
 Isolation
 ECM standards
 Reference Standard
 Overvoltage category/Pollution degree
 Protection degree
 Operating temperature range
 Connection terminal
 Housing material
 Approx. weight
 Mounting information

Cat. No. X756536

Cat. No. X756537

Cat. No. X756538

CWAA 7-0536

CWAA 7-0537

CWAA 7-0538

4...20 mA
 100 Ω

4...20 mA
 100 Ω

4...20 mA
 100 Ω

0...10 V
 >1 KΩ

0...20 mA
 <400 Ω

4...20 mA
 <400 Ω

24 Vac/dc (1)
 ≤ 13 mA ± 10%
 0.1% @ 23°C FS
 < 30 Hz
 0.02% / K FS
 1.5 KVac / 60 s (2)
 EN 61000-6-2, EN 61000-6-4
 IEC 664-1, DIN VDE
 III / 2
 IP 20 IEC 529, EN60529
 -25...+60°C
 2.5 mm² fixed screw type
 PPE
 40 g (1.41 oz)
 vertical on rail adjacent without gap

24 Vac/dc (1)
 ≤ 13 mA ± 10%
 0.1% @ 23°C FS
 < 30 Hz
 0.02% / K FS
 1.5 KVac / 60 s (2)
 EN 61000-6-2, EN 61000-6-4
 IEC 664-1, DIN VDE
 III / 2
 IP 20 IEC 529, EN60529
 -25...+60°C
 2.5 mm² fixed screw type
 PPE
 40 g (1.41 oz)
 vertical on rail adjacent without gap

24 Vac/dc (1)
 ≤ 13 mA ± 10%
 0.1% @ 23°C FS
 < 30 Hz
 0.02% / K FS
 1.5 KVac / 60 s (2)
 EN 61000-6-2, EN 61000-6-4
 IEC 664-1, DIN VDE
 III / 2
 IP 20 IEC 529, EN60529
 -25...+60°C
 2.5 mm² fixed screw type
 PPE
 40 g (1.41 oz)
 vertical on rail adjacent without gap

APPLICATIONS

These converters can be used to convert and isolate the most common standard analog signals; each model is designed for a single input output signal function, and they are the right solution in applications where many modules handling the same signal are used, where they allow a large cost reduction compared with multi function modules. These modules are provided with 3 ways galvanic isolation between input output and supply voltage. If a single signal must provide several output channels it is possible to use many modules connecting their inputs in parallel as long as the signal is voltage, or in series when the signal is current

MOUNTING ACCESSORIES

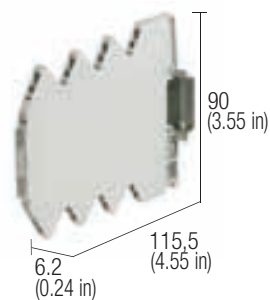
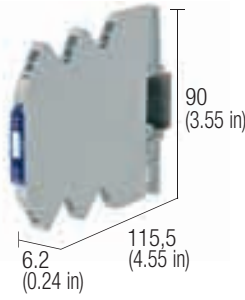
Mounting rail type according to IEC60715/TH35-7.5
 Mounting rail type according to IEC60715/G32
 Plug-in jumper red
 (16 poles, 16 A) white
 blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

—
 CWBK 7-0802 Cat. No. X766802
 CWBK 7-0803 Cat. No. X766803
 CWBK 7-0804 Cat. No. X766804

Passive galvanic isolators

- Do not require power supply
- Suitable for loop powered sensors
- 2 Ways I/O 500 V isolation
- Single and double channel version
- Compact dimension, 6.2 mm pitch

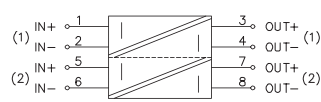
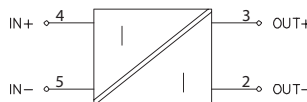


NOTES

The dimensions includes the DIN clamp.

- (1) Input voltage must have a value higher than the value calculated with this formula, where R_b is load resistance (see pic.1); for calculation refer to the diagram comparing minimum input voltage with output load and wires resistance values; refer to the diagram (see pic. 2) to define if application conditions allow to get full 20 mA output signal
- (2) 2-way isolation: IN/OUT

BLOCK DIAGRAM



VERSIONS

Single channel
Double channel

INPUT TECHNICAL DATA

Input signal
Input current
Input voltage (1)
Input resistance

OUTPUT TECHNICAL DATA

Output signal
Applicable load

GENERAL TECHNICAL DATA

Supply voltage
Rated current
Accuracy
Rise time (10..90%)
Transmission frequency
Temperature coefficient
Isolation
ECM standards
Reference Standard
Overvoltage category/Pollution degree
Protection degree
Operating temperature range
Connection terminal
Housing material
Approx. weight
Mounting information

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5
Mounting rail type according to IEC60715/G32
Plug-in jumper (16 poles, 16 A)

red
white
blue

Cat. No. X756526

CWPAA 7-0526

Cat. No. X756527

CWPAA 7-0527

1 channel 0...20 mA, 4...20 mA

2.7 + (20 mA x R_b)
100 Ω

1 channel 0...20 / 4...20 mA, (max 21 mA)

<400 Ω with output current

2 channels 0...20 mA, 4...20 mA

2.7 + (20 mA x R_b)
100 Ω

2 channels 0...20 / 4...20 mA, (max 21 mA)

<400 Ω with output current

APPLICATIONS

The passive galvanic isolators can isolate the signal generated by loop powered sensors, where the applied load must have a resistance lower than 400 Ω 20 mA, including the cable resistance; the applied input voltage has to be higher than 2.7 V compared with output voltage (see note 2). If above conditions are satisfied, passive isolators reduce cabling costs and eliminate power supplies thereby saving costs. If above conditions are not satisfied, passive module introduces a signal attenuation.

figure 1

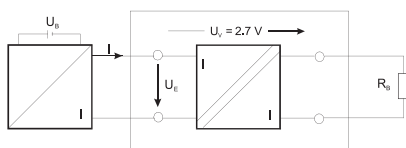
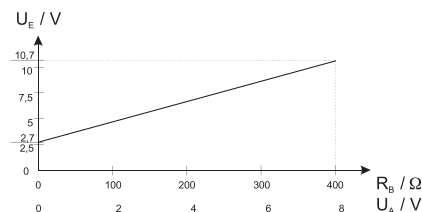
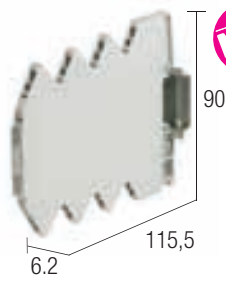


figure 2



Programmable converter analogue signal / threshold

- 3 ways I/O 2.5 KV isolation
- programmable input ranges via dip-switch and customizable via software FDT/DTM
- 2 threshold customizable via software FDT/DTM
- Symple functions programming

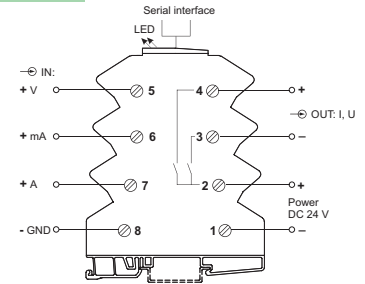


NOTES

The dimensions includes the DIN clamp.

