

Универсальные преобразователи 4179, 4184, 4225

Технические характеристики

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Universal AC / DC transmitter

4179

- Measures AC current and voltage signals
- Outputs passive or active current signals
- Programming, process monitoring and diagnostics via PR 4500
- Response time < 0.75 s and excellent accuracy better than 0.3%
- Universally powered by 21.6...253 VAC / 19.2...300 VDC



Application

- The 0...5 AAC RMS range makes it possible to accurately measure a typical current transformer.
- The 0...300 VAC RMS range allows accurate supply voltage monitoring.
- The 4179 measures standard input ranges, and can be freely configured to customer-defined input range.
- Converts narrow AC current / voltage inputs to wide bipolar or unipolar outputs, e.g. 0...1 VAC RMS input = ± 10 volt or 4...20 mA output with a minimum span of 0.5 AAC RMS or 0.5 VAC RMS.
- Configurable input limits control the output value for increased safety.
- The 4179 provides the required failure data (SFF and PFDAVG) for SIL 2 applications as per IEC 61508 / IEC 61511.
- Failure rates for 4179 correspond to Performance Level "d" according to ISO-13849.

Technical characteristic

- The latest analog and digital techniques are used to obtain maximum accuracy and immunity to interference.
- Possibility of output safety feedback by selecting S4...20 mA output.
- The current output can drive up to 800 Ohms, with an adjustable response time of 0.0...60.0 seconds.
- Exceptional mA output load stability of <0.001% of span / 100 Ohm.
- Meets the NAMUR NE21 recommendations, ensuring high accuracy in harsh EMC environments.
- Meets the NAMUR NE43 recommendations, allowing the control system to easily detect an input error.
- Tested to a high 2.3 kVAC, 3-port galvanic isolation level.
- Excellent signal to noise ratio of > 60 dB.

Mounting / installation / programming

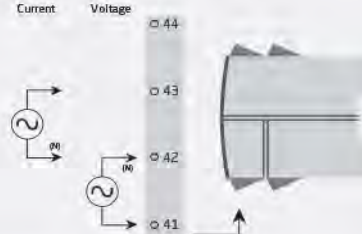
- Very low power consumption means units can be mounted side by side without an air gap – even at 60°C ambient temperature.
- Configuration, monitoring, 2-point process calibration and more are accomplished using PR's 4500 series of detachable displays.

Note

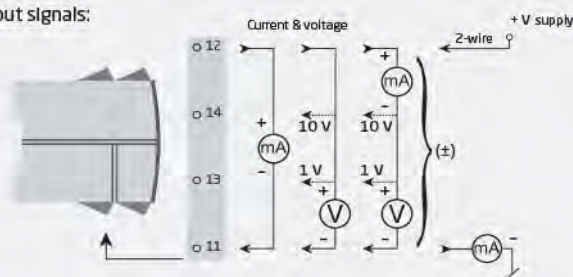
- If you need an installation instruction in hard copy, you can order it for free when placing your order.

Applications

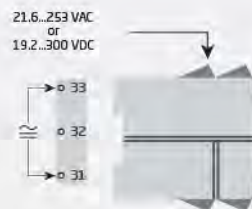
Input signals:



Output signals:



Power connection:



Order:

Type
4179

Environmental Conditions

Operating temperature.....	-20°C to +60°C
Storage temperature.....	-20°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20
Installation in.....	Pollution degree 2 & meas. / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ PR 4500.....	109 x 23.5 x 131 mm
Weight approx.....	155 g
Weight incl. 4501 / 451x (approx.).....	170 g / 185 g
DIN rail type.....	DIN EN 60715/35 mm
Wire size.....	0.13...2.08 mm ² AWG 26...14 stranded wire
Screw terminal torque.....	0.5 Nm
Vibration.....	IEC 60068-2-6
2...13.2 Hz.....	±1 mm
13.2...100 Hz.....	±0.7 g

