RUEGER – BESTA – DIESSE – YAMARI
PR ELECTRONICS - GENERAL INSTRUMENT

One Stop Shopping Products – Technical Support – Problem Solution






SOLE AGENT IN INDONESIA

PT. Instrumentation Engineering and Services

(Your Instrumentation Partner)

Address : Ruko 1000 , Komplek Taman Palem Lestari , Block V No. 3.
Jl. Kamal Raya Outer Ring Road - Jakarta 11730

Telphone : +62 8111-371-373

Mobile No : +62 8111-371-371

Email : sales@pt-ies.com & danny@pt-ies.com

Website : www.instrumentation.id

Introduction of our Company .

Our Company

Incorporated in 2009 , our company PT. Instrumentation Engineering and Services , have many experience , and expertise with background in instrumentation , and Engineering . We are focusing to provide total solution for industrial instrumentation , and Engineering .

One stop shopping of Instrumentation products.

PT. Instrumentation Engineering and Services , offers for a wide range products in servicing process plants with our expertise, with our solution such as: consultations, field service, training and engineering.

A Commitment Customer Support & Solution .

It follows the principle of "Your Instrumentation Partner" along with enduring relationship with customers. Currently, PT. Instrumentation Engineering and Services,have comprehensive technical assistance ,and support to our customers need to meet specific applications ,and emerging needs.
In which still growing and improving, to support existing , and new plants / project .

Our's Core Business Areas

1). Oil and Gas Industry
2). Engineering , Procurement & Constructors (EPC)
3). Mining Industry
4). Power Plant Industry
5). Petrochemical & Fertilizer Industry
6). Marine

Our's Brand :

- **RUEGER from Switzerland**
- **BESTA from Switzerland**
- **KSR KUEBLER from Germany**
- **DIESSE from Italia**
- **GASTRON from Korea**
- **YAMARI from Japan**
- **TIAN MIN from China**
- **Calibrator & Handheld Instruments**
- **PR Electronics from Denmark**

Our's Motto : "

" WE CAN DO IT FOR YOU "

Our's one-stop products , as following :

Temperature products :

1) **Thermocouple & RTD Sensors**
2) **Thermowell (from solid bar stock)**
3) **Skin tube Sensors**
4) **Multipoints Sensors**
5) **Thermocouple & RTD Extension cable**
6) **Temperature Gauge / Indicator**
7) **Temperature Indicator Switch**
8) **Temperature Transmitter**

Pressure Products :

1) **Pressure Gauge / Indicator**
2) **Differential Pressure Gauge**
3) **Pressure Indicator Switch**
4) **Pressure Transmitter / Transducer**
5) **Diaphragm Seal**

Level Products :

1) **Magnetic Level Gauge & Transmitter**
2) **Sight Glass Level Gauge (Reflex & Transparent)**
3) **Float Level Transmitter**
4) **Float Level Switches (side & vertical mounting)**

Instruments Valve Products :

1) **2 ways / 3 ways / 5 ways Manifolds**
2) **Neddle / Ball / Check Valve**
3) **Double Block & Bleed Valve**
4) **Monoflange Valve**
5) **High Pressure - Autoclave special design**
6) **Swivel Gauge adaptor**
7) **Accessories adaptor / connector**

Calibrators & Handheld Products :

1) **Calibrator for Pressure and Temperature**
2) **Portable Hart Communicator**
3) **Portable Signal Process / Instruments**
4) **Tranducer Signal Converter**

RUEGER

(TEMPERATURE AND PRESSURE PRODUCTS)

(TEMPERATURE - PRESSURE - INSTRUMENTS VALVE)

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RÜEGER


300
400
200
500
100
600
°C
RUEGER


RUEGER
°C
°F


40
50
60
70
80
90
30
100
20
110
10
120
0
°C
RUEGER


AMC

Temperature multipoint sensors

When several temperature measurement points have to be provided in a vessel, traditional individual solutions are not suitable for obtaining a good distribution of measurements. This is where RÜEGER Multipoint sensors provide the answer.

They are custom-made in order to meet your exact requirements for use and to be able to withstand the harshest conditions.

The number of measuring elements can vary from 2 to 36 points or even more, with external diameters ranging from 0.5 to 8 mm and lengths from a few centimeters to several meters.

RÜEGER SA has a team of engineers, exclusively dedicated to research and development into these types of instruments and giving our customers full support from initial stage to the commissioning.

explosionproof / flameproof

skin

with display

universal temperature transmitter

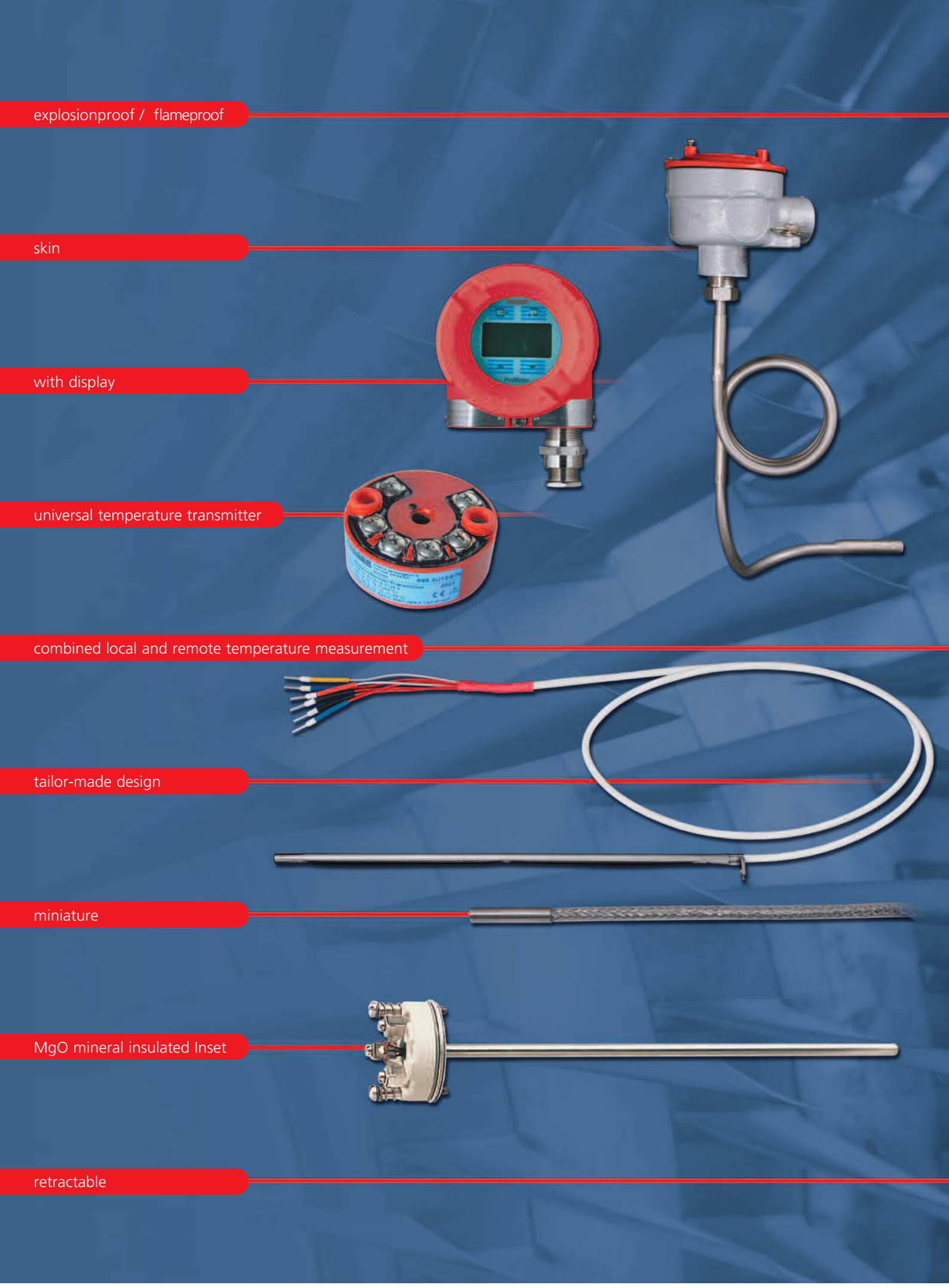
combined local and remote temperature measurement

tailor-made design

miniature

MgO mineral insulated Inset

retractable



Temperature probes and Transmitters

Thermoresistance and thermocouple probes are designed for mounting on pipes, tanks, reactors, furnaces or columns. Whether for immersion or surface measurements, the probe reaction time will always depend on the measurement environment and is designed to give the best response time.

The measuring components are interchangeable, can be used with most process connections and can be fitted with local or remote display temperature transmitter.

The advantage of temperature transmitters with or without display lies in the conversion of the measurement into a stable signal, leading to significant improvement in measurement accuracy.
The communication protocols used for the transmitters are 4-20mA HART with two-wire technology, Profibus PA or Foundation Fieldbus.

Whether in the field of chemicals, petrochemicals, energy or other industrial applications, the reliability and accuracy of its instruments have made RÜEGER SA a company of world renown with a recognised label of quality.

every angle with double scale

with electrical contact

universal type

classic type

Bimetallic thermometers

As a physical unit, temperature cannot be measured directly, only by means of a process involving a change in temperature. The bimetallic sensor is made from two materials with different expansion coefficients, welded together. These two materials expand at their free end when they undergo variations in temperature and act directly on the pointer.

The success of the RÜEGER bimetallic thermometer is due to its unique manufacturing specifications and its accuracy.

