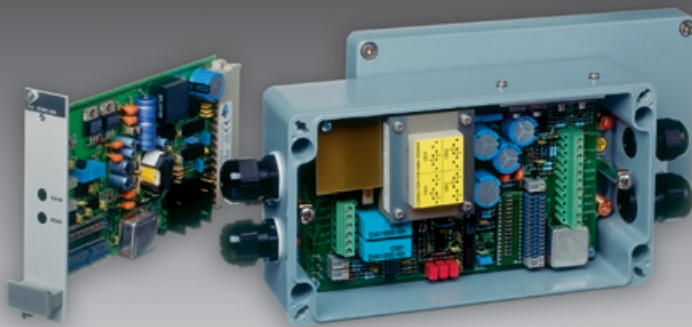




sartorius

PR 1590, PR 1591 Series Analogue Weight Transmitter



- High precision analogue transmitter for all kinds of industrial weighing, batching and level control applications
- Standard analogue outputs 0–10 V and 0/4–20 mA
- 6-wire load cell interface
- Power supply: 24 V_{DC/AC} according to NAMUR ±15 V_{DC}; 110/220 V_{AC}
- Intrinsically safe versions (galvanic isolation) CENELEC-approval [Ex ib] II B/C
- Easy to commission and to calibrate
- Adjustment easily accessible via the front
- No interaction between zero and span
- Mechanically and electrically compatible to former versions PR 1590/6x and SGT 750
- Longterm and temperature stable

Application

The analogue transmitters of the PR 159x series from Sartorius have been specially designed for use in industrial environment, and are particularly suited for applications with hazardous areas (zone 1) like chemical, petrochemical and food industries. The applications range from level control and simple weighing to complex applications e.g. mixing and filling stations, in conjunction with PLCs, computers or other supervisory systems.

The 6-wire technique enables all strain gauge load cells to be connected to the weight transmitter without any loss in accuracy resulting from temperature effects on the load cell cable. The influence of mechanical vibrations on the weight signal is suppressed by an efficient filter circuitry. The analogue output signals can be used for indication or as input signals for PLCs or other supervisory systems. The current signal may be transmitted over long distances without significant loss of accuracy.

Versions available

PR 1590/24

±15 V or 24 V_{DC/AC} according to NAMUR

PR 1590/66

intrinsically safe version (CENELEC)

PR 1591/00

field housing (IP 65) two relays for setpoints

PR 1591/10

field housing (IP 65) with display
two relays for setpoints

PR 1591/60

intrinsically safe version (CENELEC), field housing (IP 65) two relays for setpoints

Technical Data

Approvals

PTB / CENELEC [EEx ib] II B/C
for PR 1590/66 and PR 1591/60

Load cell types

All strain gauge load cells or any other type of mV source with linear output

Load cell connection

6-wire-technique recommended
4-wire-technique possible
Load cell supply: short circuit proof

Span adjustment

Coarse adjustment by 8-position
DIL-switches
Fine adjustment ($\leq 0.05\%$) by
potentiometer; range approx $\pm 2.5\%$.

Zero point adjustment

Coarse adjustment by 7-position
DIL-switches
Fine adjustment ($< 0.1\ \mu\text{V}$) by
potentiometer; range approx $\pm 3.5\%$.
No interaction between span and zero.

Analogue Filter

Active 2-pole filter with 1 Hz Cut-off
frequency. Filter can be switched off.

Analogue outputs

Voltage: 0–10 V_{DC}
max. 5 mA/min. 2 k Ω
Current: 0/4–20 mA $_{DC}$
max. 10 V/max. 500 Ω
Galvanic isolation between output signal
and power supply.

Setpoints (PR 1591/xx)

2 setpoints with potential-free change over
contacts.
Adjustable with resolution of $\pm 0.5\%$.
Setting: 0–100 % = 0–10 V
> Lim 1 active
(with negative hysteresis)
> Lim 2 active (with positive hysteresis)
Contact rating 250 V_{AC} , 4 A, 100 VA
> Derating for DC
250 V_{DC} / 0.4 A
100 V_{DC} / 0.55 A
50 V_{DC} / 1 A
30 V_{DC} / 4 A
Spark suppression recommended.