Common specifications**Supply**

Supply voltage, universal.....	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. required power.....	1.6 W
Max. power dissipation - current measurement.....	2.7 W
Max. power dissipation - voltage measurement.....	1.6 W

Isolation voltage

Test voltage.....	2.3 kVAC
Working voltage.....	250 VAC (reinforced) / 500 VAC (basic)

Response time

Response time (0...90%, 100...10%).....	< 0.75 s
Programming.....	PR 4500 communication interfaces
Signal dynamics, input.....	20 bit
Signal dynamics, output.....	18 bit
Signal / noise ratio.....	> 60 dB
Output referred common mode rejection ratio.....	0.02 ppm / VHz
Accuracy.....	Better than 0.3% of selected range*
EMC immunity influence.....	< ±0.5% of span*
Extended EMC immunity: NAMUR NE21, A criterion, burst.....	< ±1% of span*
of span.....	= of selected standard range

Input specifications**Current input**

Signal range.....	0...5 AAC / 40...400 Hz
Maximum input limit.....	6.00 AAC @ 40°C
Programmable measurement ranges.....	0...0.5; 0...1; 0...2.5 & 0...5 AAC
Custom configurable signal range.....	0...5 AAC / 40...400 Hz
Min. measurement range (span).....	0.5 AAC
Input resistance.....	< 0.042 Ω (incl. terminals)

Voltage input

Signal range.....	0...300 VAC / 40...400 Hz
Programmable measurement ranges.....	0...0.5, 0...1, 0...2.83, 0...5, 0...120, 0...230 & 0...300 VAC
Custom configurable signal range.....	0...300 VAC / 40...400 Hz
Min. measurement range (span).....	0.5 VAC
Input resistance.....	Nom. 3 MΩ 100 pF

Output specifications**Active unipolar and bipolar mA output**

Programmable ranges.....	0...20, 4...20 and S4...20 mA
Programmable ranges.....	±10 and ±20 mA
Programmable ranges.....	Direct or Inverted Action
Load (@ current output).....	≤ 800 Ω
V-curve function, active signals, 100-0-100%.....	20-0-20 mA

Passive 2-wire mA output

Programmable ranges.....	0...20 and 4...20 mA
Programmable ranges.....	Direct or Inverted action
V-curve function, 100-0-100%.....	20-0-20 mA
External loop supply.....	3.5...30 V

Current output

Signal range.....	0...23 mA (unipolar)
Signal range.....	-23...+23 mA (bipolar)
Current limit.....	≤ 28 mA (unipolar)
Current limit.....	± 28 mA (bipolar)
Load stability.....	≤ 0.001% of span / 100 Ω
Response time, programmable.....	0.0...60.0 s

Voltage output

Programmable signal ranges.....	0/0.2...1; 0/1...5; 0/2...10; 1...0.2/0; 5...1/0; 10...2/0 V
Programmable signal ranges.....	±1, ±5 and ±10 V
Programmable signal ranges.....	Direct or Inverted action
V-curve function, 100-0-100%.....	1-0-1, 5-0-5 and 10-0-10 V
Load (@ voltage output).....	≥ 500 kΩ
Response time, programmable.....	0.0...60.0 s

Observed authority requirements

EMC.....	2014/30/EU & UK SI 2016/1091
LVD.....	2014/35/EU & UK SI 2016/1101
RoHS.....	2011/65/EU & UK SI 2012/3032
EAC.....	TR-CU 020/2011

Approvals

c UL us, UL 508..... E248256

SIL..... Hardware assessed for use in
SIL applications

NB

* / ** For custom configurable signal
ranges, general accuracy and
EMC specifications are 0.3% of
full scale



Universal uni-/bipolar signal transmitter

4184

- Measures DC inputs up to ± 300 V / ± 100 mA with spans as low as 25 mV / 0.5 mA
- Passive/active current output and buffered voltage output
- Fast < 20 ms response time and excellent 0.05% accuracy
- Universally powered by 21.6...253 VAC / 19.2...300 VDC



