SITRANS RD100

Overview

The SITRANS RD100 is a 2-wire loop powered, NEMA 4X enclosed remote digital display for process instrumentation.

Benefits

- Easy setup
- Approved for hazardous locations
- NEMA 4X, IP67 impact-resistant enclosure
- Simple two-step calibration
- Two modes of input allow for easy servicing, with no interruption of loop required

Application

The RD100 is very versatile. It can be installed indoors or outdoors, in hot or cold environments, and in safe or hazardous areas.

It has been approved by FM and CSA as Intrinsically Safe and non-incendive, and operates from -40 to +85 °C (-40 to +185 °F), adding only 1 V to the loop.

The RD100 has a large 1 inch (2.54 cm) high display making it easy to read.

Calibration consists of a quick, two-step process involving the adjustment of only two non-interacting potentiometers.

Key Applications

Remotely displays process variables in level, flow, pressure, temperature and weighing applications, in a 4 to 20 mA loop.

Technical specifications

Mode of operation	
Measuring principle	Analog to digital conversion
Measuring range	4 … 20 mA
Measuring points	1 instrument only
Accuracy	± 0.1 % of span ± 1 count
Rated operating conditions	
Ambient conditions	
• Operating temperature range	-40 … +85 °C (-40 … +185 °F)
Design	
Weight	340 g (12 oz)
Material (enclosure)	Impact-resistant glass filled polycarbonate body and clear polycarbonate cover
Degree of protection	NEMA 4X, IP67
Power supply	
External loop power supply	30 V DC max.
Display	• 1 inch (2.54 cm) high LCD • Numeric range from -1 000 … +1 999
Certificates and approvals	
Hazardous	
• Intrinsically Safe	• CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T4 • CSA/FM Class I, Zone 0, Group IIC
• Non-incendive	• CSA/FM Class I, Div. 2, Groups A, B, C, D • CSA/FM Class II and III, Div. 2, Groups F and G
Options	
Mounting	• 2 inch (5.08 cm) pipe mounting kit (zinc plated or stainless steel) • Panel mounting kit

Selection and Ordering data

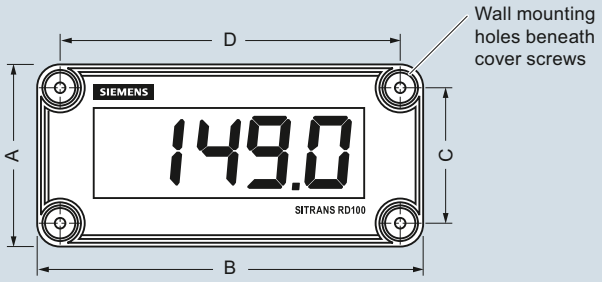
Selection and Ordering data		Article No.
SITRANS RD100 A 2-wire loop powered, NEMA 4X enclosed remote digital display for process instrumentation.	↗	**7ML5741-** **A A 0 0 - 0**
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Conduit hole location (½ inch)		
None	▶⬟	**1**
Bottom	▶⬟	**2**
Rear	⬟	**3**
Top	⬟	**4**

▶ Available ex stock. For details see page 9/5 in the appendix.
⬟ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ⬟. For details see page 9/5 in the appendix.

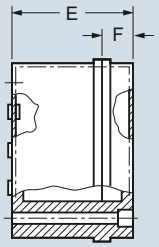
Selection and Ordering data	Article No.
Operating Instructions	
English	**7ML1998-5JU01**
French	**7ML1998-5JU11**
German Note: The Operating Instructions should be ordered as a separate line item. This device is shipped with the Siemens Milltronics manual CD containing Quick Starts and Operating Instructions.	**7ML1998-5JU31**
Accessories	
Panel mount kit	**7ML1930-1BN**
2 inch (5.08 cm) pipe mounting kit (zinc plated seal)	**7ML1930-1BP**
2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301)	**7ML1930-1BQ**

