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Safety Barriers	464-472
Din Rail Isolated Barriers	473-488

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We have simplified intrinsic safety!

Cooper Crouse-Hinds CEAG has simplified the application of intrinsic safety. Only a maximum of 3 grounded Safety Barriers are required for over 90% of the applications. In addition, each application requires only one isolated barrier making your application simple and flexible. Of course, Cooper Crouse-Hinds CEAG has a full range of products for specialized applications and OEMs.

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Device In Hazardous Area	Also Referred to As	Grounded Safety Barrier	DIN Rail Isolated Barriers
Switch or contact closure	Digital Input D/I	GHG111 0000 W 2427	GHG 122 3121 D 1003 (120VAC) GHG 122 3121 C 1009 (24VDC)
2 wire transmitters	Analog Input A/I	GHG 111 0000 W 2427	GHG 124 3111 M 1109
Solenoid valves LEDs	Digital Output D/O	GHG 111 0000 W 0779	GHG 138 3311 E X 0009
I/P Transducer	Analog Output A/O	GHG 111 0000 W 0779	GHG 126 3321 D 1008
Thermocouple RTD	Temperature Measurements	GHG 111 0000 W 0201	GHG 131 3100 M 0006 (TC) GHG 131 3100 L 0006 (RTD)
		3 Types	one isolator for each

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- Solutions to all technical questions & applications.
- Downloadable wiring diagrams, drawings, instructions, approval certificates & configuration software.
- Technical white papers on hazardous locations.
- On-line ordering.

Intrinsically Safe Barriers Product Overview

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Which product is best for your application?

We have provided you with the features and benefits of the grounded and isolated barriers. Which system is best for you? Reference the *Users Guide to Intrinsically Safe Barriers* to help guide your decision.

Users Guide to Intrinsically Safe Barriers

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Selection Process	Grounded easy 1 of 3 products for 90% of applications	Isolated easy one product per application
Versatility Of Products	most versatile, can be used for other products, i.e., load cells & encoders	usually products are application specific, all applications covered
Signal Response	very precise	good signal response
RFI immunity	yes, CE mark	yes, CE mark
Cabinet Size Required	smallest 1/2" wide	larger barrier 1" wide
Cost Per Product	lowest initial cost	slightly higher
Installation Cost	higher because of wiring & ground connection	lower ground connections required
Total Cost - small sytems 1-10 points	lowest	higher
Total Cost - small system > 100 points	low	low
Notes	ideal for very small systems and for OEMs who use a small number of barriers	isolated barriers are perfect for switching applications and where a ground is not convenient or available
Overall Rating	Great	Better

Safety Barriers

Safety barriers, also referred to as zener barriers, are passive devices which contain zener diodes, resistors and fuses to limit excess voltage and current. These are the basic building blocks which are contained in all other intrinsically safe barriers. There is a voltage drop across zener barriers because of the resistors so some selection is required as well as a ground connection.

This selection has been greatly simplified as demonstrated in the application section. (pages 485 to 489). Safety barriers are also very versatile and can be applied in many other applications. They are the smallest devices, have the lowest initial product cost, but require field wiring and ground connections.

Advantages

- lowest initial cost per unit
- very small < 1/2" wide
- very precise signal response
- small power requirements
- ideal for "other" circuits

Other Considerations

- requires ground
- barrier resistance can influence circuit function

DIN Rail Isolated Barriers

DIN rail isolated barriers, also referred to as transformer isolated or galvanically isolated barriers, are safety barriers with additional electronics to isolate and condition the signals. The isolation has the main advantage of not requiring IS ground connections.

The signal conditioning of isolated barriers simplifies the selection process as each isolated barrier is manufactured for specific functions such as switching, temperature measurements of 4-20 mA readings.

Advantages

- does not require IS ground
- loop layout & barrier selection is easy
- integrated signal conditioning

Other Considerations

- may have higher cost than grounded barriers
- larger width - 1" wide
- larger power requirements

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- Solutions to all technical questions & applications.
- Downloadable wiring diagrams, drawings, instructions, approval certificates & configuration software.
- Technical white papers on hazardous locations.
- On-line ordering.



Safety Barriers Overview

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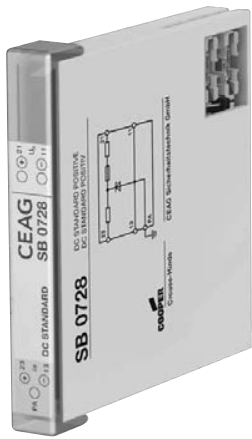
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Safety Barriers limit the energy from a possible fault on an intrinsically safe circuit so that neither sparks nor thermal effects (hot surfaces) can ignite volatile gases or dusts in hazardous locations.

Cooper Crouse-Hinds CEAG Safety Barriers are designed for simple and easy applications. A maximum of only 3 different barriers are used for the most commonly used instrument applications:

- Digital inputs
- Digital outputs
- Analog inputs
- Analog outputs
- Temperature sensors

Cooper Crouse-Hinds CEAG has designed the new Safety Barriers to insure total, trouble-free operation. Each Safety Barrier can be ordered with replaceable fuses to protect against nuisance tripping. In addition, each barrier has LEDs on the supply to monitor and show the status of the circuits.



Wiring Tool: For fast easy connections, see accessories page 482.

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Features	Benefit to You
Barriers less than 10mm wide	Space saving design
Barriers plug into prewired backplane	Allow for prewiring and fast, easy connections
Backplane snaps onto standard 35mm DIN rail	No extra hardware required
LEDs on the supply	Display barrier status and monitoring
Replaceable fuses	Avoid nuisance tripping
Cage clamp connections	No screws required
Large tagging area	Easy circuit identification
Customized backplanes	Backplanes can be supplied in any length for custom applications & OEMs
UL, cUL, & worldwide approvals	Global applications

Product Features

- CENELEC UL and CUL approvals
- LEDs on supply
- Replaceable fuses
- Screwless cage clamp connections
- Large tagging areas
- DIN rail mounting
- Backplane mounting saves wiring
- Built-in ground connections on backplane
- CE certified


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Terminology

Operating data

V_N	Rated maximum voltage
R_{max}	End-to-end resistance
S_i	Internal fuse

Safety parameters (in intrinsically safe circuits)

V_{oc}	Maximum open circuit voltage
I_{sc}	Maximum short circuit current
C_a	Maximum permissible external capacitance
L_a	Maximum permissible external inductance

Technical data:

Leakage current at V_N	$< 2 \mu A$
Temperature drift	$< -250 \times 10^{-6}/K$
Operating temperature	$-40^\circ C \dots +60^\circ C$
Storage temperature range	$-40^\circ C \dots +80^\circ C$
Relative humidity	$< 75\%$ (annual average)
No condensation	$< 95\%$ (30 d/a)
Width	see dimensions (pg 467)
Weight	$\sim 70 g$

Ordering Information

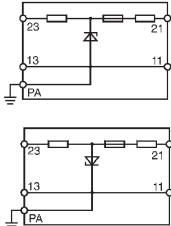
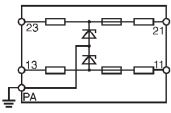
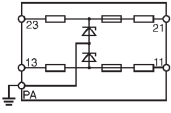
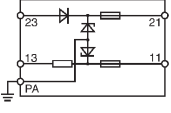
Description	Order No.
Standard backplane for 1 unit	GHG 110 0000 W 9101
Standard backplane for 10 units	GHG 110 0000 W 9100