With their individual calibration and double spiral technology, RÜEGER has the most compact bimetallic systems in the world and guarantees optimal accuracy and short response time. Thanks to its experience of over 65 years working in the world of temperature measurement, RÜEGER offers a huge range of thermometers to meet the highest demands of different industrial applications.


horizontal type
with capillary tube
with electrical contact
vertical type
liquid filled with armoured capillary

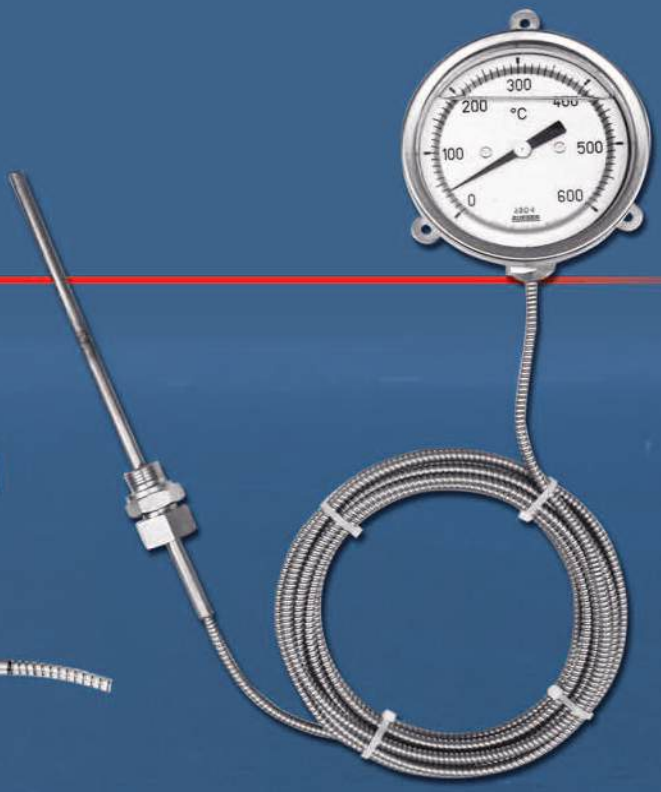
Gas thermometers

These thermometers work on the principle that pressure varies as a function of temperature, according to the gas law. The measuring system of gas thermometers consists of a capillary tube and a tubular coil. A temperature variation acting on the sensor proportionately alters the pressure of the gas contained within it. The expansion of the gas unwinds the coil. The angle of displacement of the coil is transmitted by means of an amplifying movement to a pointer, so enabling the temperature to be read.

The main features of gas thermometers are the wide range of measurement possible (-260°C to 700°C), their extreme resistance to vibration and the possibility of taking measurements from a distance (remote reading).

Thanks to its long experience, RÜEGER can offer a huge range of gas thermometers to meet the highest demands of different industrial applications.

fixed stem, exhaust gas



remote exhaust gas

combined thermocouple
gas pressure thermometer

cryogenic remote

cooling RTD sensor

cooling thermometer

Thermometers and sensors for Diesel applications

A large range of custom-designed thermo electric sensors, combined sensor-thermometers (S92) and local and remote indicating thermometers with thermowells is used worldwide by the most well known and respected naval diesel engine manufacturers for exhaust gas, turbo-charge or oil and water temperature control.

Reliable, accurate and long-lasting, RÜEGER temperature sensors and thermometers not only meet international naval standards for exhaust line components but also take into account future high performance and low emission engines.

A range of low temperature sensors and thermometers covers control and temperature indication of cargo, such as LNG/LPG tanks and vessels or refrigerated containers.


with collar
fabricated
weld-in
with extension
stepped with tantalium protection
heavy duty

Thermowells

Thermowells protect bimetallic and gas thermometers, resistance temperature detectors and thermocouples, and any probes associated with other measuring instruments (indicators, regulators and recorders). They help to protect against corrosion, abrasion and a pressurized environment.
The use of thermowells also enables these instruments and sensors to be replaced without interrupting the process.
Many different types of thermowell can be supplied in a range of materials, with various surface coatings, in line with all existing national and international standards or to customers' drawings. They can be drilled into bars or fabricated assemblies.

RÜEGER's knowledge and experience, particularly in machining and welding, enable it to supply thermowells for a wide variety of industrial applications, with complete safety for our clients. RÜEGER can also supply thermowells for extreme applications through its use of specialized materials and coatings.

with seal

classical type

with phenol case

differential

Stainless steel pressure gauges

Pressure measurement is a vast area. Various types of measurement can be identified (absolute, relative, differential, etc.) and different methods: Bourdon tube, diaphragm and capsule. One can also talk of static pressure and dynamic pressure.
In addition to supplying pressure gauges we also supply seals and other accessories such as manifolds, valves and other safety devices. Pressures commonly used in industry go from vacuum pressure to 1600 bars.

Measurement of pressure and temperature are often complementary, which gives RÜEGER a dominant position in the supply of mechanical measurement instruments. RÜEGER pressure gauges have the qualities that characterize our manufacture: accuracy, robustness and versatility.

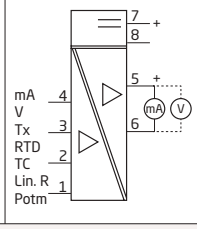
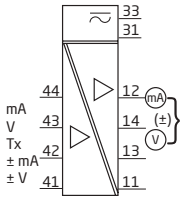
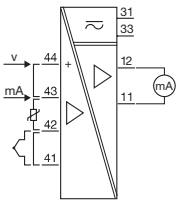
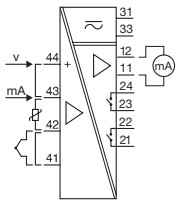
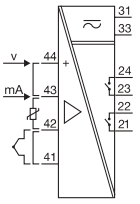
Signal Conditioning & *Communication Interfaces* *Product Catalog*

PERFORMANCE MADE SMARTER

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

PR electronics

MULTIFUNCTIONAL TRANSMITTERS

TYPE	3114	4104	4114	4116	4131
	Isolated universal converter	Universal uni-/bipolar signal transmitter	Universal transmitter	Universal transmitter	Universal trip amplifier
INPUT: RTD, TC, linear resistance, mV, mA, V, potentiometer **OUTPUT:** mA, V, relays					
INPUT:					
mA, measurement range / min. span	0...23 mA / 16 mA	-23...+23 mA	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA
V, measurement range / min. span	0...12 VDC / 0.8 V	-12...+12 VDC / 0.8 V	0...12 VDC / 0.8 V	0...12 VDC / 0.8 V	0...12 VDC / 0.8 V
RTD, measurement range / min. span	-200...+850°C / 25°C		-200...+850°C / -	-200...+850°C / -	-200...+850°C / -
Lin. R, measurement range / min. span	0...10000 Ω / -		0...10000 Ω / -	0...10000 Ω / -	0...10000 Ω / -
Potentiometer	10 Ω...100 kΩ		10 Ω...100 kΩ	10 Ω...100 kΩ	10 Ω...100 kΩ
Sensor connection, wires	2 - 3 - 4		2 - 3 - 4	2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5Lr		BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr
Cold junction compensation	Internal		Internal / external	Internal / external	Internal / external
Reference voltage / 2-wire supply	- / > 15 V	- / 16 VDC	- / 16 VDC	- / 16 VDC	- / 16 VDC
OUTPUT:					
mA, signal range / min. span	0...23 mA / 16 mA	-23...+23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA	
Load (@ current output)	≤ 600 Ω	≤ 800 Ω	≤ 800 Ω	≤ 800 Ω	
V, signal range / min. span	0...10 VDC / 0.8 VDC	-10...+10 VDC / 0.8 VDC	0...10 VDC / 0.8 VDC	0...10 VDC / 0.8 VDC	
Load (@ voltage output)	≥ 10 kΩ	≥ 500 kΩ			
Relays				2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA
TECHNICAL SPECIFICATIONS:					
Ambient temperature	-25...+70°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal AC / DC	- / 16.8...31.2 VDC	21.6...253V / 19.2...300V	21.6...253V / 19.2...300V	21.6...253V / 19.2...300V	21.6...253V / 19.2...300V
Max. required power	1.2 W	2.5 W	2.0 W	2.5 W	2.0 W
Isolation voltage, test / operation	2.5 kVAC / 250 VAC	2.3 kVAC / 250 VAC	2.3 kVAC / 250 VAC	2.3 kVAC / 250 VAC	2.3 kVAC / 250 VAC
Response time	0.4 / 1.0 s	< 20 ms	< 400 ms	< 400 ms	< 400 ms
Signal dynamics, input / output	24 bit / 16 bit	20 bit / 18 bit	24 bit / 16 bit	24 bit / 16 bit	24 bit / -
Accuracy	< ±0.1% of span	< ±0.05% of span	< ±0.1% of span	< ±0.1% of span	< ±0.1% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
NAMUR	NE 21, NE 43	NE 21	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43
Channels	1	1	1	1	1
Programming	4500 series devices	4500 series devices	4500 series devices	4500 series devices	4500 series devices

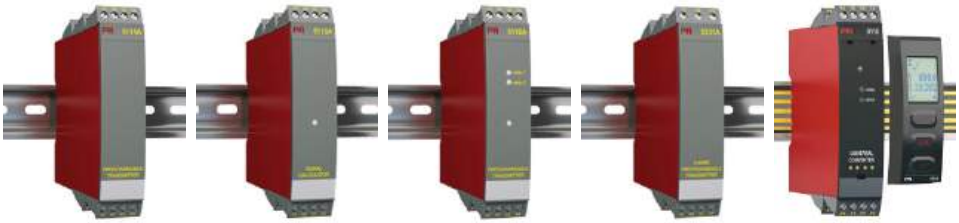
APPROVALS:						
ATEX, Zone 2	✓					
IECEx, Zone 2	✓					
FM, Zone 2 - DIV 2	✓	✓	✓	✓	✓	
UL 61010 / 508	✓ / -	- / ✓	- / ✓	- / ✓	- / ✓	
DNV-GL / EU-RO marine	✓ / -	✓ / -	✓ / ✓	✓ / ✓	✓ / ✓	
EAC	✓	✓	✓	✓	✓	
SIL 2, Hardware Assessment			✓	✓		