Dimensional drawings

RD100 - front view



RD100 - side view

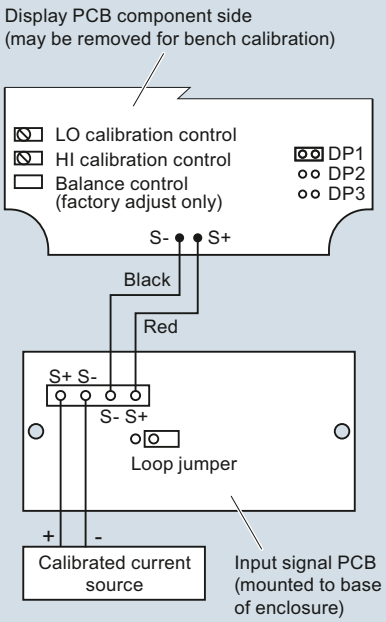


A: 80 (3.15)
B: 140 (5.51)
C: 60 (2.36)
D: 120 (4.72)
E: 65 (2.56)
F: 20 (0.79)

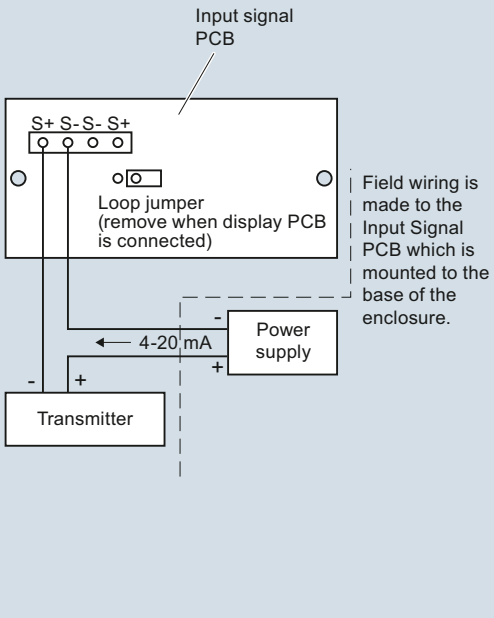
SITRANS RD100, dimensions in mm (inch)

Schematics

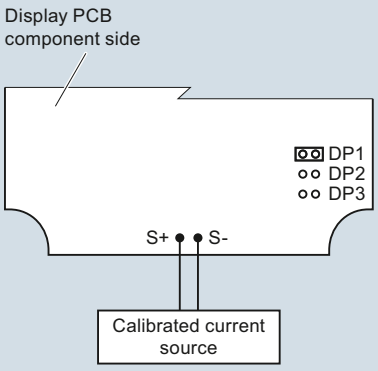
Calibrator connected to input signal PCB



Control loop connected to input signal PCB



Calibrator connected to display PCB



The display PCB may be removed from the enclosure for bench calibration. Loop jumper must be installed on input signal PCB to maintain loop.
Refer to RD100 instruction manual for more details.

SITRANS RD100 connections

SITRANS RD200

Overview

The SITRANS RD200 is a universal input, panel mount remote digital display for process instrumentation.

Benefits

- Easy setup and programming via front panel buttons or remotely using RD software
- Display readable in sunlight
- Universal input: accepts current, voltage, thermocouple and RTD signals
- Single or dual 24 V DC transmitter power supply
- Analog to Modbus RTU conversion as standard feature
- Two optional relays for alarm indication or process control applications
- Linear or square root function supported
- Meter Copy feature to reduce setup time, cost or errors
- RD software supporting remote configuration, monitoring and logging for up to 100 displays
- Other features include: 4 to 20 mA analog output option, supports pump alternation control, and optional NEMA 4 and 4X FIELD ENCLOSURES
- Large display option for improved visibility at greater distances

Application

The RD200 is a universal remote display for level, flow, pressure, temperature, weighing, and other process instruments.

Data can be remotely collected, logged and presented from as many as 100 displays on your local computer using the free downloadable RD software.

The display accepts a single input of current, voltage, thermocouple, and RTD. This makes the RD200 an ideal fit for use with most field instruments.

