

PERFORMANCE
MADE
SMARTER

Product manual

5531

Loop-powered LCD indicator



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

No. 5531V106-UK
From serial no.: 241917001

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.

Loop-powered LCD indicator 5531

Table of contents

Application	4
Technical characteristics	4
Mounting / installation	4
Accessories	5
Electrical specifications	5
Block diagram	6
Programming	7
Routing diagram	7
ATEX Installation Drawing	8
IECEX Installation Drawing	11
Document history	14

Loop-powered LCD indicator 5531

- 4 digit 1/8 DIN (48 x 96 mm) loop-powered LCD display
- Easy push-button configuration
- Backlit LCD display is readable in low light conditions
- Display can be mounted in the safe or Ex area

Application

- The 5531 indicator is powered by the 4 to 20 mA current loop and is easily scaled to display the correct process value.
- Because it does not require separate power wiring, the 5531 is perfect for remote display of process loops.
- The 5531A display can be panel-mounted in the safe area or Ex Zone 2 (gas).
- The 5531B Ex display can be panel-mounted in Ex Zone 1 (gas).

Technical characteristics

- With a full measurement range of 3.6 to 23 mA, the 5531 is NAMUR NE43 compliant.
- The display can be push-button scaled to any range between -9999 to 9999, and reverse display action is possible.
- The LCD backlight can be set to half or full intensity for easy viewing in low light conditions.
- With the backlight turned off, the display only requires 1.5 VDC, (75 Ω loop load).
- The input is HART transparent.
- The front push-buttons can be disabled to prevent unauthorized adjustment.

Mounting / installation

- Once panel-mounted with the included gasket, the 5531 provides IP65 ingress protection.

Order

Type	Version
5531	Zone 2 : A
	Zone 1, 2 : B

Accessories

8335 Splash proof cover
 8501 Field enclosure (only for 5531A)

Electrical specifications

Environmental conditions

Specifications range -20°C to +60°C
 Storage temperature -20°C to +60°C
 Calibration temperature 20...28°C
 Relative humidity < 95% RH (non-cond.)
 Protection degree, from front IP65

Mechanical specifications

Dimensions (HxWxD) 48 x 96 x 120 mm
 Cut-out dimensions (HxW) 44.5 x 91.5 mm
 Weight approx. 200 g
 Wire size, connector terminal 1 - 4 0.13...2.08 mm² / AWG 26...14 stranded wire
 Screw terminal torque. 0.5 Nm

Common electrical specifications

Supply Input loop-powered
 Signal / noise ratio > 60 dB
 Response time (0...90%, 100...10%) < 1 s
 Updating time 500 ms

Input and output specifications

Input range 4...20 mA
 Measurement range 3.6...23 mA
 Input voltage drop, without backlight < 1.5 V @ 20 mA
 Input voltage drop, with half backlight. < 6.5 V @ 20 mA
 Input voltage drop, with full backlight < 10.5 V @ 20 mA
 Loop error detection, 4...20 mA:
 Low detection (InLo) ~ < 3 mA
 High detection (InHi) ~ > 24 mA
 Display readout. ± 9999 (4 digits)
 Digit height 16 mm

Accuracy values		
Input type	Absolute accuracy	Temperature coefficient
4...20 mA	≤ ±0.1% of span	≤ ±0.01% of span / °C

EMC - immunity influence.	< ±0.5% of span
-----------------------------------	-----------------