Accessories

Safety Barrier Safeguard Fuse

Safeguard Fuse Value	Type No.	Catalog Number
0	SB 9210	GHG 110 0000 W9210
32	SB 9211	GHG 110 0000 W9211
50	SB 9212	GHG 110 0000 W9212
63	SB 9213	GHG 110 0000 W9213
80	SB 9214	GHG 110 0000 W9214
100	SB 9215	GHG 110 0000 W9215
125	SB 9216	GHG 110 0000 W9216
Safety Barrier ground bar		GHG 110 0000 W9220
Safety Barrier operating tool		SWAG-279-732

Safety Barriers

	Type No.	V _n (V)	R _{max} (ohms)	Fuse (mA)	Replaceable Fuse	V _{oc} (V)	I _{sc} (mA)	Cat.# Number
DC Single								
	SB 0728	24	326	50	SB 9211	28	93	GHG111 0000 W0728
	SB 1728	-24	326	50	SB 9211	28	93	GHG111 0000 W1728
	SB 3729	24	187	50	SB 9211	28	171	GHG111 0000 W3729
	SB 2420	24	147	63	SB 9212	27.3	208	GHG111 0000 W2420
	SB 0722	18	187	50	SB 9211	22	150	GHG111 0000 W0722
	SB 0715	12	151	100	SB 9214	15	150	GHG111 0000 W0715
	SB 3715	12	61	100	SB 9212	15	291	GHG111 0000 W3715
	SB 3710	6	42	160	SB 9213	10	300	GHG111 0000 W3710
DC Double								
	SB 0779	24/24	340/340	50/50	SB 9211	28/28	93/93	GHG111 0000 W0779
	SB 4420	24/24	146/146	63/63	SB 9213	28/28	213/213	GHG111 0000 W4420
	SB 4410	24/24	202/202	63/63	SB 9213	28/28	150/150	GHG111 0000 W4410
	SB 0796	23/27	339/435	50/50	SB 9211	26/20	87/51	GHG111 0000 W0796
	SB 0768	19/19	187/187	50/50	SB 9211	22/22	147/147	GHG111 0000 W0768
	SB 0767	12/12	157/157	100/100	SB 9214	15/15	150/150	GHG111 0000 W0767
	SB 3250	12/12	48/48	100/100	SB 9214	15/15	387/387	GHG111 0000 W3250
	SB 1350	10/10	81/488	150/150	SB 9216	11.7/11.7	174/25	GHG111 0000 W1350
	SB 1351	10/10	488/488	150/150	SB 9216	11.7/11.7	25/25	GHG111 0000 W1351
	SB 0764	10/10	1026	50/50	SB 9211	12/12	12/12	GHG111 0000 W0764
DC Floating								
	SB 1301	+6/-6	63	100/100	SB 9214	17.2	414	GHG111 0000 W1301
	SB 1302	+9/-9	1167	100/100	SB 9214	25.2	25	GHG111 0000 W1302
	SB 1303	+12/-12	160	100/100	SB 9214	29.4	248	GHG111 0000 W1303
Signal + Return								
	SB 2427	24/24	278/31 + 1.2 V	50/50	SB 9211	26.3	102/0	GHG111 0000 W2427
	SB 2787	24/24	254/31 + 1.2 V	50/50	SB 9211	28	120/0	GHG111 0000 W2787
	SB 1787	24/24	326/31 + 1.2 V	50/50	SB 9211	28	93/0	GHG111 0000 W1787
Channel 2 (11-13) Channel 1 (21-23)								

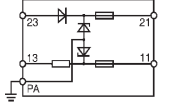
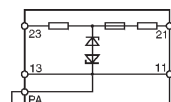
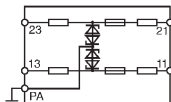
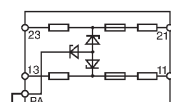
Note: Barriers will be supplied without sockets.
Please order backplane separately (see page 482).

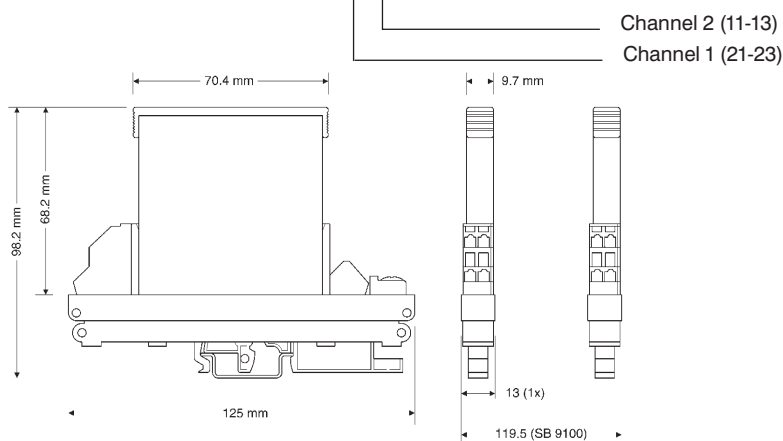
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Safety Barriers Product Selection and Dimensions

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Safety Barriers

	Type No.	V _n (V)	R _{max} (ohms)	Fuse (mA)	Replaceable Fuse	V _{oc} (V)	I _{sc} (mA)	Catalog Number
DC Double Return								
	SB 0786	24/24	31+1.2V/ 31+1.2V	50/50	SB 9211	28/28	0/0	GHG111 0000 W0786
AC Standard								
	SB 1602	12	54	100	SB 9214	16.8	390	GHG111 0000 W1602
	SB 2710	6	85	50	SB 9211	10	200	GHG111 0000 W2710
AC Double								
	SB 0766	10/10	183/183	50/50	SB 9211	12/12	80/80	GHG111 0000 W0766
	SB 2764	10/10	1077/1077	50/50	SB 9211	12/12	12/12	GHG111 0000 W2764
	SB 1766	9.8/9.8	90/90	50/50	SB 9211	12/12	160/160	GHG111 0000 W1766
	SB 1761	7/7	385/385	50/50	SB 9211	9/9	25/25	GHG111 0000 W1761
	SB 0761	6/6	142/142	100/100	SB 9214	9/9	100/100	GHG111 0000 W0761
	SB 0201	2/2	35/35	160/160	SB 9216	5.3/5.3	178/178	GHG111 0000 W0201
	SB 0751	0.35/0.35	10.8/10.8	160/160	SB 9216	1.2/1.2	238/238	GHG111 0000 W0751
Universal								
	SB 0778	24/24	656/656	50/50	SB 9211	28/28	47/47	GHG111 0000 W0778
	SB 0722	18/18	340/340	50/50	SB 9211	22/22	73/73	GHG111 0000 W0722
	SB 0765	12/12	135/135	50/50	SB 9211	15/15	150/150	GHG111 0000 W0765
	SB 0760	6/6	85/85	50/50	SB 9211	10/10	200/200	GHG111 0000 W0760



Dimensions

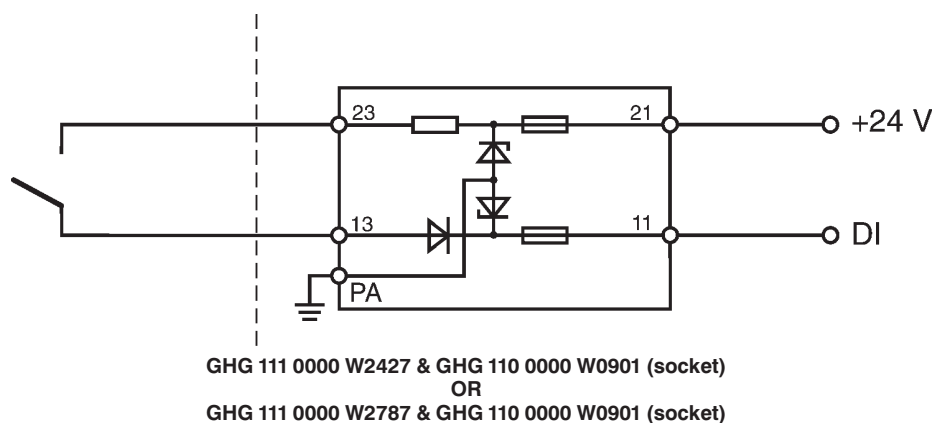


Terminal Connections

Digital Input

Floating Circuit - 1 channel

- Power supply voltage: 24VDC
- End-to-end resistance $285\ \Omega \pm 1.2V$
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