The RD200 can be set up as a standard panel mount, or combined with optional enclosures to allow it to house up to 6 displays.

Key Applications

Tank farms, pump alternation control, local or remote display of level, temperature, flow, pressure and weighing instrument values, PC monitoring and data logging with RD software.

Technical specifications

Mode of operation	
Measuring principle	Analog to digital conversion
Measuring points	• 1 instrument • Remote monitoring of 100 instruments with PC and RD software
Input	
Measuring range	
• Current	• 4 … 20 mA, 0 … 20 mA
• Voltage	• 0 … 10 V DC, 1 … 5 V, 0 … 5 V
• Thermocouple temperature	• Type J: -50 … +750 °C (-58 … +1 382 °F) • Type K: -50 … +1 260 °C (-58 … +2 300 °F) • Type E: -50 … +870 °C (-58 … +1 578 °F) • Type T: -180 … +371 °C (-292 … +700 °F) • Type T, 0.1 resolution: -180.0 … +371 °C (-199.9 … +700 °F)
• RTD temperature	• 100 Ω RTD: -200 … +750 °C (-328 … +1 382 °F)
Output signal	
Output	• PDC output • 4 … 20 mA (optional) • Modbus RTU
Relays	2 SPDT Form C relays, rated 3 A at 30 V DC or 3 A at 250 V AC, non-inductive, auto-initializing (optional)
Communications	• RS 232 with PDC or Modbus RTU • RS 422/485 with PDC or Modbus RTU
Accuracy	
4 … 20 mA optional output	± 0.1 % FS ± 0.004 mA
Process input	± 0.05 % of span ± 1 count, square root: 10 … 100 % FS
Thermocouple temperature input	• Type J: ± 1 °C (± 2 °F) • Type K: ± 1 °C (± 2 °F) • Type E: ± 1 °C (± 2 °F) • Type T: ± 1 °C (± 2 °F) • Type T, 0.1 Resolution: ± 1 °C (± 1.8 °F)
RTD temperature input	• 100 Ω RTD: ± 1 °C (± 1 °F)
Rated operating conditions	
Ambient conditions	
Storage temperature range	-40 … +85 °C (-40 … +185 °F)
Operating temperature range	0 … 65 °C (32 … 149 °F)
Design	
Weight	269 g (9.5 oz) (including options)
Material (enclosure)	• 1/8 DIN, high impact plastic, UL94V-0, color: gray • Optional plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 enclosures
Degree of protection	Type 4X, NEMA 4X, IP65 (front cover); panel gasket provided

Electrical connection	
• mA output signal	2-core copper conductor, twisted, shielded, 0.82 … 3.30 mm^2 (18 … 12 AWG), Belden 8 760 or equivalent is acceptable
• Electrical connection and relay connection	Copper conductor according to local requirements, rated 3 A at 250 V AC
Power supply	
Input voltage option 1	85 … 265 V AC, 50/60 Hz; 90 … 265 V DC, 20 W max.
Input voltage option 2	12 … 36 V DC; 12 … 24 V AC, 6 W max.
Transmitter power supply	One or two isolated transmitter power supplies (optional)
• Single power supply	One 24 V DC ± 10 % at 200 mA max.
• Dual power supplies	Two 24 V DC ± 10 % at 200 mA and 40 mA max.
External loop power supply	35 V DC max.
Output loop resistance	• 24 V DC, 10 … 700 Ω max. • 35 V DC (external), 100 … 1 200 Ω max.
Displays and controls	
Display	• 14 mm (0.56 inch) high LED • 2X option for 30.5 mm (1.2 inch) high, red LED • Numeric range from -1 999 … +9 999 • 4 digits, automatic lead zero blanking • 8 intensity levels
Memory	• Non-volatile • Stores settings for minimum of 10 years if power is lost
Programming	• Primary: front panel • Secondary: meter copy or PC with SITRANS RD software
Certificates and approvals	CE, UL, $_C$UL
Options	
Enclosures	Plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 and 4X enclosures
Mounting	• 2 inch (5.08 cm) pipe mounting kit (zinc plated seal) • 2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301)