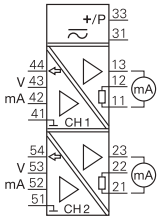
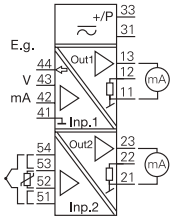
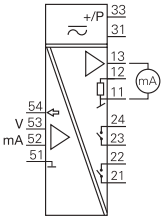
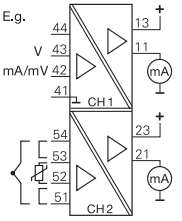
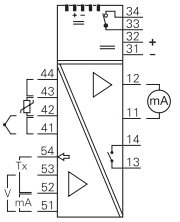
APPLICATION GUIDE:						
mA / V / temperature input	✓ / ✓ / ✓	✓ / ✓ / -	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	
Bipolar mA / V input		✓ / ✓				
Lin. R / potentiometer input	✓ / ✓		✓ / ✓	✓ / ✓	✓ / ✓	
4...20 mA Tx input	✓	✓	✓	✓	✓	
V-curve function		✓				
Buffered voltage output	✓					
Active / passive current output	✓ / -	✓ / ✓	✓ / -	✓ / -		
Analog / relay output	✓ / -	✓ / -	✓ / -	✓ / ✓	- / ✓	
Custom sensor linearization						
Process signal calibration	✓	✓	✓	✓	✓	
Power rail option	✓					

exida = FMEDA report

Of span = Of the presently selected range

MULTIFUNCTIONAL TRANSMITTERS



TYPE	5114A	5115A	5116A	5131A	9116A
	Programmable transmitter	Signal calculator	Programmable transmitter w. limit switch	2-wire programmable transmitter	Universal converter
INPUT: RTD, TC, linear resistance, mV, mA, V, potentiometer **OUTPUT:** mA, V, relays					
INPUT:					
mA, measurement range / min. span	0...100 mA / 4 mA	0...100 mA / 4 mA	0...100 mA / 4 mA	0...100 mA / 4 mA	0...23 mA / 16 mA
V, measurement range / min. span	0...250 VDC / 5 mV	0...250 VDC / 5 mV	0...250 VDC / 5 mV	0...250 VDC / 5 mV	0...12 VDC / 0.8 V
mV, measurement range / min. span	-150...+150 mV / 5 mV	-150...+150 mV / 5 mV	-2500...+2500 mV / 5 mV	-150...+150 mV / 5 mV	
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...10000 Ω / -
Potentiometer	200 Ω...100 kΩ	200 Ω...100 kΩ	200 Ω...100 kΩ		10 Ω...10000 Ω
Sensor connection, wires	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	
Cold junction compensation	Internal / external	Internal / external	Internal / external	Internal / external	Internal / external
Reference voltage / 2-wire supply	2.5 VDC / > 17.1 VDC	2.5 VDC / > 17.1 VDC	2.5 VDC / > 16.5 VDC		- / > 16.5 VDC
OUTPUT:					
mA, signal range / min. span	0...23 mA / 10 mA	0...23 mA / 10 mA	0...23 mA / 10 mA	3.5...23 mA / 10 mA	0...23 mA / 16 mA
Load (@ current output)	≤ 600 Ω	≤ 600 Ω	≤ 600 Ω	≤ (V_{supply}-7.5)/0.023 [Ω]	≤ 600 Ω
V, signal range / min. span	0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC		
Load (@ voltage output)	≥ 500 kΩ	≥ 500 kΩ	≥ 500 kΩ		
Relays			2 x SPST, AC: 500 VA		1 x SPST, AC: 500 VA
TECHNICAL SPECIFICATIONS:					
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal AC / DC	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	- / 7.5...35 VDC	- / 19.2...31.2 VDC
Max. required power, 1 / 2 channels	2.1 W / 2.8 W	2.1 W / 2.8 W	2.4 W / -	0.8 W	≤ 2.1 W
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	2.6 kVAC / 250 VAC
Response time	250 ms...60 s	250 ms...60 s	250 ms...60 s	1...60 s	0.4 / 1...60 s
Signal dynamics, input / output	22 bit / 16 bit	22 bit / 16 bit	22 bit / 16 bit	22 bit / 16 bit	24 bit / 16 bit
Accuracy	< ±0.05% of span	< ±0.05% of span	< ±0.05% of span	≤ ±0.05% of span	< ±0.1% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
NAMUR	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43
Channels	1 or 2	2	1	1 or 2	1
Programming	5909 + DIP switch	5909 + DIP switch	5909	5909 + DIP switch	4500 series devices

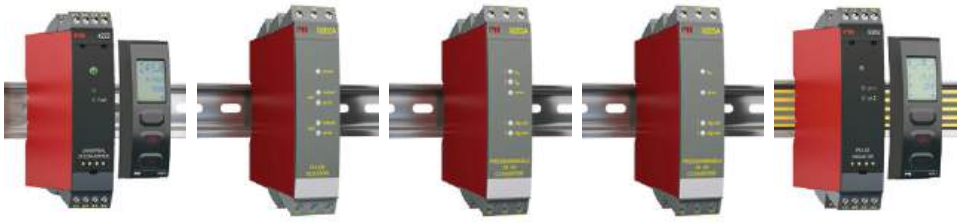
APPROVALS:					
ATEX, Zone 2					✓
IECEx, Zone 2					
FM, Zone 2					
UL 61010 / 508 / 913			- / ✓ / -		✓ / - / ✓
DNV-GL	✓	✓	✓		✓
EAC	✓	✓	✓	✓	✓
SIL 2 Full Assessment IEC 61508					✓

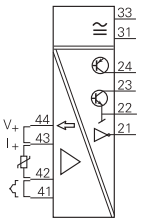
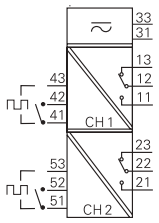
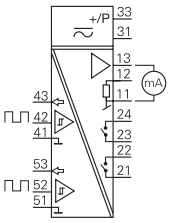
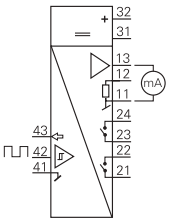
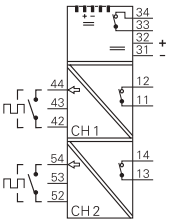
APPLICATION GUIDE:					
mA / V / temperature input	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
Bipolar mV input	✓	✓	✓	✓	
Lin. R / potentiometer input	✓ / ✓	✓ / ✓	✓ / ✓	✓ / -	✓ / ✓
4...20 mA Tx input	✓	✓	✓	✓	✓
Dual input - math functions		✓			
Buffered voltage output					
Active / passive current output	✓ / ✓	✓ / ✓	✓ / ✓	✓	✓ / ✓
Analog / relay output	✓ / -	✓ / -	✓ / ✓	✓ / -	✓ / ✓
Custom sensor linearization	✓	✓	✓		
Process signal calibration	✓	✓	✓	✓	✓
Power rail option					✓

= Full assessment acc. to IEC 61508

Of span = Of the presently selected range

FREQUENCY / PULSE



TYPE	4222	5202A	5223A	5225A	9202A
	Universal I/f converter	Pulse isolator	Programmable f/I - f/f converter	Programmable f/I - f/f converter	Pulse isolator
INPUT: Frequency, pulse, V, mA, Pt100, TC, mV **OUTPUT:** mA, V, pulse, relays					
INPUT:					
Sensor type		NAMUR / switch	All standard sensors	All standard sensors	NAMUR / switch
Hz, measurement range / min. span		0...5 kHz	0...20 kHz / 0.001 Hz	0...20 kHz / 0.001 Hz	0...5 kHz
Min. pulse width		> 100 µs	25 µs	25 µs	> 100 µs
mA, measurement range / min. span	0...23 mA / 16 mA				
V, measurement range / min. span	0...12 VDC				
RTD, measurement range / min. span	200...+850°C / -				
Lin. R, measurement range / pot.-meter	0 Ω...10 kΩ/10 Ω...100 kΩ				
Sensor connection, wires	2 - 3 - 4				
TC types	BEJKLNRSTUW3W5Lr				
OUTPUT:					
mA, signal range / min. span			0...23 mA / 5 mA	0...23 mA / 5 mA	
V, signal range / min. span			0...10 VDC / 0.25 VDC	0...10 VDC / 0.25 VDC	
Hz, signal range / min. span	0...25000 Hz / 0.001 Hz	0...5 kHz / -			0...5 kHz
Pulse output	NPN / PNP / TTL	NPN / relay	NPN / PNP or relays	NPN / PNP or relays	NPN / relay
Relays		2 x SPDT, AC: 100 VA	2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA	1 x SPST, AC: 500 VA
Max. output frequency	25 kHz		1000 Hz	1000 Hz	
Sensor supply	> 16 VDC		5...17 VDC	5...17 VDC	
TECHNICAL SPECIFICATIONS:					
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, AC / DC	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	- / 19.2...28.8 VDC	- / 19.2...31.2 VDC
Max. required power, 1 / 2 channels	2.5 W / -	- / 1.5 W or 1.8 W*	3 W	3.5 W	≤ 1.1...1.3 W/≤ 1.5...1.9 W
Isolation voltage, test / operation	2.3 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	2.6 kVAC / 250 VAC
Response time	< 1 s		60 ms...1000 s	60 ms...1000 s	200 ms
Signal dynamics, input / output	24 bit / -		- / 16 bit	- / 16 bit	
Accuracy	≤ ±0.1% of span		≤ ±0.1% of span	≤ ±0.1% of span	
Temperature coefficient	< ±0.01% of span / °C		< ±0.01% of span / °C	< ±0.01% of span / °C	
NAMUR	NE 21	NE 21			NE 21
Channels	1	2	1	1	1 or 2
Programming	4500 series devices	DIP switch	5909 + DIP switch	5909 + DIP switch	4500 series devices
APPROVALS:					
ATEX, Zone 2					✓
IECEx, Zone 2					
FM, Zone 2 - DIV 2	✓				
UL 61010 / 508 / 913	- / ✓ / -	- / ✓ / -			✓ / -/ ✓
DNV-GL					✓
EAC	✓	✓	✓	✓	✓
SIL 2, Hardware Assessment		✓			
SIL 2 Full Assessment IEC 61508					✓
APPLICATION GUIDE:					
Frequency to analog converter			✓	✓	
Analog to frequency converter	✓				
Lin. R / potentiometer input	✓ / ✓				
Concurrent f/I and f/f				✓	
Pulse converter / scaler			✓	✓	
Pulse isolator 1:1					✓
Dual input - math functions		✓	✓		
Digital output	✓		✓	✓	✓
Relay output		✓	✓	✓	✓
Process signal calibration	✓	✓	✓	✓	
Power rail option					✓

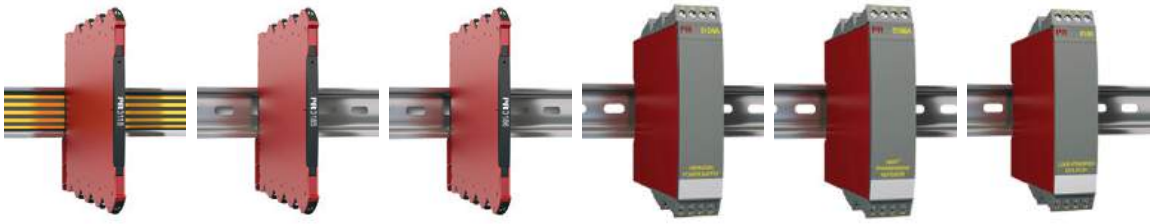
exida = FMEDA report

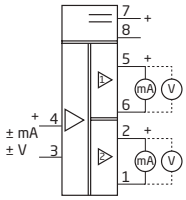
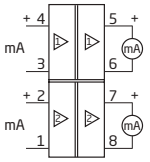
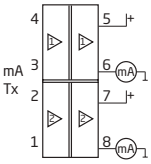
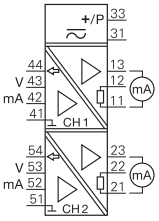
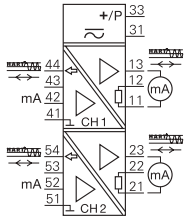
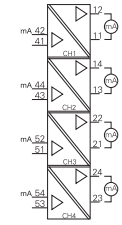
SIL 2 = Full assessment acc. to IEC 61508

