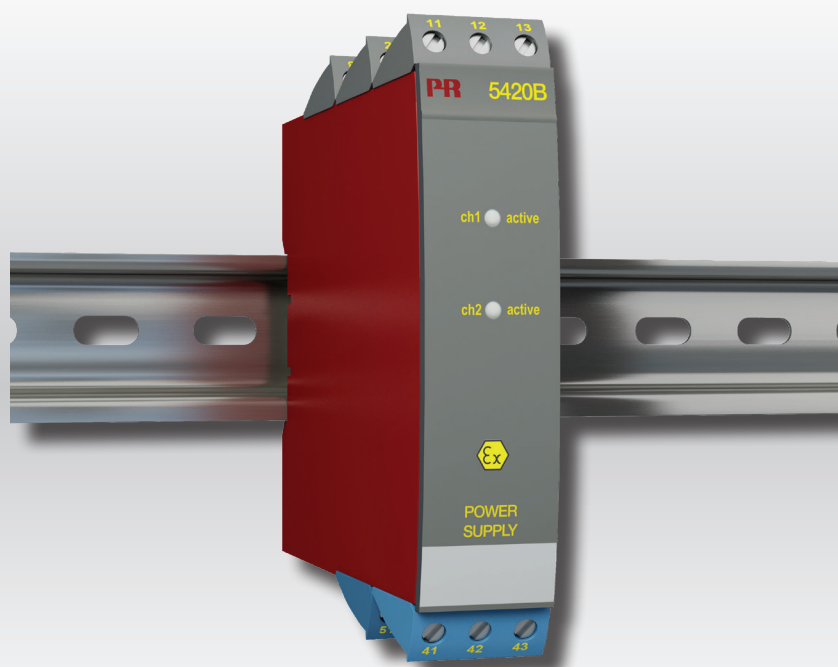


PERFORMANCE
MADE
SMARTER

Product manual

5420B

Ex power supply



TEMPERATURE | I.S. INTERFACES | COMMUNICATION INTERFACES | MULTIFUNCTIONAL | ISOLATION | DISPLAY

No. 5420BV102-UK
From ser. no.: 030145001

PR
electronics

6 Product Pillars

to meet your every need

Individually outstanding, unrivalled in combination

With our innovative, patented technologies, we make signal conditioning smarter and simpler. Our portfolio is composed of six product areas, where we offer a wide range of analog and digital devices covering over a thousand applications in industrial and factory automation. All our products comply with or surpass the highest industry standards, ensuring reliability in even the harshest of environments and have a 5-year warranty for greater peace of mind.



Temperature

Our range of temperature transmitters and sensors provides the highest level of signal integrity from the measurement point to your control system. You can convert industrial process temperature signals to analog, bus or digital communications using a highly reliable point-to-point solution with a fast response time, automatic self-calibration, sensor error detection, low drift, and top EMC performance in any environment.



I.S. Interface

We deliver the safest signals by validating our products against the toughest safety standards. Through our commitment to innovation, we have made pioneering achievements in developing I.S. interfaces with SIL 2 Full Assessment that are both efficient and cost-effective. Our comprehensive range of analog and digital intrinsically safe isolation barriers offers multifunctional inputs and outputs, making PR an easy-to-implement site standard. Our backplanes further simplify large installations and provide seamless integration to standard DCS systems.



Communication

We provide inexpensive, easy-to-use, future-ready communication interfaces that can access your PR installed base of products. All the interfaces are detachable, have a built-in display for readout of process values and diagnostics, and can be configured via push-buttons. Product specific functionality includes communication via Modbus and Bluetooth and remote access using our PR Process Supervisor (PPS) application, available for iOS and Android.



Multifunction

Our unique range of single devices covering multiple applications is easily deployable as your site standard. Having one variant that applies to a broad range of applications can reduce your installation time and training, and greatly simplify spare parts management at your facilities. Our devices are designed for long-term signal accuracy, low power consumption, immunity to electrical noise and simple programming.



Isolation

Our compact, fast, high-quality 6 mm isolators are based on microprocessor technology to provide exceptional performance and EMC-immunity for dedicated applications at a very low total cost of ownership. They can be stacked both vertically and horizontally with no air gap separation between units required.