Application

- Fast < 20 ms response time for measuring signals produced by torque, position, current & acceleration sensors.
- User configurable bipolar or unipolar I/O means the 4184 is suitable for nearly any DC voltage or current conversion.
- Freely programmable between ± 300 VDC and ± 100 mA.
- The excitation source allows measurement of a 2-wire or 3-wire transmitter, or a potentiometer.
- Converts narrow bipolar inputs to wide bipolar or unipolar outputs, e.g., ± 1 volt input = ± 10 volt or 4...20 mA output.
- Configurable input limits control the output value for increased safety.
- ± 20 VDC buffered voltage output for controlling devices like the PVG 32 valve (6...18 VDC).
- The 4184 provides the required failure data (SFF and PFDAVG) for SIL 2 applications as per IEC 61508 / IEC 61511.
- Failure rates for 4184 correspond to Performance Level "d" according to ISO-13849.

Technical characteristics

- The latest analog and digital techniques are used to obtain maximum accuracy and immunity to interference.
- Possibility of output safety readback by selecting S4...20 mA output.
- The current output can drive up to 1000 Ohms, with an adjustable response time of 0.0...60.0 seconds.
- Exceptional mA output load stability of < 0.001% of span / 100 Ohm.
- Meets the NAMUR NE21 recommendations, ensuring high accuracy in harsh EMC environments.
- Meets the NAMUR NE43 recommendations, allowing the control system to easily detect a sensor error.
- Tested to a high 2.3 kVAC, 3-port galvanic isolation level.

Mounting / installation / programming

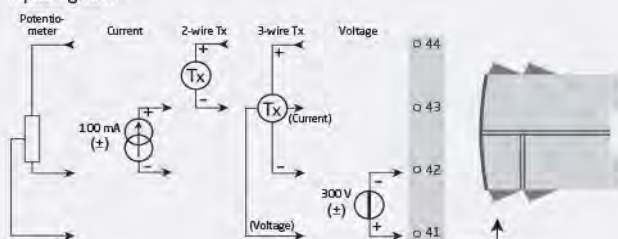
- Very low power consumption means units can be mounted side by side without an air gap – even at 60°C ambient temperature.
- Configuration, monitoring, 2-point process calibration and more are accomplished using PR's 4500 series of detachable displays.

Note

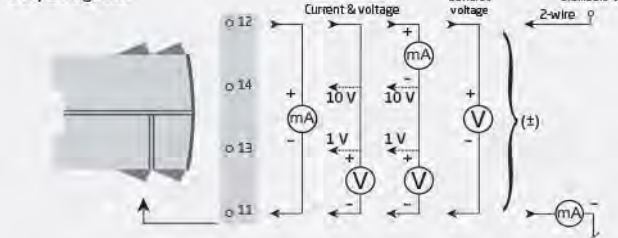
- If you need an installation instruction in hard copy, you can order it for free when placing your order.

Applications

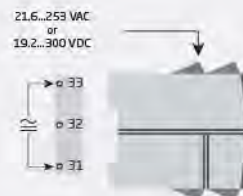
Input signals:



Output signals:



Power connection:



Order:

Type
4184

Environmental Conditions

Operating temperature.....	-20°C to +60°C
Storage temperature.....	-20°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ PR 4500.....	109 x 23.5 x 131 mm
Weight approx.....	155 g
Weight incl. 4501 / 451x (approx.).....	170 g / 185 g
DIN rail type.....	DIN EN 60715/35 mm
Wire size.....	0.13...2.08 mm ² AWG 26...14 stranded wire
Screw terminal torque.....	0.5 Nm

Common specifications

Supply

Supply voltage, universal.....	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. required power.....	≤ 2.5 W
Internal power dissipation.....	≤ 2.0 W

Isolation voltage

Test voltage.....	2.3 kVAC
Working voltage.....	250 VAC (reinforced) / 500 VAC (basic)

Response time

Response time (0...90%, 100...10%).....	< 20 ms
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Auxiliary supplies