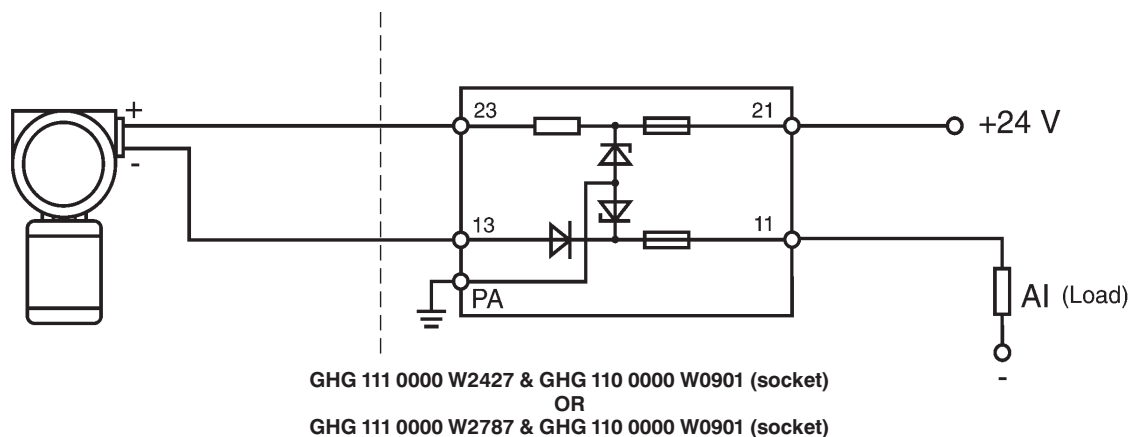
Grounded Circuit - 2 channel

- Lowest cost solution

Analog Input (4-20 mA Transmitters)

Floating Circuit - Safety barrier circuit

- Lowest possible barrier voltage drop:
6.6V maximum (@ 20 mA)
- Power supply voltage: 24VDC
- No restrictions for programming SMART transmitters
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G

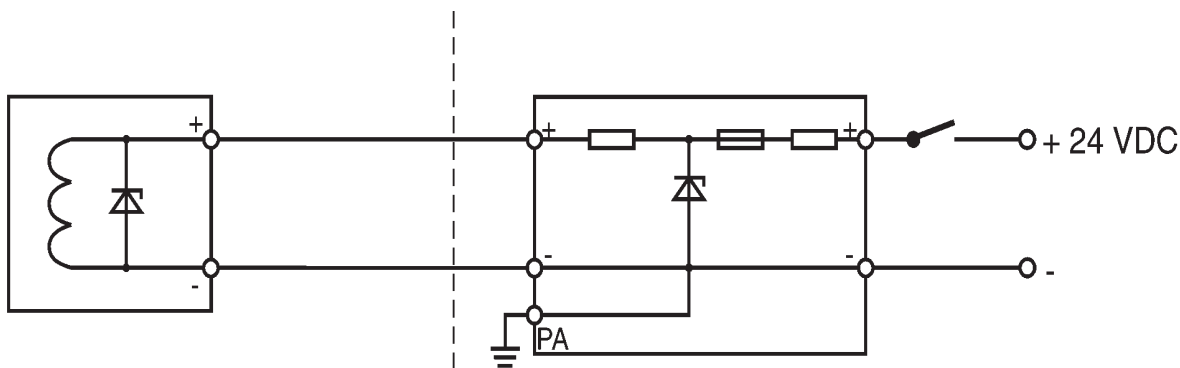


Digital Output (Solenoid valves, LEDs or Audible Alarms)**Grounded Circuit - 1 channel**

- Power supply voltage: to 24VDC
- End-to-end resistance: 326 Ω
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G

Grounded Circuit - 1 channel - Groups C-G

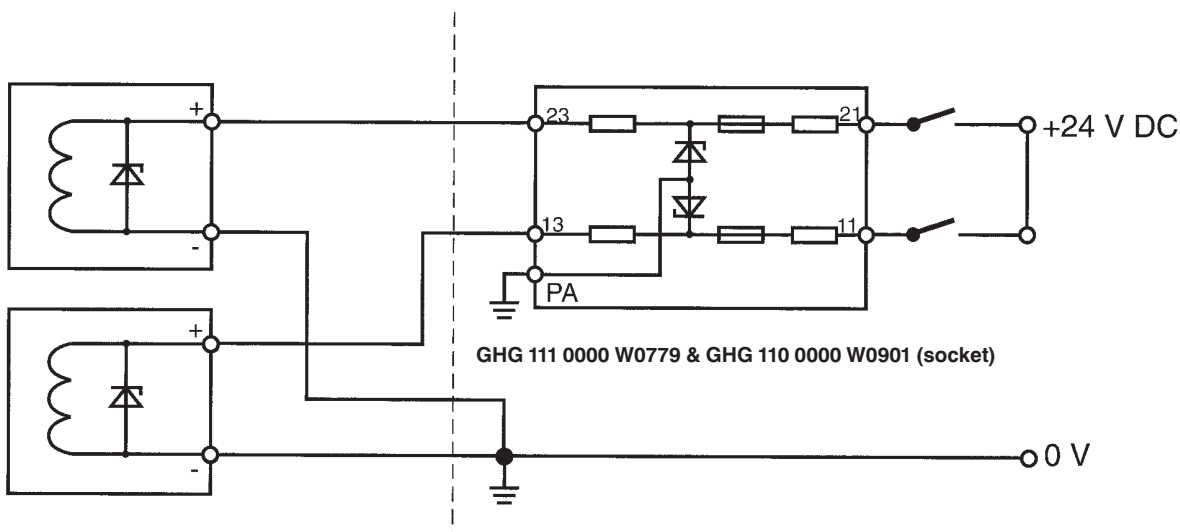
- Low resistance barrier
- Power supply voltage: to 24VDC
- End-to-end resistance: 187 Ω
- Smallest IS barrier available
- IS connection for: Zone 1, Group IIB
Class I, II, III, Div. 1, Gr. C-G



GHG 111 0000 W0728 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W3729 & GHG 110 0000 W0901 (socket)

Grounded Circuit - 2 channel

- Power supply voltage: to 24VDC
- End-to-end resistance: 326 Ω /channel
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



