Product manual

5450

PROFIBUS PA temperature transmitter

PERFORMANCE MADE SMARTER

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

No. 5450V100-EN
Product version: 01.00.00-01.99.99

PR electronics

6 Product Pillars

to meet your every need

Individually outstanding, unrivalled in combination

With our innovative, patented technologies, we make signal conditioning smarter and simpler. Our portfolio is composed of six product areas, where we offer a wide range of analog and digital devices covering over a thousand applications in industrial and factory automation. All our products comply with or surpass the highest industry standards, ensuring reliability in even the harshest of environments and have a 5-year warranty for greater peace of mind.

Temperature

Our range of temperature transmitters and sensors provides the highest level of signal integrity from the measurement point to your control system. You can convert industrial process temperature signals to analog, bus or digital communications using a highly reliable point-to-point solution with a fast response time, automatic self-calibration, sensor error detection, low drift, and top EMC performance in any environment.

I.S. Interface

We deliver the safest signals by validating our products against the toughest safety standards. Through our commitment to innovation, we have made pioneering achievements in developing I.S. interfaces with SIL 2 Full Assessment that are both efficient and cost-effective. Our comprehensive range of analog and digital intrinsically safe isolation barriers offers multifunctional inputs and outputs, making PR an easy-to-implement site standard. Our backplanes further simplify large installations and provide seamless integration to standard DCS systems.

Communication

We provide inexpensive, easy-to-use, future-ready communication interfaces that can access your PR installed base of products. All the interfaces are detachable, have a built-in display for readout of process values and diagnostics, and can be configured via push-buttons. Product specific functionality includes communication via Modbus and Bluetooth and remote access using our Portable Plant Supervisor (PPS) application, available for iOS, Android.

Multifunction

Our unique range of single devices covering multiple applications is easily deployable as your site standard. Having one variant that applies to a broad range of applications can reduce your installation time and training, and greatly simplify spare parts management at your facilities. Our devices are designed for long-term signal accuracy, low power consumption, immunity to electrical noise and simple programming.

Isolation

Our compact, fast, high-quality 6 mm isolators are based on microprocessor technology to provide exceptional performance and EMC-immunity for dedicated applications at a very low total cost of ownership. They can be stacked both vertically and horizontally with no air gap separation between units required.

Display

Our display range is characterized by its flexibility and stability. The devices meet nearly every demand for display readout of process signals and have universal input and power supply capabilities. They provide a real-time measurement of your process value no matter the industry and are engineered to provide a user-friendly and reliable relay of information, even in demanding environments.

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Product features

- PROFIBUS PA profile 4.0
- RTD, TC, potentiometer, linear resistance and bipolar mV input
- Single or true dual inputs with sensor redundancy and drift detection
- Wide ambient operating temperature of -40 to +80°C
- Easy Ex i deployment with conformity to FICSO IEC 60079-27
- Accuracy from 0.04°C
- 2.5 kVAC galvanic isolation

Functional highlights

- Temperature measurement of a wide range of TC and RTD types.
- Conversion of wide-span linear resistance and potentiometer inputs to PROFIBUS.
- Conversion of bipolar mV signals to PROFIBUS.
- Integration into asset management schemes.
- Critical applications requiring superior accuracy and/or sensor redundancy and drift detection.

Technical highlights

- True dual input transmitter. High density 7-terminal design accepts the widest range of dual input combinations.
- Sensor drift detection - alerts when sensor differential exceeds user-defined limits, for maintenance optimization.
- Variable mapping for process data such as average, differential and min./max. tracking.
- Groundbreaking digital and analog signal accuracy over full input span and ambient conditions.
- Extensive sensor matching including Callendar Van Dusen and custom linearizations.
- Programmable input limits with runtime metering ensure maximum process traceability and sensor out of range protection.
- Meets NAMUR NE21, NE44, NE89 and NE107 compliant diagnostics information.

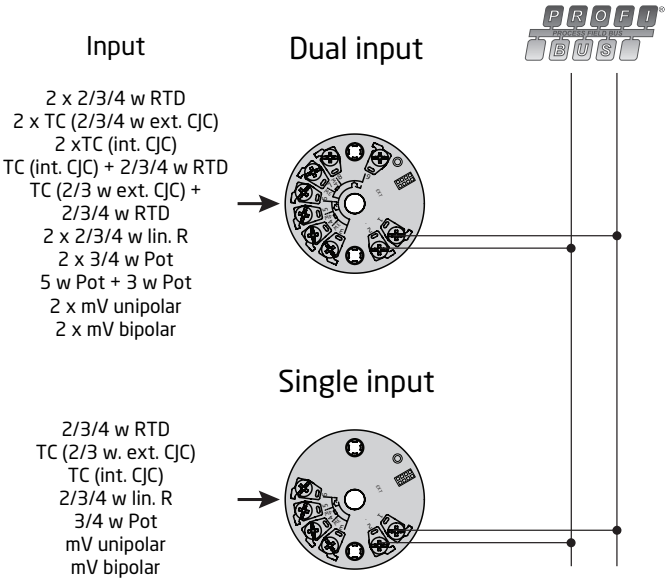
Programming

- PROFIBUS PA functions and device-specific parameters are configured via fieldbus communication and the associated DD / DTM / GSD device drivers.

Mounting / installation

- For DIN form B sensor head mounting.
- The A product version can be mounted in zone 2 and zone 22 / Class I, Division 2, Groups A, B, C, D.
- The B product version can be mounted in zone 0, 1, 2 and zone 21, 22 including M1.
- The D product version can be mounted in zone 0, 1, 2 and zone 21, 22 including M1 / Class I, Division 1, Groups A, B, C, D.

Applications

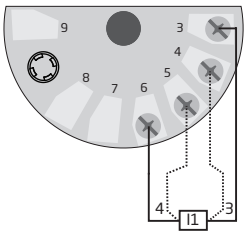


Connections

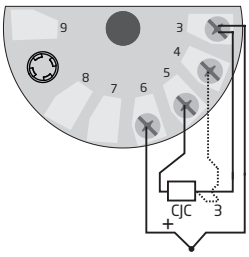
Input connections

Single input

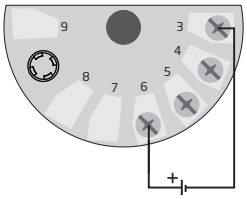
2 w / 3 w / 4 w
RTD or lin. R



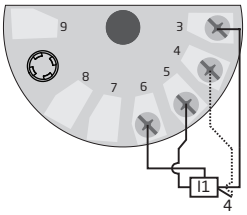
TC (internal CJC or
external 2 w / 3 w CJC)



mv

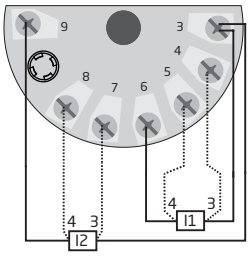


3 w / 4 w potentiometer

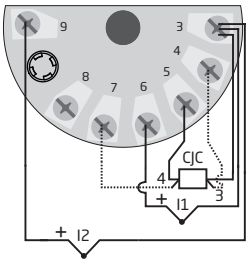


Dual inputs

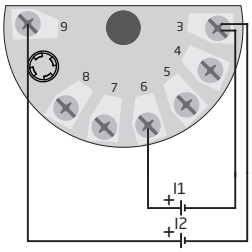
Input 1: 2 w / 3 w / 4 w RTD or lin. R
Input 2: 2 w / 3 w / 4 w RTD or lin. R



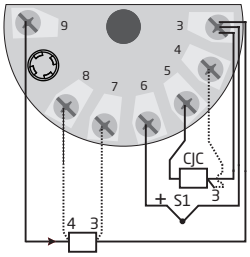
Input 1: TC (int. CJC or ext.
2 w / 3 w / 4 w CJC)
Input 2: TC (int. CJC or ext.
2 w / 3 w / 4 w CJC)



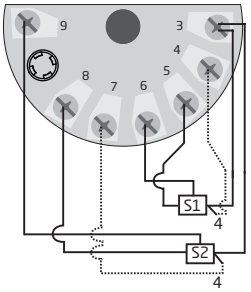
Input 1: mV
Input 2: mV



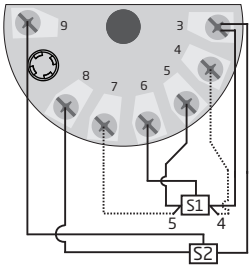
Input 1: TC (int. CJC or ext. 2 w / 3 w CJC)
Input 2: 2 w / 3 w / 4 w RTD



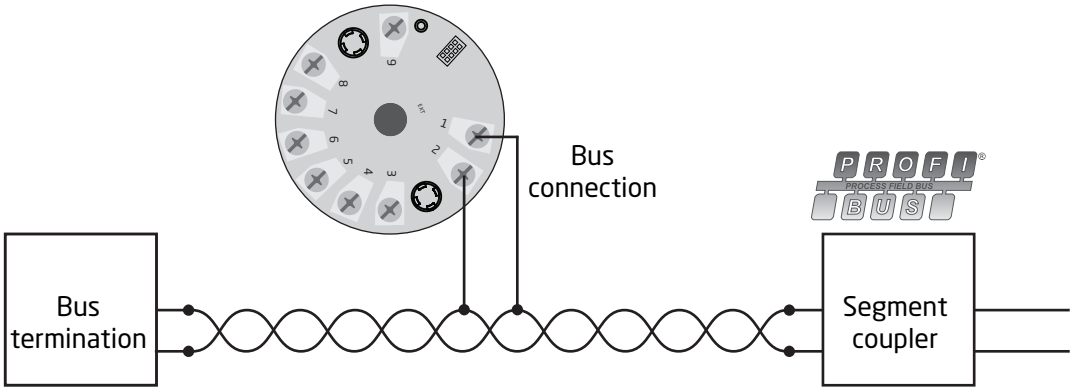
Input 1: 3 w / 4 w potentiometer
Input 2: 3 w / 4 w potentiometer



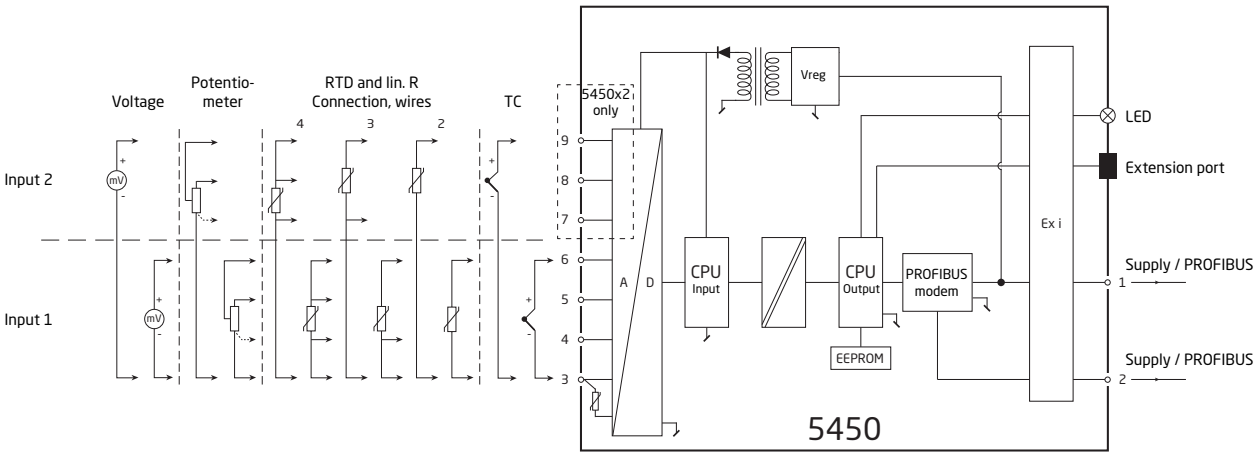
Input 1: 5 w potentiometer
Input 2: 3 w potentiometer



Output connection



Block diagram



For full overview of input connections, refer to Connections on page 6.