2-wire loop supply.....	> 16 V @ 23 mA
3-wire loop supply.....	> 18...< 28 V @ 23...0 mA
Loop supply limitation.....	27...35 mA avg., < 80 mA peak
Reference voltage.....	2.5 VDC ±0.5%
Reference voltage, load.....	0...15 mA
Current limit, reference voltage.....	< 60 mA
Programming.....	PR 4500 communication interfaces
Signal dynamics, input.....	24 bit
Signal dynamics, output.....	18 bit
Signal / noise ratio.....	> 60 dB
Bandwidth.....	> 40 Hz
Accuracy.....	Better than 0.05% of selected range
EMC immunity influence.....	< ±0.5% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst.....	< ±1% of span
Conducted emission, cl. A.....	150 kHz...10 MHz

Input specifications

Current input

Signal range.....	±100 mA
Programmable measurement ranges.....	0...1, 0...5, 1...5, 0...20, 4...20, ±1, ±5, ±10, ±20, ±50, ±100 mA
Custom configurable signal range.....	±100 mA
Min. measurement range (span).....	0.5 mA
Input voltage drop.....	0.6 V @ 20 mA nom.

Voltage input

Signal range.....	±300 VDC
Programmable measurement ranges.....	0...0.1, 0...1, 0.2...1, 0...2.5, 0...5, 1...5, 0...10, 2...10, 0...100, 0...300, ±0.1, ±1, ±2.5, ±5, ±10, ±100, ±300 V
Custom configurable signal range.....	±300 V
Min. measurement range (span).....	25 mV
Input resistance.....	Nom. 3 MΩ (> 2.5 VDC)
Input resistance.....	Nom. > 10 MΩ (≤ 2.5 VDC)

Potentiometer input

3-wire potentiometer input.....	0...100%
Reference voltage.....	2.5 V
Calibration resistance.....	5 kΩ
Min. potentiometer resistance.....	200 Ω

Output specifications

Current output

Signal range.....	0...23 mA (unipolar)
Signal range.....	-23...+23 mA (bipolar)
Custom config. output range.....	±20 mA
Min. signal range.....	4 mA
Load (@ current output).....	≤ 1000 Ω / ± 20 V @ ±20 mA
Current limit.....	≤ 28 mA (unipolar)
Current limit.....	± 28 mA (bipolar)
Load stability.....	≤ 0.001% of span / 100 Ω
Response time, programmable.....	0.0...60.0 s

Passive 2-wire mA output

Programmable ranges.....	0...20 and 4...20 mA
Ext. 2-wire loop supply range.....	3.5...28.8 VDC

Voltage output

Programmable signal ranges.....	0/0.2...1; 0/1...5; 0/2...10 V
Programmable signal ranges.....	±1, ±5 and ±10 V
Programmable signal ranges.....	Direct or Inverted action
Load (@ voltage output).....	≥ 500 kΩ
Response time, programmable.....	0.0...60.0 s

Shunted voltage output

Signal range.....	± 1.2 V / ± 12 V
Programmable standard ranges.....	0...1, 0...2.5, 0...5, 1...5, 0...10, 2...10 V ±1, ±2.5, ±5, ±10 V
Min. span.....	0.8 V
Custom config. output range.....	±10 V
Load, min.....	> 500 kΩ

Buffered voltage output

Signal range.....	± 23 V
Programmable standard ranges.....	0...1, 0.2...1, 0...2.5, 0...5, 1...5, 0...10, 2...10, 0...20, 4...20; ±1, ±2.5, ±5, ±10, ±20 V
Min. span.....	0.8 V
Custom config. output range.....	±20 V
Current limit.....	< 50 mA
Load, min.....	> 2 kΩ

Observed authority requirements

EMC.....	2014/30/EU & UK SI 2016/1091
LVD.....	2014/35/EU & UK SI 2016/1101
RoHS.....	2011/65/EU & UK SI 2012/3032
EAC.....	TR-CU 020/2011

Approvals

c UL us, UL 508.....	E248256
SIL.....	Hardware assessed for use in SIL applications