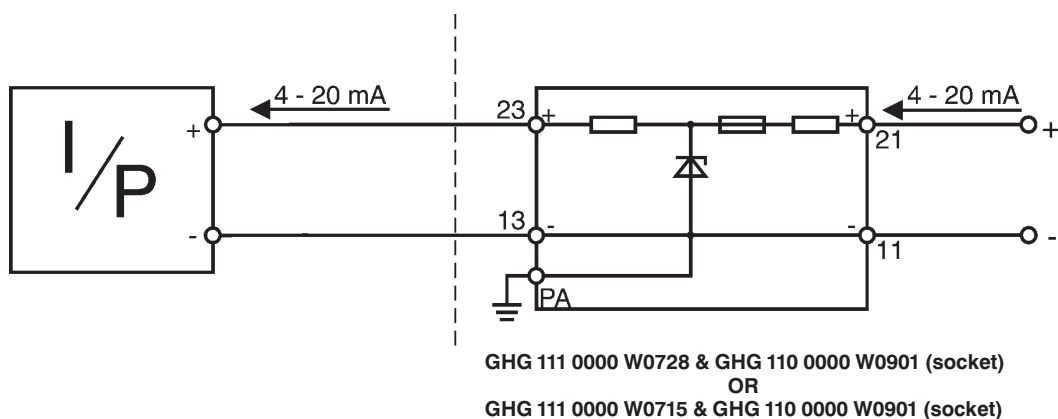
GHG 111 0000 W0779 & GHG 110 0000 W0901 (socket)

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Analog Output (4-20 mA Transducers)

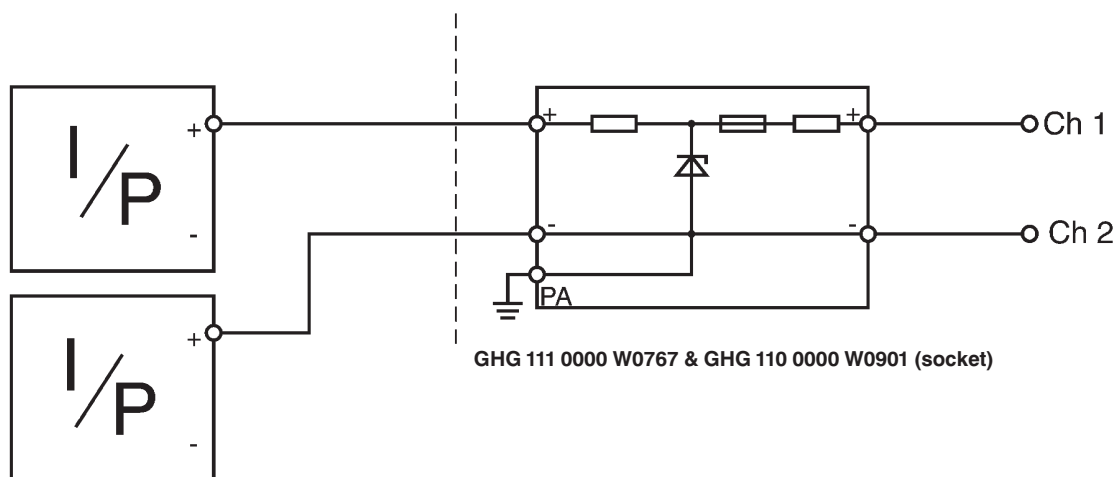
Grounded Circuit - 1 channel

- Smallest IS barrier available
- Short circuit proof
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



Grounded Circuit - 2 channels

- Smallest IS barrier available
- Short circuit proof
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution

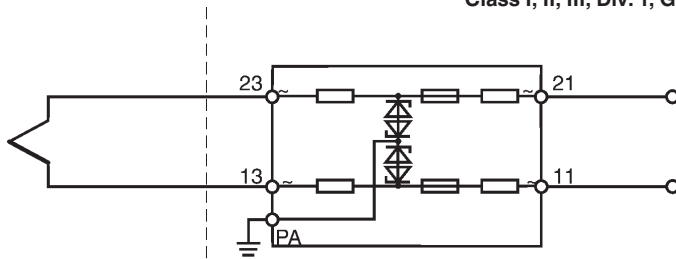


Temperature Sensors (Thermocouples, RTDs)

One safety barrier for all applications

Thermocouple

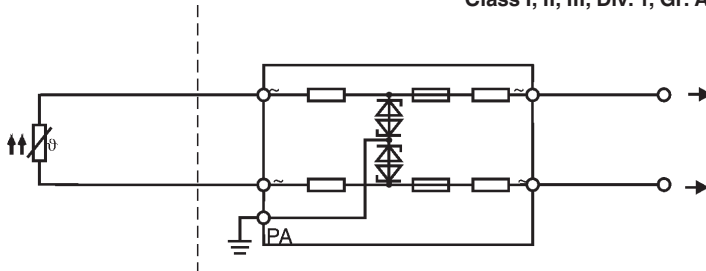
- Low resistance solution (70 Ω)
- Short circuit proof
- Lowest cost solution for thermocouple available
- Smallest thermocouple IS barrier available
- Suited for all thermocouples
- IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

2-Wire RTD

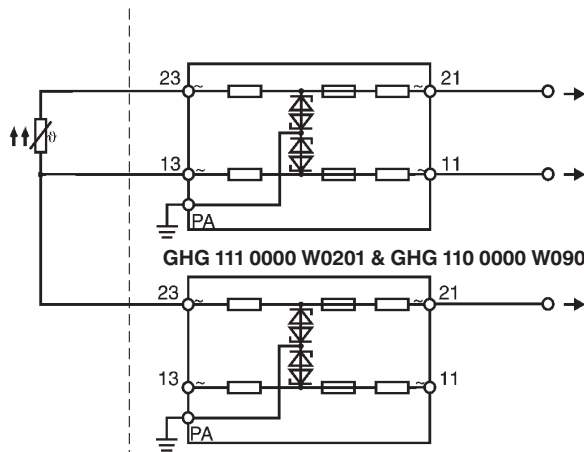
- Lowest resistance solution (70 Ω)
- Short circuit proof
- Smallest RTD IS barrier available
- IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

3+4 Wire RTD

- Lowest resistance solution (70 Ω)
- Short circuit proof
- Lowest temperature coefficient
- Smallest RTD IS barrier available
- IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

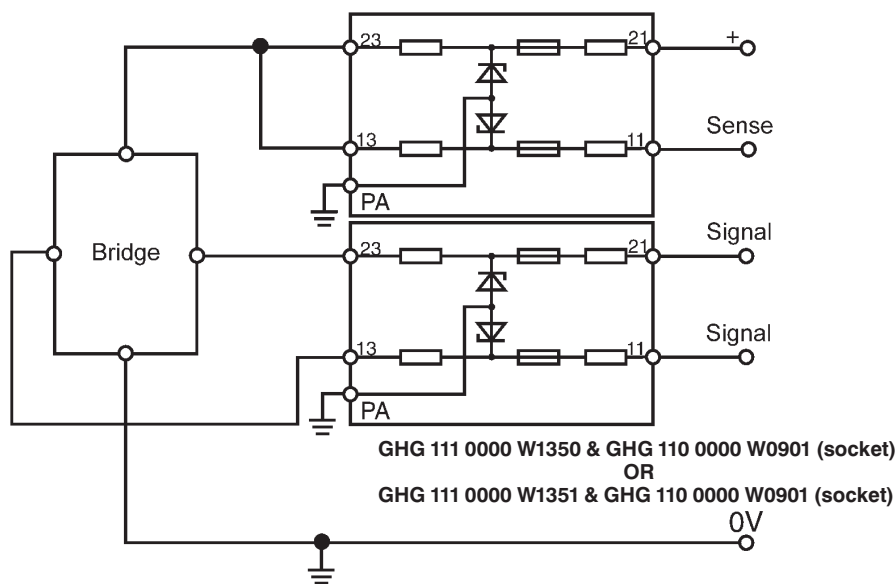
GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