Specifications

Ordering information

Product variants

5450A and 5450D: Expected release ultimo August 2025

Type	Version		Inputs		Reserved
5450	General purpose / Zone 2 / DIV. 2	: A	Single input (4 terminals)	: 1	: -
	Zone 0, 1, 2, 21, 22, M1 (ATEX only)	: B	Dual input (7 terminals)	: 2	
	Zone 0, 1, 2, 21, 22, M1 / DIV. 1, DIV. 2	: D			

Example: 5450A2- (General purpose, dual input)

Technical specifications

Environmental conditions

Ambient operating temperature range	-40...+80°C
Storage temperature	-50...+85°C
Calibration temperature	23...25°C
Humidity	< 99% RH non condensing
Protection degree, enclosure / terminals	IP68 / IP00

Mechanical specifications

Dimensions	44 x 21.45 mm
Center hole diameter	Ø 6.35 mm / ¼ in
Weight approx.	50 g
Max. wire size	1...1.5 mm2 stranded wire
Wire stripping length	7 mm
Screw terminal torque	0.4 Nm
Vibration, IEC 60068-2-6	2...25 Hz = ± 1.6 mm, 25...100 Hz = ± 4 g

Common electrical specifications

Supply voltage, 5450A	9...32 VDC
Supply voltage, 5450B and 5450D	9...30 VDC
Supply voltage in FISCO installations	9.0...17.5 VDC
Max. internal power dissipation	< 352 mW
Isolation - test	2.5 kVAC
Isolation - working, 5450A	55 VAC
Isolation - working, 5450B and 5450D	42 VAC
Write protection	Jumper
Warm-up time	< 5 min.
Start-up time	< 15 s
Programming	PROFIBUS GSD, DD
Signal / noise ratio	> 60 dB
Long-term stability, first year / 5 years	± 0.05% of reading / ± 0.10% of reading
Response time	< 400ms
Update time, PROFIBUS	< 100ms
Programmable damping	0...60 s
Signal dynamics, input	24 bit

Input accuracies:

Basic values		
Input type	Basic accuracy	Temperature coefficient*
Pt10	≤ ±0.8°C	≤ ±0.020°C / °C
Pt20	≤ ±0.4°C	≤ ±0.010°C / °C
Pt50	≤ ±0.16°C	≤ ±0.004°C / °C
Pt100	≤ ±0.04°C	≤ ±0.002°C / °C
Pt200	≤ ±0.08°C	≤ ±0.002°C / °C
Pt500	Tmax. ≤ 180°C: ≤ ±0.08°C Tmax. > 180°C: ≤ ±0.16°C	≤ ±0.002°C / °C
Pt1000	≤ ±0.08°C	≤ ±0.002°C / °C

Basic values		
Pt2000	Tmax. ≤ 300°C: ≤ ±0.08°C Tmax. > 300°C: ≤ ±0.40°C	≤ ±0.002°C / °C
Pt10000	≤ ±0.16°C	≤ ±0.002°C / °C
Pt x	The highest tolerance of the adjacent points	The highest coefficient of the adjacent points
Ni10	≤ ±1.6°C	≤ ± 0.020°C / °C
Ni20	≤ ±0.8°C	≤ ± 0.010°C / °C
Ni50	≤ ± 0.32°C	≤ ± 0.004°C / °C
Ni100	≤ ±0.16°C	≤ ± 0.002°C / °C
Ni120	≤ ±0.16°C	≤ ± 0.002°C / °C
Ni200	≤ ±0.16°C	≤ ± 0.002°C / °C
Ni500	≤ ±0.16°C	≤ ± 0.002°C / °C
Ni1000	≤ ±0.16°C	≤ ± 0.002°C / °C
Ni2000	≤ ±0.16°C	≤ ± 0.002°C / °C
Ni10000	≤ ±0.32°C	≤ ± 0.002°C / °C
Ni x	The highest tolerance of the adjacent points	The highest coefficient of the adjacent points
Cu5	≤ ±1.6°C	≤ ± 0.040°C / °C
Cu10	≤ ±0.8°C	≤ ± 0.020°C / °C
Cu20	≤ ± 0.4°C	≤ ± 0.010°C / °C
Cu50	≤ ± 0.16°C	≤ ± 0.004°C / °C
Cu100	≤ ±0.08°C	≤ ± 0.002°C / °C
Cu200	≤ ±0.08°C	≤ ± 0.002°C / °C
Cu500	≤ ±0.16°C	≤ ± 0.002°C / °C
Cu1000	≤ ±0.08°C	≤ ± 0.002°C / °C
Cu x	The highest tolerance of the adjacent points	The highest coefficient of the adjacent points
Lin. R: 0...400 Ω	≤ ±40 mΩ	≤ ±2 mΩ / °C
Lin. R: 0...100 kΩ	≤ ±4 Ω	≤ ±0.2 Ω / °C
Potentiometer: 0...100%	<0.05%	<±0.005%
* Input temperature coefficients are the listed values or [0.002% of reading] / °C, whichever is greater.		
mV: -20...100 mV	≤ ±5 µV ≤ ± 0.01% of reading**	≤ ±0.2 µV / °C
mV: -100...1700 mV	≤ ± 0.1 mV ≤ ± 0.01% of reading**	≤ ±36 µV / °C
mV: ±800 mV	≤ ± 0.1 mV ≤ ± 0.01% of reading**	≤ ±32 µV / °C
TC E	≤ ±0.2°C ≤ ± 0.01% of reading**	≤ ±0.025°C / °C
TC J	≤ ±0.25°C ≤ ± 0.01% of reading**	≤ ±0.025°C / °C
TJ K	≤ ±0.25°C ≤ ± 0.01% of reading**	≤ ±0.025°C / °C

Basic values		
TC L	≤ ±0.35°C ≤ ± 0.01% of reading**	≤ ±0.025°C / °C
TC N	≤ ±0.4°C ≤ ± 0.01% of reading**	≤ ±0.025°C / °C
TC T	≤ ±0.25°C ≤ ± 0.01% of reading	≤ ±0.025°C / °C
TC U	<0°C: ≤ ±0.8°C ≤ ± 0.01% of reading** ≥0°C: ≤ ±0.4°C ≤ ± 0.01% of reading**	≤ ±0.025°C / °C
TC Lr	≤ ±0.2°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC R	<200°C: ≤ ±0.5°C ≤ ± 0.01% of reading** ≥200°C: ≤ ±1.0°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC S	<200°C: ≤ ±0.5°C ≤ ± 0.01% of reading** ≥200°C: ≤ ±1.0°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC W3	≤ ±0.6°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC W5	≤ ±0.4°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC type: B[1]	≤ ±1°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC type:B[2]	≤ ±3°C ≤ ± 0.01% of reading**	≤ ±0.1°C / °C
TC type:B[3]	≤ ±8°C ≤ ± 0.01% of reading**	≤ ±0.8°C / °C
TC type:B[4]	not specified	not specified
CJC (internal)	< ±0.5°C	Included in basic accuracy
CJC (external)	≤ ±0.08°C	≤ ±0.002°C / °C
* Input temperature coefficients are the listed values or [0.002% of reading] / °C, whichever is greater. ** Gain deviation.		

TC B[1] accuracy specification range. . . . . > 400°C
TC B[2] accuracy specification range. . . . . > 160°C < 400°C
TC B[3] accuracy specification range. . . . . > 85°C < 160°C
TC B[4] accuracy specification range. . . . . < 85°C
EMC - immunity influence. . . . . < ±0.1% of span
Extended EMC immunity:
NAMUR NE 21, A criterion, burst . . . . . < ±1% of span

Input specifications

RTD input types

RTD type	Standard	Min. value	Max. value	α	Min. span
Pt10...10.000	IEC 60751	-200°C	+850°C	0.003851	10°C
	JIS C 1604-8	-200°C	+649 °C	0.003916	10°C
	GOST 6651-2009	-200°C	+850°C	0.003910	10°C
	Callendar Van Dusen	-200°C	+850°C	-----	10°C
Ni10...10.000	DIN 43760-1987	-60°C	+250°C	0.006180	10°C
	GOST 6651-2009 / OIML R84:2003	-60°C	+180°C	0.006170	10°C
Cu5...1000	Edison Copper Winding No. 15	200°C	+260°C	0.004270	100°C
	GOST 6651-2009 / OIML R84:2003	-180°C	+200°C	0.004280	100°C
	GOST 6651-94	-50°C	+200°C	0.004260	100°C

Connection type. . . . . 2-, 3- and 4-wire
Permissible cable resistance per wire . . . . . ≤ 50 Ω
Sensor current . . . . . < 0.15 mA
Effect of sensor cable resistance (3- / 4-wire) . . . . . < 0.002 Ω / Ω
Sensor cable, wire-wire capacitance . . . . . Max. 30 nF (Pt1000 & Pt10000 IEC and JIS + Ni1000 & NI10000)
Max. 50 nF (others than above)
Sensor error detection, programmable. . . . . None, Shorted, Broken, Shorted or Broken

NOTE: Regardless of the sensor error detection configuration, shorted sensor error detection will be disabled if the lower limit for the configured sensor type is lower than the constant detection limit for shorted sensor.

