

PERFORMANCE  
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SMARTER

Product manual

**5531**

***Loop-powered LCD indicator***



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

No. 5531V105-UK

Serial no.:

121288001 - 108 & > 121350001-241917000

**PR**  
electronics

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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.



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.



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.



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.



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.



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.



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

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# 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
- Available with the 8501 field enclosure

## 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 5531B1 Ex display includes the 8501 enclosure and can be mounted in Ex Zone 2 or 22 (gas or dust).
- The 5531B2 Ex display includes the 8501 enclosure and can be mounted in Ex Zone 1, 2, 21 or 22 (gas or dust).

## 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  $\Omega$  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.

## 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), 5531A, 5531B . . . . .	48 x 96 x 120 mm
Cut-out dimensions (HxW) . . . . .	44.5 x 91.5 mm
Weight approx., 5531A, 5531B . . . . .	200 g
Dimensions (HxWxD), 5531B1, 5531B2. . . . .	92 x 112 x 143 mm
Cable glands / cable diameter . . . . .	2 x M16 x 1.5 / Ø 5...8 mm
Dimensions, 8501 backplate. . . . .	112 x 112 mm
Weight approx., 5531B1, 5531B2 . . . . .	900 g
Wire size, connector terminal 1 - 4 . . . . .	0.13...2.08 mm <sup>2</sup> / 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
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## 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

## Approvals

### NI:

#### 5531A:

KEMA 05ATEX1044 X . . . . .	II 3 G Ex ic IIC T6 Gc (-20°C ≤ Ta ≤ +60°C)
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#### 5531B1:

KEMA 05ATEX1044 X . . . . .	II 3 G Ex ic IIC T6 Gc (-20°C ≤ Ta ≤ +60°C) II 3 D Ex ic IIIC T85°C Dc (-5°C ≤ Ta ≤ +60°C)
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### I.S. / Ex

#### 5531B:

KEMA 05ATEX1105 X . . . . .	II 2 G Ex ia IIC T6 Gb (-20°C ≤ Ta ≤ +60°C)
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EAC Ex . . . . .	RU C-DK.ПБ98.В.00192
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#### 5531B2:

KEMA 05ATEX1105 X . . . . .	II 2 G Ex ia IIC T6 Gb (-20°C ≤ Ta ≤ +60°C) II 2 D Ex ia IIIC T85°C Db (-5°C ≤ Ta ≤ +60°C)
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### I.S. / Ex data

$U_i$ . . . . .	: 45 VDC
$I_i$ . . . . .	: 120 mA
$P_i$ . . . . .	: 0.9 W
$C_i$ . . . . .	: 0 nF
$L_i$ . . . . .	: 0 mH

## Special conditions for safe use

For applications in explosive dust atmospheres, the Loop Powered LCD Indicator shall be installed in such a way that the risk of mechanical danger is low, and that it shall be protected from exposure to UV light.

Electrostatic charging of the plastic display and the label shall be avoided.

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

## Field enclosure type 8501

The field enclosure type 8501 complies with industrial standards for efficient protection of process equipment in wet areas up to IP65. When 8501 is delivered with a built-in 5531, the assembled unit is approved for installation in explosive gas atmospheres as well as in explosive dust environments. The technical specifications of the field enclosure can be found in the 8501 data sheet.