Display (PR 1591/10)

3 1/2 digit 7-segment LCD
Height: 12.7 mm
Range: adjustable up to 1999
Units of weight: kg/t by stick-on foil
Decimal point: possible positions
0000 - 0.000 - 00.00 - 000.0

Connections

PR 1590/xx:
All connections are made via 48 pole
connector; DIN 41612, Type F,
acc to IEC 130–14, e.g. F 068.II

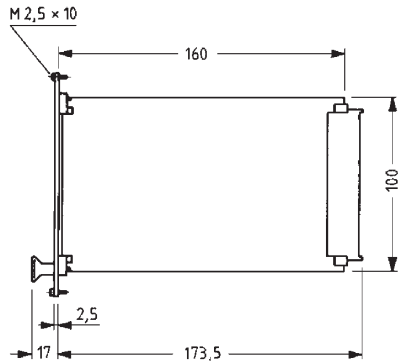
PR 1591/xx:

All connections are made via screw
terminals, suitable for 2.5 mm wire diameter.
Cable input via cable glands, which are upon
delivery closed with a screw cap.

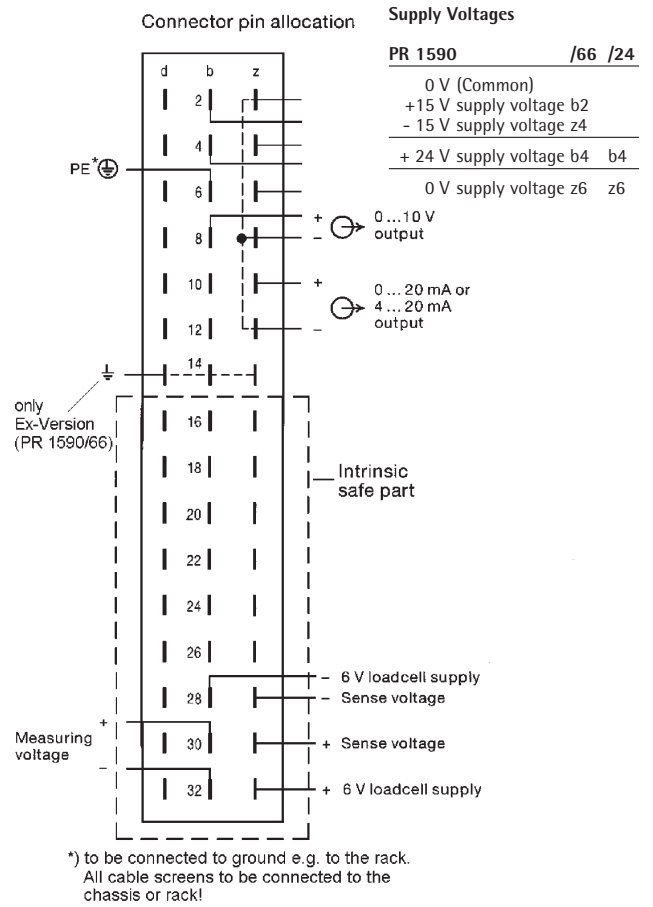
Weight transmitter	PR 1590/24	PR 1590/66	PR 1591/00	PR 1591/10	PR 1591/60
Accuracy class	0.05 %		0.1 %	0.1 %	
Linearity	0.01 %	0.1 %	0.01 %	0.01 %	0.05 %
Zero stability	0.09 % / 10 K	0.14 % / 10 K	< 0.17 % / 10 K	< 0.17 % / 10 K	< 0.23 % / 10 K
Span stability	0.05 % / 10 K	0.13 % / 10 K	< 0.10 % / 10 K	< 0.10 % / 10 K	< 0.18 % / 10 K
Ranges span	2.5–25 mV	2.5–25 mV	2.5 – 25 mV	2.5–25 mV	2.5–25 mV
Ranges deadload	0–15 mV	0–15 mV	0–15 mV	0–15 mV	0–15 mV
Load cell supply	12 V	12 V / 7 V	12 V	12 V	12 V
Minimum impedance (resulting)	75 Ω	150 / 87 Ω	100 Ω	100 Ω	150 Ω
Supply voltage (nominal)	24 $V_{DC/AC}$ $\pm 15 V_{DC}$	24 $V_{DC/AC}$ $\pm 15 V_{DC}$	110/128/220/238 V_{AC}	110/128/220/238 V_{AC}	110/128/220/238 V_{AC}
Voltage tolerances (Operating range)	DC: 18... 33 V AC: 18... 28 V	DC: 18... 33 V AC: 18... 28 V		-15 %... +10 % 48 Hz to 62 Hz	
Power consumption (at nominal voltage)	7.5 W / 11 VA	5.5 W / 8.5 VA		11 W max. / 20 VA max.	
Isolated output (signal / supply)			yes		
Control outputs	no	no	2 relays	2 relays	2 relays
Additional features		for Ex-use		Display built-in	for Ex-use
Net weight	0.23 kg	0.34 kg	2.6 kg	2.6 kg	3.9 kg
Shipping weight	0.50 kg	0.65 kg	3.6 kg	3.6 kg	5.1 kg
Operating temperat.	-10° C to +55° C	-10° C to +55° C	-10° C to +55° C	0° C to +55° C	-10° C to +55° C
Storage temperature	-40° C to +70° C	-40° C to +70° C	-20° C to +60° C	-20° C to +60° C	-40° C to +70° C
Packing dimensions w x d x h in mm	240 x 160 x 70		460 x 250 x 220	460 x 250 x 220	510 x 340 x 260