Detection limit for shorted sensor . . . . . 15 Ω
Sensor error detection time (RTD element) . . . . . ≤ 70 ms
Sensor error detection time (for 3rd and 4th wire) . . . . . ≤ 2000 ms

TC input types

Type	Min. temperature	Max. temperature	Min. span	Standard
B	0 (85)°C	+1820°C	100°C	IEC 60584-1
E	-200°C	+1000°C	50°C	IEC 60584-1
J	-100°C	+1200°C	50°C	IEC 60584-1
K	-180°C	+1372°C	50°C	IEC 60584-1
L	-200°C	+900°C	50°C	DIN 43710
Lr	-200°C	+800°C	50°C	GOST 3044-84
N	-180°C	+1300°C	50°C	IEC 60584-1
R	-50°C	+1760°C	100°C	IEC 60584-1
S	-50°C	+1760°C	100°C	IEC 60584-1
T	-200°C	+400°C	50°C	IEC 60584-1
U	-200°C	+600°C	50°C	DIN 43710
W3	0°C	+2300°C	100°C	ASTM E988-96
W5	0°C	+2300°C	100°C	ASTM E988-96

Cold junction compensation (CJC):
Constant, internal or external via a Pt100 or Ni100 sensor

Internal CJC temperature range	-50°C to +100°C
External CJC connection	2-, 3- or 4-wire (4-wire only for dual input device)
External CJC cable resistance per wire (for 3- and 4-wire connections)	50 Ω
Effect of CJC cable resistance (for 3- and 4-wire connections)	< 0.002 Ω / Ω
External CJC sensor current	< 0.15 mA
External CJC temperature range	-50°C to +135°C
CJC sensor cable, wire-wire capacitance	Max. 50 nF
Maximum total cable resistance	Max. 10 kΩ
Sensor cable, wire-wire capacitance	Max. 50 nF
Sensor error detection, programmable	None, Shorted, Broken, Shorted or Broken

NOTE: Shorted sensor error detection only applies to CJC sensor.

Sensor error detection time (TC element)	≤ 70 ms
Sensor error detection time, external CJC (for 3rd and 4th wire)	≤ 2000 ms

Linear resistance input

Input range	0 Ω...100 kΩ
Min. span	25 Ω
Connection type	2-, 3- or 4-wire
Permissible cable resistance per wire	≤ 50 Ω
Sensor current	< 0.15 mA
Effect of sensor cable resistance (3- / 4-wire)	< 0.002 Ω / Ω
Sensor cable, wire-wire capacitance	Max. 30 nF (Lin. R > 400 Ω) Max. 50 nF (Lin. R ≤ 400 Ω)
Sensor error detection, programmable	None, Broken

Potentiometer input

Potentiometer	10 Ω...100 kΩ
Input range	0...100%
Min. span	10%
Connection type	3-, 4- or 5-wire (5-wire only for dual input device)
Permissible cable resistance per wire	≤ 50 Ω
Sensor current	< 0.15 mA
Effect of sensor cable resistance (4- / 5-wire)	< 0.002 Ω / Ω
Sensor cable, wire-wire capacitance	Max. 30 nF (Potentiometer > 400 Ω) Max. 50 nF (Potentiometer ≤ 400 Ω)
Sensor error detection, programmable	None, Shorted, Broken, Shorted or Broken

NOTE: Regardless of the sensor error detection configuration, shorted sensor error detection will be disabled if the configured potentiometer size is lower than the constant detection limit for shorted sensor.

Detection limit for shorted sensor	15 Ω
Sensor error detection time, wiper arm	≤ 70 ms (no shorted sensor detection)
Sensor error detection time, element	≤ 2000 ms
Sensor error detection time (4th and 5th wire)	≤ 2000 ms

mv input

Measurement range	-800...+800 mV (bipolar) -100...1700 mV
Min. span	2.5 mV

Input resistance	10 MΩ
Sensor cable, wire-wire capacitance	Max. 30 nF (input range: -100...1700 mV) Max. 50 nF (input range: -20...100 mV)
Sensor error detection, programmable	None, Broken
Sensor error detection time	≤ 70 ms

Output specifications

PROFIBUS PA connection

PROFIBUS PA protocol	Profile A&B, ver. 4.0 (compatible with 3.02)
PROFIBUS PA protocol standard	EN 50170 vol. 2
PROFIBUS PA address (at delivery)	126
PROFIBUS PA physical layer	2 x function blocks 1 / 2 transducer block(s)
PROFIBUS PA termination	100 Ω +1 µF

Please observe correct cabling for PROFIBUS PA according to IEC 61158-2:2023 and consult PROFIBUS Foundation for further guidance: https://www.profibus.com/download/profibus-installation-guidelines.

Approvals & certificates

Observed authority requirements

EMC	2014/30/EU
RoHS	2011/65/EU
ATEX	2014/34/EU
EAC	Pending
EAC Ex	Pending

I.S. / Ex approvals

5450A:

ATEX	DEKRA 24ATEX0007X

5450B:

ATEX	DEKRA 24ATEX0006X

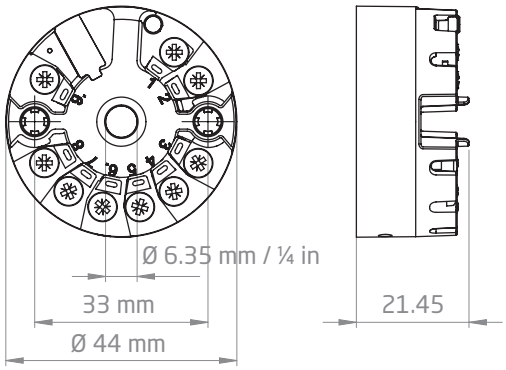
5450D:

ATEX	DEKRA 24ATEX0006X

5450A and 5450D:

IECEx	IECEx DEK. 24.0005X
C FM us	Pending
C CSA us	Pending
INMETRO	Pending
NEPSI	Pending
EAC Ex	Pending

Mechanical specifications



Programming

The PR 5450 provides a PROFIBUS PA interface. Initial parameterization and programming are carried out via the PROFIBUS PA interface and its corresponding devices drivers. For integration into PLC/DCS systems a comprehensive mapping of relevant transmitter variables are available.

Available device drivers for PR 5450 PROFIBUS PA

Device drivers are supplied for popular field programming devices and DCS systems and provides the user with convenient programming, integration, and monitoring for PR5450.

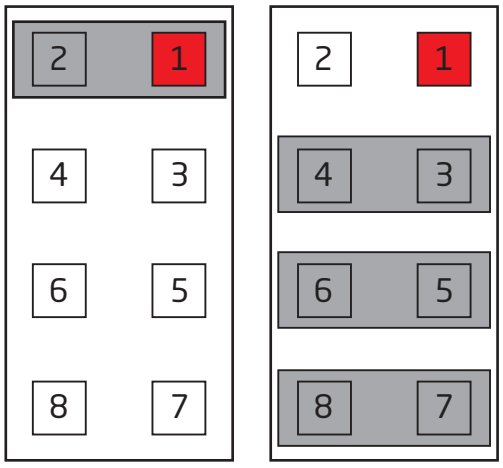
Type	Purpose
GDS, General Station Description	PROFIBUS Master device driver mapping transmitter variables, e.g. PLC / DCS systems
EDD, Electronic Device Description	Configuration and supervision for management software e.g. SIMATIC PDM, Emerson Delta V
DTM, Device Type Manager	Configuration and supervision for management software e.g. Pactware

All available for download here: https://www.prelectronics.com/software/

Security functions

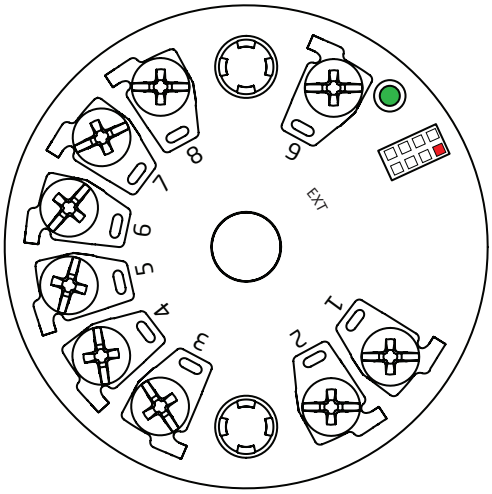
The PR 5450 transmitter is supplied with hardware write protection disabled and software PIN disabled.

The device has one internal jumper to enable Write Protection.



Write protect No function

Jumper pin no. 1 is marked with red in the drawing.



Hardware write protection overrides software security features.
With your preferred FDT you can access the transmitter's security features:

- Button lock: enable / disable (reserved for future use)
- User PIN: change user pin / enable / disable, valid numbers 1 - 65535. Factory default 2457
- HW lock: readout status of write protect jumper
- PIN code recovery: readout of recovery ID and serial number
- PUK code: One-time code to reset PIN code

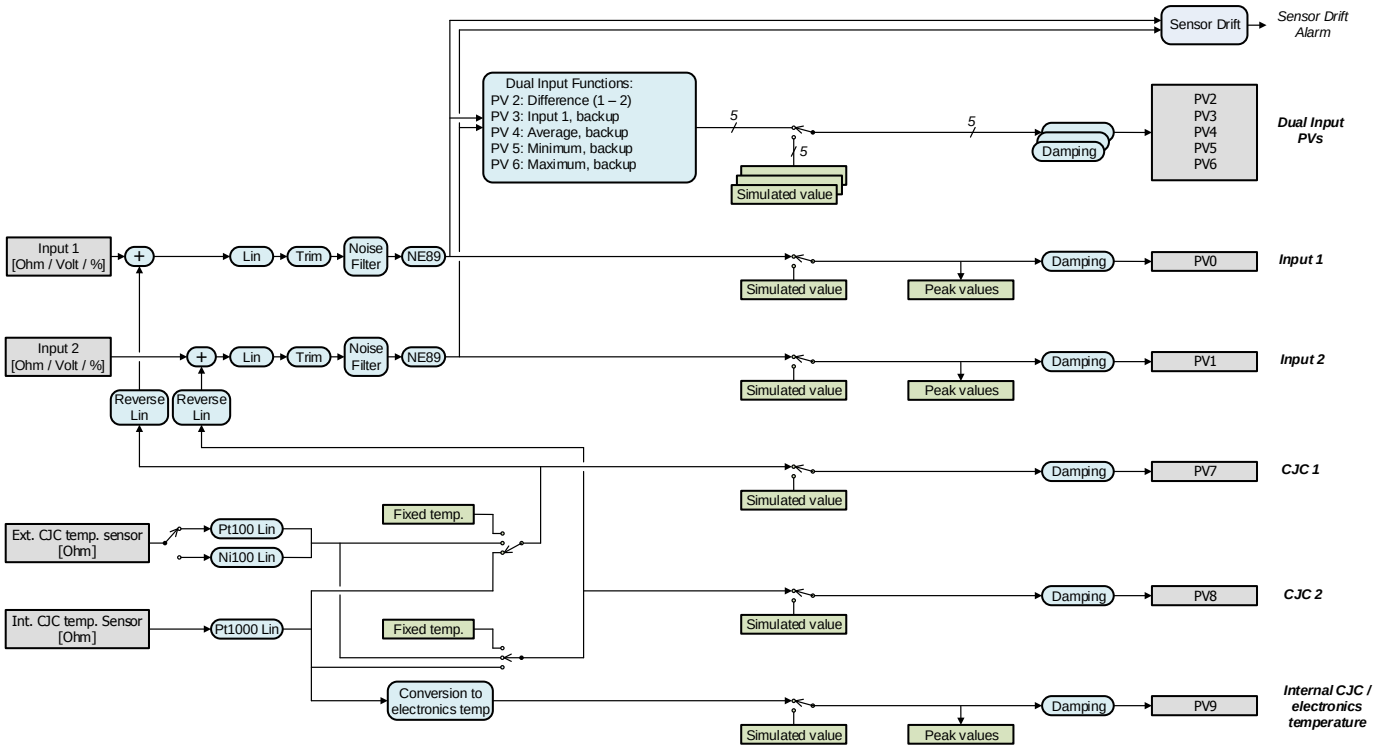
To activate PIN code recovery and get your one-time PUK code, contact PR electronics Global Customer Service at https://www.prelectronics.com/support/ and provide recovery ID and serial number.