Display

Our display range is characterized by its flexibility and stability. The devices meet nearly every demand for display readout of process signals, and have universal input and power supply capabilities. They provide a real-time measurement of your process value no matter the industry, and are engineered to provide a user-friendly and reliable relay of information, even in demanding environments.

Ex power supply

5420B

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Warning



GENERAL

This device is designed for connection to hazardous electric voltages.

Ignoring this warning can result in severe personal injury or mechanical damage.

To avoid the risk of electric shock and fire, the safety instructions of this manual must be observed and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following.

Prior to the commissioning of the device, this manual must be examined carefully.

Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Warning



**HAZARD-
OUS
VOLTAGE**

Until the device is fixed, do not connect hazardous voltages to the device.

The following operations should only be carried out on a disconnected device and under ESD-safe conditions:

- Dismantlement of the device for setting of DIP-switches and jumpers.

- General mounting, wire connection and disconnection.

- Troubleshooting the device.

Repair of the device and replacement of circuit breakers must be done by PR electronics A/S only.

Warning



**INSTAL-
LATION**

SYSTEM 5000 must be mounted on DIN rail according to DIN 46277.

The communication connector of SYSTEM 5000 is connected to the input terminals on which dangerous voltages can occur, and it must only be connected to the programming unit Loop Link by way of the enclosed cable.

Symbol identification



Triangle with an exclamation mark: Read the manual before installation and commissioning of the device in order to avoid incidents that could lead to personal injury or mechanical damage. Warning/demand. Potentially lethal situations.



The CE mark proves the compliance of the device with the essential requirements of the directives.



The double insulation symbol shows that the device is protected by double or reinforced insulation.



Ex devices have been approved according to the ATEX directive for use in connection with installations in explosive areas.

Safety instructions

Definitions

Hazardous voltages have been defined as the ranges: 75 to 1500 Volt DC, and 50 to 1000 Volt AC.

Technicians are qualified persons educated or trained to mount, operate, and also trouble-shoot technically correct and in accordance with safety regulations.

Operators, being familiar with the contents of this manual, adjust and operate the knobs or potentiometers during normal operation.

Receipt and unpacking

Unpack the device without damaging it and check whether the device type corresponds to the one ordered. The packing should always follow the device until this has been permanently mounted.

Environment

Avoid direct sun light, dust, high temperatures, mechanical vibrations and shock, and rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.

All devices fall under Installation Category II, Pollution Degree 2, and Insulation Class II.

Mounting

Only technicians, who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these, should connect the device. Should there be any doubt as to the correct handling of the device, please contact your local distributor or, alternatively,

PR electronics A/S
www.prelectronics.com

Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.a. wire cross section, protective fuse, and location.

Descriptions of input / output and supply connections are shown in the block diagram and on the side label.

The following apply to fixed hazardous voltages-connected devices:

The max. size of the protective fuse is 10 A and, together with a power switch, it should be easily accessible and close to the device. The power switch should be marked with a label telling it will switch off the voltage to the device.

Year of manufacture can be taken from the first two digits in the serial number.

Calibration and adjustment

During calibration and adjustment, the measuring and connection of external voltages must be carried out according to the specifications of this manual. The technician must use tools and instruments that are safe to use.

Normal operation

Operators are only allowed to adjust and operate devices that are safely fixed in panels, etc., thus avoiding the danger of personal injury and damage. This means there is no electrical shock hazard, and the device is easily accessible.

Cleaning

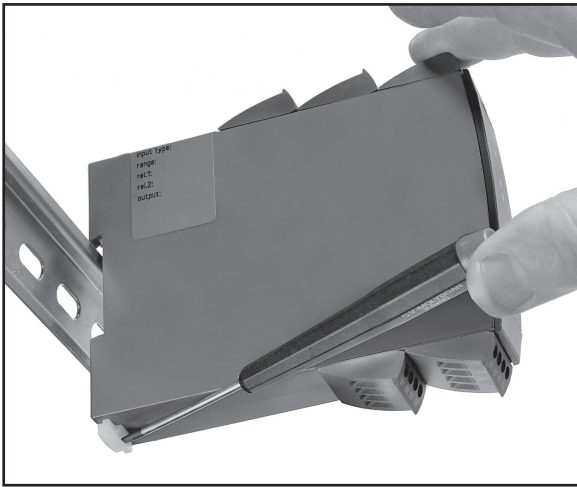
When disconnected, the device may be cleaned with a cloth moistened with distilled water.