PR 1590 (Single Euroformat)

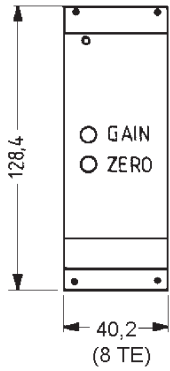
PR 1590/xx Dimensions in mm



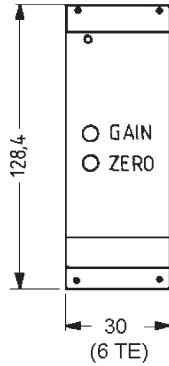
PR 1590/xx Connecting Diagram



PR 1590/66



PR 1590/24



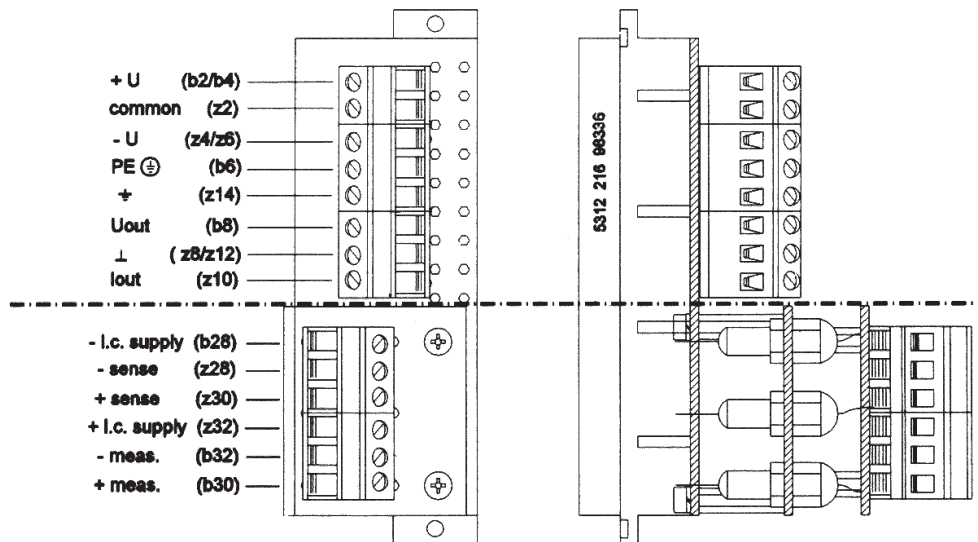
Filter unit
(supplied with PR 1590/66 only)

Connections to the safe area

- + U (b2/b4)
- common (z2)
- U (z4/z6)
- PE (b6)
- + (z14)
- Uout (b8)
- ⊥ (z8/z12)
- lout (z10)