- (1) Version with spring-clamp terminals available on request
- (2) Input temperature ranges can be set via dip switch and adjustable via FDT/DTM software.
Output ranges can be set via FDT/DTM software
- (3) 3-way isolation: IN / OUT/ supply

BLOCK DIAGRAM



VERSION

With screw terminals (standard)

With spring terminals

Programming tool

INPUT TECHNICAL DATA

Input signal (1)

Input resistance

Zero / Spam

OUTPUT TECHNICAL DATA

Threshold regulation

Contact type

Max. switching voltage / current

Status indication

Operating mode

GENERAL TECHNICAL DATA

Supply voltage

Rated current

Accuracy

Data processing

Linearity error

Temperature coefficient

Response time

Isolation

EMC Standard

Reference Standard

Overvoltage category/Pollution degree

Protection degree

Operating temperature range

Connection terminal

Housing material

Approx. weight

Mounting information

MOUNTING ACCESSORIES

Profilato d'appoggio a norma IEC60715/TH35-7.5

Profilato d'appoggio a norma IEC60715/G32

Ponte di parallelo

(16 poli, 16 A)

rosso
bianco
blu

Cod. X756360

LCONALSFDT

Cod. X756894

LCONZBUSB

(1)

-30...+30 V

330 K Ω

-50...+50 mA

30 Ω

-5...+5 A

10 m Ω

adjustable via software FDT/DTM

programmable via software FDT/DTM

2 NO contact (solid state relay)

30 Vdc / 100 mA

2 yellow LED

limit value, window, tendency, inverting and hold function

24 Vdc (16.8...30 Vdc)

18 mA \pm 10% @ 24 Vdc

0.1% FS

24 Bit

< 100 ppm FS

< 100 ppm/ $^{\circ}$ C

1...500 ms (adjustable, default 30 ms)

2.5 kVac / 60 s (3)

EN 50081-2, EN 50082-2

IEC 664-1, DIN VDE

III / 2

IP20

-40...+70 $^{\circ}$ C

1.5 mm 2 fixed screw type

Noryl UL94V-0

600 g

vertical on rail adjacent without gap

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

—

CWBK 7-0802 cod. X766802

CWBK 7-0803 cod. X766803

CWBK 7-0804 cod. X766804

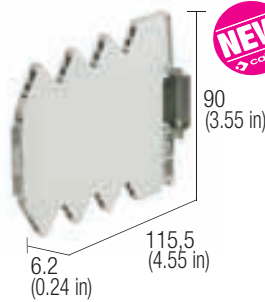
APPLICATIONS

CWTPR 7-0360 is an analog signal converter that provides high accuracy measurement and that can be connected to a wide range of analogue sensors.

Input range and the output thresholds can be modified with a FDT/DTM software and an USB interface. Are available two normally open contact with solid state relay.

Programmable converters for temperature sensors

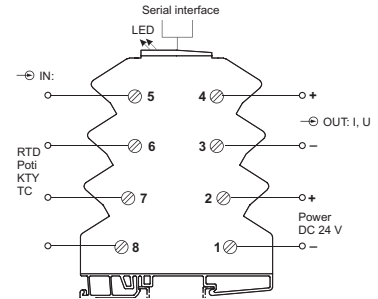
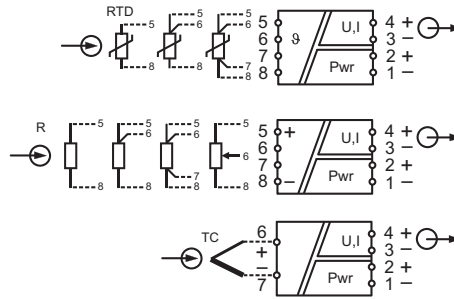
- For PT100, PT1000 sensors, thermocouples, potentiometers
- 3 ways I/O 2.5 KV isolation
- 145 programmable input ranges via dip-switch and customizable via software FDT/DTM
- 5 programmable output ranges via dip-switch and customisable via software FDT/DTM
- Compact dimension, 6.2 mm pitch



NOTES

- The dimensions includes the DIN clamp.
- (1) Version with spring-clamp terminals available on request
 - (2) Input temperature ranges, and output signals, can be set via dip switch, or adjustable via FDT/DTM software.
 - (3) 3-way isolation: IN / OUT/ supply

BLOCK DIAGRAM



VERSIONS

With screw terminals (standard)

With spring terminals

Programming tool

INPUT TECHNICAL DATA

Input signal

Temperature range

OUTPUT TECHNICAL DATA

Output signal

Applicable load

Display signals

Cod. X756340

Cod. X756894

LCONTADFDT

(1)

LCONZBUSB

PT100, PT1000 sensor
potenziometer 0...600k Ω
thermocouple B, C, E, J, K, N, R, S, T type
-200...+1400°C, according to sensor type (2)

0...10 / -10...+10 V, (max. 10.25 V)
0...20 / 4...20 mA, (max 21 mA) (2)
>2 K Ω with output voltage
<650 Ω with output current
green LED = OK, flashing red LED = error

APPLICATIONS

CSWTPR 7-0340 is a temperature to analog signal conversion module that provides high accuracy measurement and that can be connected to a wide range of temperature sensors. The module can be used for a temperature range from -200 to + 1.400°C.

With resistive sensors it is possible to select among 2, 3, 4 wire connections. Input and output ranges can be modified with a FDT/DTM software and an USB interface.