Advanced functions

The PR 5450 PROFIBUS PA temperature transmitter provides the user with a comprehensive data set for convenient access to process data, device status and operational statistics with PROFIBUS functions blocks.

The processing diagram outlines the internal processing chain and serves as a reference for the calculated process values and status registers outlined in the functional description.

Overview of process values (PV)



Function	Description
Differential	Value is proportional to the difference between input 1 and input 2 measurements. *PV 2 = Input 1 – Input 2 or Input 2 – Input 1 or |Input 2 – Input 1|*
Average measurement	Value is proportional to the average of input 1 and input 2 measurements. *PV 3 = 0.5* (Input 1 + Input 2)*
Max.	Value is proportional to the input with the highest value. *IF (Input 1 > Input 2) THEN PV 6 = Input 1 ELSE PV 6 = Input 2*
Min.	Value is proportional to the input with the lowest value. *IF (Input 1 < Input 2) THEN PV 5 = Input 1 ELSE PV 5 = Input 2*
Sensor drift	If the differential between input 1 and input 2 measured values exceed a predefined limit then a sensor drift error is indicated. *IF ABS (Input 1 – Input 2) > SensorDriftLimit THEN IndicateSensor-DriftError*
Redundancy (hot backup)	PV3 is proportional to input 1 as long as no error is detected and input is within user-defined limits. If sensor error on input 1 is detected or if sensor 1 value is outside user-defined limits, PV 3 then becomes proportional to input 2 and a warning indication is generated. *IF (NoSensorErrorOnInput1 AND Input1InsideLimits) THEN* *PV 3 = Input 1 ELSEIF (NoSensorErrorOnInput2 AND Input2InsideLimits) THEN PV 3 = Input 2*
Customized linearization - Callendar Van Dusen	Supports direct entry of CVD constants.
Customized linearization - Polynomial type	Supports polynomial linearization up to 5 segments, each with up to 4th order polynomials.
Customized linearization - Table linearization	Supports table linearization with up to 60 in/out values.
Customized linearization - 2nd order spline linearization	Supports 2nd order spline linearization with up to 40 output values.
Operating time - transmitter electronics	Recording of internal transmitter temperatures during operation, logging time spent in each of 9 fixed sub temperature ranges. < -50°C -50...-30°C -30...-10°C -10...+10°C +10...+30°C +30...+50°C +50...+70°C +70...+85°C >85°C
Operating time - inputs	Recording of input measurement values during operation, logging time spent in each of 9 fixed sub input ranges. Subranges are defined individually for each input type.
Peak value - transmitter electronics	Recording of min./max. internal transmitter temperature for device's complete lifetime.
Peak value - inputs	Recording of min./max. values for input/s measurements is saved. Values are reset when measurement configuration is changed.

Operation and troubleshooting

LED function

Onboard LED indicates faults according to NAMUR NE44 and NE107.

Condition	Green / red LED
Device OK	Constant
No supply	OFF
Indication of faults independent of the device,e.g. wire break, sensor short circuit, violation of input or output limits	Flashing
Device error	Constant

NE 107 device status

NAMUR NE107 defines a range of standard status levels and includes standard usage of LEDs, graphic symbols and colors.

If normal operation is disrupted, the following errors can be presented to the end user in the FDT programming framework user interface.

NE107 symbol	NE107 status	Short description, see NE107 for details	LED operation
	Failure	Problem with external sensor or process. Internal device problem.	Constant RED
	Function check	Change of configuration. Simulation ongoing. Calibration ongoing.	Blinking RED
	Out of specification	Device being operated out of specification. Uncertain value due to process and environment influence	Blinking RED
	Maintenance required	Device output is OK but maintenance is needed.	Blinking GREEN

Diagnostics overview

Incident description	Description	LED action	NE-107 Class	User action
The device variable mapped to PV0-9 is beyond its operating limits.	Process value Out of limits	Flashing RED	Out of specifications	Reconnect sensor - check process value
Sensor temperature / Int. CJC is beyond its limits	Sensor temperature limit exceeded	Flashing RED	Out of specifications	Check operating temperature
Sensor is in startup phase	Sensor is not ready	Flashing RED	Function check	Normally clears in < 15 s
Simulation is activated	Sensor is in simulation mode	Flashing RED	Function check	Disable simulation
Updating config	Sensor configuration is being written, measurment suspended	Flashing RED	Function check	Await programming to complete
Sensor 1 / 2 break detected	Sensor 1 malfunction	Lights RED	Failure	Check sensor wirring
CJC 1 / 2 break detected	CJC 1 / 2 malfunction	Lights RED	Failure	Check sensor wirring
Sensor power supply	PROFIBUS PA power supply is beyond specifications	Lights RED	Failure	Check wirring, PROFIBUS coupler
Internal transmitter error	Internal transmitter HW / SW occurred	Lights RED	Failure	Reconnect sensor. If problem persists, contact PR electronics

ATEX installation drawing

ATEX Installation drawing 5450QA01-V10

ATEX Certificate DEKRA **24ATEX0006X**
Standards: EN IEC 60079-0:2018, EN IEC 60079-11:2012

Ex ia Installation

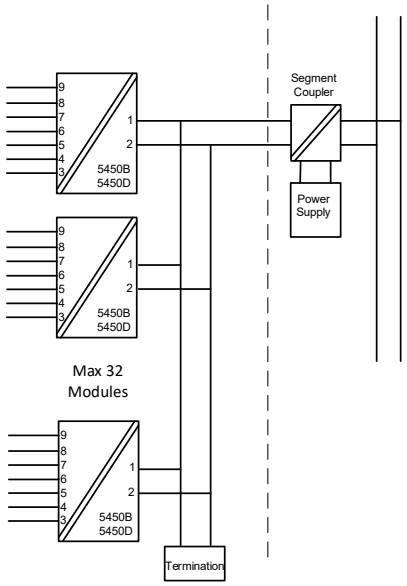
For safe installation of the 5450B.. and 5450D.. the following must be observed.

Marking

II 1 G Ex ia IIC T6...T4 Ga or
II 2(1) G Ex ib [ia Ga] IIC T6...T4 Gb
II 2 D Ex ia IIIC T85ºC….T110 ºC Db
I M1 Ex ia I Ma

Hazardous Area
Zone 0, 1, 2, 21, 22 and M1

Unclassified Area



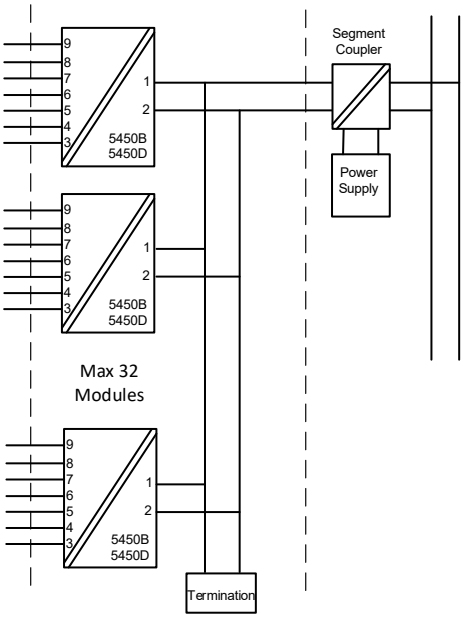
	Terminal		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Uo	7.2 VDC	7.2 VDC	7.2 VDC
Io:	7.3 mA	7.3 mA	12.9 mA
Po:	13.2 mW	13.2 mW	23.3 mW
Lo:	667 mH	667 mH	200 mH
Co:	13. 324 µF	13. 324 µF	13. 324 µF

Ex ib Installation

Hazardous Area
Zone 0, 1, 2,
21, 22 and M1

Hazardous Area
Zone 1

Unclassified Area



	Terminal		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Uo	7.2 VDC	7.2 VDC	7.2 VDC
Io:	7.3 mA	7.3 mA	12.9 mA
Po:	13.2 mW	13.2 mW	23.3 mW
Lo:	667 mH	667 mH	200 mH
Co:	13. 324 µF	13. 324 µF	13. 324 µF

Terminal 1,2	
Ex ia and Ex ib installation	**FISCO Field Device**
Ui: 30 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature Range Ma -40 ≤ Ta ≤ 85ºC T4/110ºC: -40 ≤ Ta ≤ 85ºC T5/100 ºC: -40 ≤ Ta ≤ 73ºC T6/85ºC: -40 ≤ Ta ≤ 58ºC	**Temperature Range:** Ma -40 ≤ Ta ≤ 85ºC T4/110ºC: -40 ≤ Ta ≤ 85ºC T5/100 ºC: -40 ≤ Ta ≤ 82ºC T6/85ºC: -40 ≤ Ta ≤ 67ºC

General installation instructions
Year of manufacture can be taken from the first two digits in the serial number.

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

For EPL Ga, if the enclosure is made of aluminum, it must be installed such, that ignition sources due to impact and friction sparks are excluded.

The distance between terminals, including the wires' bare part, shall be at least 3 mm separated from any earthed metal.
If the transmitter was applied in type of protection Ex ec, it may afterwards not be applied for intrinsic safety.

For multiple wire connection the wires must be crimped together.

For installation in a potentially explosive gas atmosphere, the following instructions apply:
The transmitter shall be mounted in an enclosure form B according to DIN43729 or equivalent providing a degree of protection of at least IP20 according to EN60529.
The enclosure shall be suitable for the application and correctly installed.

For installation in a potentially explosive dust atmosphere, the following instructions apply:
If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Db, the transmitter shall be mounted in a certified enclosure providing a degree of protection of at least IP5X according to EN 60079-0, and that is suitable for the application and correctly installed.
Cable entry devices and blanking elements shall fulfill the same requirements.