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Load Cells

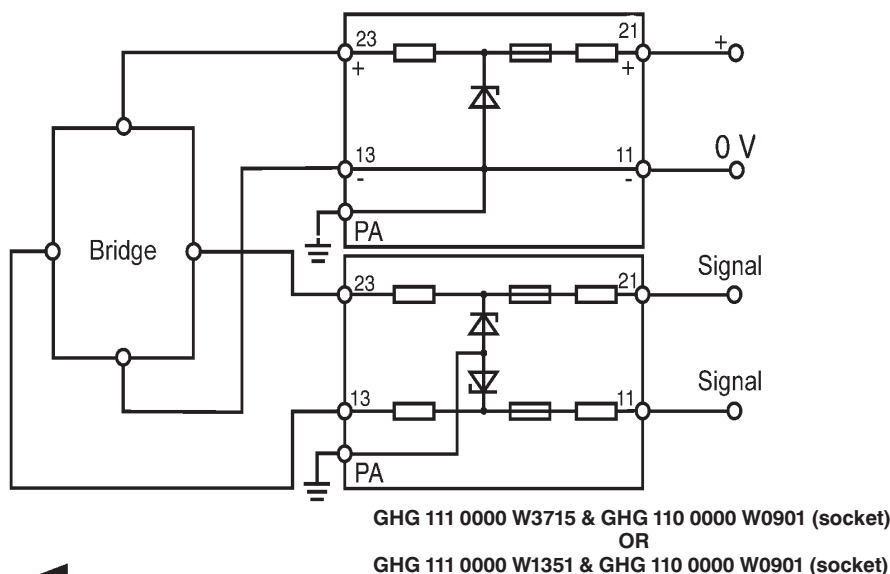
10VDC Supply - Sense

- Lowest resistance solution (80 Ω maximum)
- 8.1V excitation at 350 Ω bridge
- Only two barriers required for complete system
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



12VDC Supply - Without Sense

- Lowest resistance solution (53 Ω maximum)
- 10.4V excitation at 350 Ω bridge
- Only two barriers required for complete system
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



8C Isolators DIN Rail Devices Overview

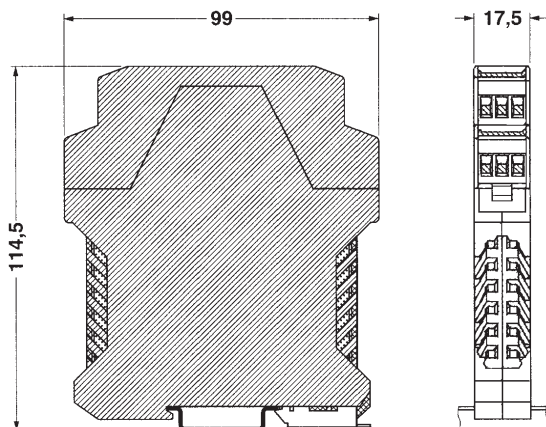
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Isolators, also referred to as transformer isolated barriers, are intrinsically safe devices which do not require a ground. Isolators contain additional electronics to isolate and condition the signals between the hazardous area and control room.

Each Cooper Crouse-Hinds CEAG isolator is designed for specific applications making them easy to select. Each isolator has plug-in terminals so they can be prewired or quickly replaced. In addition, each isolator has LEDs to monitor and show the status of each circuit.

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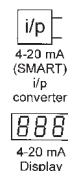
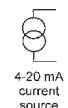
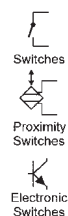
Features	Benefit to You
Plug-in terminals	Allows for prewiring and fast, easy connections
Snaps onto standard 35mm DIN rail	No extra hardware required
LEDs on each isolator	Monitor and display circuit status
No grounding required	No extra connection
Small enclosures, 22.5mm wide	Space savings in cabinet
Built application-specific	Easy selection on page 491
Single or double channels	Flexibility with maximum circuit density
Low energy consumption	Smaller power supplies required
UL, cUL & worldwide approvals	Global applications



Isolators DIN Rail Devices Applications & Product Selection

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	Selection chart	Product	Catalog Number	Page
D/I	Relay output	2/942	GHG 122 3121 D 1003** (120 VAC)	492
			GHG 122 3121 D 1009 (24 VDC)	492
	Transistor output PLC or hi speed applications	2/941	GHG 122 3121 C 1009** (24 VDC)	493
A/I	SMART/ Fully isolated	6/420	GHG 124 3111 K 1206	495
	SMART/ Field device isolated	8/420	GHG 124 3111 M 1109**	494
	NON SMART/ Fully isolated	7/420	GHG 124 3111 L 1006	496
D/O	Fully insulated	7/915	GHG 138 3311 F X009	498
	Loop powered	6/915	GHG 138 3311 E X008**	497
A/O	SMART/ Standard	6/304	GHG 125 3310 K 0306	500
	NON SMART/ Standard	5/304	GHG 125 3310 H 0306	501
	NON SMART/ Loop powered	5/303	GHG 126 3321 D 1008**	499
RTD	Standard	4/125	GHG 131 3100 L 0006**	503
TC	Standard	4/127	GHG 131 3100 M 0006**	504

** Normally Stocked

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Digital Input Switch Amplifier Relay Output Model 2/942

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Product Features:

- NAMUR inputs, mechanical contacts
- DIN rail mounted
- 1 or 2 channels
- Line monitoring
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL and CUL approvals

Technical Data:

Input	NAMUR specification
Output relay	1 change over
Voltage rating	250VAC/100VDC
Current rating	5AAC/2ADC
Power rating	100VA/50W
Mech. life time	10 ⁶ operations (20 Hz max.)
Phase reversal	via front switch
Power consumption at	230V/2.2W per channel 24V/0.55W per channel
Ambient temperature	-20°C ... +60°C
Relative humidity	<75% (average) <95% keep dry



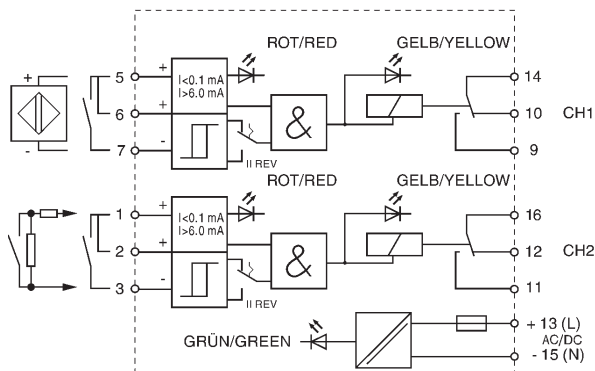
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	V _{oc} ≤ 11V, I _{sc} ≤ 26 mA

Ordering Information:

Type No.	Channels	Power supply	Ex-protection	Catalog No.
2/942	1 channel	230VAC	ia/ib	GHG 122 3111 D 1002
2/942	1 channel	120VAC	ia/ib	GHG 122 3111 D 1003
2/942	1 channel	24VDC	ia/ib	GHG 122 3111 D 1009
2/942	2 channels	230VAC	ia/ib	GHG 122 3121 D 1002
2/942	2 channels	120VAC	ia/ib	GHG 122 3121 D 1003*
2/942	2 channels	24VDC	ia/ib	GHG 122 3121 D 1009

* Normally Stocked



Digital Input Switch Amplifier Transistor Output Model 2/941

8C

www.isbarriers.com

Product Features:

- NAMUR inputs, mechanical contacts, or optocouplers
- DIN rail mounted
- 1 or 2 channels
- Line monitoring
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input	NAMUR specifications
Transistor output	(npn open emitter) 1 or 2 outputs/channel
Switches per channel	passive external +24V (30V max.) active internal +24V
Current rating	100 mA max. (short circuit protected)
Phase reversal	via front switch
Power supply	20 - 30VDC
Power consumption	0.5W per channel
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