***1.5 W (2 relays) / 1.8 W (4 relays)**

Of span = Of the presently selected range

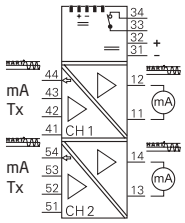
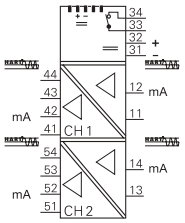
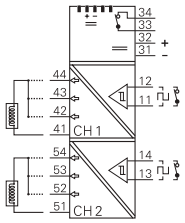
HART COMMUNICATION FOUNDATION



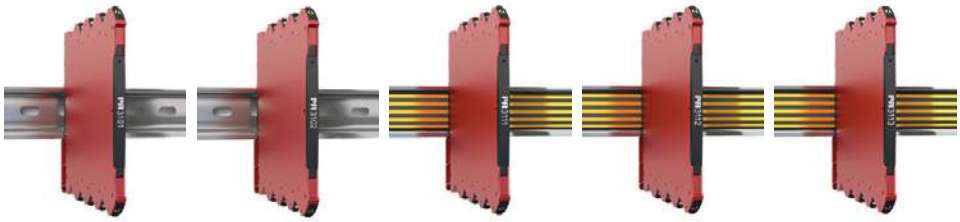
TYPE	3118	3185	3186	5104A	5106A	6185
	Bipolar isolated converter / splitter	Loop-powered isolator	2-wire transmitter isolator	Repeater / power supply	HART transparent repeater	Loop-powered isolator
INPUT: mA, mV, V, HART communication						
OUTPUT: mA, V, HART communication						
INPUT:						
mA, measurement range / min. span	-23...+23 mA	0...23 mA / 1:1	3.5...23 mA / 1:1	0...23 mA / 16 mA	3.5...23 mA / 1:1	0...23 mA / 1:1
V, measurement range / min. span	±5 and ±10 VDC			0...10 VDC / 8 VDC		
Max. offset				20% of selec. max. value		
Reference voltage / 2-wire supply			- / V_{loop}-2.5 VDC	- / > 17.1 VDC	- / > 17 VDC	
OUTPUT:						
mA, signal range / min. span	0...23 mA / 16 mA	0...23 mA / 1:1	3.5...23 mA / 1:1	0...23 mA / 16 mA	3.5...23 mA / 1:1	0...23 mA / 1:1
Load (@ current output)	≤ 300 Ω per channel	≤ 600 Ω		≤ 600 Ω	≤ 600 Ω	≤ 600 Ω
V, signal range / min. span	0...10 VDC / 4 VDC			0...10 VDC / 0.8 VDC		
Load (@ voltage output)	≥ 10 kΩ			≥ 500 kΩ		
Max. offset				20% of selec. max. value		
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-25...+70°C	-25...+70°C	-25...+70°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, AC / DC	- / 16.8...31.2 VDC	≤ 1.25 V + (0.015 x Vout.)	- / 6...35 VDC	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	- / ≤ 1.8 VDC
Max. required power, 1 / 2 channels	*0.8 W / -	30 mW per channel	50 mW per channel	2.0 W / 2.8 W	2.0 W / 2.8 W	40 mW per channel
Isolation voltage, test / operation	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	2 kVAC / -
Response time	< 7 ms	< 5 ms	< 5 ms	< 25 ms	< 25 ms	< 4 ms
Signal dynamics, input / output	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain
Accuracy	< ±0.05% of span	< ±0.1% of span	< ±0.05% of span	≤ ±0.1% of span	≤ ±0.1% of span	≤ ±0.1% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
NAMUR	NE 21	NE 21	NE 21	NE 21	NE 21	
Channels	1	1 or 2	1 or 2	1 or 2	1 or 2	1, 2 or 4
Programming	DIP switch	No	No	DIP switch	DIP switch	No
APPROVALS:						
ATEX, Zone 2	✓	✓	✓			
IECEx, Zone 2	✓	✓	✓			
FM, Zone 2 - DIV 2	✓	✓	✓			
UL 61010 / 508	✓ / -	✓ / -	✓ / -	- / ✓	- / ✓	
DNV-GL	✓	✓	✓	✓		
EAC	✓	✓	✓	✓	✓	✓
APPLICATION GUIDE:						
Signal repeater		✓	✓		✓	✓
Signal converter	✓			✓		
Signal splitter	✓					
mA / V bipolar input	✓ / ✓					
4...20 mA Tx input			✓	✓	✓	
Buffered voltage output	✓					
Active / passive input signal		✓ / -	✓ / ✓			✓ / -
mA / V output	✓ / ✓	✓ / -	✓ / -	✓ / ✓	✓ / -	✓ / -
Active / passive mA output	✓ / -	✓ / -	- / ✓	✓ / ✓	✓ / ✓	✓ / -
Mounting in Zone 2 / Div 2	✓	✓	✓			
Power rail option	✓					

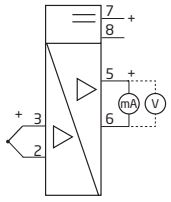
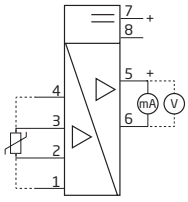
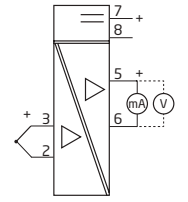
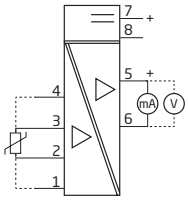
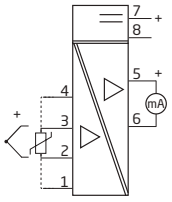
* = @ 24 VDC

Of span = Of the presently selected range

TYPE	9106A	9107A	9203A			
	HART transparent repeater	HART transparent driver	Solenoid / alarm driver			
INPUT: mA, HART communication **OUTPUT:** mA, HART communication						
INPUT:						
mA, measurement range / min. span	3.5...23 mA / 16 mA	3.5 ...23 mA / 16 mA				
V, measurement range / min. span						
Max. offset						
Reference voltage / 2-wire supply	- / > 16 VDC					
Sensor type			NPN / PNP / switch			
OUTPUT:						
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA				
Pulse output			Valves etc.			
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C			
Supply voltage, AC / DC	- / 19.2...31.2 VDC	19.2...31.2 VDC	19.2...31.2 VDC			
Max. required power, 1 / 2 channels	≤ 1.1 W / ≤ 1.9 W	≤ 1.0 W / ≤ 1.8 W	≤ 1.9...2.5 W / ≤ 3.1 W			
Isolation voltage, test / operation	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC			
Response time	< 5 ms	< 5 ms	< 10 ms			
Signal dynamics,input	Analog signal chain	Analog signal chain				
Accuracy	≤ ±16 µA	< ±16 µA				
Temperature coefficient	≤ ±1.6 µA / °C	< ±0.01% of span / °C				
NAMUR	NE 21	NE 21	NE 21			
Channels	1 or 2	1 or 2	1 or 2			
Programming	4500 series devices	4500 series devices	4500 series devices			
APPROVALS:						
ATEX, Zone 2	✓	✓	✓			
IECEx, Zone 2						
FM, Zone 2 - DIV 2						
UL 61010 / 913	✓ / ✓	✓ / ✓	✓ / ✓			
DNV-GL	✓	✓	✓			
EAC	✓	✓	✓			
SIL 2/3 Full Assessment IEC 61508	✓	✓	✓			
APPLICATION GUIDE:						
Signal repeater	✓					
Signal driver		✓				
Signal splitter	✓					
Solenoid / alarm driver			✓			
mA input	✓	✓				
4...20 mA Tx input	✓					
Active / passive mA output	✓ / ✓	✓ / -				
HART signal transparent	✓	✓				
Mounting in Zone 2 / Div 2	✓	✓	✓			
Power rail option	✓	✓	✓			

= Full assessment acc. to IEC 61508



TYPE	3101	3102	3111	3112	3113
INPUT: RTD, linear resistance, TC, mV, mA, potentiometer OUTPUT: mA, HART communication	TC converter	Pt100 converter	TC converter - isolated	Pt100 converter - isolated	HART 7 temperature converter
					
INPUT:					
RTD, measurement range / min. span		-200...+850°C / 10°C		-200...+850°C / 10°C	-200...+850°C / 10°C
Lin. R, measurement range / min. span					
Sensor connection, wires		2 - 3 - 4		2 -3 - 4	2 - 3 - 4
TC types	J & K		J & K		J & K
Max. offset					
Cold junction compensation	Internal		Internal / external		Internal / external
OUTPUT:					
mA, signal range / min. span	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA
Load (@ current output)	≤ 600 Ω	≤ 600 Ω	≤ 600 Ω	≤ 600 Ω	≤ 600 Ω
V, signal range / min. span	0...10 VDC / 4 VDC	0...10 VDC / 4 VDC	0...10 VDC / 4 VDC	0...10 VDC / 4 VDC	
Load (@ voltage output)	≥ 10 kΩ	≥ 10 kΩ	≥ 10 kΩ	≥ 10 kΩ	
TECHNICAL SPECIFICATIONS:					
Ambient temperature	-25...70°C	-25...70°C	-25...70°C	-25...70°C	-25...70°C
Supply voltage, DC	16.8...31.2 VDC	16.8...31.2 VDC	16.8...31.2 VDC	16.8...31.2 VDC	16.8...31.2 VDC
Max. required power*	0.52 W	0.52 W	0.7 W	0.7 W	0.7 W
Isolation voltage, test / operation			2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC
Response time	< 30 ms	< 30 ms	< 30 ms	< 30 ms	< 60 ms
Signal dynamics, input / output	23 bit / 18 bit	23 bit / 18 bit	23 bit / 18 bit	23 bit / 18 bit	23 bit / 18 bit
Accuracy	≤ ±0.1% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
NAMUR	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43
Channels	1	1	1	1	1
Programming	DIP switch	DIP switch	DIP switch	DIP switch	DIP switch / HART
APPROVALS:					
ATEX, Zone 2	✓	✓	✓	✓	✓
IECEx, Zone 2	✓	✓	✓	✓	✓
FM, Zone 2 - DIV 2	✓	✓	✓	✓	✓
UL 61010 / 508	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -
DNV-GL	✓	✓	✓	✓	✓
EAC	✓	✓	✓	✓	✓
APPLICATION GUIDE:					
RTD / TC / mV input	- / ✓ / -	✓ / - / -	- / ✓ / -	✓ / - / -	✓ / ✓ / -
mA / V output	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓	✓ / -
Loop-powered					
Galvanically isolated			✓	✓	✓
HART protocol					✓
Mounting in Zone 2 / DIV 2	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓
Process signal calibration					✓
Power rail option			✓	✓	✓