SITRANS RD200

Selection and Ordering data		Article No.
SITRANS RD200	↗	**7ML5740-** ■■■■■ - ■ **A**
A universal input, panel mount remote digital display for process instrumentation.		
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Input voltage		
85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.	►⬟	**1**
12 ... 36 V DC; 12 ... 24 V AC, 6 W max.	⬟	**2**
Transmitter supply		
None	⬟	**A**
Single 24 V DC transmitter supply[1]	►⬟	**B**
Dual 24 V DC transmitter supply[1)2)]		**C**
Output		
None	►⬟	**A**
2 relays	⬟	**B**
4 ... 20 mA output	⬟	**C**
Communication		
Modbus enabled	►⬟	**0**
Approvals		
CE, UL, cUL	⬟	**1**
Display Size		
Standard	►⬟	**0**
2X option for 30.5 mm (1.2 inch) high, red LED	►⬟	**1**

1) Available with input voltage option 1 only

2) Available with output option C only

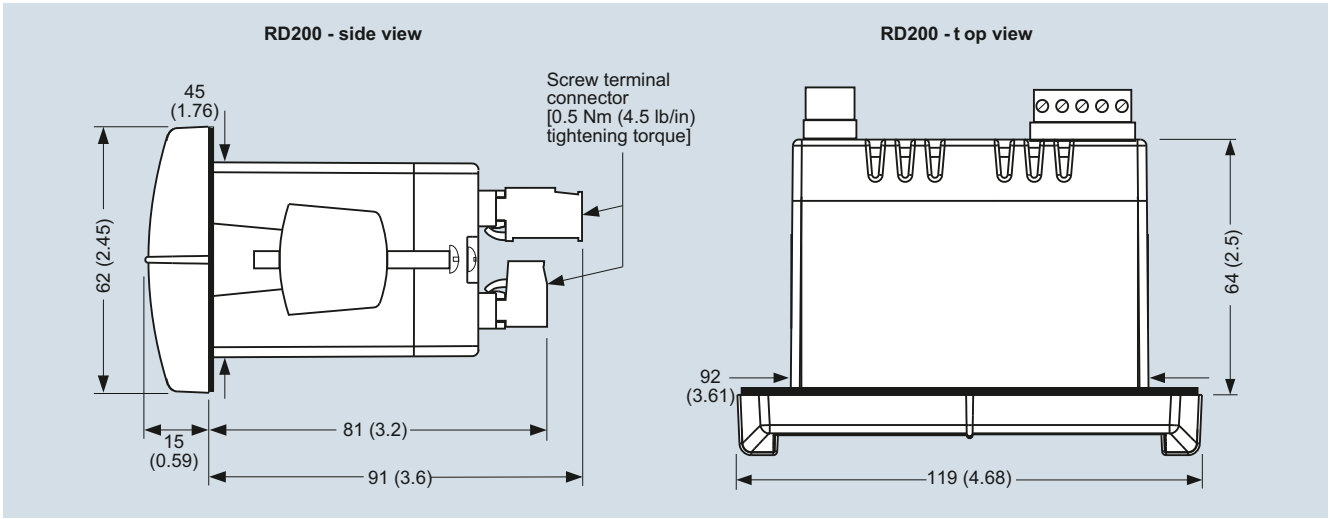
⬟ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ⬟. For details see page 9/5 in the appendix.

► Available ex stock when configured with the following options only: Input voltage: 1, Transmitter supply: B, Output : A, Communication: 0. For details see page 9/5 in the appendix.

