Reliable and *extremely precise* *signal conditioning*

PERFORMANCE MADE SMARTER

4000 series

Multifunctional converters

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

The 4000 series is designed to achieve the optimally efficient process, and we have focused on the these 3 characteristics in order to meet user needs:

Multifunctional - User-friendly - Reliable

PR electronics

Efficiency *in focus*

Multifunctional - User-friendly - Reliable

The process industry puts a constant focus on efficiency. In this connection reliable and extremely precise signal conditioning is an absolutely essential prerequisite. Since 1974 the committed mission of PR electronics has been to guarantee the best and most dependable signal conditioning. Thus, today, PR electronics is one of the few companies who back every product with a 5-year product guarantee.

The flexible solution
A high degree of flexibility in the 4000 series has been a must for PR electronics. The detachable front programming units ensure a high level of information and a comprehensive view of the process. Easy configuration and modification is ensured by the advanced help text, guiding the user effortlessly through the menu structure.

Just in time
The devices in the 4000 series are the result of PR electronics' market knowledge and innovative product development. Development, test and production of our devices are carried out at the production facilities in the Danish headquarter which is optimized for day-to-day delivery of all PR products.

Detachable displays

The 4000 series can be delivered pre-configured from factory, but the detachable display fronts 4510 / 4511 / 4512* provide access to advanced configuration directly in the process and allow the user to copy the configuration to other devices or communicate via Modbus (4511) or Bluetooth (4512).

Easy readability

The alphanumerical display ensures easy readability of the process information.

Applicable for SIL 2

The sophisticated design of 4114, 4116, 4179, 4184 and 4225 makes the devices suitable for application in SIL 2 circuits.

* 4510. 4511 and 4512 are sold separately.

The 4000 series is equipped with approvals for applications worldwide.


4104
4114
4116
4131
4179
4184
4222
4225B
4.50
bar
PRES03
4.76
mA
208
4512
relay 1
relay 2
f out
f in
UNIVERSAL
TRANSMITTER
BIPOLAR
IGNAL
ISMITTER
UNIVERSAL
I/f CONVERTER
UNIVERSAL
f/I - f/f
CONVERTER

Multifunctional

8 product variants cover hundreds of applications

In all aspects of the design PR electronics has focused on the multifunctionality of the 4000 series. Hence, the 8 product variants cover hundreds of applications, resulting in reduced stock as well as increased flexibility and competitiveness:

- Universal supply voltage of 21.6...253 VAC / 19.2...300 VDC.
- Universal input module for the connection of mA, V, Pt100, TC, lin. R and potentiometer.
- 2-point process calibration.
- 2-wire supply and reference for potentiometer measurements.
- Universal programming by way of the display fronts 4510 / 4511 / 4512, which recognize the module type in question and adapts the menu structure accordingly.
- In the addition to the setpoint and window relay functions, the 4116, 4131 and 4225 feature a "latch" function for applications where alarms must be reset manually.

User-friendly

multilingual help texts

The communication between user and device is characterized by its simplicity and thus the configuration can be carried out without a detailed manual. The following features optimize the usability of the 4000 series:

- The menu is easily understandable as the scrolling help text guides the user through all the configuration steps.
- The help texts are available in 7 language versions: English, German, French, Spanish, Italian, Swedish and Danish.
- All configuration options can be selected from the display front without the need of a PC, DIP-switches, jumpers or special tools.
- The front programming units can be used to display process values and copy the configuration to other devices. At the same time, the display fronts provide access to the sophisticated, yet simple, menu structure.

Reliable

5-year product guarantee

Product reliability has always been one of the key words at PR electronics. Securing customer processes also includes the elimination of potential risks in connection with e.g. mounting errors or general mishandling, which may occur in stressful situations. In addition to our usual 5-year product guarantee, the 4000 series integrates the following protection features:

- 2.3 kVAC galvanic isolation between input, supply, relays and analog output.
- Sophisticated sensor error detection with alarm function by way of the relays or the analog output.
- Process simulation by way of the relays or the analog output.
- Password protection against unauthorized changes to the configuration.
- 4114, 4116, 4179, 4184 and 4225 are suitable for SIL 2 applications (the built-in safety readback on the mA output must be actively selected in the menu).
- FM-approved for installation in Div. 2.
- The 4000 devices comply with NAMUR 21 (burst), NE43 (sensor error), LVD and UL 508.
- Optional internal CJC or CJC connector (accessory, PR type 5910) for 4114, 4116 and 4131.

Communication interfaces
Local or remote access to your process data:

4510 – LOI (Local Operator Interface) connectivity on your new and existing PR 4000 and 9000 devices to locally monitor process values, device configuration and perform signal simulation.

4511 – Modbus communication enabler. Get easy, remote access to your process values - by enabling existing and future PR 4000 and 9000 devices for digital communication.