* = @ 24 VDC

Of span = Of the presently selected range

TEMPERATURE TRANSMITTERS



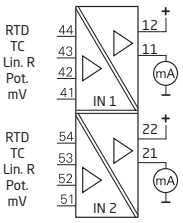
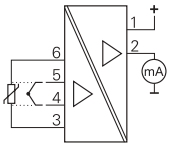
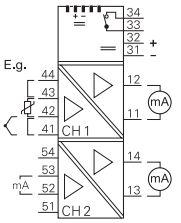



TYPE	6331A	6333A	6334A	6335A	6337A	6350A
INPUT: RTD, linear resistance, TC, mV, mA, potentiometer OUTPUT: mA, HART communication, Profibus PA, Foundation Fieldbus	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire HART 5 transmitter	2-wire HART 7 transmitter	Profibus PA / Foundation Fieldbus transmitter
INPUT:						
mA, measurement range / min. span						-100...+100 mA / -
mV, measurement range / min. span	-12...800 mV / 5 mV		-12...+150 mV / 5 mV	-800...+800 mV / 2.5 mV	-800...+800 mV / 2.5 mV	-800...+800 mV / -
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / 10°C	-200...+850°C / -
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω	0...10 kΩ / 30 Ω		0...7000 Ω / 25 Ω	0...7000 Ω / 25 Ω	0...10 kΩ / -
Potentiometer						0...100 kΩ / -
Sensor connection, wires	2 - 3 - 4	2 - 3		2 - 3 - 4	2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5Lr		BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	
Cold junction compensation	Internal / external		Internal	Internal / external	Internal / external	Internal / external
OUTPUT:						
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	Profibus PA/Foundation F.
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C
Supply voltage, DC	7.2...35 VDC	8...35 VDC	7.2...35 VDC	8...35 VDC	8...35 VDC	9...32 VDC
Max. required power, 1 / 2 channels	0.8 W / 1.6 W	0.8 W / 1.6 W	0.8 W / 1.6 W	0.8 W / 1.6 W	0.8 W / 1.6 W	< 350 mW per channel
Isolation voltage, test / operation	1500 VAC / 50 V		1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V
Response time	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s	1...60 s
Signal dynamics, input / output	20 bit / 16 bit	19 bit / 16 bit	18 bit / 16 bit	22 bit / 16 bit	22 bit / 16 bit	24 bit / -
Accuracy	≤ ±0.05% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of MV
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.005% of span / °C	< ±0.005% of span / °C	< ±0.002% of MV / °C
NAMUR	NE 21, NE 43	NE 43	NE 21, NE 43	NE 21, NE 43, NE 89	NE 21, NE 43, NE 89	NE 21, NE 43
Channels	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2
Programming	5909	5909	5909	5909 / HART 5	5909 / HART 7 / HART 5	Profibus PA/Foundation F.
APPROVALS:						
ATEX, Zone 2	✓	✓	✓	✓	✓	✓
IECEx, Zone 2	✓	✓	✓	✓	✓	✓
CSA, Zone 2 - DIV 2	✓	✓		✓	✓	✓
FM, Zone 2 - DIV 2						✓
UL 61010 / 508						
DNV-GL						
EAC	✓	✓	✓	✓	✓	✓
SIL 2, Hardware Assessment				✓	✓	
SIL 2 Full Assessment IEC 61508						
APPLICATION GUIDE:						
RTD / TC / mV input	✓ / ✓ / ✓	✓ / - / -	- / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / -	✓ / -		✓ / -	✓ / -	✓ / ✓
Dual input (4 terminals)				✓	✓	✓
Custom sensor linearization	✓	✓	✓	✓	✓	✓
mA output	✓	✓	✓	✓	✓	
Loop-powered	✓	✓	✓	✓	✓	
Galvanically isolated	✓		✓	✓	✓	✓
HART protocol				✓	✓	
Mounting in Zone 2 / DIV 2	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	✓ / ✓
Process signal calibration	✓	✓	✓	✓	✓	✓

exida = FMEDA report

Of span = Of the presently selected range
Of MV = Of the present measurement value

TEMPERATURE TRANSMITTERS

TYPE	6437A	7501	9113A			
INPUT: RTD, linear resistance, TC, mV, mA, potentiometer **OUTPUT:** mA, HART communication	2-wire HART 7 temperature transmitter 	Field mounted HART temperature transmitter 	Temperature / mA converter 			
INPUT:						
mA, measurement range / min. span			0...23 mA / 16 mA			
mV, measurement range	± 800 mV, -0.1...+1.7 V	-800...+800 mV				
mV, min. span	2.5 mV	2.5 mV				
RTD, measurement range / min. span	-200...+850°C / 10°C	-200...+850°C / 10°C	-200...+850°C / 25°C			
Lin. R, measurement range / min. span	0...100 kΩ / 25 Ω	0...7000 Ω / 25 Ω				
Potentiometer	10 Ω...100 kΩ / 10%					
Sensor connection, wires	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4			
TC types	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5Lr			
Cold junction compensation	Internal / external	Internal / external	Internal / external			
OUTPUT:						
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	0...23 mA / 16 mA			
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-50...+85°C	-40...+85°C	-20...+60°C			
Supply voltage, DC	7.5...48 VDC	10 / 12...35 VDC	19.2...31.2 VDC			
Max. required power, 1 / 2 channels	< 850 mW / -		≤ 0.8 W / ≤ 1.4 W			
Isolation voltage, test / operation	2.5 kVAC / 55 VAC	1500 VAC / 50 VAC	2.6 kVAC / 250 VAC			
Response time	70 ms	22 bit / 16 bit	0.4 / 1...60 s			
Signal dynamics, input / output	24 bit / 18 bit	1...60 s	24 bit / 16 bit			
Accuracy	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.1% of span			
Temperature coefficient	< ±0.005% of span / °C	< ±0.005% of span / °C	< ±0.01% of span / °C			
NAMUR	NE 21 / 43 / 44 / 89 / 107	NE 21, NE 43	NE 21, NE 43			
Channels	1 or 2*	1	1 or 2			
Programming	5909 / HART 7 / HART 5	LOI / HART	4500 series devices			
APPROVALS:						
ATEX, Zone 2	✓	✓	✓			
IECEx, Zone 2	✓	✓				
CSA, Zone 2 - DIV 2	✓					
FM, Zone 2 - DIV 2	✓					
INMETRO / NEPSI	✓ / ✓					
UL 61010 / 913			✓ / ✓			
DNV-GL / EU-RO marine	- / ✓	- / ✓	✓ / -			
EAC	✓	✓	✓			
SIL 2, Hardware Assessment		✓				
SIL 2/3 Full Assessment IEC 61508	✓ / ✓		✓ / -			
APPLICATION GUIDE:						
RTD / TC / mV input	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / -			
Lin. R / potentiometer input	✓ / ✓	✓ / -				
Dual input (4 terminals)		✓				
True dual input (8 terminals)	✓					
Custom sensor linearization	✓	✓				
mA output	✓	✓	✓			
Loop-powered	✓	✓				
Galvanically isolated	✓	✓	✓			
HART protocol	✓	✓				
Process signal calibration	✓	✓	✓			
Power rail option			✓			

= Full assessment acc. to IEC 61508

= FMEDA report

* = Single or true dual inputs

LOI = Local operator interface

Of span = Of the presently selected range

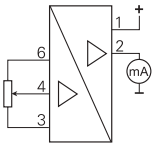
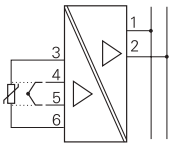
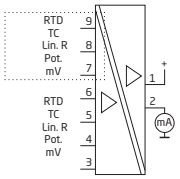
TYPE	5331D	5332D	5333D	5334B	5335D	5337D
INPUT: RTD, linear resistance, TC, mV, potentiometer OUTPUT: mA, HART communication	2-wire programmable transmitter	2-wire programmable RTD transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire transmitter with HART 5 protocol	2-wire transmitter with HART 7 protocol
INPUT:						
mV, measurement range / min. span	-12...800 mV / 5 mV			-12...150 mV / 5 mV	-800...+800 mV / 2.5 mV	-800...+800 mV / 2.5 mV
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / 10°C
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...10 kΩ / 30 Ω		0...7000 Ω / 25 Ω	0...7000 Ω / 25 Ω
Potentiometer						
Sensor connection, wires	2 - 3 - 4	2 - 3 - 4	2 - 3		2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5Lr			BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5
Max. offset						
Cold junction compensation	Internal / external	Internal / external		Internal	Internal / external	Internal / external
OUTPUT:						
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C
Supply voltage, DC	7.2...30 VDC	7.2...30 VDC	8...30 VDC	7.2...30 VDC	8...30 VDC	8...30 VDC
Max. required power	0.7 W	0.7 W	0.7 W	0.7 W	0.7 W	0.7 W
Isolation voltage, test / operation	1500 VAC / 50 V			1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V
Response time	1...60 s	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s
Signal dynamics, input / output	20 bit / 16 bit	20 bit / 16 bit	19 bit / 16 bit	18 bit / 16 bit	22 bit / 16 bit	22 bit / 16 bit
Accuracy	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.005% of span / °C	< ±0.005% of span / °C
NAMUR	NE 21, NE 43	NE 21, NE 43	NE 43	NE 21, NE 43	NE 21, NE 43, NE89	NE 21, NE 43, NE89
Channels	1	1	1	1	1	1
Programming	5909	5909	5909	5909	5909 / HART 5	5909 / HART 7 / HART 5
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEx	✓	✓	✓	✓	✓	✓
FM	✓	✓	✓		✓	✓
CSA	✓	✓	✓		✓	✓
INMETRO	✓		✓	✓	✓	✓
DNV-GL	✓		✓	✓	✓	✓
EAC Ex	✓		✓	✓		
NEPSI						
SIL 2 Hardware Assessment					✓	✓
APPLICATION GUIDE:						
RTD / TC / mV input	✓ / ✓ / ✓	✓ / - / -	✓ / - / -	- / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / -	✓ / -	✓ / -		✓ / -	✓ / -
Dual input (4 terminals)					✓	✓
Custom sensor linearization	✓	✓	✓	✓	✓	✓
mA output	✓	✓	✓	✓	✓	✓
Loop-powered	✓	✓	✓	✓	✓	✓
Galvanically isolated	✓			✓	✓	✓
HART protocol					✓	✓
Process signal calibration	✓	✓	✓	✓	✓	✓