Universal f/I-f/f converter

4225

- Front programmable
- Input: NAMUR, NPN, PNP, Tacho, TTL, S0 & switches
- Output: Programmable bipolar mA / V, frequency or relay
- Universal power supply 21.6...253 VAC / 19.2...300 VDC



Functional highlights

- Measures frequencies up to 100 kHz.
- Active and passive current output ± 23 mA / 0...23 mA.
- Buffered voltage output ± 10 VDC.
- Linearization: Linear or square root function.
- 2-point process calibration.
- Programmable trigger levels -0.05...6.5 V.
- Programmable sensor supply 5...17 V.
- NAMUR sensor error detection.
- Advanced configurable input limits for increased safety.
- Digital output: NPN & PNP; 0...100 kHz with programmable logic level 5...24 V.
- Output relay with windows, setpoint and latch functionality.
- Simulation of process value during commissioning and maintenance.
- All terminals are over-voltage protected (24 VDC), polarity protected and short-circuit protected.
- The 4225 provides the required failure data (SFF and PFDAVG) for SIL 2 applications as per IEC 61508 / IEC 61511.
- Failure rates for 4225 correspond to Performance Level "d" according to ISO-13849.

Technical highlights

- Accuracy $< 0.06\%$ / span.
- Temperature coefficient 0.006% / $^{\circ}\text{C}$.
- Response time < 30 ms.
- 2.3 kVAC, 3-port galvanic isolation.
- NAMUR NE21 and NE43.

Programming

- Configuration, monitoring and diagnostics using the PR 4500 detachable communication interfaces. Product-specific functionality includes communication via Modbus and Bluetooth using our PR Process Supervisor (PPS) application, available for iOS and Android.
- All programming can be password protected.
- Scrolling help text in 7 languages.

Mounting

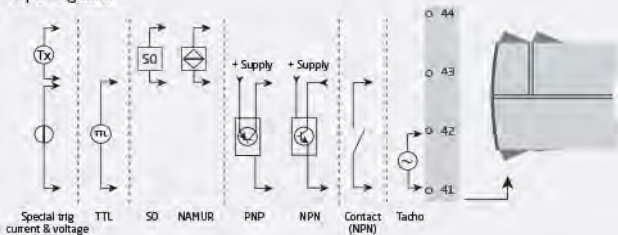
- Units can be mounted side by side, horizontally and vertically, without air gap on a standard DIN rail – even at 60°C ambient temperature.

Note

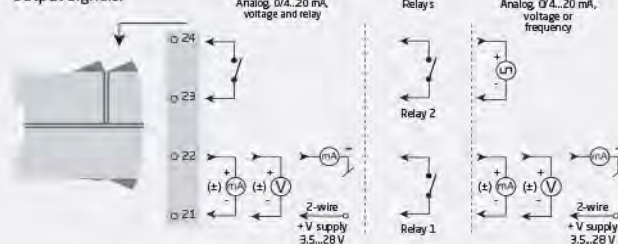
- If you need an installation instruction in hard copy, you can order it for free when placing your order.

Applications

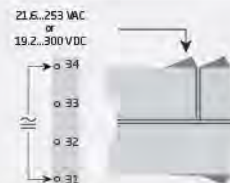
Input signals:



Output signals:



Power connection:



Order

Type	Output
4225	1 analog output and 1 relay : A
	2 relays : B
	1 analog output or 1 frequency output : C

Environmental Conditions

Operating temperature.....	-20°C to +60°C
Storage temperature.....	-20°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ PR 4500.....	109 x 23.5 x 131 mm
Weight approx.....	160 / 165 / 150 g (A / B / C)
DIN rail type.....	DIN EN 60715/35 mm
Wire size.....	0.13...2.08 mm ² AWG 26...14 stranded wire
Screw terminal torque.....	0.5 Nm
Vibration.....	IEC 60068-2-6
2...13.2 Hz.....	±1 mm
13.2...100 Hz.....	±0.7 g