GENERAL TECHNICAL DATA

Supply voltage	24 Vdc (16.8...30 Vdc)
Rated current	18 mA max. @ 24 Vdc
Accuracy	10K/span(K) + 0.2% FS (for RTD) / 10K/span(K) + 0.4% FS (for TE)
Data processing	24 bit
Linearity error	$\pm 0.05\%$ FS - $\pm 0.1\%$ FS (for TE)
Temperature coefficient	<100 ppm/°C
Response time	5...500 ms (regolabile, default 30 ms)
Isolation	2.5 kVac / 60 s (3)
ECM standards	EN 61000-6-2, EN 61000-6-4
Reference Standard	IEC 664-1, DIN VDE
Overvoltage category / Pollution degree	III / 2
Protection degree	IP 20 IEC 529 EN60529
Operating temperature	-40...+70°C
Connection terminal	1.5 mm ² fixed screw ty'e
Housing material	PPE
Approx. weight	40 g (1.41 oz)
Mounting information	vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
Mounting rail type according to IEC60715/G32	—
Plug-in jumper	red CWBK 7-0802 cod. X766802 white CWBK 7-0803 cod. X766803 blue CWBK 7-0804 cod. X766804

Range*	S1			S2			
Start	7	8	1 2	End	3 4	5 6	7 8
-200°C	•			0°C	•		
-150°C	•			50°C	•		
-100°C	•	•		100°C	•	•	
-50°C	•	•	•	150°C	•	•	•
0°C	•	•	•	200°C	•	•	•
				250°C			•
				300°C	•	•	•
				350°C	•	•	•
				400°C	•	•	•
				450°C	•	•	•
				500°C	•	•	•
				550°C	•	•	•
				600°C	•	•	•
				650°C	•	•	•
				700°C	•	•	•
				750°C	•	•	•
				800°C	•	•	•
				850°C	•	•	•
				900°C	•	•	•
				950°C	•	•	•
				1000°C	•	•	•
				1050°C	•	•	•
				1100°C	•	•	•
				1150°C	•	•	•
				1200°C	•	•	•
				1250°C	•	•	•
				1300°C	•	•	•
				1350°C	•	•	•
				1400°C	•	•	•

S1-S2 1-8 off:
FDT/DTM

• → Switch On

Programmable converter temperature sensor / threshold

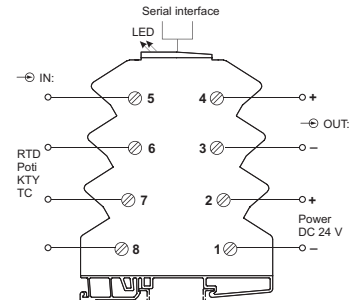
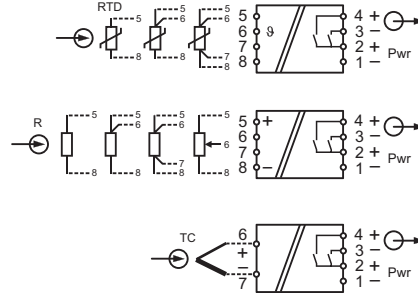
- For PT100, PT1000 sensors, thermocouples, potentiometers
- 3 ways I/O 2.5 KV isolation
- 145 programmable input ranges via dip-switch and customizable via software FDT/DTM*
- 2 threshold customizable via software FDT/DTM
- Compact dimension, 6.2 mm pitch



NOTES

- The dimensions includes the DIN clamp.
- (1) Version with spring-clamp terminals available on request
 - (2) Input temperature ranges can be set via dip switch and adjustable via FDT/DTM software. Output ranges can be set via FDT/DTM software
 - (3) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

With screw terminals (standard)

With spring terminals

Programming tool

INPUT TECHNICAL DATA

Input signal

Temperature range

OUTPUT TECHNICAL DATA

Threshold regulation

Contact type

Max. switching voltage / current

Status indication

Operating mode

GENERAL TECHNICAL DATA

Supply voltage

Rated current

Accuracy

Data processing

Linearity error

Temperature coefficient

Response time

Isolation

ECM standards

Reference Standard

Overvoltage category / Pollution degree

Protection degree

Operating temperature

Connection terminal

Housing material

Approx. weight

Mounting information

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

Mounting rail type according to IEC60715/G32

Plug-in jumper

red
white
blue

Cod. X756370

Cod. X756894

LCONTLSFDT

(1)

LCONZBUSB

PT100, PT1000 sensor
potenziometer 0...600k Ω
thermocouple B, C, E, J, K, N, R, S, T type
-200...+1400°C, according to sensor type (2)

programmable via software FDT/DTM

2 NO contact (solid state relay)

30 Vdc / 100 mA

2 yellow LED

limit value, window, tendency, inverting and hold function

24 Vdc (16.8...30 Vdc)

18 mA max. @ 24 Vdc

10K/span(K) + 0.2% FS (for RTD) / 10K/span(K) + 0.4% FS (for TE)

24 bit

$\pm 0.05\%$ FS (for RTD and potentiometer) / $\pm 0.1\%$ FS (for TE)

<100 ppm/°C

5...500 ms (regolabile, default 30 ms)

2.5 kVac / 60 s (3)

EN 61000-6-2, EN 61000-6-4

IEC 664-1, DIN VDE

III / 2

IP 20 IEC 529 EN60529

-40...+70°C

1.5 mm² fixed screw type

PPE

40 g (1.41 oz)

vertical on rail adjacent without gap

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

CWBK 7-0802 cod. X766802

CWBK 7-0803 cod. X766803

CWBK 7-0804 cod. X766804

APPLICATIONS

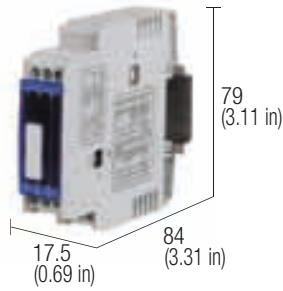
CWTPR 7-0370 is a temperature to analog signal conversion module that provides high accuracy measurement and that can be connected to a wide range of temperature sensors. The module can be used for a temperature range from -200 to +1.400°C. With resistive sensors it is possible to select among 2, 3, 4 wire connections.

Input range and the output thresholds can be modified with a FDT/DTM software and an USB interface.

Two normally open contact with solid state relay are available.

Programmable converters for RTD sensors

- Converters for PT100 sensors
- 3 ways galvanic isolation
- 8 programmable input range
- 3 programmable output range
- Simple programming
- Version with 24-240 Vac/dc supply voltage

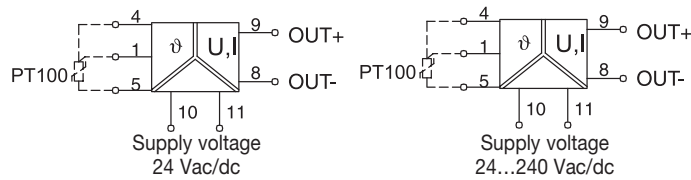


NOTES

The dimensions includes the DIN clamp.