exida = FMEDA report

Of span = Of the presently selected range

I.S. TEMPERATURE TRANSMITTERS

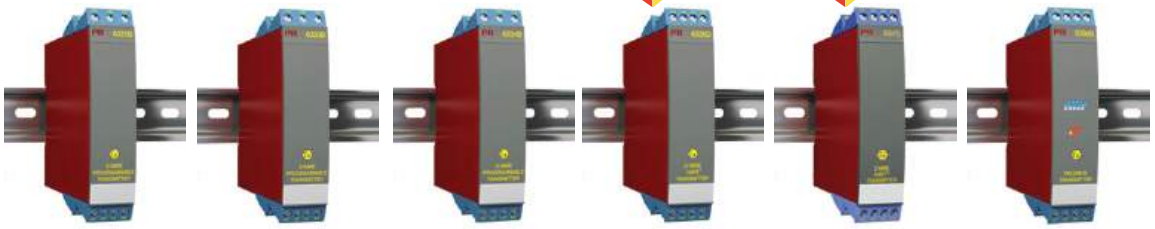


TYPE	5343B	5350B	5437D
INPUT: RTD, linear resistance, TC, mV, potentiometer OUTPUT: mA, HART communication, Profibus PA, Foundation Fieldbus	2-wire level transmitter 	Profibus PA / Foundation Fieldbus transmitter 	2-wire HART 7 temperature transmitter 
INPUT:			
mV, measurement range		-800...+800 mV	-± 800 mV, -0.1...+1.7 V
mV, min. span			2.5 mV
RTD, measurement range / min. span		-200...+850°C / -	-200...+850°C / 10°C
Lin. R, measurement range / min. span	0...100 kΩ / 1 kΩ	0...10 kΩ / -	0...100 kΩ / 25 Ω
Potentiometer	1 kΩ...100 kΩ	0...100 kΩ	10 Ω...100 kΩ / 10%
Sensor connection, wires		2 - 3 - 4	2 - 3 - 4
TC types		BEJKLNRSTUW3W5	BEJKLNRSTUW3W5Lr
Max. offset	50% of selec. max. value		
Cold junction compensation		Internal / external	Internal / external
OUTPUT:			
mA, signal range / min. span	3.5...23 mA / 16 mA	Profibus PA/Foundation F.	3.5...23 mA / 16 mA
TECHNICAL SPECIFICATIONS:			
Ambient temperature	-40...+85°C	-40...+85°C	-50...+85°C
Supply voltage, DC	8...30 VDC	9...32 VDC	7.5...30 VDC
Max. required power	0.7 W	< 350 mW	< 850 mW
Isolation voltage, test / operation		1500 VAC / 50 V	2.5 kVAC / 42 VAC
Response time	0.33...60 s	1...60 s	70 ms
Signal dynamics, input / output	19 bit / 16 bit	24 bit / -	24 bit / 18 bit
Accuracy	≤ ±0.1% of span	≤ ±0.05% of MV	≤ ±0.05% of span
Temperature coefficient	≤ ±0.01% of span / °C	< ±0.002% of MV / °C	< ±0.005% of span / °C
NAMUR	NE 43	NE 21, NE 43	NE 21 / 43 / 44 / 89 / 107
Channels	1	1	1 or 2*
Programming	5909	Profibus PA/Foundation F.	5909 / HART 7 / HART 5
APPROVALS:			
ATEX	✓	✓	✓
IECEx	✓	✓	✓
FM	✓	✓	✓
CSA		✓	✓
INMETRO	✓	✓	✓
DNV-GL / EU-RO marine	✓ / -		- / ✓
EAC Ex	✓	✓	✓
NEPSI			✓
SIL 2, Hardware Assessment			
SIL 2/3 Full Assessment IEC 61508			✓ / ✓
APPLICATION GUIDE:			
RTD / TC / mV input		✓ / ✓ / ✓	✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / ✓	✓ / ✓	✓ / ✓
Dual input (4 terminals)		✓	
True dual input (7 terminals)	✓		✓
Custom sensor linearization	✓	✓	✓
mA output	✓		✓
Bus-powered PA/FF		✓ / ✓	
Loop-powered			✓
Galvanically isolated	✓	✓	✓
HART protocol			✓
Process signal calibration		✓	✓

= Full Assessment acc. to IEC 61508

* = Single or true dual inputs

Of span = Of the presently selected range
Of MV = Of the present measurement value

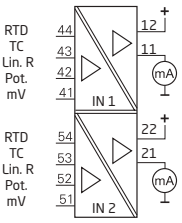
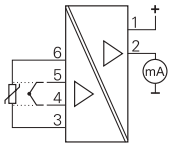


TYPE	6331B	6333B	6334B	6335D	6337D	6350B
INPUT: RTD, linear resistance, TC, mV, mA, potentiometer **OUTPUT:** mA, HART communication, Profibus PA, Foundation Fieldbus	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire HART 5 transmitter	2-wire HART 7 transmitter	Profibus PA / Foundation Fieldbus transmitter
INPUT:						
mA, measurement range / min. span						-100...+100 mA
mV, measurement range / min. span	-12...800 mV / 5 mV		-12...+150 mV / 5 mV	-800...+800 mV / 2.5 mV	-800...+800 mV / 2.5 mV	-800...+800 mV / -
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / 10°C	-200...+850°C / -
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω	0...10 kΩ / 30 Ω		0...7000 Ω / 25 Ω	0...7000 Ω / 25 Ω	0...10 kΩ / -
Potentiometer						0...100 kΩ / -
Sensor connection, wires	2 - 3 - 4	2 - 3		2 - 3 - 4	2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5Lr		BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	
Cold junction compensation	Internal / external		Internal	Internal / external	Internal / external	Internal / external
OUTPUT:						
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	Profibus PA/Foundation F.
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C
Supply voltage, DC	7.2...30 VDC	8...30 VDC	7.2...30 VDC	8...30 VDC	8...30 VDC	9...32 VDC
Max. required power, 1 / 2 channels	0.7 W / 1.4 W	0.7 W / 1.4 W	0.7 W / 1.4 W	0.7 W / 1.4 W	0.7 W / 1.4 W	< 350 mW per channel
Isolation voltage, test / operation	1500 VAC / 50 V		1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V
Response time	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s	1...60 s
Signal dynamics, input / output	20 bit / 16 bit	19 bit / 16 bit	18 bit / 16 bit	22 bit / 16 bit	22 bit / 16 bit	24 bit / -
Accuracy	≤ ±0.05% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of MV
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.005% of span / °C	< ±0.005% of span / °C	< ±0.002% of MV / °C
NAMUR	NE 21, NE 43	NE 43	NE 21, NE 43	NE 21, NE 43, NE 89	NE 21, NE 43, NE 89	NE 21, NE 43
Channels	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2
Programming	5909	5909	5909	5909 / HART 5	5909 / HART 7 / HART 5	Profibus PA/Foundation F.
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEx	✓	✓	✓	✓	✓	✓
FM	✓	✓		✓	✓	✓
CSA	✓	✓		✓	✓	✓
UL						
DNV-GL						
EAC Ex	✓	✓	✓	✓	✓	✓
SIL 2, Hardware Assessment				✓	✓	
APPLICATION GUIDE:						
RTD / TC / mV input	✓ / ✓ / ✓	✓ / - / -	- / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / -	✓ / -		✓ / -	✓ / -	✓ / ✓
Dual input (4 terminals)				✓	✓	✓
Custom sensor linearization	✓	✓	✓	✓	✓	✓
mA output	✓	✓	✓	✓	✓	
Bus-powered PA/FF						✓ / ✓
Loop-powered	✓	✓	✓	✓	✓	
Galvanically isolated	✓		✓	✓	✓	✓
HART protocol				✓	✓	
Process signal calibration	✓	✓	✓	✓	✓	✓

exida = FMEDA report

Of span = Of the presently selected range
Of MV = Of the present measurement value

I.S. TEMPERATURE TRANSMITTERS

TYPE	6437D	7501
	2-wire HART 7 temperature transmitter	Field mounted HART temperature transmitter
INPUT: RTD, linear resistance, TC, mV, potentiometer OUTPUT: mA, HART communication		
INPUT:		
mA, measurement range / min. span		
mV, measurement range	± 800 mV, -0.1...+1.7 V	-800...+800 mV
mV, min. span	2.5 mV	2.5 mV
RTD, measurement range / min. span	-200...+850°C / 10°C	-200...+850°C / 10°C
Lin. R, measurement range / min. span	0...100 kΩ / 25 Ω	0...7000 Ω / 25 Ω
Potentiometer	10 Ω...100 kΩ / 10%	
Sensor connection, wires	2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5
Cold junction compensation	Internal / external	Internal / external
OUTPUT:		
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA
TECHNICAL SPECIFICATIONS:		
Ambient temperature	-50...+85°C	-40...+85°C
Supply voltage, DC	7.5...30 VDC	10 / 12...30 VDC
Max. required power, 1 / 2 channels	< 850 mW / -	
Isolation voltage, test / operation	2.5 kVAC / 42 VAC	1500 VAC / 50 V
Signal dynamics, input / output	70 ms	22 bit / 16 bit
Response time	24 bit / 18 bit	1...60 s
Accuracy	≤ ±0.05% of span	≤ ±0.05% of span
Temperature coefficient	< ±0.005% of span / °C	< ±0.005% of span / °C
NAMUR	NE 21 / 43 / 44 / 89 / 107	NE 21, NE 43
Channels	1 or 2*	1
Programming	5909 / HART 7 / HART 5	LOI / HART
APPROVALS:		
ATEX	✓	✓
IECEx	✓	✓
FM	✓	✓
CSA	✓	✓
INMETRO	✓	✓
EU-RO marine	✓	✓
EAC Ex	✓	✓
NEPSI	✓	✓
SIL 2 Hardware Assessment		✓
SIL 2/3 Full Assessment IEC 61508	✓ / ✓	
APPLICATION GUIDE:		
RTD / TC / mV input	✓ / ✓ / ✓	✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / ✓	✓ / -
Dual input (4 terminals)		✓
True dual input (8 terminals)	✓	
Custom sensor linearization	✓	✓
mA output	✓	✓
Bus-powered PA/FF		
Loop-powered	✓	✓
Galvanically isolated	✓	✓
HART protocol	✓	✓
Process signal calibration	✓	✓