Liability

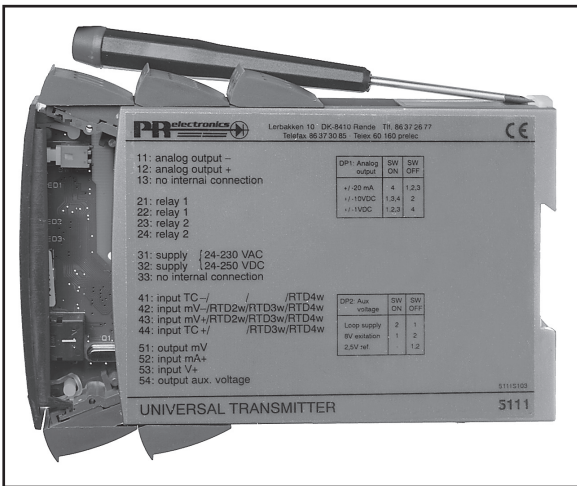
To the extent the instructions in this manual are not strictly observed, the customer cannot advance a demand against PR electronics A/S that would otherwise exist according to the concluded sales agreement.

How to demount system 5000

First, remember to demount the connectors with hazardous voltages.



Picture 1:
By lifting the bottom lock, the device is detached from the DIN rail.



Picture 2:
Then, by lifting the upper lock and pulling the front plate simultaneously the PCB is removed. Switches and jumpers can now be adjusted.

11: analog output -
 12: analog output +
 13: no internal connection
 21: relay 1
 22: relay 1
 23: relay 2
 24: relay 2
 31: supply [24-230 VAC
 32: supply [24-250 VDC
 33: no internal connection
 41: input TC - / /RTD4w
 42: input mV - /RTD2w/RTD3w/RTD4w
 43: input mV + /RTD2w/RTD3w/RTD4w
 44: input TC + / /RTD3w/RTD4w
 51: output mV
 52: input mA+
 53: input V+
 54: output aux. voltage

DPS Analog output	SW CN	SW OFF
+/- 20 mA	4	1,3,3
+/- 10VDC	1,3,4	2
+/- 1VDC	1,3,3	4

DPS Aux voltage	SW CN	SW OFF
Loop supply	2	1
BV excitation	1	2
2.5V ref		1,2

UNIVERSAL TRANSMITTER 5111

Ex power supply 5420B

- 2 channels
- 5-port 3.75 kVAC galvanic isolation
- Output voltage > 18 V to Ex area
- Active current loop detection
- Universal supply by AC or DC

Application

- Voltage supply with safety barrier for the supply of equipment mounted in hazardous area.
- Voltage supply with failsafe detection of active current loop from 2-wire transmitters mounted in hazardous area.

Technical characteristics

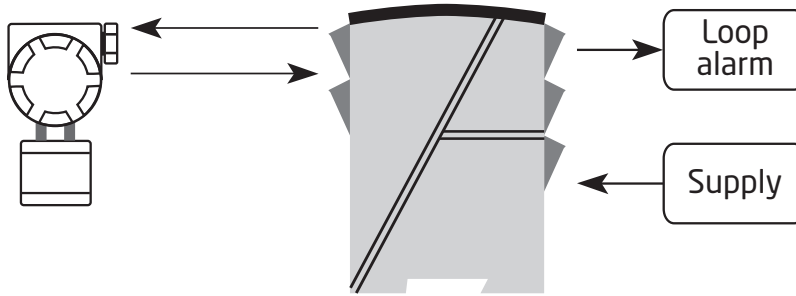
- PR5420B has a relay with change-over contacts available in the safe area. When the loop current is within the defined limit, the relay is ON.
- Supply and outputs are floating and galvanically separated.