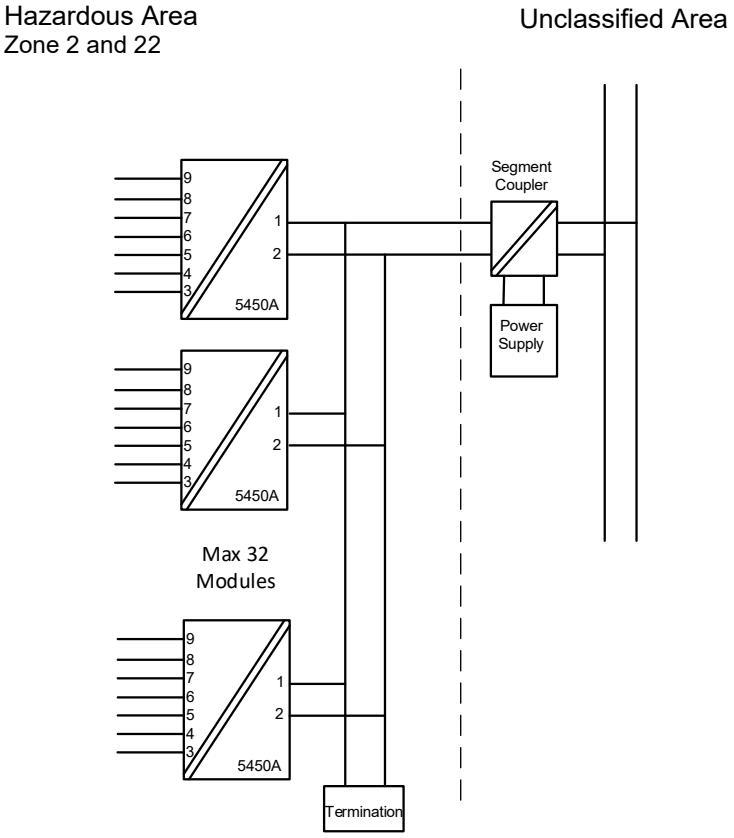
For installalation in mines the following instructions apply:
The transmitter shall be mounted in a metal enclosure providing a degree of protection of at least IP54 according to EN 60529.
Aluminum enclosures are not allowed for mines.
The enclosure shall be suitable for the application and correctly installed.
Cable entry devices and blanking elements shall fulfill the same requirements.

Ex ec / Ex ic Installation

ATEX Certificate **DEKRA 24ATEX0007X**
EN IEC 60079-7:2015 +A1:2018

For safe installation of the 5450A the following must be observed.

Marking
II 3 G Ex ec IIC T6…T4 Gc
II 3 G Ex ic IIC T6…T4 Gc
II 3 D Ex ic IIIC T85ºC….T110 ºC Dc



Terminal 1,2 Ex ec	**Terminal 1,2 Ex ic**	**Terminal 1,2 (FISCO Field Device)**
Vmax = 30 VDC In = 11 mA	Ui: 30 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature Range T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 80ºC T6/85ºC: -40 ≤Ta≤ 65ºC	**Temperature Range** T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 85ºC T6/85ºC: -40 ≤Ta≤ 70ºC	**Temperature Range** T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 85ºC T6/85ºC: -40 ≤Ta≤ 74ºC

Terminal 3,4,5,6,7,8,9 Ex ec	**Terminal Ex ic**		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Vmax = 7.2 VDC	Uo: 7.2 VDC Io: 7.3 mA Po: 13.2 mW Lo: 667 mH Co: 13. 324 µF		Uo: 7.2 VDC Io: 12.9 mA Po: 23.3 mW Lo: 200 mH Co: 13. 324 µF

General installation instructions

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

For an ambient temperature ≥ 60ºC, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

The enclosure shall be suitable for the application and correctly installed.
The distance between terminals, inclusive the wires' bare part, shall be at least 3 mm separated from any earthed metal.

For multiple wire connection the wires must be crimped together.

For installation in a potentially explosive gas atmosphere, the following instructions apply:
The transmitter shall be mounted in an enclosure form B according to DIN 43729 or equivalent providing a degree of protection of at least IP20 according to EN 60529.
The enclosure shall be suitable for the application and correctly installed.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex ec, the transmitter shall be mounted in enclosure providing a degree of protection of at least IP54 according to EN IEC 60079-0, and that is suitable for the application and correctly installed.
Cable entry devices and blanking elements shall fulfill the same requirements.

For installation in a potentially explosive dust atmposphere, the following instructions apply:
If the transmitter is supplied with an intrinsically safe signal "ic" and interfaces an intrinsically safe signal "ic" (e.g. a passive device), the transmitter shall be mounted in a metal enclosure form B according to DIN 43729 or equivalent providing a degree of protection of at least IP54 according to EN IEC 60079-0.
Cable entry devices and blanking elements shall fulfill the same requirements.

IECEx installation drawing

IECEx Installation drawing 5450QI01-V10

IECEx Certificate IECEx DEK **24.0005X**

Standards: IEC 60079-0:2017, IEC 60079-11:2011,
IEC 60079-7:2015 + A1:2017

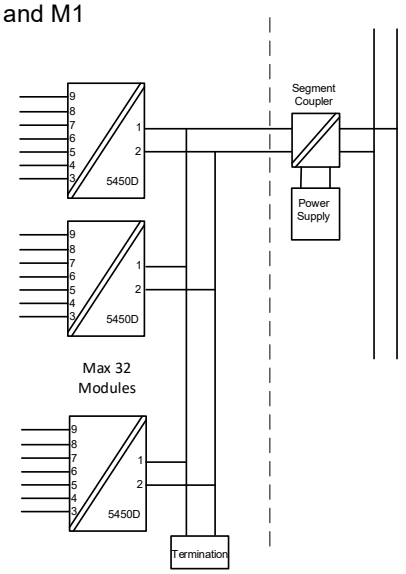
For safe installation of the 5450D.. the following must be observed.

Marking Ex ia IIC T6…T4 Ga or
Ex ib [ia Ga] IIC T6…T4 Gb
Ex ia IIIC T85ºC….T110 ºC Db
Ex ia I Ma

Ex ia Installation

Hazardous Area
Zone 0, 1, 2, 21, 22 and M1

Unclassified Area



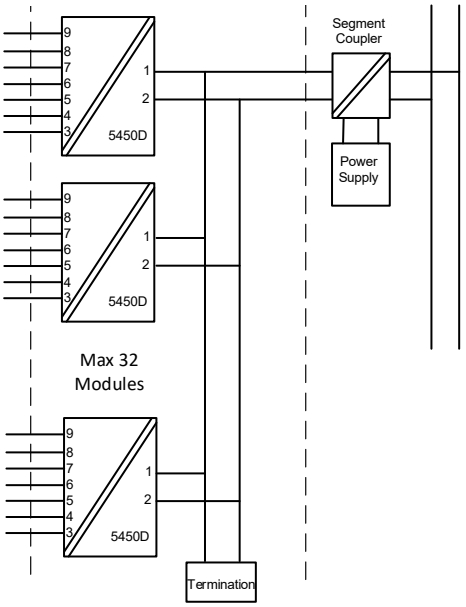
	Terminal		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Uo:	7.2 VDC	7.2 VDC	7.2 VDC
Io:	7.3 mA	7.3 mA	12.9 mA
Po:	13.2 mW	13.2 mW	23.3 mW
Lo:	667 mH	667 mH	200 mH
Co:	13. 324 µF	13. 324 µF	13. 324 µF

Ex ib Installation

Hazardous Area
Zone 0, 1, 2,
21, 22 and M1

Hazardous Area
Zone 1

Unclassified Area



	Terminal		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Uo	7.2 VDC	7.2 VDC	7.2 VDC
Io:	7.3 mA	7.3 mA	12.9 mA
Po:	13.2 mW	13.2 mW	23.3 mW
Lo:	667 mH	667 mH	200 mH
Co:	13.324 µF	13.324 µF	13.324 µF

Terminal 1,2	
Ex ia and Ex ib installation	**FISCO Field Device**
Ui: 30 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature Range Ma -40 ≤ Ta ≤ 85ºC T4/110ºC: -40 ≤ Ta ≤ 85ºC T5/100 ºC: -40 ≤ Ta ≤ 73ºC T6/85ºC: -40 ≤ Ta ≤ 58ºC	**Temperature Range:** Ma -40 ≤ Ta ≤ 85ºC T4/110ºC: -40 ≤ Ta ≤ 85ºC T5/100 ºC: -40 ≤ Ta ≤ 82ºC T6/85ºC: -40 ≤ Ta ≤ 67ºC

General installation instructions
If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

For EPL Ga, if the enclosure is made of aluminum, it must be installed such, that ignition sources due to impact and friction sparks are excluded.

The distance between terminals, inclusive the wires bare part, shall be at least 3 mm separated from any earthed metal.
If the transmitter was applied in type of protection Ex ec, it may afterwards not be applied for intrinsic safety.

For multiple wire connection the wires must be crimped together.

For installation in a potentially explosive gas atmosphere, the following instructions apply:
The transmitter shall be mounted in an enclosure form B according to DIN43729 or equivalent providing a degree of protection of at least IP20 according to IEC60529.
The enclosure shall be suitable for the application and correctly installed.

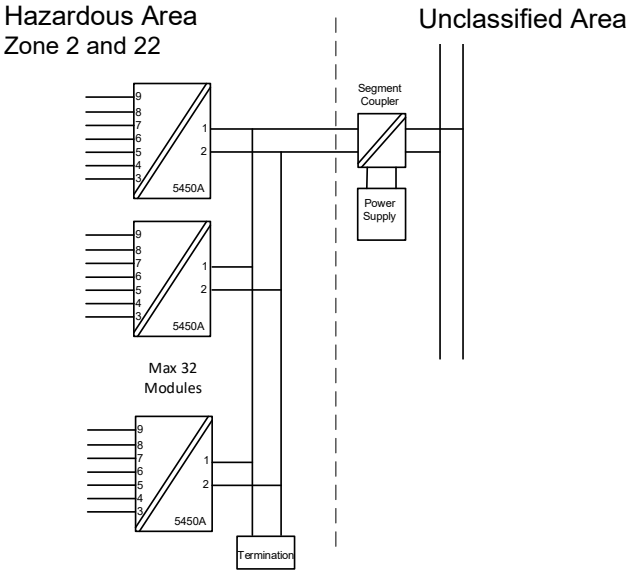
For installation in a potentially explosive dust atmosphere, the following instructions apply:
If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Db or Dc and applied in type of protection Ex ia or Ex ic, the transmitter shall be mounted in a certified enclosure providing a degree of protection of at least IP5X according to IEC 60079-0, and that is suitable for the application and correctly installed.
Cable entry devices and blanking elements shall fulfill the same requirements.

For installation in mines the following instructions apply:
The transmitter shall be mounted in a metal enclosure providing a degree of protection of at least IP54 according to IEC60529.
Aluminum enclosures are not allowed for mines.
The enclosure shall be suitable for the application and correctly installed.
Cable entry devices and blanking elements shall fulfill the same requirements.

Ex ec / Ex ic Installation

For safe installation of the 5450A the following must be observed.