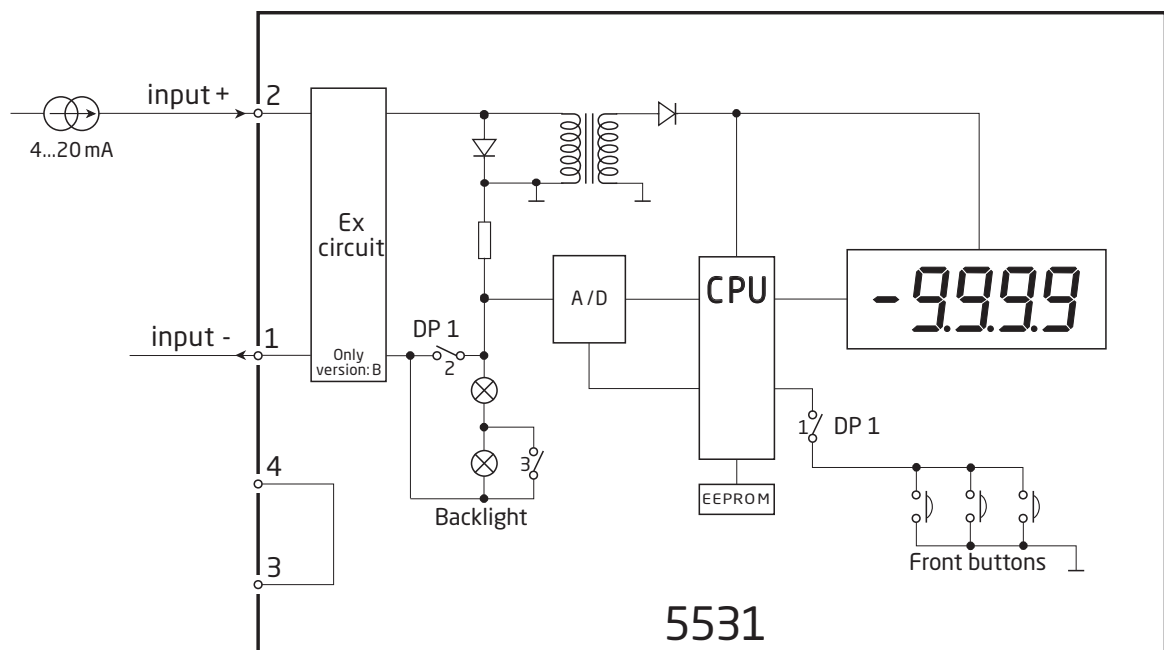
## Order

Type	Input signal area classification	Field enclosure
5531A	4...20 mA from safe area and zone 2	No
5531B1	4...20 mA from safe area, zone 2 and 22	Yes
5531B	4...20 mA from zone 0	No
5531B2	4...20 mA from zone 0 and 20	Yes

## Accessories

- 8335 Splash proof cover
- 8501 Field enclosure for 5531A

## Block diagram



# Programming

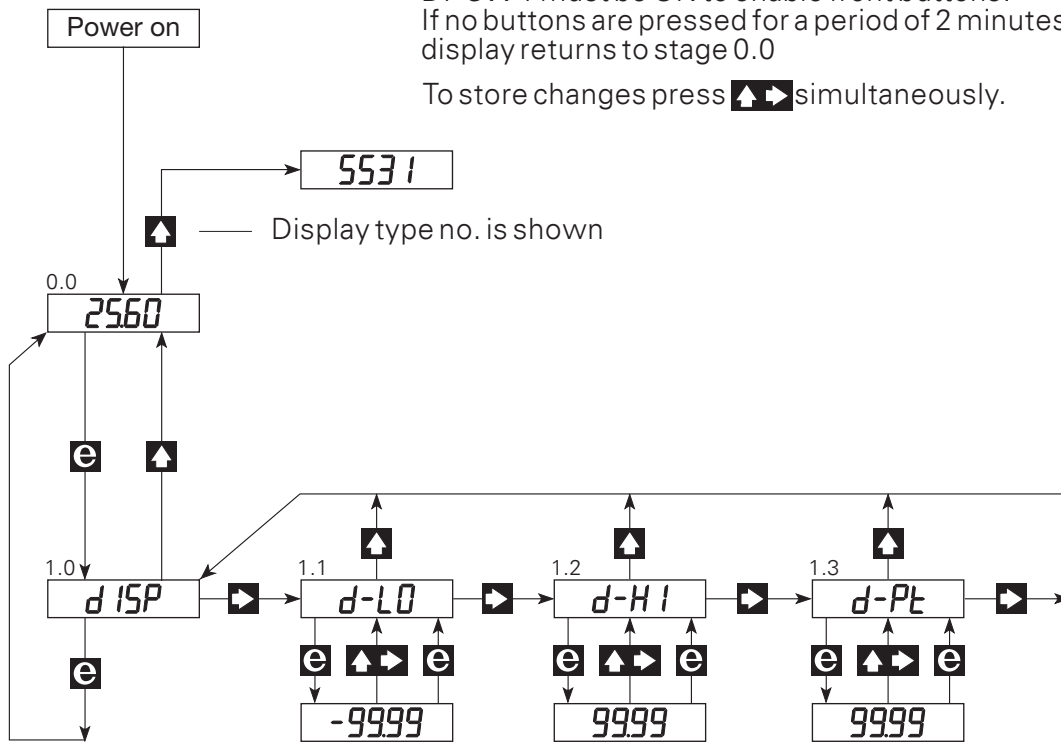
DP 1 Front keyboard	SW ON	SW OFF
Keys locked	-	1
Keys NOT locked	1	-

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

## Routing diagram

DP SW 1 must be ON to enable front buttons.  
 If no buttons are pressed for a period of 2 minutes,  
 display returns to stage 0.0

To store changes press  simultaneously.





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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](http://prelectronics.com).

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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.