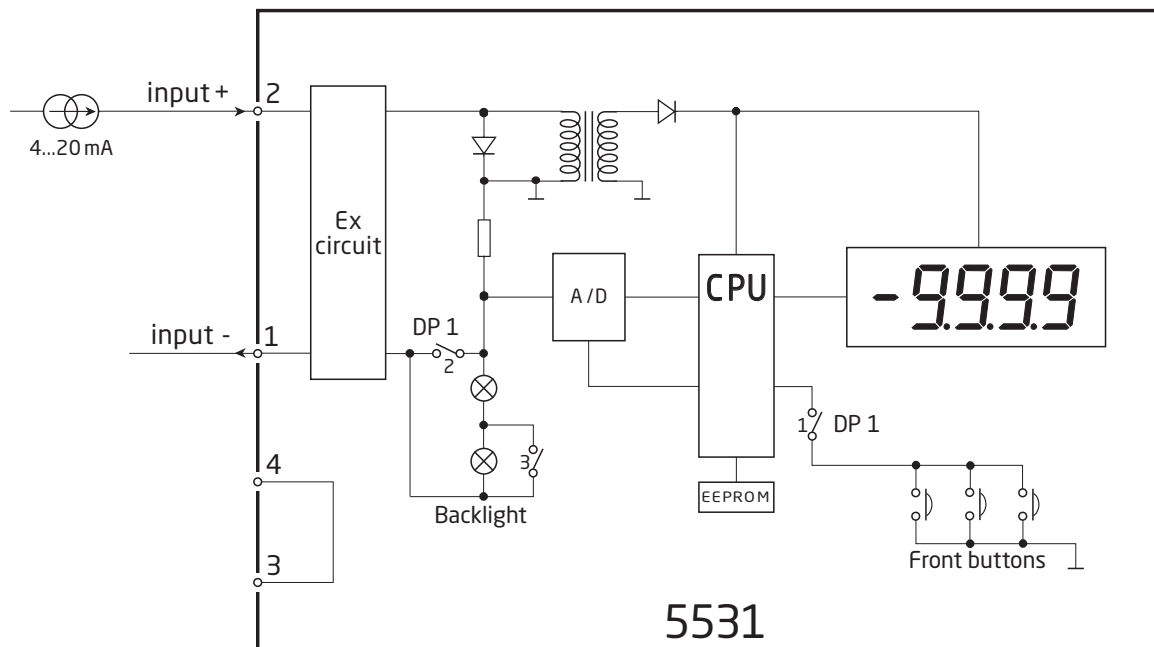
Observed authority requirements

EMC	2014/30/EU
ATEX	2014/34/EU
RoHS	2011/65/EU
EAC	TR-CU 020/2011
EAC Ex	TR-CU 012/2011

Ex / I.S. approvals

ATEX	
5531A	KEMA 05ATEX1044X
5531B	KEMA 05ATEX1105X
IECEx	DEK 24.0002X
CCC	2024322309006239
EAC Ex	EAEU KZ 7500361.01.01.08756