8C
Intrinsically
Safe

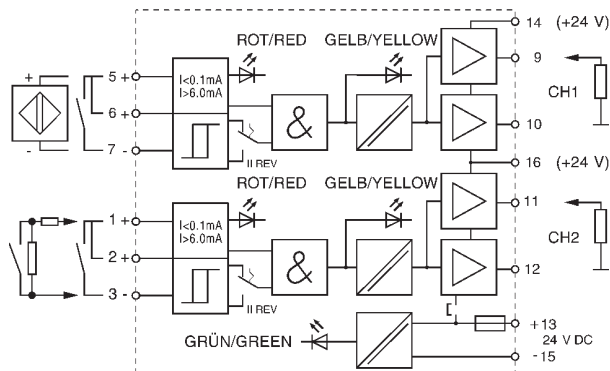
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 11 \text{ V}$, $I_{sc} \leq 26 \text{ mA}$

Ordering Information:

Type No.	Output	Ex-protect.	Catalog No.
2/941	2 channels 700 Hz, 1 passive output each	ia/ib	GHG 122 3121 C 1009*
2/941	2 channels 700 Hz, 2 passive outputs each	ia/ib	GHG 122 3121 C 2009
2/941	2 channels 700 Hz, 1 active output	ia/ib	GHG 122 3121 C 3009
2/941	1 channel 1200 Hz, 1 passive output	ia/ib	GHG 122 3151 C 1009
2/941	1 channel 1200 Hz, 2 passive outputs	ia/ib	GHG 122 3151 C 2009

* Normally Stocked



8C

Analog Input SMART-Transmitter Power Supply Model 8/420

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Product Features:

- Power supply for 2- and 3-wire 4-20 mA transmitters
- SMART communication for all major transmitter brands
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CE certified
- CENELEC, UL, CUL

Technical Data:

Field device power supply	17V at 20mA
Load	800 Ω (24V)
SMART communication	across load or via front socket
Response time	2.2 ms (10 - 90%)
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Band width	0 - 12KHz
Power supply	20 - 30VDC
Power consumption	2.1W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



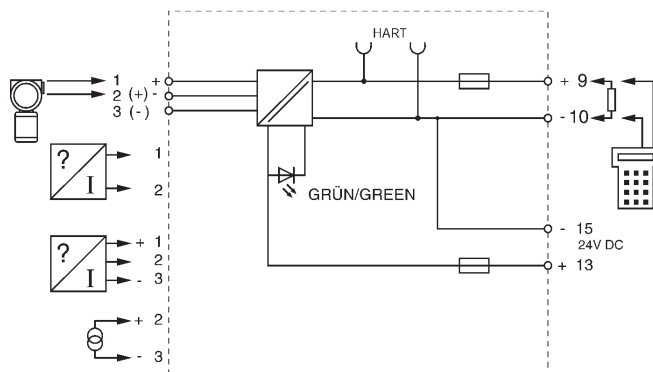
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 28V$, $I_{sc} \leq 98mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
8/420	ia/ib	GHG 124 3111 M 1109*

* Normally Stocked



Analog Input SMART-Transmitter Power Supply Model 6/420

8C

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Product Features:

- Power supply for 2- and 3-wire and 4-20 mA transmitters
- SMART communication for all major brands
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL

Technical Data:

Field device power supply	17V at 20 mA ($V_z = 28$ V), 15V at 20 mA ($V_z = 24$ V)
Load	800 Ω
SMART communication	across load or via front socket
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Response time	2.2 ms (10 - 90%)
Band width	0 - 12 KHz
Power supply	20 - 26VAC 20 - 30VDC
Power consumption	3.1VA/2.2W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



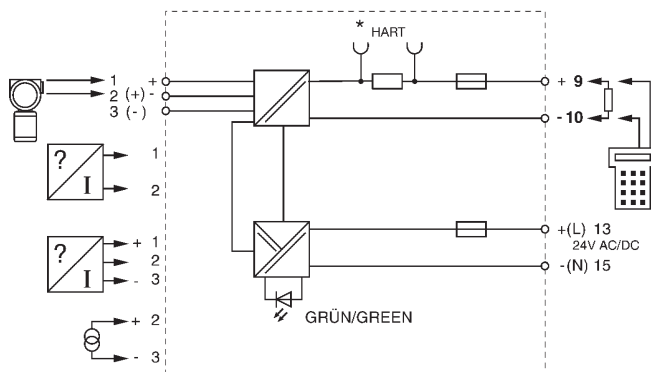
8C
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Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Ex-protection	Catalog No.
6/420-1	ia/ib, $V_{oc} \leq 28$ V, $I_{sc} \leq 98$ mA	GHG 124 3111 K 1206
6/420-4	ia/ib, $V_{oc} \leq 24$ V, $I_{sc} \leq 76$ mA	GHG 124 3411 K 1206



8C

Analog Input Transmitter Power Supply Model 7/420

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Product Features:

- Power supply for 2- and 3-wire 4-20 mA transmitters
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL

Technical Data:

Field device power supply	17V at 20mA ($V_z = 28V$), 15V at 20mA ($V_z = 24V$)
Load	1000 Ω
Response time	2.2 ms (10-90%)
Linearity	< 0.1%
Temperature drift	< 0.1%/10 K
Power supply	20 - 26VAC 18 - 30VDC
Power consumption	3.1VA/2.2W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

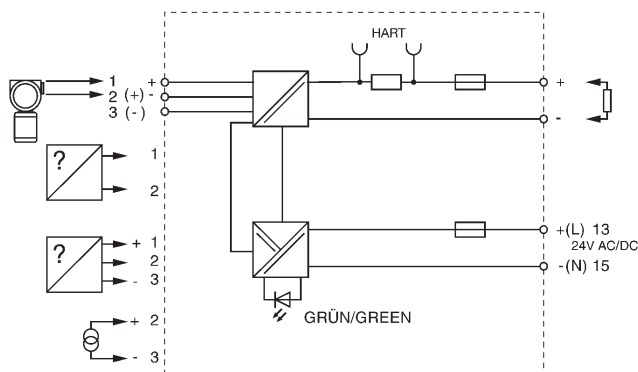


Explosion Protection:

Category [EEx ia] IIC
Approval Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Ex-protection	Catalog No.
7/420	ia/ib, $V_{oc} \leq 28V$, $I_{sc} \leq 98mA$	GHG 124 3111 L 1006
7/420	ia/ib, $V_{oc} \leq 24V$, $I_{sc} \leq 76mA$	GHG 124 3411 L 1006



Digital Output Loop Powered Model 6/915

8C

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Product Features:

- Drives solenoid valves, acoustic alarms, LED's
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL, CUL

Technical Data:

Valve current	$I = V_o / (R_a + R_{valve})$
Power supply	18 - 30VDC loop powered
Input current	1.2 ... 2x output current
Response time	20 ms
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