Selection and Ordering data	Article No.
Operating Intructions	
English	**7ML1998-5JS01**
Spanish	**7ML1998-5JS21**
German Note: The Operating Instructions should be ordered as a separate line item. This device is shipped with the Siemens Milltronics manual CD containing Quick Starts and Operating Instructions.	**7ML1998-5JS31**
Other Operating Instructions	
SITRANS RD Enclosures, English	**7ML1998-5JX01**
SITRANS RD Enclosures, German	**7ML1998-5JX31**
SITRANS RD Serial communications accessories, English	**A5E31979195**
SITRANS RD Serial communications accessories, German	**A5E31979197**
SITRANS RD Software, English	**7ML1998-5JW01**
SITRANS RD Software, German	**7ML1998-5JW31**

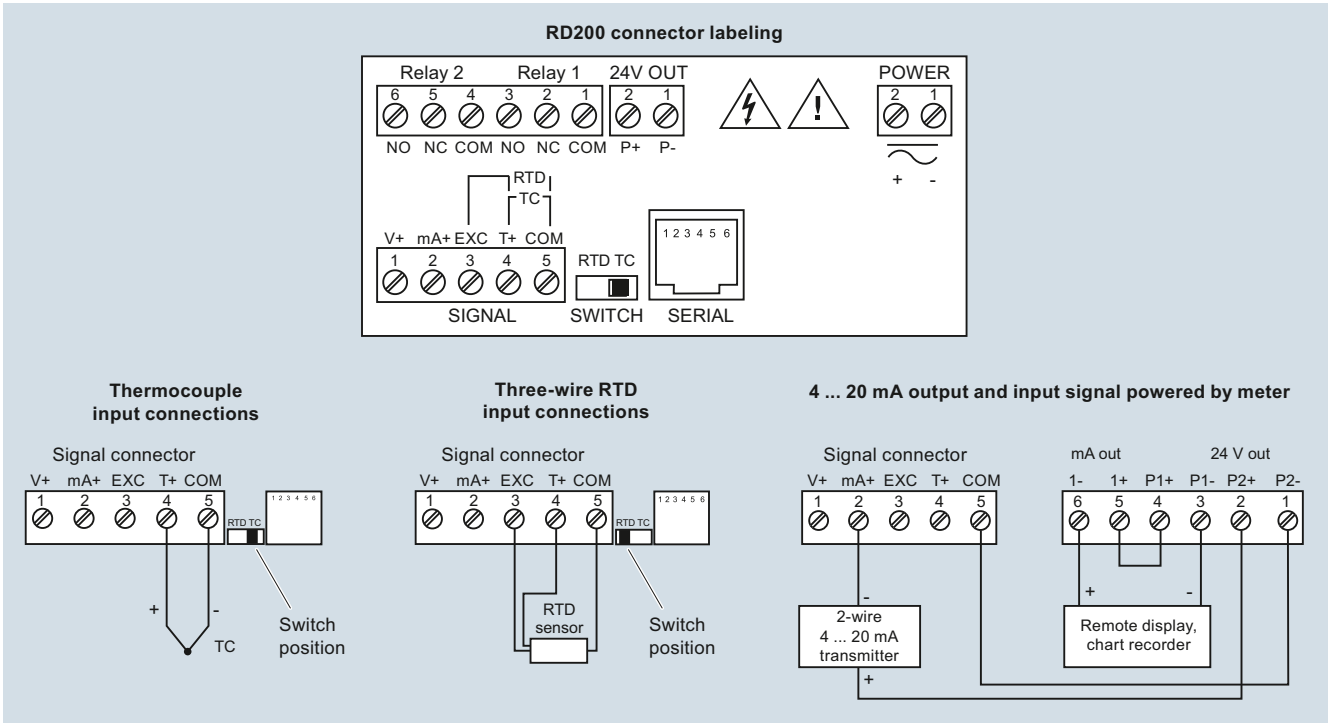
Selection and Ordering data	Article No.
Accessories	
SITRANS RD200 copy cable 2.1 m (7 ft)	**7ML1930-1BR**
SITRANS RD200 RS 232 serial adapter (copy cable included)	**7ML1930-1BS**
SITRANS RD200 RS 422/485 serial adapter (copy cable included)	**7ML1930-1BT**
RS 232 to RS 422/485 isolated converter	**7ML1930-1BU**
RS 232 to RS 422/485 non-isolated converter	**7ML1930-1BV**
SITRANS RD200 RS 232 and RS 485 isolated multi-input adapter board	**7ML1930-1BW**
USB to RS 422/485 isolated converter	**7ML1930-1BX**
USB to RS 422/485 non-isolated converter	**7ML1930-1BY**
USB to RS 232 converter	**7ML1930-6AK**
RD Software CD for 1 ... 100 displays	**7ML1930-1CC**
Low cost polycarbonate plastic enclosure for 1 display	**7ML1930-1CF**
2 inch (5.08 cm) pipe mounting kit (zinc plated seal) only available with 7ML1930-1CF	**7ML1930-1BP**
2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301) only available with 7ML1930-1CF	**7ML1930-1BQ**
Thermoplastic enclosure	
For use with 1 display	**7ML1930-1CG**
For use with 2 displays	**7ML1930-1CH**
For use with 3 displays	**7ML1930-1CJ**
For use with 4 displays	**7ML1930-1CK**
For use with 5 displays	**7ML1930-1CL**
For use with 6 displays	**7ML1930-1CM**
Stainless steel enclosure (Type 304, EN 1.4301)	
For use with 1 display	**7ML1930-1CN**
For use with 2 displays	**7ML1930-1CP**
For use with 3 displays	**7ML1930-1CQ**
For use with 4 displays	**7ML1930-1CR**
For use with 5 displays	**7ML1930-1CS**
For use with 6 displays	**7ML1930-1CT**
Steel enclosure	
For use with 1 display	**7ML1930-1CU**
For use with 2 displays	**7ML1930-1CV**
For use with 3 displays	**7ML1930-1CW**
For use with 4 displays	**7ML1930-1CX**
For use with 5 displays	**7ML1930-1CY**
For use with 6 displays	**7ML1930-1DA**