Block diagram

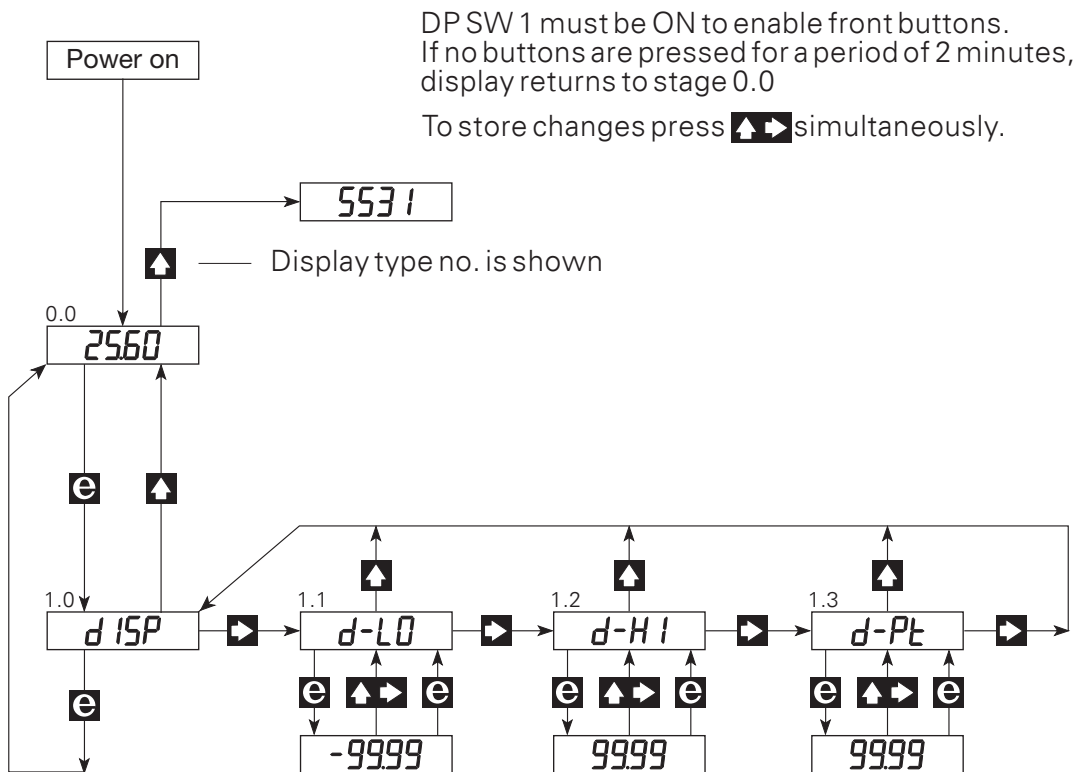


Programming

DP 1 Front keyboard	SW ON	SW OFF
Keys locked	-	1
Keys NOT locked	1	-

DP 1 Backlight	SW ON	SW OFF
Off	2	-
Half intensity	3	2
Full intensity	-	2, 3

Routing diagram



ATEX Installation drawing 5531QA02-V4R0

Installation instructions:

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

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

The 5531 module is maintenance free after installation. When installed by means of the red brackets, torque shall be between 0.1 and 0.2 Nm.

In case of failure or damage to the enclosure the module must immediately be removed from hazardous area and returned for repair at PR electronics A/S Lerbakken 10, 8410 Roende Denmark.

When using 2-wire cables between barrier and transmitter, terminal 3 and 4 may be used for easy installation as seen in installation drawing.

WARNING



SYSTEM 5700 devices contain no DIP-switches or jumpers. Configuration is carried out from front. SYSTEMS 5500 and 5700 must be mounted in a cabinet ensuring IP54 protection degree of internal electronics.

Specific conditions for safe use

Precautions shall be taken to minimize the risk from electrostatic discharge at the non-metallic enclosure surface.

ATEX Installation drawing 5531QA02-V4R0

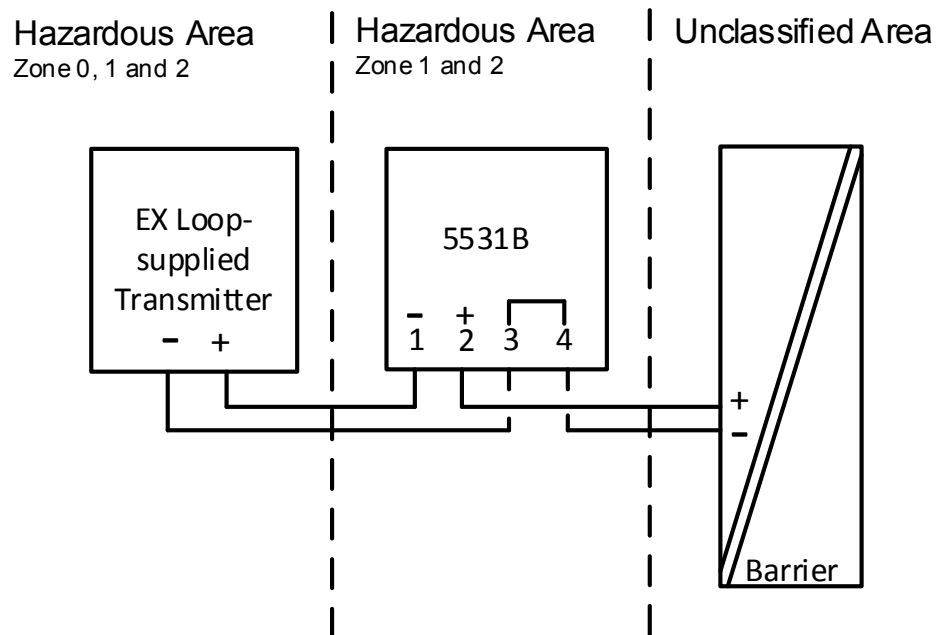
Installation instructions:

ATEX Certificate DEKRA 05ATEX 1105X
Standards: EN IEC 60079-0:2018, EN 60079-11:2012

Ex ia Installation

For safe installation of the 5531B the following must be observed.