Common specifications

Supply

Supply voltage, universal.....	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse.....	400 mA SB / 250 VAC
Max. required power.....	≤ 2.5 W
Max. power dissipation.....	≤ 2.0 W

Isolation voltage

Test voltage.....	2.3 kVAC
Input to any (working).....	250 VAC (reinforced)
Relay to relay (working).....	< 115 VAC (reinforced), > 115 VAC (basic)
Relay to analog (working).....	> 115 VAC (basic)
NPN to analog (working).....	Isolated > 50 VDC
Push-Pull / PNP to analog (working).....	Shared ground with analog output

Response time

Response time (0...90%, 100...10%).....	≤ 30 ms
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Auxiliary supplies

Sensor supply limitation (terminal 44).....	23 mA, 5...17 V
Programming.....	PR 4500 communication interfaces
Signal dynamics, output.....	18 bit
Signal / noise ratio.....	> 60 dB
Accuracy.....	See manual for details
EMC immunity influence.....	< ±0.5% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst.....	< ±1% of span

Input specifications

Frequency input

Frequency range.....	0.001 Hz to 100 kHz
Time range, time function.....	10 µs to 999.9 s
Max. frequency / min. pulse width, with input filter ON.....	75 Hz / 8 ms

Sensor specifications

NAMUR, trig-level LOW / HIGH.....	≤ 1.2 / ≥ 2.1 mA
Tacho, trig-level LOW / HIGH.....	≤ -50 mV / ≥ +50 mV
NPN / PNP, trig-level LOW / HIGH.....	≤ 4.0 V / ≥ 7.0 V
TTL, trig-level LOW / HIGH.....	≤ 0.8 V / ≥ 2.0 V
S0, trig-level LOW / HIGH.....	≤ 2.2 mA / ≥ 9.0 mA

Special voltage / current input

User-programmable trig-levels.....	-0.05...6.50 V
User-programmable trig-levels.....	0.0...10.0 mA

Output specifications

Current output

Signal range.....	-23...+23 mA (bipolar)
Signal range.....	0...23 mA (unipolar)
Programmable standard ranges.....	0...20, 4...20, S4-20, ±10 mA, ±20 mA
Load (@ current output).....	≤ 600 Ω
Load stability.....	≤ 0.001% of span / 100 Ω
Response time, programmable.....	0.0...60.0 s
Sensor error indication.....	0 / 3.5 / 23 mA / none
Current limit.....	≤ 28 mA

Buffered voltage output

Signal range.....	± 11.5 V
Programmable standard ranges.....	0...5, 1...5, 0...10, 2...10, ± 5, ± 10 VDC
Load, min.....	> 2 kΩ
Response time, programmable.....	0.0...60.0 s

Relay output

Relay functions.....	Setpoint, Window, Sensor error, Latch, Power and Off
Hysteresis.....	0...100%
ON and OFF delay.....	0...3600 s
Sensor error reaction.....	Break / Make / Hold
Max. voltage.....	250 VAC / VDC
Max. current.....	2 A
Max. AC power.....	500 VA

Frequency output

Frequency range.....	0.001 Hz...100 kHz
Prog. pulse time (f ≤ 500 Hz).....	1...1000 ms
Pulse time > 500 Hz.....	Fixed 50%

NPN / PNP / Push-Pull output

Isink max.....	130 mA
Voltage drop 130 mA.....	< 1.5 VDC
Ext. voltage (terminal 24) max.....	30 VDC
*Isourcing max.....	30 mA
Vout.....	24 VDC ± 10%
Voltage.....	5...24 VDC

Observed authority requirements

EMC.....	2014/30/EU & UK SI 2016/1091
LVD.....	2014/35/EU & UK SI 2016/1101
RoHS.....	2011/65/EU & UK SI 2012/3032

Approvals

c UL us, UL 508.....	E248256
SIL.....	Hardware assessed for use in SIL applications

По вопросам продаж и поддержки обращайтесь:

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