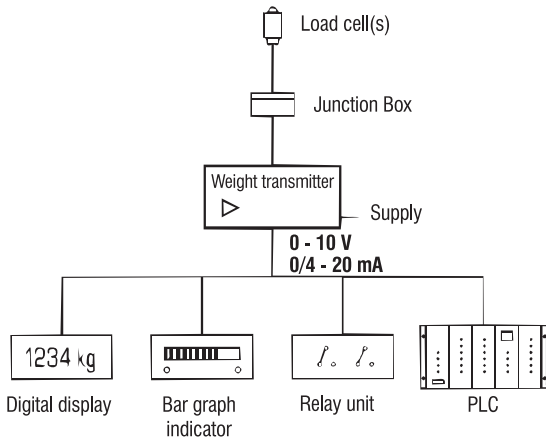
Connections to the Ex-area

- i.c. supply (b28)
- sense (z28)
- + sense (z30)
- + i.c. supply (z32)
- meas. (b32)
- + meas. (b30)

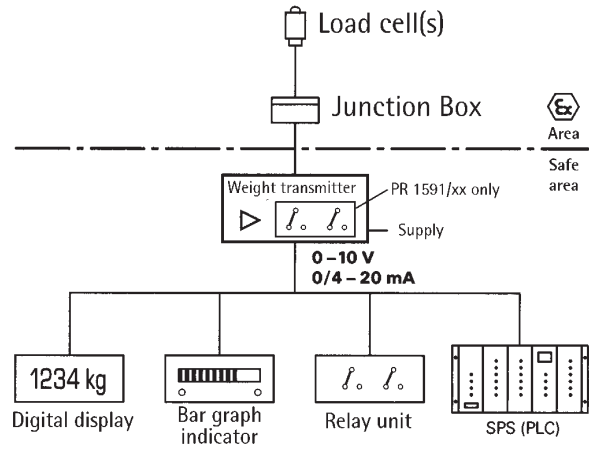


IP 65 housing

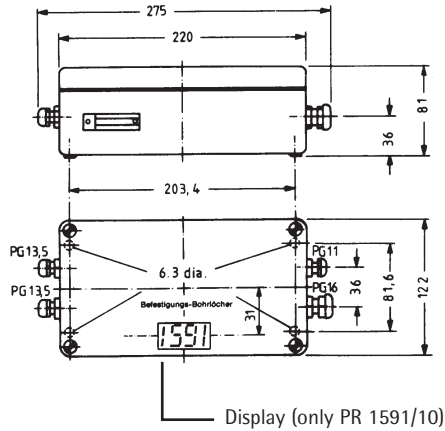
PR 1591/0 ... /10 and PR 1590/24
Application diagram



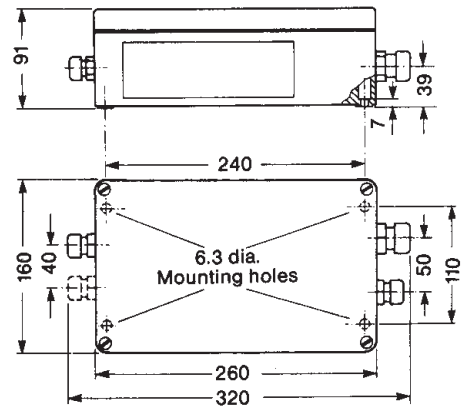
PR 1591/60 and PR 1590/66
Ex-Application diagram



PR 1591/00



PR 1591/60



Order information

Type	Description	Order number
PR1590/24	Analogue Weight Transmitter 24 V _{DC/AC}	9405 115 90241
PR1590/66	Analogue Weight Transmitter EEx-i 24 V _{AC/DC} 6 LCS	9405 115 90661
PR1591/00	Analogue Weight Transmitter with two relays for setpoints, fieldhousing (IP65)	9405 115 91001
PR1591/10	Analogue Weight Transmitter with display two relays for setpoints, fieldhousing (IP65)	9405 115 91101
PR1591/60	Analogue Weight Transmitter intrinsically safe version (CENELEC), field housing (IP 65) two relays for setpoints	9405 115 91601