Marking $(-20^{\circ}\text{C} \leq T_a \leq 60^{\circ}\text{C})$ II 2 G Ex ia IIC T4 Gb (5531B)



	Terminal 1, 2, 3 and 4
U _i	45 VDC
I _i	120 mA
P _i	0.9 W
L _i	0 mH
C _i	0 nF

ATEX Installation drawing 5531QA02-V4R0

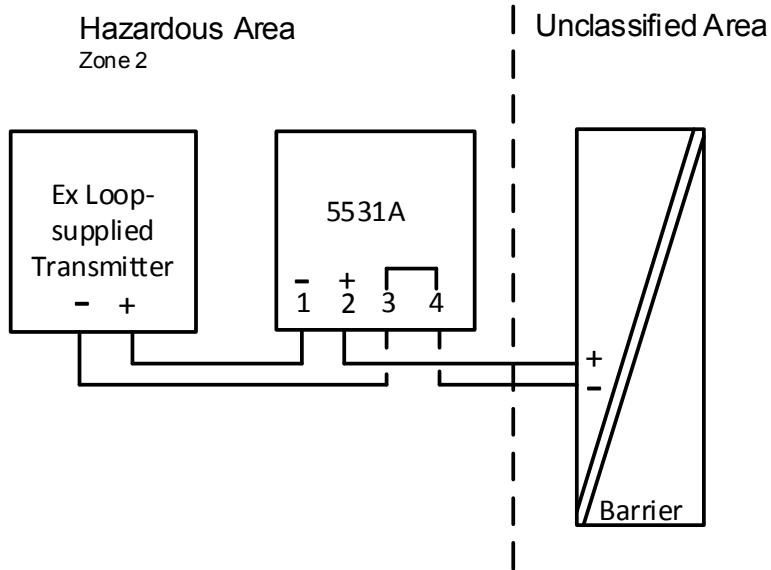
Installation instructions:

ATEX Certificate DEKRA 05ATEX 1044X
 Standards: EN IEC 60079-0:2018, EN 60079-11:2012

Ex ic Installation

For safe installation of the 5531A the following must be observed.

Marking (-20°C ≤ Ta ≤ 60°C) II 3 G Ex ic IIC T4 Gc (5531A)



	Terminal 1, 2, 3 and 4
Ui	45 VDC
Ii	120 mA
Pi	0.9 W
Li	0 mH
Ci	0 nF

IECEX Installation drawing 5531QI02-V3R0

Installation instructions:

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

The 5531 module is maintenance free after installation. When installed by means of the red brackets, torque shall be between 0.1 and 0.2 Nm.

In case of failure or damage to the enclosure the module must immediately be removed from hazardous area and returned for repair at PR electronics A/S Lerbakken 10, 8410 Roende Denmark.

When using 2-wire cables between barrier and transmitter, terminal 3 and 4 may be used for easy installation as seen in installation drawing.

WARNING



SYSTEM 5700 devices contain no DIP-switches or jumpers. Configuration is carried out from front.
SYSTEMS 5500 and 5700 must be mounted in a cabinet ensuring IP54 protection degree of internal electronics.

Specific conditions for safe use

Precautions shall be taken to minimize the risk from electrostatic discharge at the non-metallic enclosure surface.