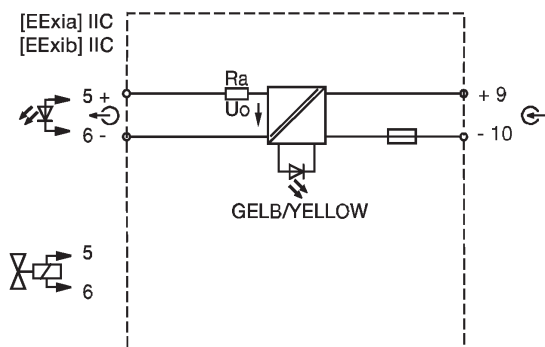
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Safety Values		Drive Capability		Catalog No.
	V _{oc} [V]	I _{sc} [mA]	V _o [V]	R _a [Ω]	
6/915-0	4.9	200	4	31	GHG 138 3311 E 0008
6/915-1	7.9	148	6.5	64	GHG 138 3311 E 1008
6/915-2	12.6	150	12	115	GHG 138 3311 E 2008
6/915-3	15.8	175	14	122	GHG 138 3311 E 3008
6/915-4	18.7	144	17	175	GHG 138 3311 E 4008
6/915-5	18.7	282	17	115	GHG 138 3311 E 5008
6/915-6	23.1	85	21	340	GHG 138 3311 E 6008
6/915-7	27.3	96	24	370	GHG 138 3311 E 7008*
6/915-8	23.1	69	20.6	404	GHG 138 3311 E 8008
6/915-9	18.7	329	16.6	103	GHG 138 3311 E 9008

* Normally Stocked



8C
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8C

Digital Output Model 7/915

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Product Features:

- Fully isolated
- Drives solenoid valves, acoustic alarms, LED's
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CENELEC, UL, CUL Approvals

Technical Data:

Input drive	on: 10 - 30V off: 0 - 1.5V
Input resistance	4 kΩ
Valve current	$I = V_o / (R_a + R_{valve})$
Power supply	20 - 30VDC
Power consumption	approx. 1W
Response time	20 ms
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

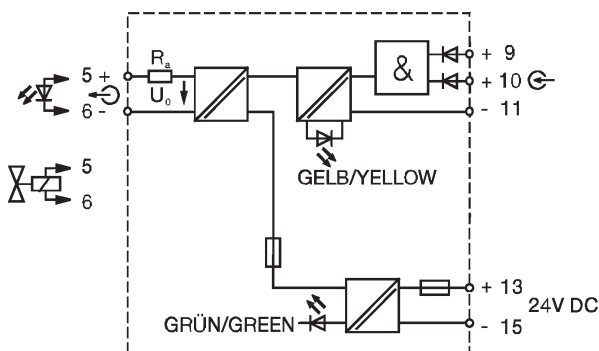


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Safety Values		Drive Capability		Catalog No.
	V _{oc} [V]	I _{sc} [mA]	V _o [V]	R _a [Ω]	
7/915-0	4.9	200	4	31	GHG 138 3311 F 0009
7/915-1	7.9	148	6.5	64	GHG 138 3311 F 1009
7/915-2	12.6	150	12	115	GHG 138 3311 F 2009
7/915-3	15.8	175	14	122	GHG 138 3311 F 3009
7/915-4	18.7	144	17	175	GHG 138 3311 F 4009
7/915-5	18.7	282	17	115	GHG 138 3311 F 5009
7/915-6	23.1	85	21	340	GHG 138 3311 F 6009
7/915-7	27.3	96	24	370	GHG 138 3311 F 7009
7/915-8	23.1	69	20.6	404	GHG 138 3311 F 8009
7/915-9	18.7	329	16.6	103	GHG 138 3311 F 9009



Analog Output Loop Powered Model 5/303

8C

www.isbarriers.com

Product Features:

- 1 or 2 channels
- Galvanic isolation
- Analog output for 4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input voltage	$8.4V + 0.02 \times \text{load} \times (V/\Omega)$
Linearity	< 0.1%
Temperature drift	< 0.1% / 10 K
Power supply	8.4 - 30VDC loop powered
Dimensions	see drawing
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

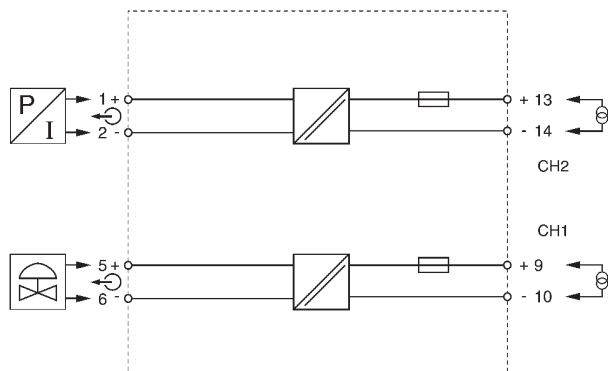
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 12,6V$ $I_{sc} \leq 95 \text{ mA}$

Ordering Information:

Type No.	Channels	Ex-protection	Catalog No.
5/303	1 channel	ia	GHG 126 3311 D 1008
5/303	2 channels	ia	GHG 126 3321 D 1008*

* Normally Stocked



8C

Analog Output SMART Output Isolator Model 6/304

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Product Features:

- Fully isolated
- Output isolator for 0/4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- SMART Communication
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input resistance	50Ω/250Ω (Smart)
Max. load	22.5V Power supply 600 Ω
	20V Power supply 420 Ω
Linearity	< 0.1
Temperature drift	< 0.1%/10 K
Response time	100 ms (10 - 90%)
Power supply	20 - 26VAC
	20 - 30VDC
Power consumption	2.3 VA/1.4 W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average)
	< 95% keep dry

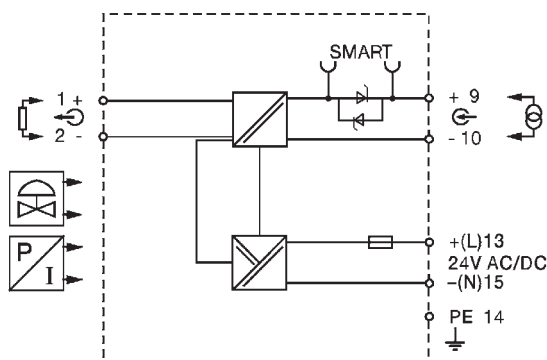


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 28V$
	$I_{sc} \leq 93 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
6/304	ia/ib	GHG 125 3310 K 0306



Analog Output Isolator Model 5/304

8C

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Product Features:

- Output isolator for 0/4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input resistance	25 Ω
Max. load at 22.5V Power supply	500 Ω
20V Power supply	320 Ω
Linearity	< 0.1
Temperature drift	< 0.1 % / 10 K
Response time	100 ms (10 - 90%)
Power supply	18 - 26.4VAC 18 - 30VDC
Power consumption	2.3VA / 1.4W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



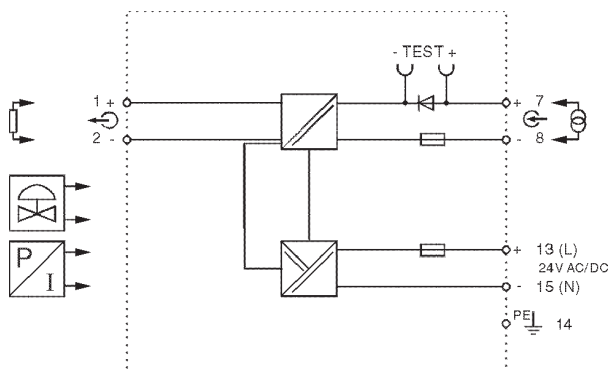
8C Intrinsically Safe

Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 12.6V$ $I_{sc} \leq 76 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
5/304	ia/ib	GHG 125 3310 H 0306