Marking
Ex ec IIC T6…T4 Gc
Ex ic IIC T6…T4 Gc
Ex ic IIIC T85ºC….T110 ºC Dc



Terminal 1,2 **Ex ec**	**Terminal 1,2** **Ex ic**	**Terminal 1,2** **(FISCO Field Device)**
Vmax = 30 VDC In = 11 mA	Ui: 30 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature Range T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 80ºC T6/85ºC: -40 ≤Ta≤ 65ºC	**Temperature Range** T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 85ºC T6/85ºC: -40 ≤Ta≤ 70ºC	**Temperature Range** T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 85ºC T6/85ºC: -40 ≤Ta≤ 74ºC

Terminal Ex ec	Terminal Ex ic		
3, 4, 5, 6, 7, 8, 9	**3, 4, 5, 6**	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Vmax = 7.2 VDC	Uo: 7.2 VDC Io: 7.3 mA Po: 13.2 mW Lo: 667 mH Co: 13. 324 µF		Uo: 7.2 VDC Io: 12.9 mA Po: 23.3 mW Lo: 200 mH Co: 13. 324 µF

General installation instructions
If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

For an ambient temperature ≥ 60ºC, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

The enclosure shall be suitable for the application and correctly installed.
The distance between terminals, including the wires' bare part, shall be at least 3 mm separated from any earthed metal.

For multiple wire connection the wires must be crimped together.

For installation in a potentially explosive gas atmosphere, the following instructions apply:
The transmitter shall be installed in a certified enclosure providing a degree of protection of at least IP54 in accordance with IEC 60079-0, which is suitable for the application and correctly installed e.g. in an enclosure that is in type of protection Ex e. Additionally, the area inside the enclosure shall be pollution degree 2 or better as defined in IEC 60664-1.
Cable entry devices and blanking elements shall fulfill the same requirements.

If the transmitter is installed in an explosive atmosphere requiring the use of equipment protection level Gc and applied in type of protection Ex ec, the transmitter shall be mounted in a certified enclosure providing a degree of protection of at least IP54 according to IEC 60079-0, and that is suitable for the application and correctly installed.
Cable entry devices and blanking elements shall fulfill the same requirements.

For installation in a potentially explosive dust atmosphere, the following instructions apply:
If the transmitter is supplied with an intrinsically safe signal "ic" and interfaces an intrinsically safe signal "ic" (e.g. a passive device), the transmitter shall be mounted in a certified metal enclosure form B according to DIN 43729 or equivalent providing a degree of protection of at least IP54 according to IEC 60079-0.
Cable entry devices and blanking elements shall fulfill the same requirements.

CSA installation drawing - approval pending

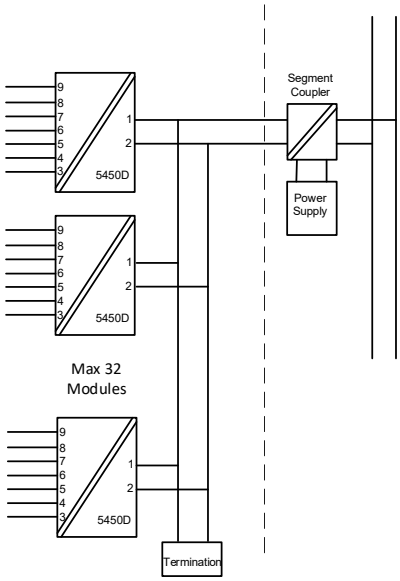
cCSAus Installation drawing 5450QC01-V2R0

CSA Certificate CSA25CA80210307

Marking:
Class I, Division 1, Groups A,B,C,D T6…T4;
Ex ia IIC T6…T4; Class I, Zone 0: AEx ia IIC T6…T4;
Ex ib [ia] IIC T6…T4 or Class I, Zone 1: AEx ib [ia] IIC T6…T4

Hazardous classified Location
Class I, Division 1, Zone 0, Zone 1

Unclassified Location



Certified segment coupler, barrier or FISCO supply with entity parameters:

Um ≤ 250 V
Voc or Uo ≤ Vmax or Ui
Isc or Io ≤ Imax or Ii
Po ≤ Pi

Ca or Co ≥ Ci + C cable
La or Lo ≥ Li + L cable

Loop input terminal 1,2 parameter limits	
DIV1,ABCD or Ex ia, Ex ib **Field Device**	**FISCO** **Field Device**
Ui: 30 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature range T4: -40 ≤ Ta ≤ 85ºC T5: -40 ≤ Ta ≤ 73ºC T6: -40 ≤ Ta ≤ 58ºC	**Temperature range:** T4: -40 ≤ Ta ≤ 85ºC T5: -40 ≤ Ta ≤ 82ºC T6: -40 ≤ Ta ≤ 67ºC

	Sensor terminal parameter limits		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Uo	7.2 VDC	7.2 VDC	7.2 VDC
Io:	7.3 mA	7.3 mA	12.9 mA
Po:	13.2 mW	13.2 mW	23.3 mW
Lo:	667 mH	667 mH	200 mH
Co:	13.324 µF	13.324 µF	13.324 µF

General IS installation instructions

Install in accordance with the Canadian Electrical Code (CEC) for Canada and the National Electrical Code (NEC) for the US.

The transmitter must be installed in a suitable enclosure to meet installation codes stipulated in the Canadian Electrical Code (CEC) or for US the National Electrical Code (NEC).

For EPL Ga, Gb or Gc, the transmitter shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to IEC 60529, and that it is suitable for the application and correctly installed.

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the enclosure is made of aluminum, it must be installed such that ignition sources due to impact and friction sparks are excluded.

If the outer enclosure is made of non-metallic materials or of painted metal, electrostatic charging shall be avoided.

The distance between terminals, inclusive the wires' bare part, shall be at least 3 mm separated from any earthed metal.

For multiple wire connections the wires must be crimped together.

Only equipment classified as simple apparatus such as thermocouples and RTD's may be connected to sensor terminals.

Use supply wires with a rating of at least 5 K above the ambient temperature.

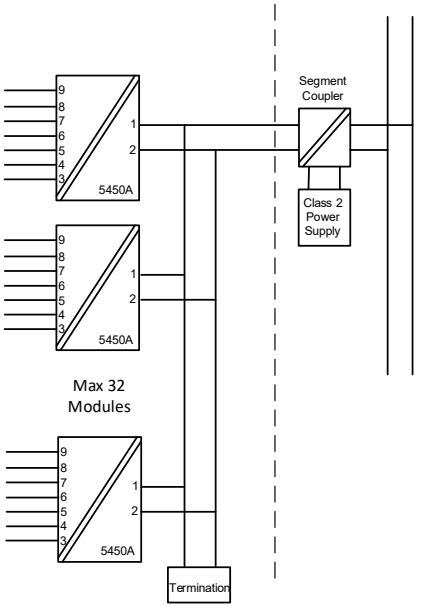
WARNING: Substitution of components may impair intrinsic safety
AVERTISSEMENT: la substitution de composants peut nuire à la sécurité intrinsèque

Marking

Class I, Division 2, Groups A, B, C, D T6…T4 or
Ex ec IIC T6…T4 or Class I, Zone 2: AEx ec IIC T6…T4 or
Ex ec [ic] IIC T6…T4 or Class I, Zone 2: AEx ec [ic] IIC T6…T4

Hazardous classified Location
Zone 2

Unclassified Location



Terminal 1,2 **Ex ec**	**Terminal 1,2** **Ex ic**	**Terminal 1,2** **(FISCO Field Device)**
Vmax = 30 VDC In = 11 mA	Ui: 30 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature range T4: -40 ≤Ta≤ 85ºC T5: -40 ≤Ta≤ 80ºC T6: -40 ≤Ta≤ 65ºC	**Temperature range** T4: -40 ≤Ta≤ 85ºC T5: -40 ≤Ta≤ 85ºC T6: -40 ≤Ta≤ 70ºC	**Temperature range** T4: -40 ≤Ta≤ 85ºC T5: -40 ≤Ta≤ 85ºC T6: -40 ≤Ta≤ 74ºC

Terminal Ex ec	**Terminal Ex ic**		
3, 4, 5, 6, 7, 8, 9	**3, 4, 5, 6**	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Vmax = 7.2 VDC	Uo: 7.2 VDC Io: 7.3 mA Po: 13.2 mW Lo: 667 mH Co: 13.324 µF		Uo: 7.2 VDC Io: 12.9 mA Po: 23.3 mW Lo: 200 mH Co: 13.324 µF

General installation instructions
For non-incendive installation the fieldbus transmitter must be installed and wired according to manufacturer's field wiring instructions.

For installation in Canada the module shall be installed in a suitable enclosure to meet installation codes stipulated in the Canadian Electrical Code (CEC).

For installation in the US the module shall be installed in a suitable enclosure according to the National Electrical Code (NEC).

The transmitter must be installed in a certified enclosure providing a degree of protection of at least IP54 according to IEC60529 that is suitable for the application and is correctly installed. Cable entry devices and blanking elements shall fulfil the same requirements.

The equipment shall only be used in an area of not more than pollution degree 2 as defined in IEC 60664-1.

Barriers are not required for Ex ec installation, but installation must be in accordance with the NEC or CEC.

If the enclosure is made of non-metallic materials or of painted metal, electrostatic charging shall be avoided.

For an ambient temperature ≥ 60ºC, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

The distance between terminals, including the wires' bare part, shall be at least 3 mm separated from any earthed metal.

For multiple wire connections the wires must be crimped together.

Use supply wires with a rating of at least 5 K above the ambient temperature.

WARNING: Substitution of components may impair intrinsic safety
AVERTISSEMENT: la substitution de composants peut nuire à la sécurité intrinsèque

WARNING: Do not disconnect equipment unless power has been switched off or the area is known to be safe.
AVERTISSEMENT: Ne débranchez pas l'équipement sauf si l'alimentation a été coupée ou si la zone est connue pour être sûre.