- (1) Adjustable via rotary-switch
- (2) Adjustable via dip-switch
- (3) They can also be used with 2 wire PT100 sensor, connecting the terminals 1 and 4
- (4) range 16.8...30 Vdc / 19.2...28.8 Vac
- (5) range 16.8...264 Vdc / 19.2...264 Vac
- (6) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

- 24 Vac/dc supply voltage
- 24-240 Vac/dc supply voltage

Cat. No. X756816

Cat. No. X756817

CWPT 6-0816

CWPT 6-0817

INPUT TECHNICAL DATA

Input signal	PT100 3 wires (3)
Temperature range (1)	-50...+50°C (-58...+122°F) -50...+100°C (-58...+212°F) -50...+150°C (-58...+302°F) 0...+100°C (+32...+212°F) 0...+150°C (+32...+302°F) 0...+200°C (+32...+392°F) 0...+300°C (+32...+572°F) 0...+400°C (+32...+752°F)
Supply current	0.5 mA

Input signal	PT100 3 wires (3)
Temperature range (1)	-50...+50°C (-58...+122°F) -50...+100°C (-58...+212°F) -50...+150°C (-58...+302°F) 0...+100°C (+32...+212°F) 0...+150°C (+32...+302°F) 0...+200°C (+32...+392°F) 0...+300°C (+32...+572°F) 0...+400°C (+32...+752°F)
Supply current	0.5 mA

Input signal	PT100 3 wires (3)
Temperature range (1)	-50...+50°C (-58...+122°F) -50...+100°C (-58...+212°F) -50...+150°C (-58...+302°F) 0...+100°C (+32...+212°F) 0...+150°C (+32...+302°F) 0...+200°C (+32...+392°F) 0...+300°C (+32...+572°F) 0...+400°C (+32...+752°F)
Supply current	0.5 mA

OUTPUT TECHNICAL DATA

Output signal (2)	0...10 V
Applicable load	0...20 / 4...20 mA >1 K Ω with output voltage, <400 Ω with output current

Output signal (2)	0...10 V
Applicable load	0...20 / 4...20 mA >1 K Ω with output voltage, <400 Ω with output current

Output signal (2)	0...10 V
Applicable load	0...20 / 4...20 mA >1 K Ω with output voltage, <400 Ω with output current

GENERAL TECHNICAL DATA

Supply voltage	24 Vac/dc (2)
Rated current	≤ 35 mA $\pm 10\%$ @ 24 Vdc
Accuracy	<0.3% FS
Transmission frequency	<30 Hz
Temperature coefficient	0.015% / K FS
Isolation	1.5 kVac / 60 s (6)
ECM standards	EN 50081-2, EN 50082-2
Reference Standard	IEC 664-1, DIN VDE
Overvoltage category/Pollution degree	III / 2
Protection degree	IP20
Operating temperature range	-20...+60°C
Connection terminal	2.5 mm ² fixed screw type
Housing material	Noryl UL94V-0
Approx. weight	75 g (2.65 oz)
Mounting information	vertical on rail adjacent without gap

Supply voltage	24-240 Vac/dc (3)
Rated current	≤ 35 mA $\pm 10\%$ @ 24 Vdc
Accuracy	<0.3% FS
Transmission frequency	<30 Hz
Temperature coefficient	0.015% / K FS
Isolation	4 kVac / 60 s (6)
ECM standards	EN 50081-2, EN 50082-2
Reference Standard	IEC 664-1, DIN VDE
Overvoltage category/Pollution degree	III / 2
Protection degree	IP20
Operating temperature range	-20...+60°C
Connection terminal	2.5 mm ² fixed screw type
Housing material	Noryl UL94V-0
Approx. weight	85 g (3.00 oz)
Mounting information	vertical on rail adjacent without gap

Supply voltage	24-240 Vac/dc (3)
Rated current	≤ 35 mA $\pm 10\%$ @ 24 Vdc
Accuracy	<0.3% FS
Transmission frequency	<30 Hz
Temperature coefficient	0.015% / K FS
Isolation	4 kVac / 60 s (6)
ECM standards	EN 50081-2, EN 50082-2
Reference Standard	IEC 664-1, DIN VDE
Overvoltage category/Pollution degree	III / 2
Protection degree	IP20
Operating temperature range	-20...+60°C
Connection terminal	2.5 mm ² fixed screw type
Housing material	Noryl UL94V-0
Approx. weight	85 g (3.00 oz)
Mounting information	vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	
Mounting rail type according to IEC60715/G32	
Plug-in jumper	red
(16 poles, 16 A)	white
	blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

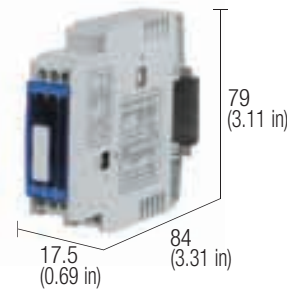
PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB	—
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APPLICATIONS

The modules convert and isolate signals generated by 3 wire / 2 wire PT100 (RTD) sensors into analog signals; the module can be set into 8 temperature ranges and for up to 3 most important analog ranges. Set up is easily achieved by setting a dip-switch on one side of the module. The modules provide input and output isolation, assuring high signal accuracy, and can be used with isolated and not isolated sensors. Two wire sensors can be used by connecting a jumper wire between 1 and 4 terminal blocks.