IECEX Installation drawing 5531QI02-V3R0

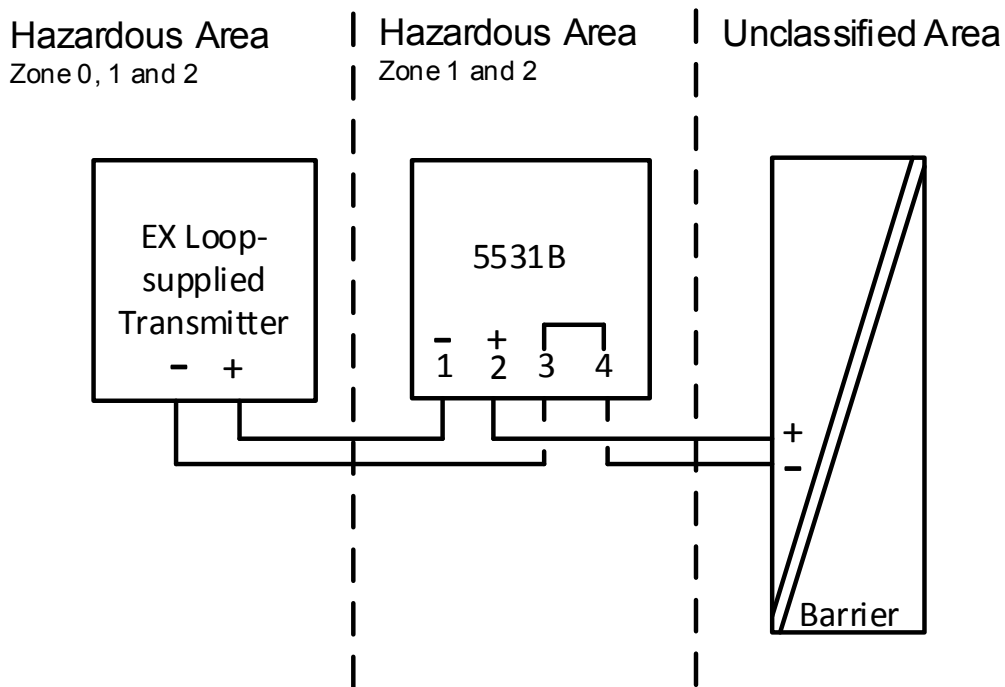
Installation instructions:

IECEX Certificate IECEX DEK 24.0002X
 Standards: IEC 60079-0:2017, IEC 60079-11:2011

Ex ia Installation

For safe installation of the 5531B the following must be observed.

Marking (-20°C ≤ Ta ≤ 60°C) Ex ia IIC T4 Gb (5531B)



	Terminal 1, 2, 3 and 4
U _i	45 VDC
I _i	120 mADC
P _i	0.9 W
L _i	0 mH
C _i	0 nF

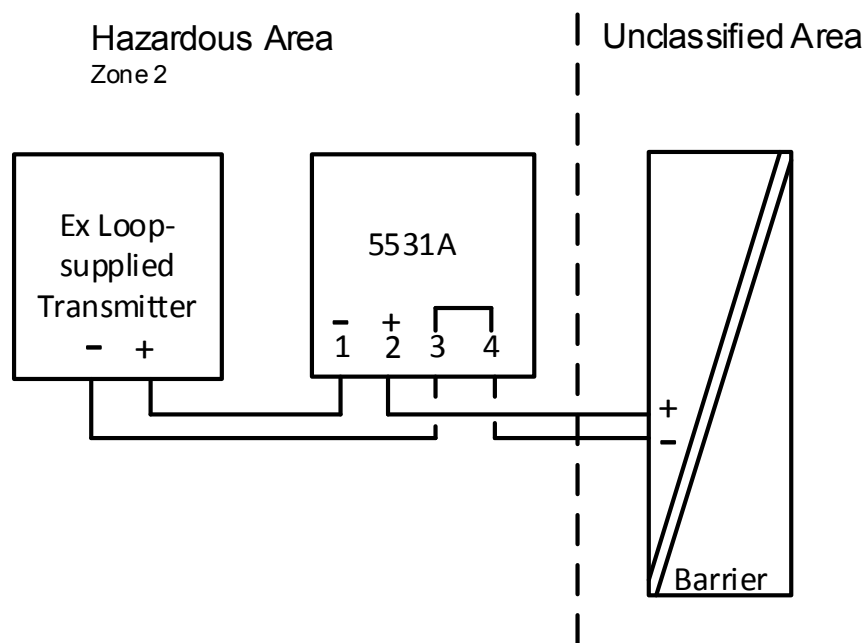
IECEx Installation drawing 5531QI02-V3R0

Installation instructions:

Ex ic Installation

For safe installation of the 5531A the following must be observed.

Marking (-20°C ≤ Ta ≤ 60°C) Ex ic IIC T4 Gc (5531A)



	Terminal 1, 2, 3 and 4
U _i	45 VDC
I _i	120 mADC
P _i	0.9 W
L _i	0 mH
C _i	0 nF

Document history

The following list provides notes concerning revisions of this document.

Rev. ID	Date	Notes
106	2438	ATEX approval updated. IECEX and CCC approvals added. EAC Ex approval updated. Models 5531B1 and 5531B2 discontinued.

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.