Dimensional drawings



SITRANS RD200, dimensions in mm (inch)

Schematics



SITRANS RD200 connections

SITRANS RD300

Overview

The SITRANS RD300 is a panel mount remote digital display for process instrumentation and acts as a multi-purpose, easy to use, rate/totalizer ideal for flow rate, total, and control applications.

Benefits

- Easy setup and programming via front panel buttons or remotely using RD software
- Display readable in sunlight
- Input: accepts current and voltage
- Single or dual 24 V DC transmitter power supply
- Serial communication using built in protocol or Modbus RTU
- Supports up to 8 relays and 8 digital I/O for process control and alarming
- 32-point linearization, square root or exponential linearization
- Multi-pump alternation control
- Supports total, grand total or non-resettable grand total
- 9-digit totalizer with total overflow feature
- Large dual-line 6-digit display
- Configure, monitor, and datalog from a PC
- Dual-input option with math functions: addition, difference, average, multiplication, division, minimum, maximum, weighted average, ratio, concentration

Application

The RD300 is a remote display for level, flow, pressure, weighing, and other process instruments. This display also acts as a multi-purpose, easy to use rate/totalizer ideal for flow rate, total, and control applications.

Data can be remotely collected, logged and presented on your local computer using the free downloadable RD software.

The display accepts a single or dual input of current and voltage. This makes the RD300 an ideal fit for use with most field instruments.

The RD300 can be set up as a standard panel mount, or combined with optional enclosures to allow it to house up to 6 displays.

Key Applications

Tank farms, pump alternation control, local or remote display of level, flow, pressure and weighing instrument values, PC monitoring and data logging with RD software.