Programmable converters for thermocouples

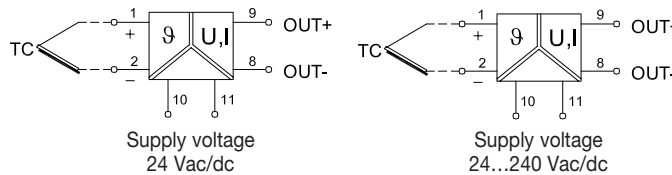
- Converters for sensors with thermocouples J and K type
- 3 ways galvanic isolation
- 8 programmable input range
- 3 programmable output range
- Simple programming
- Version with 24-240 Vac/dc supply voltage



NOTES

- The dimensions includes the DIN clamp.
- (1) Adjustable via rotary-switch
 - (2) Adjustable via dip-switch
 - (3) range 16.8...30 Vdc / 19.2...28.8 Vac
 - (4) range 16.8...264 Vdc / 19.2...264 Vac
 - (5) *3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



VERSIONS

- 24 Vac/dc supply voltage
- 24-240 Vac/dc supply voltage

Cat. No. X756844

CWTH 6-0844

Cat. No. X756847

CWTH 6-0847

INPUT TECHNICAL DATA

Input signal

Temperature range (1)

thermocouples FeCuNi (J type) e NiCrNi (K type) according to DIN/IEC584-1	thermocouples FeCuNi (J type) e NiCrNi (K type) according to DIN/IEC584-1
-50...+200°C (-58...+392°F)	-50...+200°C (-58...+392°F)
-50...+350°C (-58...+662°F)	-50...+350°C (-58...+662°F)
0...+200°C (+32...+392°F)	0...+200°C (+32...+392°F)
0...+400°C (+32...+752°F)	0...+400°C (+32...+752°F)
0...+600°C (+32...+1112°F)	0...+600°C (+32...+1112°F)
0...+800°C (+32...+1472°F)	0...+800°C (+32...+1472°F)
0...+1000°C (+32...+1832°F)	0...+1000°C (+32...+1832°F)
0...+1200°C (+32...+2192°F)	0...+1200°C (+32...+2192°F)

Supply current

OUTPUT TECHNICAL DATA

Output signal (2)

Applicable load

0...10 V 0...20 / 4...20 mA	0...10 V 0...20 / 4...20 mA
>1 KΩ with output voltage, <400 Ω with output current	>1 KΩ with output voltage, <400 Ω with output current

GENERAL TECHNICAL DATA

Supply voltage	24 Vac/dc (3)	24-240 Vac/dc (4)
Rated current	≤ 35 mA ± 10% @ 24 Vdc	≤ 35 mA ± 10% @ 24 Vdc
Accuracy	<0.5% FS	<0.5% FS
Transmission frequency	<30 Hz	<30 Hz
Temperature coefficient	0.015% / K FS	0.015% / K FS
Isolation	1.5 kVac / 60 s (5)	4 kVac / 60 s (5)
ECM standards	EN 50081-2, EN 50082-2	EN 50081-2, EN 50082-2
Reference Standard	IEC 664-1, DIN VDE	IEC 664-1, DIN VDE
Overtoltage category/Pollution degree	III / 2	III / 2
Protection degree	IP20	IP20
Operating temperature range	-20...+60°C	-20...+60°C
Connection terminal	2.5 mm ² fixed screw type	2.5 mm ² fixed screw type
Housing material	Noryl UL94V-0	Noryl UL94V-0
Approx. weight	65 g (2.29 oz)	75 g (2.65 oz)
Mounting information	vertical on rail adjacent without gap	vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

Mounting rail type according to IEC60715/G32

Plug-in jumper	red
(16 poles, 16 A)	white
	blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

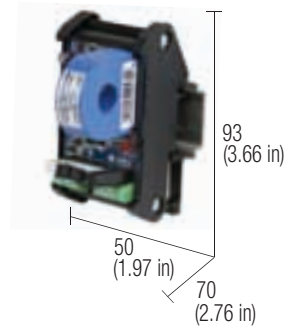
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APPLICATIONS

The modules convert and isolate signals generated by thermocouples type J (FeCuNi) or K (NiCrNi) into an analog signal; can be set into 8 temperature input ranges, and can be set for up to 3 most important analog ranges. The set up is possible by setting a dip-switch on one side of the module. The modules provide input and output isolation, assuring high signal accuracy, and can be used with isolated and not isolated sensors.

Current to threshold converters

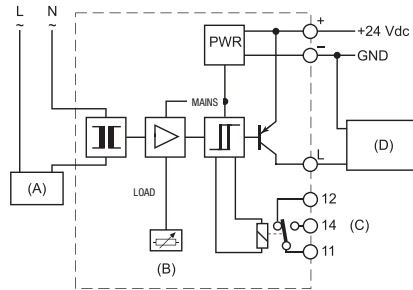
- For AC current measure
- Adjustable threshold value
- Versions with transistor or relay output
- IN/OUT 3 KV isolation



NOTES

The dimensions includes the terminal blocks and the DIN clamp.
 (1) Isolation referred to conductor being measured, not isolated (naked) and in contact with the wall of the toroid. By using isolated conductors, the isolation value of the conductor is added to isolation of the module.

BLOCK DIAGRAM



- (A) AC load
 - (B) Threshold
 - (C) Output with SPDT contact
 - (D) Digital input drive by transistor
- Power supply
24 Vac/dc

VERSIONS

Cod. XCCIS2
CCIS-2

APPLICATIONS

This module converts a current flowing through circuit into a threshold that can be adjusted by the potentiometer; when the current reaches the threshold value, the relay or the transistor switches; the wire must be feed through the hole of the current sensor for current detection.

INPUT TECHNICAL DATA

Max. measured current	50 A (AC)
Max. measured voltage	600 Vac (1)
Frequency	50...60 Hz
Sensor's hole diameter	Ø 13 mm

OUTPUT TECHNICAL DATA

Threshold regulation	2...40 A
Threshold hysteresis	± 10%
Max. output current	100 mA open collector PNP
Output status	"high" 24 V (closed) with I < threshold "low" 0 V (open) with I > threshold
Response time	20 ms

GENERAL TECHNICAL DATA

Supply voltage	24 Vdc ± 10%
Max rated current	100 mA
Operating temperature range	0...60°C
Input/output isolation	> 3 kVac /60 s
Connection terminal	2.5 mm ² fixed screw type (14 AWG)
Housing material	polyamide UL94V-03
Approx. weight	100 g (3.53 oz)
Mounting information	vertical on rail adjacent without gap

MOUNTING ACCESSORIES

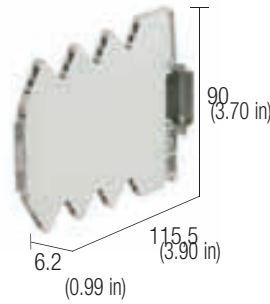
Profilato d'appoggio a norma IEC60715/TH35	
Profilato d'appoggio a norma IEC60715/G32	
Plug-in jumper	red
(16 poles, 16 A)	white
	blue

PR/3/AC, PR/3/AS

PR/DIN/AC, PR/DIN/AS, PR/DIN/AL	
	—
	—
	—

Current to analog converters

- For AC/DC current measurements
- Protected against transients
- Power supplied LED
- 3 output signals available

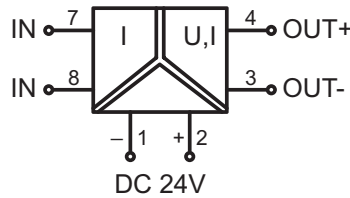


NOTES

The dimensions includes the terminal blocks and the DIN clamp.