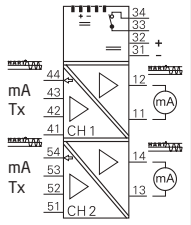
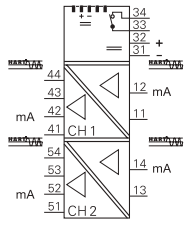
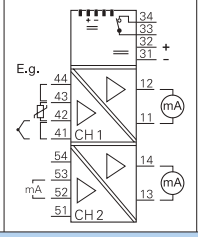
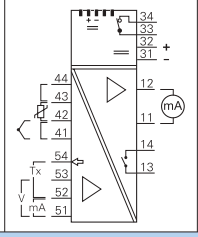
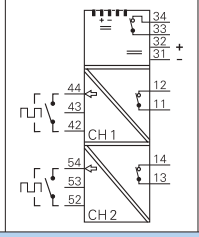
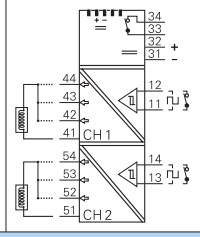
= Full assessment acc. to IEC 61508

= FMEDA report

* = Single or true dual inputs

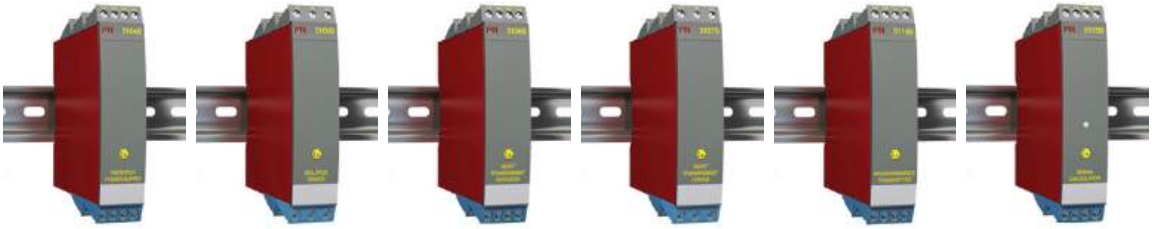
LOI = Local operator interface

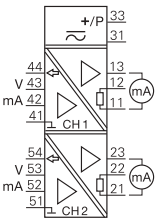
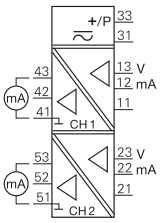
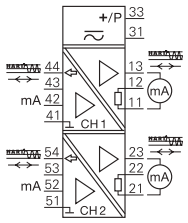
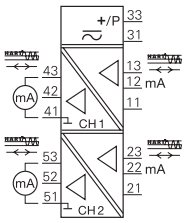
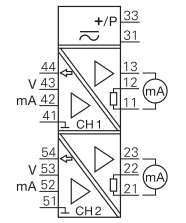
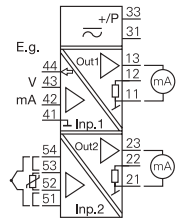
Of span = Of the presently selected range

TYPE	9106B	9107B	9113B	9116B	9202B	9203B
	HART transparent repeater	HART transparent driver	Temperature / mA converter	Universal converter	Pulse isolator	Solenoid / alarm driver
INPUT: mA, mV, V, potentiometer, RTD, Lin. R, TC, Hz, HART communication **OUTPUT:** mA, relays, HART communication						
INPUT:						
mA, measurement range / min. span	3.5...23 mA / 16 mA	3.5 ...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA		
V, measurement range / min. span				0...12 VDC / 0.8 V		
RTD, measurement range / min. span			-200...+850°C / 25°C	-200...+850°C / 25°C		
Lin. R, measurement range / min. span				0...10000 Ω / -		
Potentiometer				10 Ω...10000 Ω		
Sensor connection, wires			2 - 3 - 4	2 - 3 - 4		
TC types			BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr		
Sensor type					NAMUR / switch	NPN / PNP / switch
Hz, measurement range / min. span					0...5 kHz	
Min. pulse width					100 µs	
OUTPUT:						
mA, signal range / min. span	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	0...23 mA / 16 mA	0 ...23 mA / 16 mA		
Pulse output					NPN / relay	Valves etc.
Hz, signal range					0...5 kHz	
Relay				1 x SPST, AC: 500 VA	1 x SPST, AC: 500 VA	
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, DC	19.2...31.2 VDC	19.2...31.2 VDC	19.2...31.2 VDC	19.2...31.2 VDC	19.2...31.2 VDC	19.2...31.2 VDC
Max. required power, 1 / 2 channels	≤ 1.1 W / ≤ 1.9 W	≤ 1.0 W / ≤ 1.8 W	≤ 0.8 W / ≤ 1.4 W	≤ 2.1 W / -	≤ 1.1...1.3 W/≤ 1.5...1.9 W	≤ 1.9...2.5 W/≤ 3.1 W
Isolation voltage, test / operation	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC	2.6 kVAC / 250 VAC
Response time	< 5 ms	< 5 ms	0.4 / 1...60 s	0.4 / 1...60 s	200 ms	< 10 ms
Signal dynamics, input / output	Analog signal chain	Analog signal chain	24 bit / 16 bit	24 bit / 16 bit		
Accuracy	< ±16 µA	< ±16 µA	≤ ±0.1% of span	≤ ±0.1% of span		
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C		
NAMUR	NE 21	NE 21	NE 21, NE 43	NE 21, NE 43	NE 21	NE 21
Channels	1 or 2	1 or 2	1 or 2	1	1 or 2	1 or 2
Programming	4500 series devices	4500 series devices	4500 series devices	4500 series devices	4500 series devices	4500 series devices
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEx	✓	✓	✓	✓	✓	✓
FM	✓	✓	✓	✓	✓	✓
INMETRO	✓	✓	✓	✓	✓	✓
UL 61010 / 913	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓
DNV-GL	✓	✓	✓	✓	✓	✓
EAC Ex	✓	✓	✓	✓	✓	✓
SIL 2/3 Full Assessment IEC 61508	✓ / ✓	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -
APPLICATION GUIDE:						
AI barrier	✓		✓	✓		
AO barrier		✓				
DI barrier					✓	
DO barrier						✓
mA / V / temperature input	✓ / - / -	✓ / - / -	✓ / - / ✓	✓ / ✓ / ✓		
4...20 mA Tx input	✓			✓		
mA / V / relay output	✓ / - / -	✓ / - / -	✓ / - / -	✓ / - / ✓	- / - / ✓	
Active / passive mA output	✓ / ✓	✓ / -	✓ / ✓	✓ / ✓		
HART signal transparent	✓	✓				
Process signal calibration			✓	✓		
Power rail option	✓	✓	✓	✓	✓	✓

SIL 2/3 = Full assessment acc. to IEC 61508

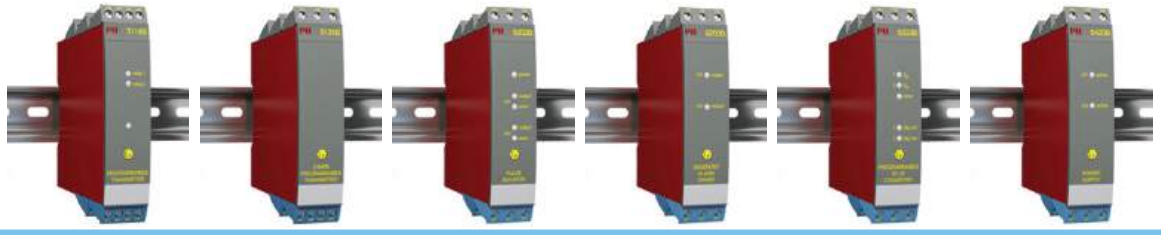
Of span = Of the presently selected range

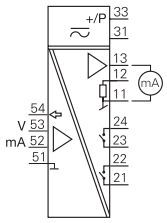
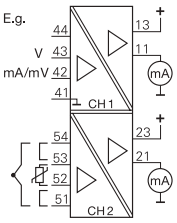
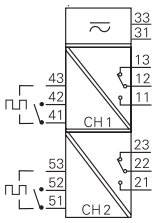
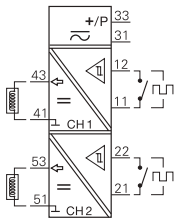
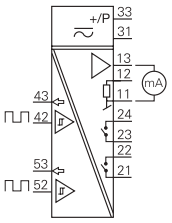
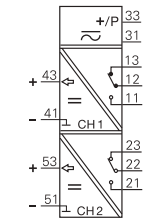