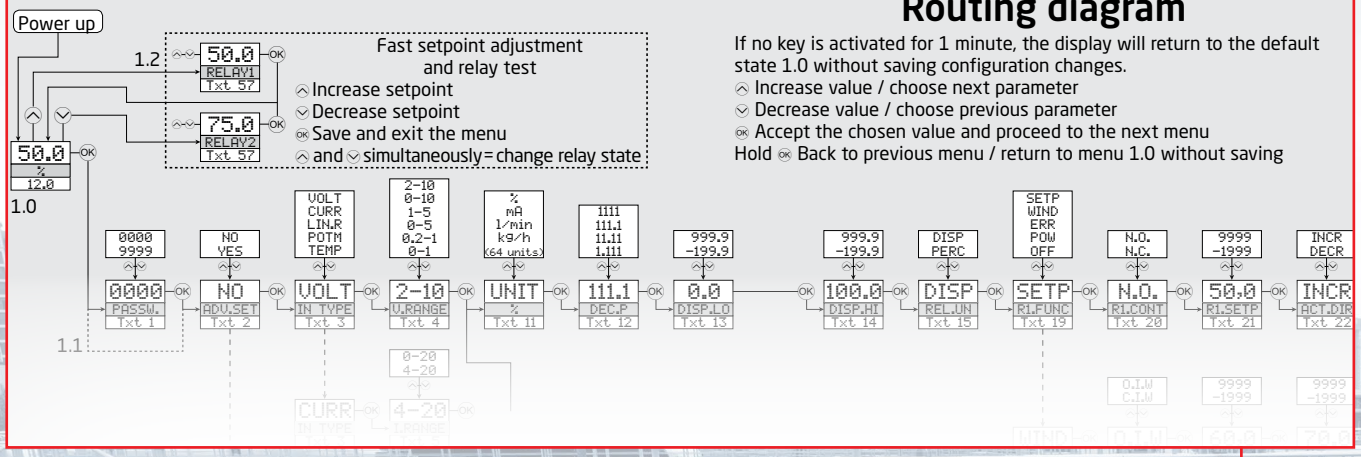
4512 - Bluetooth communication enabler. Enable Bluetooth communication and data logging on all your PR 4000 and PR 9000 units.

PPS - PR Process Supervisor - monitoring of process values, device configuration and signal simulation. For iOS and Android.

Routing diagram

If no key is activated for 1 minute, the display will return to the default state 1.0 without saving configuration changes.
- Increase value / choose next parameter
- Decrease value / choose previous parameter
- OK Accept the chosen value and proceed to the next menu

Hold OK Back to previous menu / return to menu 1.0 without saving



The easily understandable menu structure makes for effortless configuration.

Besides standard configuration of input, output and relays, the display fronts provide access to several other functionalities such as display configuration, process calibration, simulation mode function and much more.

Specifications:	4104	4114	4116	4131	4179	4184	4222	4225
mA input	●	●	●	●		●	●	
Active and passive input	●	●	●	●		●	●	
AC current and AC voltage input					●			
3-wire mA input	●					●		
V input	●	●	●	●		●	●	
Bipolar current and voltage input	●					●		
Pt100: 2-, 3- and 4-wire		●	●	●			●	
TC types: B...W5, LR		●	●	●			●	
Potentiometer		●	●	●		●	●	
Linear resistance: 0 Ω...10 kΩ		●	●	●			●	
Frequency input: PNP, NPN, TTL, 0...100 kHZ								●
2 relay outputs: 250 VRMS / 2 A			●	●				●
mA output	●	●	●		●	●		●
Active and passive current output	●				●	●		●
V output	●	●	●		●	●		●
Bipolar current and voltage output	●				●	●		●
Buffered voltage output						●		●
Frequency output: PNP, NPN, TTL[1]							●[2]	●[3]

1: TTL output only for 4222

2: 0...25 kHz 3: 0...100 kHz

Customer case - Lyonnaise des Eaux

Wastewater lift station surveillance and management – the easier, more cost-efficient, and more flexible way

Lyonnaise des Eaux in Montgeron (Ile-de-France, France), decided to renovate its lift station cabinets - getting a much simpler, more cost-efficient setup with remote access to transmitter data and programming – along with the ability to tele-monitor the water level in pumping stations via secure network...

Need for a flexible multifunctional transmitter for lift station water level monitoring

Lyonnaise des Eaux's team in Montgeron – a city situated in the southern Paris region – provides service for several lift stations for the local wastewater system. In 2004 the team decided to install the PR 4116 universal transmitter for water level monitoring at the individual stations. They needed a transmitter that could

Photo from lyonnaise-des-eaux.com

be used to program the pumps as well as indicate relay failure for practically every installation. The 4116 offered both functionalities.
In addition, the 4116 was chosen for easy installation into the existing cabinets, the five-year warranty, simple programming, and fair price.

Simplifying wiring and renovating cabinets ten years later

In 2014 the team found that some of the stations needed renovation. The pumping station probes were reacting to contact with litter and rain water, triggering the pumps to stop. Arnaud CHAMBON of Lyonnaise des Eaux decided on PR multifunctional transmitters and communication enablers for the renovation project:

"We needed to renovate but certainly also to simplify the cabinets at the Rue de Paris at Villeneuves St Georges. In one cabinet we had twenty PR 4116 and 4501 and in another cabinet we had an additional fifteen", Mr. Chambon explains and continues, "We replaced the existing probes with piezo probes and replaced the modules in the cabinets with a new set of PR 4116 universal transmitters with 4511 communication enablers clicked onto the front. The pumps were controlled by the PR modules using threshold and hysteresis functionality. This gave us a simpler and much more cost-efficient set-up... with less wiring."

"... Now - without wiring, we have remote access to the data transmitted by the 4116 and we can program the modules as well. We have also saved on installation costs.

Lyonnaise des Eaux
Products used:

- **4116 universal transmitter**
- **4501 display / programming front (obsolete - replaced by 4510)**
- **4511 communication enabler**

Benefit today from PERFORMANCE MADE SMARTER

PR electronics is the leading technology company that specializes 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 that communicate, monitor and connect our customers' process measurement points to their process control systems.

Our innovative, patented technologies are derived from our extensive R&D facilities and our thorough 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.

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