(1) Do not connect directly to a 400 V line

BLOCK DIAGRAM



VERSIONS

- 0...1 A input
- 0...5 A input
- 0...10 A input

Cod. X756540	Cod. X756541	Cod. X756542
WAA 7-0540	WAA 7-0541	WAA 7-0542

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INPUT TECHNICAL DATA

Input signal	0...1 A AC/DC	0...5 A AC/DC	0...10 A AC/DC
Max. input voltage	400 V (1)	400 V (1)	400 V (1)
Current wire connection	1.5 mm ² screw type	1.5 mm ² screw type	1.5 mm ² screw type

VOLTAGE

0...10 V	0...20 mA / 4...20 mA
11 V	21 mA
>1 K Ω	<400 Ω

OUTPUT TECHNICAL DATA

Output signal	0...10 V	0...20 mA / 4...20 mA
Max. output signal	11 V	21 mA
Applicable load	>1 K Ω	<400 Ω

CURRENT

0...10 V	0...20 mA / 4...20 mA
11 V	21 mA
>1 K Ω	<400 Ω

GENERAL TECHNICAL DATA

Supply voltage	24 Vdc (16.8...30 Vdc)	24 Vdc (16.8...30 Vdc)	24 Vdc (16.8...30 Vdc)
Rated current	13 mA	13 mA	13 mA
Operating temperature	-25...+60°C	-25...+60°C	-25...+60°C
Linearity error	< 0.1% FS (23°C)	< 0.1% FS (23°C)	< 0.1% FS (23°C)
Offset error	< 0.5% FS (23°C)	< 0.5% FS (23°C)	< 0.5% FS (23°C)
Temperature coefficient	< 150 ppm / K FS	< 150 ppm / K FS	< 150 ppm / K FS
Response time	—	—	—
Protection degree	IP20	IP20	IP20
Connection terminal	1.5 mm ² screw type	1.5 mm ² screw type	1.5 mm ² screw type
Approx. weight	55 g (1.94 oz)	55 g (1.94 oz)	55 g (1.94 oz)
Mounting information	vertical on rail adjacent without gap	vertical on rail adjacent without gap	vertical on rail adjacent without gap

APPLICATIONS

Through a "HALL" sensor they grant AC/DC current measurements.

The presence of current in a circuit indicates not only that power is supplied but also that the circuit is closed and the load connected and active.

It's also possible to know the work conditions of the circuit.

The module guarantees galvanic isolation between the current conductor and the analog.

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	
Mounting rail type according to IEC60715/G32	
Plug-in jumper (16 poles, 16 A)	red white blue

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

—	
CWBK 7-0802	cod. X766802
CWBK 7-0803	cod. X766803
CWBK 7-0804	cod. X766804

● → Switch On		S1			
Input	Output	1	2	3	4
0-1A	0-10V				
0-1A	0-20mA	●			
0-1A	4-20mA		●		

Range WAA7-0540

● → Switch On		S1			
Input	Output	1	2	3	4
0-5A	0-10V				
0-5A	0-20mA	●			
0-5A	4-20mA		●		

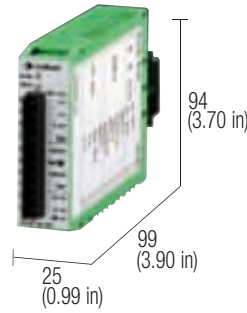
Range WAA7-0541

● → Switch On		S1			
Input	Output	1	2	3	4
0-10A	0-10V				
0-10A	0-20mA	●			
0-10A	4-20mA		●		

Range WAA7-0542

Current to analog converters

- For AC/DC current measurements
- Protected against transients
- Power supplied LED
- 3 output signals available



NOTES

The dimensions includes the terminal blocks and the DIN clamp.

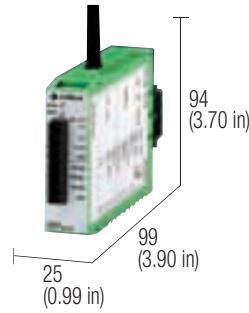
BLOCK DIAGRAM

Article available until sell-out
 XW000928 will be replaced by **X756540**
 XW000929 will be replaced by **X756541**
 XW000930 will be replaced by **X756542**

VERSIONS	Cat. No. XW000928	Cat. No. XW000929	Cat. No. XW000930	APPLICATIONS
0...1 A input	SW01VA			
0...5 A input		SW05VA		
0...10 A input			SW10VA	
INPUT TECHNICAL DATA				In 99 mm depth measure is included the space occupied by the terminal block provided with the product. Through a "HALL" sensor they grant AC/DC current measurements. The presence of current in a circuit indicates not only that power is supplied but also that the circuit is closed and the load connected and active. It's also possible to know the work conditions of the circuit. The module guarantees galvanic isolation between the current conductor and the analog output and, if not connected in series to the controlled current, cannot be damaged by power surges or short circuits.
Input signal	0...1 A AC/DC	0...5 A AC/DC	0...10 A AC/DC	
Max. input voltage	380 V	380 V	380 V	
Current wire connection	2.5 mm ² pluggable screw type	2.5 mm ² pluggable screw type	2.5 mm ² pluggable screw type	
OUTPUT TECHNICAL DATA				
Output signal	VOLTAGE			
Max. output signal	CURRENT			
Applicable load	0...10 V	0...20 mA / 4...20 mA		
	11 V	22 mA		
	>2 K Ω	<500 Ω		
GENERAL TECHNICAL DATA				
Supply voltage	24 Vdc \pm 10%	24 Vdc \pm 10%	24 Vdc \pm 10%	
Rated current	60 mA	60 mA	60 mA	
Operating temperature	0...55°C	0...55°C	0...55°C	
Linearity error	< 0.5%	< 0.5%	< 0.5%	
Offset error	< 0.5%	< 0.5%	< 0.5%	
Amplification error	< 0.2%	< 0.2%	< 0.2%	
Temperature coefficient	< 0.02%/K	< 0.02%/K	< 0.02%/K	
Surge immunity	200 V	200 V	200 V	
Response time	10 mS	10 mS	10 mS	
Protection degree	IP20	IP20	IP20	
Connection terminal	2.5 mm ² pluggable screw type	2.5 mm ² pluggable screw type	2.5 mm ² pluggable screw type	
Approx. weight	100 g (3.53 oz)	100 g (3.53 oz)	100 g (3.53 oz)	
Mounting information	vertical on rail adjacent without gap	vertical on rail adjacent without gap	vertical on rail adjacent without gap	
MOUNTING ACCESSORIES				
Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB			
Mounting rail type according to IEC60715/G32	—			
Plug-in jumper	red	—		
(16 poles, 16 A)	white	—		
	blue	—		