FM installation drawing - approval pending

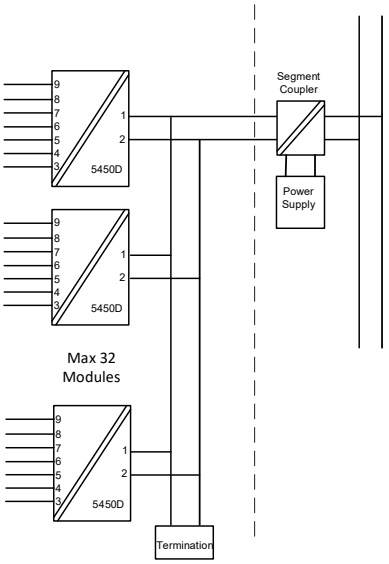
cFMus Installation drawing 5450QF01-V4R0

FM Certificates FM25US0051X; FM25CA0022X

IS Class I, Division 1 Groups A,B,C,D T6…T4 or
Class I, Zone 0 AEx ia IIC T6…T4 Ga or
Ex ia IIC T6…T4 Ga

Hazardous classified Location
Division 1 or Zone 0

Unclassified Location



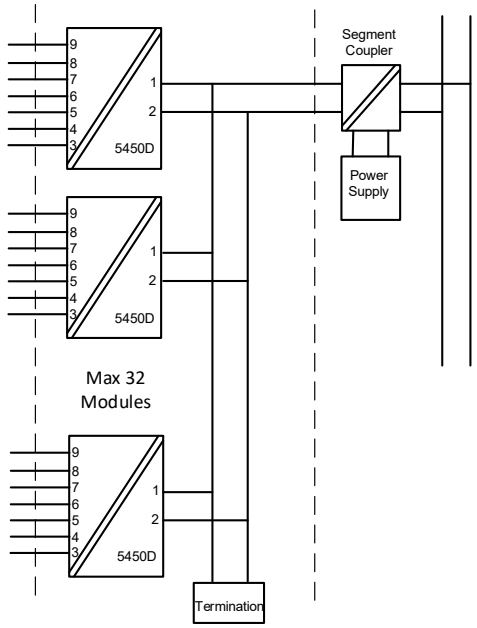
FM or CSA certified segment coupler, barrier or FISCO supply with entity parameters:

Um ≤ 250 V
Voc or Uo ≤ Vmax or Ui
Isc or Io ≤ Imax or Ii
Po ≤ Pi

Ca or Co ≥ Ci + C cable
La or Lo ≥ Li + L cable

IS Class I, Zone 1 AEx ib [ia] IIC T6…T4 Gb
Ex ib [ia Ga] IIC T6…T4 Gb

Zone 0 Zone 1 Unclassified Location



FM or CSA certified segment coupler, barrier or FISCO supply with entity parameters:

Um ≤ 250 V
Voc or Uo ≤ Vmax or Ui
Isc or Io ≤ Imax or Ii
Po ≤ Pi

Ca or Co ≥ Ci + C cable
La or Lo ≥ Li + L cable

Loop input, terminal 1,2 parameter limits	
DIV1, ABCD or AEx ia, AEx ib or Ex ia, Ex ib Field Device	**FISCO Field Device**
Ui: 30 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature range T4: -40 ≤ Ta ≤ 85ºC T5: -40 ≤ Ta ≤ 73ºC T6: -40 ≤ Ta ≤ 58ºC	**Temperature range:** T4: -40 ≤ Ta ≤ 85ºC T5: -40 ≤ Ta ≤ 82ºC T6: -40 ≤ Ta ≤ 67ºC

	Sensor terminal parameter limits		
	3, 4, 5, 6	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Uo	7.2 VDC	7.2 VDC	7.2 VDC
Io:	7.3 mA	7.3 mA	12.9 mA
Po:	13.2 mW	13.2 mW	23.3 mW
Lo:	667 mH	667 mH	200 mH
Co:	13.324 µF	13.324 µF	13.324 µF

General IS installation instructions

The equipment shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to CSA C22.2 No. 60529 for Canada and ANSI/IEC 60529 for the US, and that is suitable for the application and correctly installed

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

If the enclosure is made of aluminum, it must be installed such that ignition sources due to impact and friction sparks are excluded.

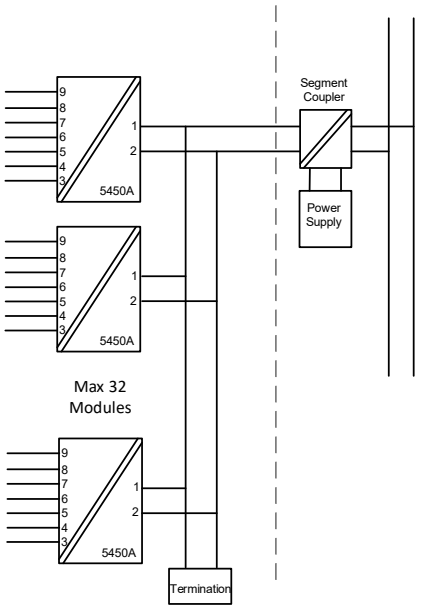
The distance between terminals, inclusive the wires' bare part, shall be at least 3 mm separated from any earthed metal.

For multiple wire connections the wires must be crimped together.

Only equipment classified as simple apparatus such as thermocouples and RTDs may be connected to sensor terminals.

Class I, Division 2, Groups A,B,C,D or
CL I, Zone 2, AEx ec IIC T6…T4 Gc or
CL I, Zone 2 AEx ic IIC T6…T4 Gc
Ex ec IIC T6…T4 Gc or
Ex ic IIC T6…T4 Gc

Hazardous classified Location Unclassified Location



Terminal 1,2 **Class I, DIV 2, ABCD or** **AEx ec / Ex ec**	**Terminal 1,2** **AEx ic / Ex ic**	**Terminal 1,2** **(FISCO Field Device)**
Vmax = 30 VDC In = 11 mA	Ui: 30 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any	Ui: 17.5 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Any
Temperature range T4: -40 ≤Ta≤ 85ºC T5: -40 ≤Ta≤ 80ºC T6: -40 ≤Ta≤ 65ºC	**Temperature range** T4: 40 ≤Ta≤ 85ºC T5: -40 ≤Ta≤ 85ºC T6: -40 ≤Ta≤ 70ºC	**Temperature range** T4: -40 ≤Ta≤ 85ºC T5: -40 ≤Ta≤ 85ºC T6: -40 ≤Ta≤ 74ºC

Terminal Ex ec	Terminal Ex ic		
3, 4, 5, 6, 7, 8, 9	**3, 4, 5, 6**	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Vmax = 7.2 VDC	Uo: 7.2 VDC Io: 7.3 mA Po: 13.2 mW Lo: 667 mH Co: 13.324 µF		Uo: 7.2 VDC Io: 12.9 mA Po: 23.3 mW Lo: 200 mH Co: 13.324 µF

General installation instructions

The equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the Canadian Electrical Code (CSA C22.1) for Canada and National Electrical Code (ANSI/NFPA 70) for the US.

For non-incendive installation the fieldbus transmitter must be installed and wired according to manufacturer's field wiring instructions.

For installation in Canada the module shall be installed in a suitable enclosure to meet installation codes stipulated in the Canadian Electrical Code (CEC).

Barriers are not required for Class I, Division 2 installation or Ex ec installation, but installation must be in accordance with the NEC or CEC.

If the enclosure is made of non-metallic plastic materials, electrostatic charges on the transmitter enclosure shall be avoided.

For an ambient temperature ≥ 60ºC, heat resistant cables shall be used with a rating of at least 20 K above the ambient temperature.

The distance between terminals, including the wires' bare part, shall be at least 3 mm separated from any earthed metal.

For multiple wire connections the wires must be crimped together.

For Class I, Zone 2 (Increased Safety 'ec').
The equipment shall be installed within an enclosure that provides a minimum ingress protection of IP54 in accordance with CSA C22.2 No. 60079-0 for Canada and with ANSI/UL 60079-0 for the US.

The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1 and correctly installed.

For Class I, Zone 2 (Increased Safety 'ic').
The equipment shall be mounted in an enclosure that provides a degree of protection of at least IP20 according to CSA C22.2 No. 60529 for Canada and ANSI/IEC 60529 for the US, and that is suitable for the application and correctly installed.

INMETRO installation drawing - approval pending

Instalação INMETRO 5450QB01-V2

Certificado INMETRO DEKRA **25.0004X**

Normas: ABNT NBR IEC 60079-0:2020 Versão Corrigida:2023
ABNT NBR IEC 60079-7:2018 Versão Corrigida:2022
ABNT NBR IEC 60079-11:2013 Versão Corrigida:2017

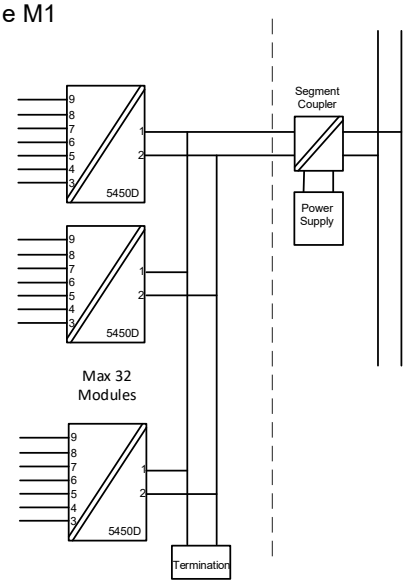
Para a instalação segura do dispositivo 5450D os seguintes pontos devem ser observados.

Marcação Ex ia IIC T6…T4 Ga ou
Ex ib [ia Ga] IIC T6…T4 Gb
Ex ia IIIC T85ºC….T110 ºC Db
Ex ia I Ma

Instalação Ex ia

Área classificada
Zona 0, 1, 2, 21, 22 e M1

Área não classificada



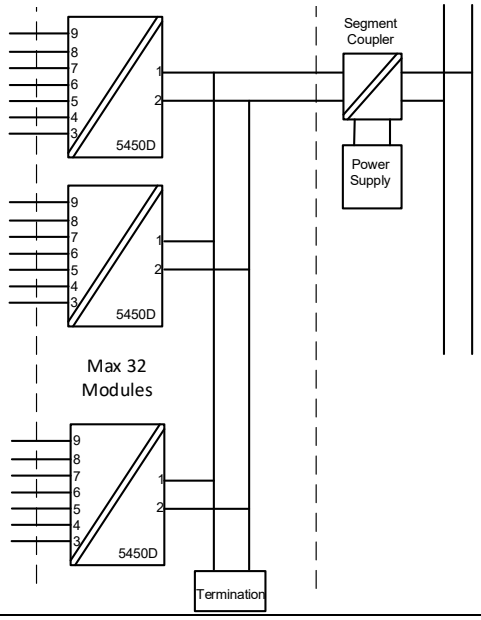
	Terminais		
	3,4,5,6	3,7,8,9	3,4,5,6,7,8,9
Uo	7,2 VDC	7,2 VDC	7,2 VDC
Io:	7,3 mA	7,3 mA	12,9 mA
Po	13,2 mW	13,2 mW	23,3 mW
Lo:	667 mH	667 mH	200 mH
Co	13,324 µF	13,324 µF	13,324 µF

Instalação Ex ib

Área classificada
Zona 0, 1, 2,
21, 22 e M1

Área classificada
Zona 1

Área não classificada



	Terminais		
	3,4,5,6	3,7,8,9	3,4,5,6,7,8,9
Uo	7,2 VDC	7,2 VDC	7,2 VDC
Io:	7,3 mA	7,3 mA	12,9 mA
Po	13,2 mW	13,2 mW	23,3 mW
Lo:	667 mH	667 mH	200 mH
Co	13,324 µF	13,324 µF	13,324 µF

Terminais 1,2	
Instalações Ex ia e Ex ib	**Dispositivo de campo FISCO**
Ui: 30 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Qualquer	Ui: 17.5 VDC Ii: 380 mA Li: 0 µH Ci: 1 nF Pi: Qualquer

Faixas de temperaturas	Faixas de temperaturas
Ma -40 ≤ Ta ≤ 85ºC T4/110ºC: -40 ≤ Ta ≤ 85ºC T5/100 ºC: -40 ≤ Ta ≤ 73ºC T6/85ºC: -40 ≤ Ta ≤ 58ºC	Ma -40 ≤ Ta ≤ 85ºC T4/110ºC: -40 ≤ Ta ≤ 85ºC T5/100 ºC: -40 ≤ Ta ≤ 82ºC T6/85ºC: -40 ≤ Ta ≤ 67ºC

Instruções gerais de instalação

Se o invólucro for feito de materiais plásticos não metálicos, devem ser evitadas cargas eletrostáticas no invólucro do transmissor.