Mounting / installation

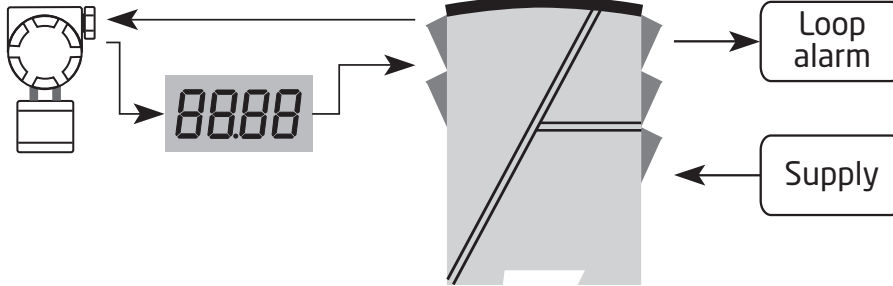
- Mounted vertically or horizontally on a DIN-rail. Up to 84 channels per metre can be mounted.

Application

2-wire transmitter



2-wire transmitter



Order

Type	Channels
5420B	Double : 2

Electrical specifications

Environmental conditions

Specifications range	-20...+60°C
Calibration temperature	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications

Dimensions (HxBxD)	109 x 23.5 x 130 mm
Weight	215 g
DIN rail type	DIN 46277
Max. wire size	1 x 2.5 mm ² stranded wire
Screw terminal torque	0.5 Nm

Common electrical specifications

Supply voltage	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse	400 mA SB / 250 VAC
Max. required power	≤ 4 W (2 channels)
Internal power dissipation	≤ 2 W (2 channels)
Isolation - test / working	3.75 kVAC / 250 VAC
PELV/SELV	IEC 61140

EMC - immunity influence	< ±0.5%
Extended EMC immunity: NAMUR NE 21, A criterion, burst	< ±1%

Outputs

Output voltage	> 18 VDC at 20 mA
Output current per channel (max.)	28 mA

Relay outputs

ON within limit	> 3.8...< 20.5 mA
Vmax.	250 VRMS
Imax.	2 ARMS
Max. AC output	100 VA
Max. load at 24 VDC	1 A

Ex / I.S. data

Um	250 V
Uo.	28 VDC
Io	93 mADC
Po.	0.65 W
Lo.	3 mH
Co.	0.08 µF

Observed authority requirements

EMC	2014/30/EU
LVD	2014/35/EU
ATEX	2014/34/EU
RoHS	2011/65/EU

Approvals

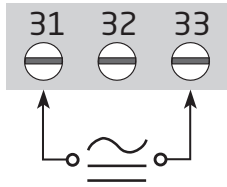
EAC	TR-CU 020/2011
EAC Ex	TR-CU 012/2011

I.S. / Ex

ATEX	DEMKO 99ATEX126256
EAC Ex	RU C-DK.HA65.B.00355/19

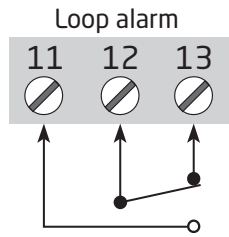
Connections

Supply:

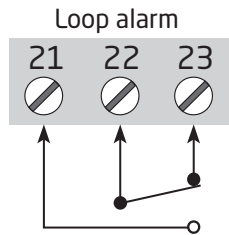


Safe area:

Channel 1

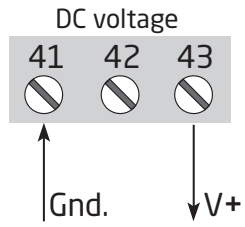


Channel 2

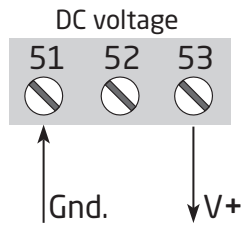


Outputs for Ex area:

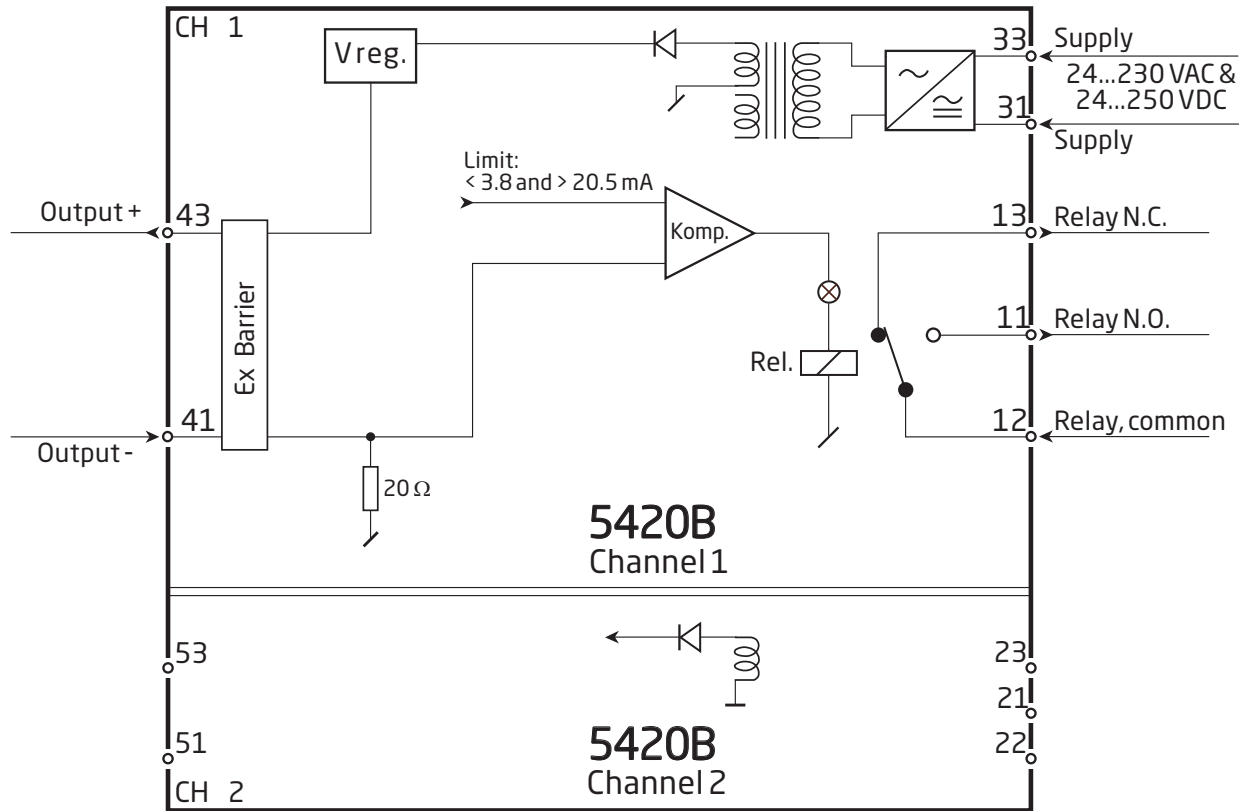
Channel 1



Channel 2



Block diagram



We are near you, *all over the world*

Our trusted red boxes are supported wherever you are

All our devices are backed by expert service and a 5-year warranty. With each product you purchase, you receive personal technical support and guidance, day-to-day delivery, repair without charge within the warranty period and easily accessible documentation.

We are headquartered in Denmark, and have offices and authorized partners the world over. We are a local

business with a global reach. This means that we are always nearby and know your local markets well. We are committed to your satisfaction and provide **PERFORMANCE MADE SMARTER** all around the world.

For more information on our warranty program, or to meet with a sales representative in your region, visit prelectronics.com.

Benefit today from *PERFORMANCE MADE SMARTER*

PR electronics is the leading technology company specialized in making industrial process control safer, more reliable and more efficient. Since 1974, we have been dedicated to perfecting our core competence of innovating high precision technology with low power consumption. This dedication continues to set new standards for products communicating, monitoring and connecting our customers' process measurement points to their process control systems.

Our innovative, patented technologies are derived from our extensive R&D facilities and from having a great understanding of our customers' needs and processes. We are guided by principles of simplicity, focus, courage and excellence, enabling some of the world's greatest companies to achieve PERFORMANCE MADE SMARTER.