Technical specifications

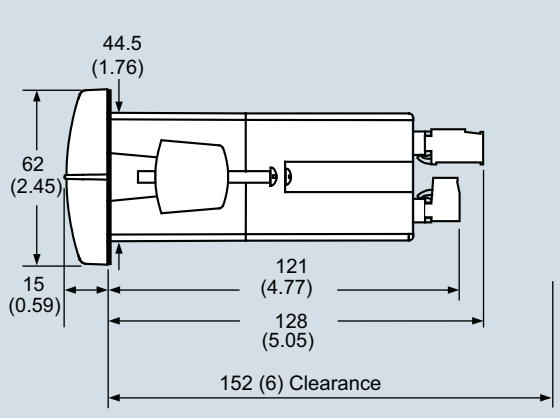
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring points	1 or 2 instruments
Input	
Measuring range	
• Current	• 4 … 20 mA, 0 … 20 mA
• Voltage	• 0 … 10 V DC, 1 … 5 V, 0 … 5 V
Output signal	
Output	• 4 … 20 mA (optional) • Modbus RTU
Relays	2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A at 30 VDC and 125/250 VAC resistive load; 1/14 HP (50 W) at 125/250 V AC for inductive loads (optional)
Communications	• RS 232 with Modbus RTU • RS 422/485 with Modbus RTU
Accuracy	
4 … 20 mA optional output	± 0.1 % FS ± 0.004 mA
Process input	± 0.05 % of span ± 1 count, square root: 10 … 100 % FS
Rated operating conditions	
Ambient conditions	
Storage temperature range	-40 … +85 °C (-40 … +185 °F)
Operating temperature range	0 … 65 °C (32 … 149 °F)
Design	
Weight	269 g (9.5 oz) (including options)
Material (enclosure)	• 1/8 DIN, high impact plastic, UL94V-0, color: gray • Optional plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 enclosures
Degree of protection	Type 4X, NEMA 4X, IP65 (front cover); panel gasket provided
Electrical connection	
mA output signal	2-core copper conductor, twisted, shielded, 0.82 … 3.30 mm^2 (18 … 12 AWG), Belden 8 760 or equivalent is acceptable
Electrical connection and relay connection	Copper conductor according to local requirements, rated 3 A at 250 V AC
Power supply	
Input voltage option	85 … 265 V AC, 50/60 Hz; 90 … 265 V DC, 20 W max. or jumper selectable 12/24 V DC ± 10 %, 15 W max.
Transmitter power supply	Terminals P+ & P-: 24 V DC ± 10 %, 12/24 V DC powered models selectable for 24, 10, or 5 V DC supply (internal jumper J4), 85 ... 265 V AC models rated at 200 mA max, 12/24 V DC powered models rated at 100 mA max, at 50 mA max. for 5 or 10 V DC supply.
External loop power supply	35 V DC max.
Output loop resistance	• 24 V DC, 10 … 700 Ω max. • 35 V DC (external), 100 … 1 200 Ω max.

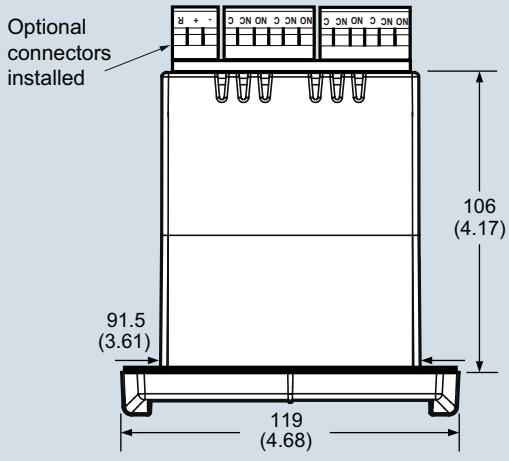
Displays and controls	
Main Display	0.6 inch (15 mm) high, red LEDs
Second display	0.46 inch (12 mm) high, red LEDs, 6-digits: each (-99 999 ... 999 999)
Memory	• Non-volatile • Stores settings for minimum of 10 years if power is lost
Programming	• Primary: front panel • Secondary: meter copy or PC with SITRANS RD software
Certificates and approvals	CE, UL, $_{C}$UL
Options	
Enclosures	Plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 and 4X enclosures