Para EPL Ga, se o invólucro for de alumínio, ele deve ser instalado de forma que as fontes de ignição devido a faíscas de impacto e fricção sejam excluídas.

A distância entre terminais, fios inclusivos não isolados, deve ser separada por pelo menos 3 mm de qualquer metal aterrado.
Se o transmissor foi aplicado no tipo de proteção Ex ec, não pode ser aplicado para segurança intrínseca.

Para conexão de múltiplos fios, os fios devem ser crimpados juntos.

Para instalações com uma atmosfera de gás potencialmente explosiva, a seguinte instrução se aplicará:
O transmissor deverá ser montado em um invólucro de formato tipo B de acordo com a norma DIN43729 ou equivalente que possibilita um grau mínimo de proteção IP20 de acordo com a ABNT NBR IEC60529.
O invólucro deve ser adequado para a aplicação e instalado corretamente.

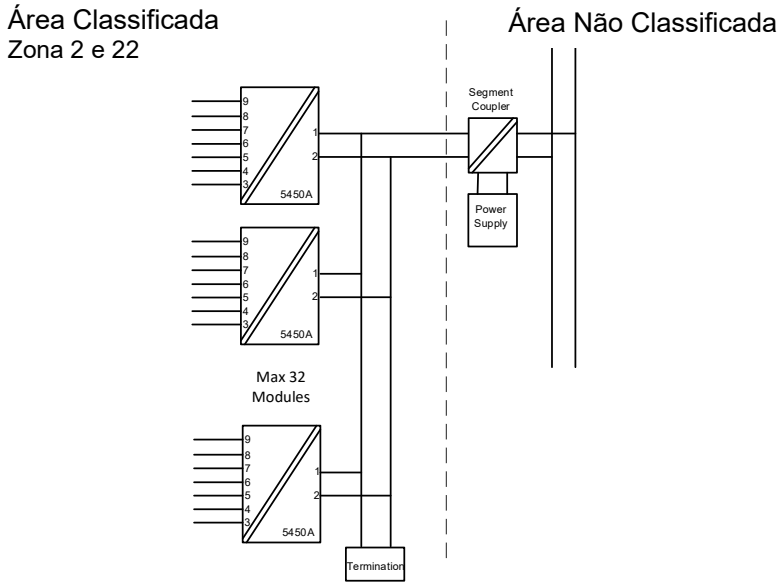
Para instalação em uma atmosfera de poeira potencialmente explosiva, as seguintes instruções se aplicarão:
Se o transmissor for instalado em uma atmosfera explosiva que exija o uso de nível de proteção de equipamento Db ou Dc e aplicado no tipo de proteção Ex ia ou Ex ic, o transmissor deverá ser montado em invólucro que forneça um grau de proteção de pelo menos IP5X de acordo com ABNT NBR IEC60079-0, e que seja adequado à aplicação e instalado corretamente.
Os dispositivos de entrada de cabos e os elementos de obturação devem cumprir os mesmos requisitos.

Para instalações em minas, as instruções abaixo se aplicam:
O transmissor deverá ser montado em um invólucro de metal que possibilita um grau mínimo de proteção IP54 de acordo com a ABNT NBR IEC60529.
Invólucros de alumínio não são permitidos para instalações em minas.
O invólucro deve ser adequado para a aplicação e instalado corretamente.
Os dispositivos de entrada de cabos e os elementos espaçadores devem satisfazer os mesmos requisitos.

Instalações Ex ec / Ex ic

Para a instalação segura do dispositivo 5450A os seguintes pontos devem ser observados.

Marcação
Ex ec IIC T6…T4 Gc
Ex ic IIC T6…T4 Gc
Ex ic IIIC T85ºC….T110ºC Dc



Terminais 1,2 **Ex ec**	**Terminais 1,2** **Ex ic**	**Terminais 1,2** **(Dispositivo de campo FISCO)**
Vmáx. = 30 VDC In = 11 mA	Ui: 30 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Qualquer	Ui: 17,5 VDC Ii: 380mA Li: 0 µH Ci: 1 nF Pi: Qualquer
Faixas de temperaturas T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 80ºC T6/85ºC: -40 ≤Ta≤ 65ºC	**Faixas de temperaturas** T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 85ºC T6/85ºC: -40 ≤Ta≤ 70ºC	**Faixas de temperaturas** T4/110ºC:-40 ≤Ta≤ 85ºC T5/100ºC:-40 ≤Ta≤ 85ºC T6/85ºC: -40 ≤Ta≤ 74ºC

Terminais Ex ec	Terminais Ex ic		
3, 4, 5, 6, 7, 8, 9	**3, 4, 5, 6**	**3, 7, 8, 9**	**3, 4, 5, 6, 7, 8, 9**
Vmáx. = 7,2 VDC	Uo: 7,2 VDC Io: 7,3 mA Po: 13,2 mW Lo: 667 mH Co: 13,324 µF		Uo: 7,2 VDC Io: 12,9 mA Po: 23,3 mW Lo: 200 mH Co: 13,324 µF

Instruções gerais de instalação

Se o invólucro for feito de materiais plásticos não metálicos, devem ser evitadas cargas eletrostáticas no invólucro do transmissor.

Para uma temperatura ambiente ≥ 60ºC, devem ser utilizados cabos resistentes ao calor com uma classificação de pelo menos 20 K acima da temperatura ambiente.

O invólucro deve ser adequado para a aplicação e instalado corretamente.
A distância entre terminais, fios inclusivos não isolados, deve ser separada por pelo menos 3 mm de qualquer metal aterrado.

Para conexão de múltiplos fios, os fios devem ser crimpados juntos.

Para instalações em uma atmosfera de gás potencialmente explosiva, as instruções abaixo e aplicarão:
O transmissor deverá ser instalado em um invólucro que possibilita um grau de proteção de no mínimo IP54 de acordo com a ABNT NBR IEC 60079-0 e seja adequado para a aplicação e instalado corretamente, por exemplo em um invólucro que esteja no tipo de proteção Ex e.
Em adição, o invólucro deverá possibilitar um grau de poluição interna de 2 ou melhor, como definido na ABNT NBR IEC60664-1.
Os dispositivos de entrada de cabos e os elementos espaçadores devem satisfazer os mesmos requisitos.

Para a instalação em uma atmosfera de poeira potencialmente explosiva, as seguintes instruções se aplicarão:
Se o transmissor for fornecido com um sinal intrinsecamente seguro "ic" e fizer interface com um sinal intrinsecamente seguro "ic" (por exemplo, um dispositivo passivo), o transmissor deverá ser montado em um invólucro metálico certificado forma B de acordo com DIN 43729 ou equivalente que forneça um grau de proteção de pelo menos IP54 conforme ABNT NBR IEC 60079-0.
Os dispositivos de entrada de cabos e os elementos de obturação devem cumprir os mesmos requisitos.

NEPSI installation drawing - approval pending

NEPSI 安装图 5450QN01-V1R0

NEPSI 证书　　GYJ2x.xxxxX

防爆标志为　　Ex ia IIC T4…T6 Ga
Ex ib [ia Ga] IIC T4…T6 Gb
Ex ic IIC T4…T6 Gc
Ex ec [ic Gc] IIC T4…T6 Gc
Ex ia IIIC T80°C/T95°C/T130°C Db
Ex ib [ia Da] IIIC T80°C/T95°C/T130°C Db

二、产品使用注意事项

2.1 变送器的使用环境温度范围、温度组别与安全参数的关系如下表所示:

接线端子	防爆等级	环境温度	温度组别	安全参数
1 ~ 2	ia, ib iaDb ibDb	(-50~+50)°C	T6/T80°C	U_i=30 V　I_i=120 mV　P_i=900 mW　L_i≈0 C_i=1 nF
		(-50~+65)°C	T5/T95°C	
		(-50~+85)°C	T4/T130°C	
		(-50~+55)°C	T6/T80°C	U_i=30 V　I_i=120 mV　P_i=750 mW　L_i≈0 C_i=1 nF
		(-50~+70)°C	T5/T95°C	
		(-50~+85)°C	T4/T130°C	
		(-50~+60)°C	T6/T80°C	U_i=30 V　I_i=120 mV　P_i=610 mW　L_i≈0 C_i=1 nF
		(-50~+75)°C	T5/T95°C	
		(-50~+85)°C	T4/T130°C	
	ic	(-50~+55)°C	T6	U_i=37 V　L_i≈0　C_i=1 nF U_i=48 V　P_i=851 mW　L_i≈0　C_i=1 nF
		(-50~+70)°C	T5	
		(-50~+85)°C	T4	
		(-50~+60)°C	T6	U_i=30 V　L_i≈0　C_i=1 nF
		(-50~+75)°C	T5	
		(-50~+85)°C	T4	
1 ~ 2	ec	(-50~+55)°C	T6	U_{max}=37 V
		(-50~+70)°C	T5	
		(-50~+85)°C	T4	
		(-50~+60)°C	T6	U_{max}=30 V
		(-50~+75)°C	T5	
		(-50~+85)°C	T4	
3 - 4 ~ 9	ia, ib, ic	(-50~+85)°C	T4 ~ T6	U_o=7.2 V　I_o=12.9 mA　Po=23.3 mW L_o=200 mH　C_o=13.5 μF
3 - 4 ~ 6 3 - 7 ~ 9				U_o=7.2 V　I_o=12.9 mA　Po=13.2 mW L_o=667 mH　C_o=13.5 μF

2.2 变送器必须与已经通过防爆认证的关联设备配套/传感器共同组成本安防爆系统方可使用于爆炸性危险场所。其系统接线必须同时遵守本产品、所配关联设备和传感器的使用说明书要求，接线端子不得接错。
2.3 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
2.4 用户在安装、使用和维护变送器时，须同时严格遵守产品使用说明书和下列标准:

GB 3836.13-2021 爆炸性环境 第 13 部分: 设备的修理、检修、修复和改造

GB 3836.15-2017 爆炸性气体环境用电气设备 第 15 部分: 危险场所电气安装 (煤矿除外)

GB 3836.16-2022 爆炸性气体环境用电气设备 第 16 部分: 电气装置的检查和维护 (煤矿除外)

GB 3836.18-2017 爆炸性环境第 18 部分: 本质安全系统

GB 50257-2014 电气装置安装工程爆炸和火灾危险环境电气装置施工及验收规范

GB 12476.2-2010 可燃性粉尘环境用电气设备 第 2 部分: 选型和安装

GB 15577-2007 粉尘防爆安全规程

Document history

The following list provides notes concerning revisions of this document.

Rev. ID	Date	Notes
100	2520	Initial release of the product.

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