8C

Analog Output with Level Shift Option Model 7/304

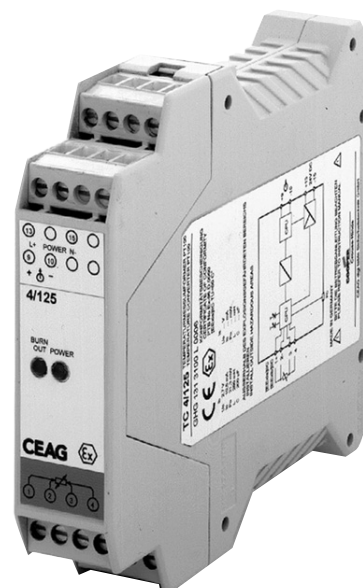
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Product Features:

- Fully isolated
- Output isolator for 4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Level Shift Option
- Current/voltage converter

Technical Data:

Input resistance	25 Ω
Max. load at 22.5V Power supply	500 Ω
20V Power supply	320 Ω
Linearity	< 0.1
Temperature drift	< 0.1%/10 K
Response time	100 ms (10 - 90%)
Power supply	18 - 26.4VAC (2.3VA) 18 - 30VDC (1.4W)
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

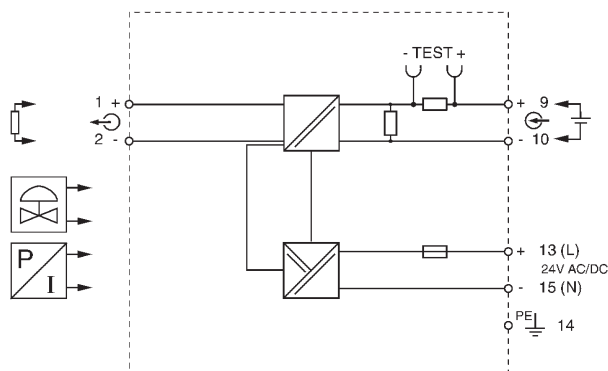


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 12.6V$, $I_o \leq 94$ mA $V_{sc} \leq 28V$, $I_o \leq 93$ mA

Ordering Information:

Type No.	Input	Output	Ex-protection	Catalog No.
7/304	0/4-20 mA	0/4-20 mA	ia/ib	GHG 125 3310 L 0306
7/304	0-20 mA	4-20 mA	ia/ib	GHG 125 3310 L 0106
7/304	1-5V	4-20 mA	ia/ib	GHG 125 3313 L 0306
7/304	1-10V	4-20 mA	ia/ib	GHG 125 3315 L 0306



RTD Temperature Converter Model 4/125

8C

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Product Features

- Galvanic isolation
- 2, 3 or 4-wire-RTD converter
- DIN rail mounted
- Short circuit protected output
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- OFF - LINE programmable
- CE certified
- CENELEC, UL, CUL

Technical Data:

Range -200°C +850°C, smallest span 20 Ω

Output 0/4-20 mA

Burn-out feature Output selectable 0, > 100%, frozen

Load < 750 Ω

Line resistance < 50 Ω

Linearity < 0.1%

Temperature drift < 0.1% / 10K

Response time < 150 ... 350 ms mode dependent

Power supply 20.4 - 30VDC (< 1.5 W)

Weight 160 g

Ambient temperature -20°C ... +60°C

Relative humidity < 75% (average)
< 95% keep dry



8C Intrinsically
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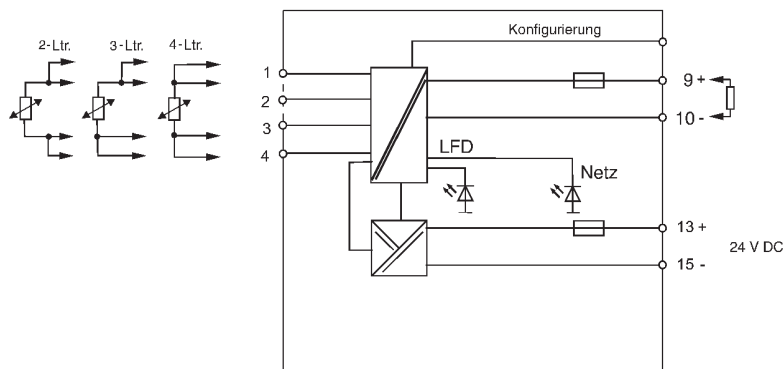
Explosion Protection:

Category [EEx ia/ib] IIC
Approval Class I, II, III, Div. 1, Gr. A-G
Safety values $V_{oc} \leq 2.7V$, $I_{sc} \leq 10.6 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
4/125 Programming Cable	ia/ib	GHG 131 3100 L 0006* GHG 139 0028 C 0000

* Normally Stocked



8C

Thermocoupler Converter Model 4/127

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Product Features:

- Galvanic isolation
- Converter for all thermocouples
- mV Input
- DIN rail mounted
- Short circuit protected output
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- OFF - LINE programmable
- CE certification
- CENELEC, UL, CUL

Technical Data:

Range (mV)	-75mV ... + 75mV (smallest range 5mV for 0.1%)
Thermocouple	B, E, J, K, R, S, T
DIN/IEC 43710	L, U, and Platinum
Compensation	Internal or External
Output	0/4-20 mA
Load	< 750 Ω
Burn-out feature	Output selectable 0, > 100%, frozen
Line fault detection (LFD)	> 1 kΩ
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Response time	< 150...600 ms mode dependent
Power supply	20.4 - 30VDC (< 1.5W)
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



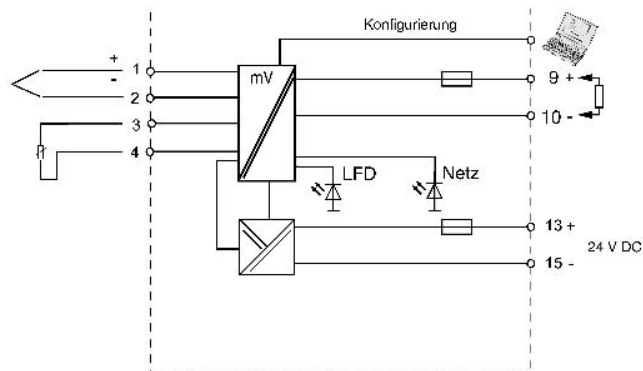
Explosion Protection:

Category	[EEx ia/ib] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 1.8V$, $I_{sc} \leq 21.6 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
4/127	ia/ib	GHG 131 3100 M 0006*
Programming Cable		GHG 139 0028 C 0000

* Normally Stocked



Trip Amplifier with 1-2 Trip Points Model 3/209

8C

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Product Features:

- Programmable external set points, gradients, ratios, min./max.-selection
- Digital display in engineering units
- Self monitoring
- EMC to IEC 1000 and EN 50081-50082
- Galvanic separation between input, power supply and contacts
- Line monitor
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input	0/4-20 mA, 0/1-5V
Input impedance	25 Ω (mA) 10 k Ω (V)
Output Relay	
Voltage rating	250VAC/150VDC
Current rating	2 AAC/DC
Power rating	60VA/30W
Mechanical life	10 ⁶ operations
Electrical life	0.5 10 ⁶ operations
Response time	>20 ms (variable)
Transistor	24V max. 30VDC/100 mA
Voltage drop	2V
Response time	> 10 ms (variable)
Temperature drift	< 0.1%/10 K
Power supply	20 - 26.4VAC 20 - 30VDC
Power consumption	2VA/1.5W
Weight	300g
Ambient temperature	-10°C... +60°C
Relative humidity	< 75% (Average)



8C Intrinsically Safe

Ordering Information:

Input	Output	Trip relays	Catalog No.
0/4-20 mA	2 relays	1 min./1 max.	GHG 137 2011 E 1016
0/4-20 mA	1 relay, 1 transistor	1 min./1 max.	GHG 137 2011 E 9016