Selection and Ordering data	Article No.
SITRANS RD300 ↗	**7ML5744-**
Dual line Remote digital display compatible with PI instruments	**- 0 A**
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Input voltage	
85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.	**1**
12 ... 36 V DC; 12 ... 24 V AC, 6 W max.	**2**
Output	
None	**A**
2 Relays	**B**
4 Relays	**C**
4 ... 20 mA output	**D**
2 Relays and 4 ... 20 mA output	**E**
4 Relays and 4 ... 20 mA output	**F**
Type	
Single input process and flow rate/totalizer Mtr	**A**
Dual input process Mtr	**B**
Display	
Standard	**0**
SunBright	**1**
Approvals	
UL & C-UL & CE	**0**

Selection and Ordering data	Article No.
Operating Intructions	
Single input process and flow rate/totalizer Mtr	
English	**A5E31917845**
French	**A5E31948924**
German	**A5E31948919**
Dual input process Mtr	
English	**A5E33481367**
German	**A5E33481387**
Note: The operating instructions should be ordered as a separate line on the order.	
Other Operating Instructions	
SITRANS RD DIN-Rail Mounting Kit, English	**A5E31979181**
SITRANS RD DIN-Rail Mounting Kit, German	**A5E31979184**
SITRANS RD Expansion Modules, English	**A5E31979173**
SITRANS RD Expansion Modules, German	**A5E31979176**
SITRANS RD Serial Communications Accessories, English	**A5E31979195**
SITRANS RD Serial Communications Accessories, German	**A5E31979197**
Accessories	
DIN-Rail Mounting Kit	**7ML1930-6AB**
4 Relays Expansion Module	**7ML1930-6AC**
4 Digital I/O Module	**7ML1930-6AD**
Dual output 4 ... 20mA expansion module for dual input meter	**7ML1930-6AP**
Meter Copy Cable	**7ML1930-6AE**
RS 232 Serial Adapter	**7ML1930-6AF**
RS 422/485 Serial Adapter	**7ML1930-6AG**
RD300 USB Serial Adapter	**7ML1930-6AJ**
USB to RS 232 Converter	**7ML1930-6AK**
Snubber	**7ML1930-6AL**
Plastic enclosure	
For 1 meter	**7ML1930-6AM**
For 2 meters	**7ML1930-6AN**
For 4 meters	**7ML1930-1CK**
For 5 meters	**7ML1930-1CL**
For 6 meters	**7ML1930-1CM**

Dimensional drawings

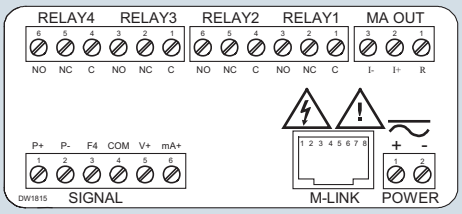




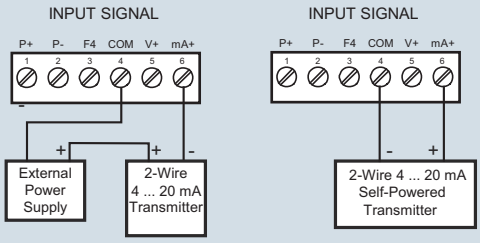
SITRANS RD300, dimensions in mm (inch)

Schematics

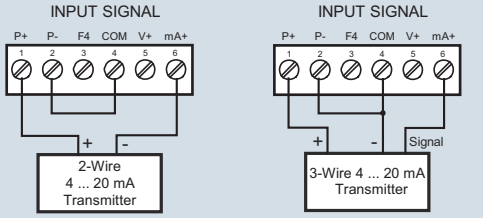
Connector labeling for fully loaded single input meter



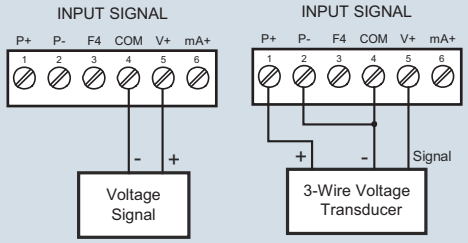
Transmitter powered by external supply or self-powered



Transmitter powered by internal supply



Voltage Input Connections



SITRANS RD300 connections