PERFORMANCE MADE SMARTER



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.

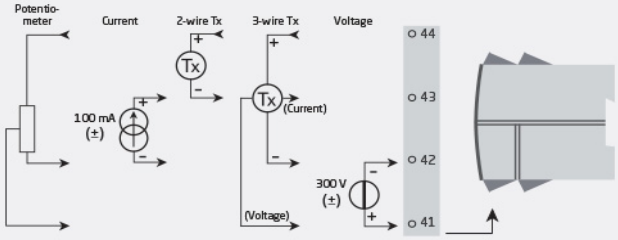
Technical characteristics
- The latest analog and digital techniques are used to obtain maximum accuracy and immunity to interference.
- Possibility of output safety readback by selecting S4...20 mA output.
- The current output can drive up to 1000 Ohms, with an adjustable response time of 0.0…60.0 seconds.
- 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.

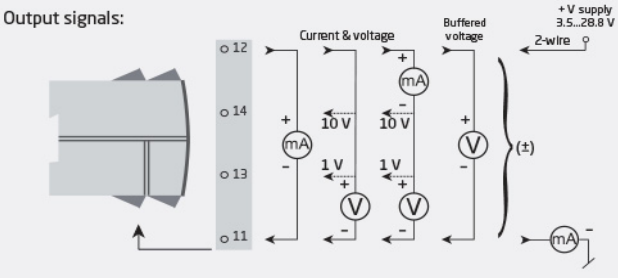
Note
- If you need an installation instruction in hard copy, you can order it for free when placing your order.

Applications

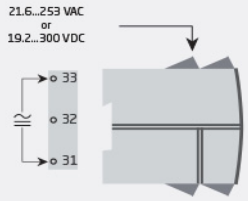
Input signals:



Output signals:



Power connection:



This page is automatically generated on the basis of information provided on www.prelectronics.com and affiliated websites. It is provided to you as a service and for information purpose only. While we have attempted to maintain the information as accurately as possible, the page may contain errors or omissions for which we disclaim any and all liability

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

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) (1)

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