Current to analog converters

- For AC/DC current measurements
- Protected against transients
- Power supplied LED
- 3 output signals available

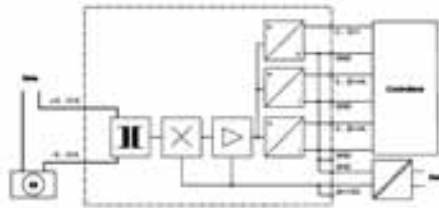


Article available until sell-out

NOTES

The dimensions includes the terminal blocks and the DIN clamp.

BLOCK DIAGRAM



VERSIONS
0...20 A input
0...50 A input

Cat. No. XW000931	Cat. No. XW000932
SW20VA	SW50VA

APPLICATIONS

INPUT TECHNICAL DATA
Input signal
Max. input voltage
Current wire connection

0...20 A AC/DC	0...50 A AC/DC
380 V	380 V
Ø 8 mm	Ø 8 mm

In 99 mm depth measure is included the space occupied by the terminal block provided with the product.

OUTPUT TECHNICAL DATA
Output signal
Max. output signal
Applicable load

VOLTAGE	CURRENT
0...10 V	0...20 mA / 4...20 mA
11 V	22 mA
>2 KΩ	<500 Ω

They allow the user to measure AC/DC currents by an "HALL" sensor. The presence of current in a circuit indicates not only that power is supplied but also that the circuit is closed and the load connected and active. It is also possible to know the working conditions of the controlled circuit.

GENERAL TECHNICAL DATA
Supply voltage
Rated current
Operating temperature
Linearity error
Offset error
Amplification error
Temperature coefficient
Surge immunity
Response time
Protection degree
Connection terminal
Approx. weight
Mounting information

24 Vdc ± 10%	24 Vdc ± 10%
60 mA	60 mA
0...55°C	0...55°C
< 0.5%	< 0.5%
< 0.5%	< 0.5%
< 0.2%	< 0.2%
< 0.02%/K	< 0.02%/K
200 V	200 V
10 mS	10 mS
IP20	IP20
2.5 mm ² pluggable screw type (14 AWG)	2.5 mm ² pluggable screw type (14 AWG)
100 g (3.53 oz)	100 g (3.53 oz)
vertical on rail adjacent without gap	vertical on rail adjacent without gap

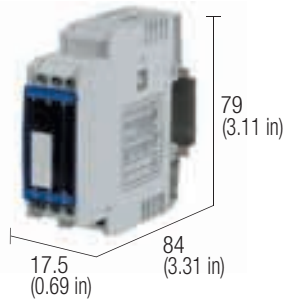
The module guarantees galvanic isolation between the current conductor and the analog output and, if not connected in series to the controlled current, cannot be damaged by power surges or short circuits.

MOUNTING ACCESSORIES	
Mounting rail type according to IEC60715/TH35	
Mounting rail type according to IEC60715/G32	
Plug-in jumper	red
(16 poles, 16 A)	white
	blue

PR/3/AC, PR/3/AS
PR/DIN/AC, PR/DIN/AS, PR/DIN/AL
—
—
—

Frequency to analog signal converters

- Adjustable frequency range 0...28.8 KHz
- 3 programmable analog signal output ranges
- 3 ways I/O 2.5 KV isolation

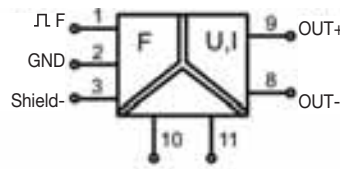


NOTES

The dimensions includes the terminal blocks and the DIN clamp.

- (1) range 16.8...30 Vdc / 19.2...28.8 Vac
 (2) 3-way isolation: IN/OUT/power supply

BLOCK DIAGRAM



AC/DC 24V

VERSIONS

Cat. No. X756524
CWNFA 6-0524

INPUT TECHNICAL DATA

Input signal (range)	0...28.8 KHz adjustable via DIP switch
Input signal (type)	AC/DC 0.6...30 Vpp
Input resistance	50 K Ω
Hysteresis	0.5 Vpp or 5 Vpp adjustable via DIP switch

OUTPUT TECHNICAL DATA

Output signal	0...10 V, (max. 10.6 V)
Applicable load	0...20 / 4...20 mA, (max 21 mA)
Ripple	>1 K Ω with output voltage <400 Ω with output current < 5 mVeff

GENERAL TECHNICAL DATA

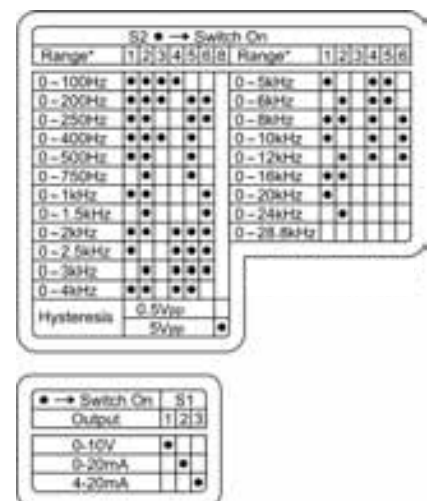
Supply voltage	24 Vac/dc (1)
Rated current	20 mA
Accuracy	0.1 FS (23°C)
Linearity error	0.02%
Ripple	0.1%
Setting time (accuracy 1%)	200 ms
Temperature coefficient	70 ppm/K
Isolation	1.5 KVac / 60 s (2)
ECM standards	EN 61000-6-2, EN 61000-6-4
Reference Standard	IED 664-1, DIN VDE
Overvoltage category	III
Pollution degree	2
Protection degree	IP 20 IEC 529 EN60529
Operating temperature range	-25...+60°C
Connection terminal	1.5 mm ² fixed screw type
Housing material	PPE
Approx. weight	70 g (2.47 oz)
Mounting information	vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
Mounting rail type according to IEC60715/G32	—
Plug-in jumper	red white blue

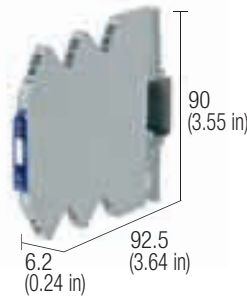
APPLICATIONS

This module is used to convert a frequency signal, with either sinusoidal or square waveform, into a standard analog signal (eg. 0...10 V, 0...20 mA, 4...20 mA). A microprocessor provides a high resolution, high stability and accuracy output signal and a dip switch gives the possibility to select a calibrated range of frequency measurement from 0 ... 100 Hz up to 0...28.8 kHz.



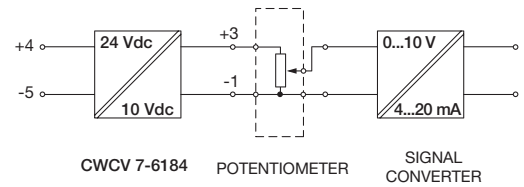
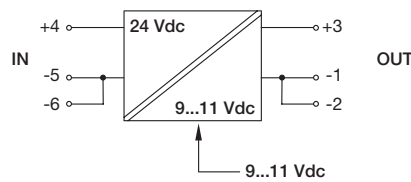
Auxiliary supply output for sensors and potentiometers

- Stabilized switching converter
- IN 16.8...20 Vdc / 9...11 Vdc 60 mA
- Suitable to feed potentiometers and sensors



NOTES	BLOCK DIAGRAM	EXAMPLE
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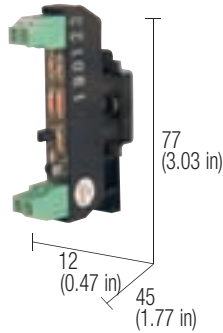
The dimensions includes the DIN clamp.
(1) range 16.8...30 Vdc



VERSIONS	Cat. No. X766184	APPLICATIONS											
With screw connection (standard)	CWCV 7-6184	<p>For the highest accuracy of electronic measurements in process control and automation systems, a stable supply source is required to feed reference voltages. Accuracy of position sensors, such as linear or rotary potentiometers, depends greatly on the stability and accuracy of the DC supply of the sensor. For this reason our modules are provided with a calibrated DC output dedicated to feed the sensor for the highest accuracy, and this feature also helps to save space and the cost of an external DC supply source.</p>											
With spring connection													
INPUT TECHNICAL DATA													
Rated voltage	24 Vdc (1)												
Current @ Iout max.	30 mA @ 10 Vdc												
Protection fuse	T 1 A (external)												
OUTPUT TECHNICAL DATA													
Voltage	10 Vdc (9...11 Vdc adjustable)												
Maximum current	60 mA												
Continuous current	60 mA												
Load regulation	< 1%												
Ripple @ rated U-I output	≤ 50 mVpp												
Overload / short circuit protection	si												
Output signal	yellow LED Power OK												
Parallel connection	possible with external diode												
GENERAL TECHNICAL DATA													
Operating temperature range	-25...+60°C												
Input/output isolation	50 Vac / 60 s												
Protection degree	IP 20 IEC529, EN60529												
EMC Standards	EN 50081-1, EN 50082-2, EN 61000-3-2												
Surge immunity	EN61000-4-2, EN61000-4-4												
Connection terminal	1.5 mm ² screw type / 1.5 mm ² spring type (16 AWG)												
Housing material	Noryl UL94V-0												
Approx. weight	35 g (1.24 oz)												
Mounting information	vertical on rail adjacent without gap												
MOUNTING ACCESSORIES	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB												
Mounting rail type according to IEC60715/TH35-7.5	—												
Mounting rail type according to IEC60715/G32	—												
Plug-in jumper	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:20%;"></td> <td style="width:10%; text-align: center;">red</td> <td style="width:10%;">CWBK 7-0802</td> <td style="width:10%;">Cat. No. X766802</td> </tr> <tr> <td></td> <td style="text-align: center;">white</td> <td>CWBK 7-0803</td> <td>Cat. No. X766803</td> </tr> <tr> <td></td> <td style="text-align: center;">blue</td> <td>CWBK 7-0804</td> <td>Cat. No. X766804</td> </tr> </table>		red	CWBK 7-0802	Cat. No. X766802		white	CWBK 7-0803	Cat. No. X766803		blue	CWBK 7-0804	Cat. No. X766804
	red	CWBK 7-0802	Cat. No. X766802										
	white	CWBK 7-0803	Cat. No. X766803										
	blue	CWBK 7-0804	Cat. No. X766804										

NPN and PNP signal polarity inverter

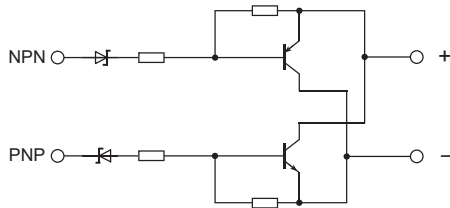
- Converts a NPN sensor in a PNP sensor and vice versa
- Compact design



NOTES

The dimensions includes the terminal blocks and the DIN clamp.
(1) range 17...30 Vdc

BLOCK DIAGRAM



VERSIONS

Cat. No. XNPNPNP
CI-NPN/PNP

APPLICATIONS

It converts signal form PNP sensors into NPN signal and vice versa. It allows to adapt the PLC inputs to all sensors on the market, regardless of their output polarity, and it is a great help for maintenance and allows in any case a quick replacement of failed sensors when you need a PNP sensor but you have a NPN type.

INPUT TECHNICAL DATA

Input voltage	24 Vdc (1)
Max. current	200 mA
Max. frequency	120 KHz

GENERAL TECHNICAL DATA

OFF state current	—
ECM standards	EN 61000-6-2, EN 61000-6-4
Reference Standard	IEC 664-1, DIN VDE
Overvoltage category	II
Pollution degree	2
Protection degree	IP 20 IEC 529 EN60529
Operating temperature range	0...55°C
Connection terminal	morsetti a vite 2.5 mm ² fissi
Housing material	Poliammide UL94V-0
Approx. weight	20 g (0.71 oz)
Mounting information	vertical on rail adjacent without gap

MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AS
Mounting rail type according to IEC60715/G32	PR/DIN/AC - PR/DIN/AS - PR/DIN/AL
Plug-in jumper	red — white — blue —

EXAMPLE