TYPE	5104B	5105B	5106B	5107B	5114B	5115B
	Ex repeater / power supply	Ex-isolated driver	HART transparent repeater	HART transparent driver	Programmable transmitter	Signal calculator
INPUT: mA, mV, V, potentiometer, RTD, linear resistance, TC, HART communication **OUTPUT:** mA, V, relays, HART communication						
INPUT:						
mA, measurement range / min. span	0...23 mA / 16 mA	0...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	0...100 mA / 4 mA	0...100 mA / 4 mA
V, measurement range / min. span	0...10 VDC / 8 VDC	0...10 VDC / 8 VDC			0...250 VDC / 5 mV	0...250 VDC / 5 mV
mV, measurement range / min. span					-150...+150 mV / 5 mV	-150...+150 mV / 5 mV
RTD, measurement range / min. span					-200...+850°C / 25°C	-200...+850°C / 25°C
Lin. R, measurement range / min. span					0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω
Potentiometer					200 Ω...100 kΩ	200 Ω...100 kΩ
Sensor connection, wires					2 - 3 - 4	2 - 3 - 4
TC types					BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr
Max. offset	20% of selec. max. value	20% of selec. max. value	20% of selec. max. value	20% of selec. max. value	50% of selec. max. value	50% of selec. max. val.
OUTPUT:						
mA, signal range / min. span	0...23 mA / 16 mA	0...23 mA / 16 mA	3.5...23 mA / 16 mA	3.5...23 mA / 16 mA	0...23 mA / 10 mA	0...23 mA / 10 mA
Load (@ current output)	≤ 600 Ω	≤ 770 Ω	≤ 600 Ω	≤ 770 Ω	600 Ω	600 Ω
V, signal range / min. span	0...10 VDC / 0.8 VDC	0...10 VDC / 0.8 VDC			0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC
Max. offset	20% of selec. max. value	20% of selec. max. value	20% of selec. max. value	20% of selec. max. value	50% of selec. max. value	50% of selec. max. val.
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, AC / DC	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V/19.2...300 V
Max. required power, 1 / 2 channels	2.0 W / 2.8 W	1.3 W / 2.0 W	2.0 W / 2.8 W	1.4 W / 2.1 W	2.1 W / 2.8 W	2.1 W / 2.8 W
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC
Response time	< 25 ms	< 25 ms	< 25 ms	< 25 ms	250 ms...60 s	250 ms...60 s
Signal dynamics, input / output	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain	22 bit / 16 bit	22 bit / 16 bit
Accuracy	≤ ±0.1% of span	≤ ±0.1% of span	≤ ±0.1% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
NAMUR	NE 21	NE 21	NE 21	NE 21	NE 21, NE 43	NE 21, NE 43
Channels	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	2
Programming	DIP switch	DIP Switch	No	No	5909 + DIP switch	5909 + DIP switch
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEx						
FM						
CSA						
UL	✓	✓	✓	✓		
DNV-GL	✓	✓			✓	✓
EAC Ex	✓	✓	✓	✓	✓	✓
APPLICATION GUIDE:						
AI barrier	✓		✓		✓	✓
AO barrier		✓		✓		
DI barrier						
DO barrier						
RTD / TC input					✓ / ✓	✓ / ✓
mA / V / mV input	✓ / ✓ / -	✓ / ✓ / -	✓ / - / -	✓ / - / -	✓ / ✓ / ✓	✓ / ✓ / ✓
4...20 mA Tx input	✓		✓		✓	✓
Lin. R / potentiometer input					✓ / ✓	✓ / ✓
mA / V / relay output	✓ / ✓ / -	✓ / ✓ / -	✓ / - / -	✓ / - / -	✓ / ✓ / -	✓ / ✓ / -
Active / passive mA output	✓ / ✓	✓ / -	✓ / ✓	✓ / -	✓ / ✓	✓ / ✓
Process signal calibration					✓	✓

Of span = Of the presently selected range

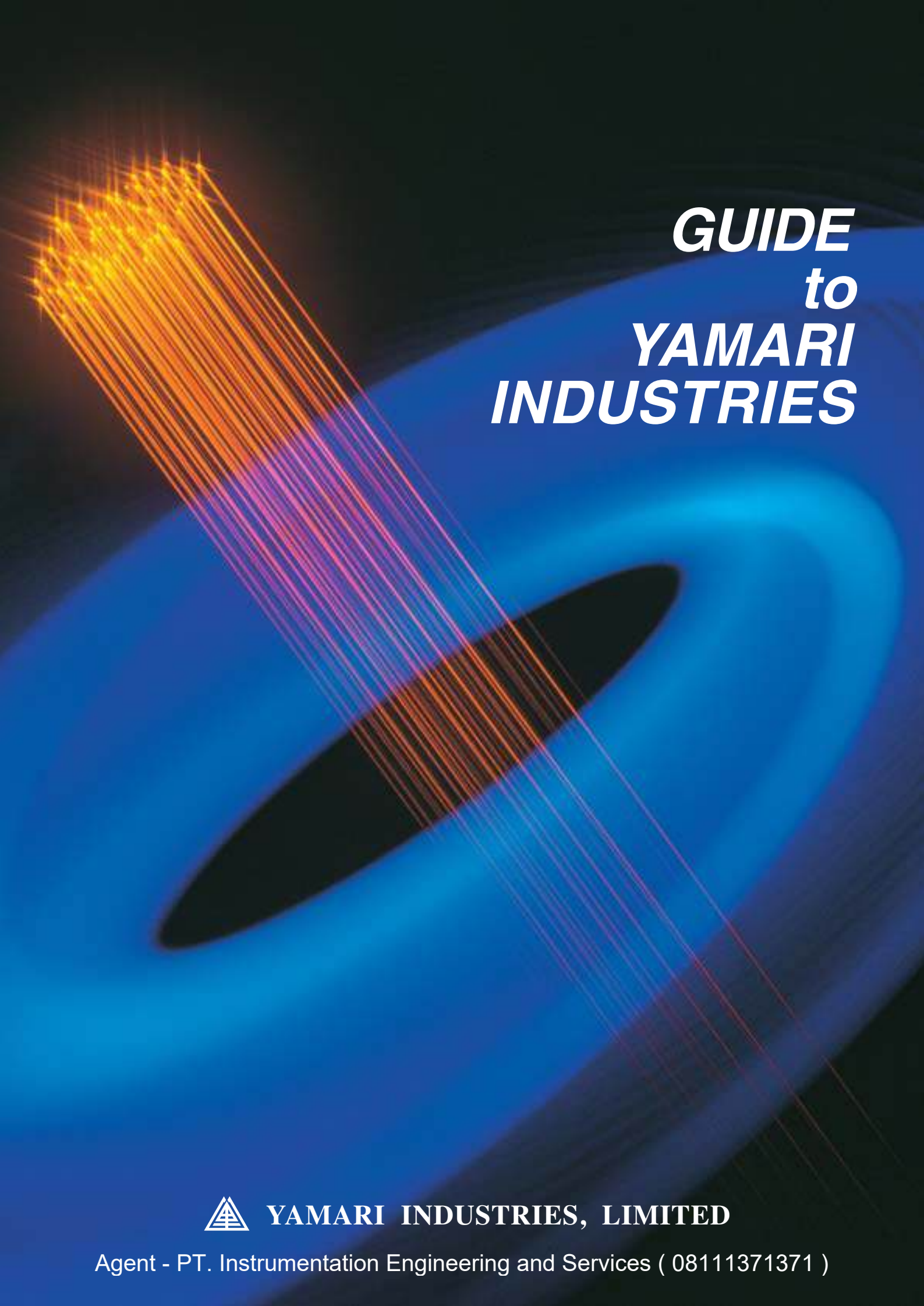
exida



TYPE	5116B	5131B	5202B	5203B	5223B	5420B
	Programmable transmitter	2-wire programmable transmitter	Pulse isolator	Ex solenoid / alarm driver	Programmable f/I - f/f converter	Ex power supply for 2-wire Tx
INPUT: mA, mV, V, potentiometer, RTD, linear resistance, TC, Hz OUTPUT: mA, V, relays						
INPUT:						
mA, measurement range / min. span	0...100 mA / 4 mA	0...100 mA / 4 mA				
V, measurement range / min. span	0...250 VDC / 5 mV	0...250 VDC / 5 mV				
mV, measurement range / min. span	-2500...+2500 mV / 5 mV	-150...+150 mV / 5 mV				
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C				
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω					
Potentiometer	200 Ω...100 kΩ					
Sensor connection, wires	2 - 3 - 4	2 - 3 - 4				
TC types	BEJKLNRSTUW3W5Lr	BEJKLNRSTUW3W5Lr				
Sensor type			NAMUR / switch	NPN / PNP / switch	NAMUR / switch	
Hz, measurement range / min. span			0...5 kHz		0...20 kHz / 0.001 Hz	
OUTPUT:						
mA, signal range / min. span	0...23 mA / 10 mA	3.5...23 mA / 10 mA			0...23 mA / 5 mA	
Pulse output			NPN / relay	Valves etc.	NPN / PNP / relay	
Hz, signal range			0...5 kHz		0...1000 Hz	
Relays	2 x SPST, AC: 500 VA		2 x SPDT, AC: 100 VA		2 x SPST, AC: 100 VA	1 x SPDT, AC: 100 VA
Voltage / current						> 18 VDC / 20 mA
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, AC / DC	21.6...253 V / 19.2...300 V	- / 7.5...35 VDC	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V	21.6...253 V / 19.2...300 V
Max. required power, 1 / 2 channels	2.4 W / -	0.8 W / 1.6 W	- / 1.8 W	2.0 W / 2.5 W	3 W / -	- / 2.5 W
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC
Response time	250 ms...60 s	250 ms...60 s			60 ms...1000 s	
Signal dynamics, input / output	22 bit / 16 bit	22 bit / 16 bit			- / 16 bit	
Accuracy	≤ ±0.05% of span	≤ ±0.05% of span				
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C			< ±0.01% of span / °C	
NAMUR	NE 21, NE 43	NE 21, NE 43	NE 21	NE 21		NE 21
Channels	1	1 or 2	2	1 or 2	1	2
Programming	5909	5909 + DIP switch	DIP switch	DIP switch	5909 + DIP switch	No
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEx						
FM	✓					
CSA						
UL	✓		✓	✓		
DNV-GL	✓					
EAC Ex	✓	✓	✓	✓	✓	✓
SIL 2, Hardware Assessment			✓			
APPLICATION GUIDE:						
AI barrier	✓	✓				
AO barrier						
DI barrier			✓		✓	
DO barrier				✓		
mA / V / temperature input	✓	✓				
4...20 mA Tx input	✓					✓
mA / V / relay output	✓	✓ / - / -				
Active / passive mA output	✓ / ✓	- / ✓				
Process signal calibration	✓	✓			✓	

exida = FMEDA report

Of span = Of the presently selected range



GUIDE to YAMARI INDUSTRIES

YAMARI INDUSTRIES, LIMITED

Agent - PT. Instrumentation Engineering and Services (08111371371)

LINE OF PRODUCTS

Various Kinds of Thermometric Devices and Related Articles, including :

M.I.Thermocouples (THERMIC) ;

M.I. Resistance Thermometers (RESIMIC) ;

Special Thermocouples for Superhigh Temperatures (HT-THERMIC) ;

Thermocouples and Resistance Thermometers with Protection Tubes ;

Thermometer Protection Tubes, including Thermowells ;

M.I. Extension Lead cables, and Ordinary Extension and Compensating Leadwires ;

Temperature Sensor Calibration Equipment ;

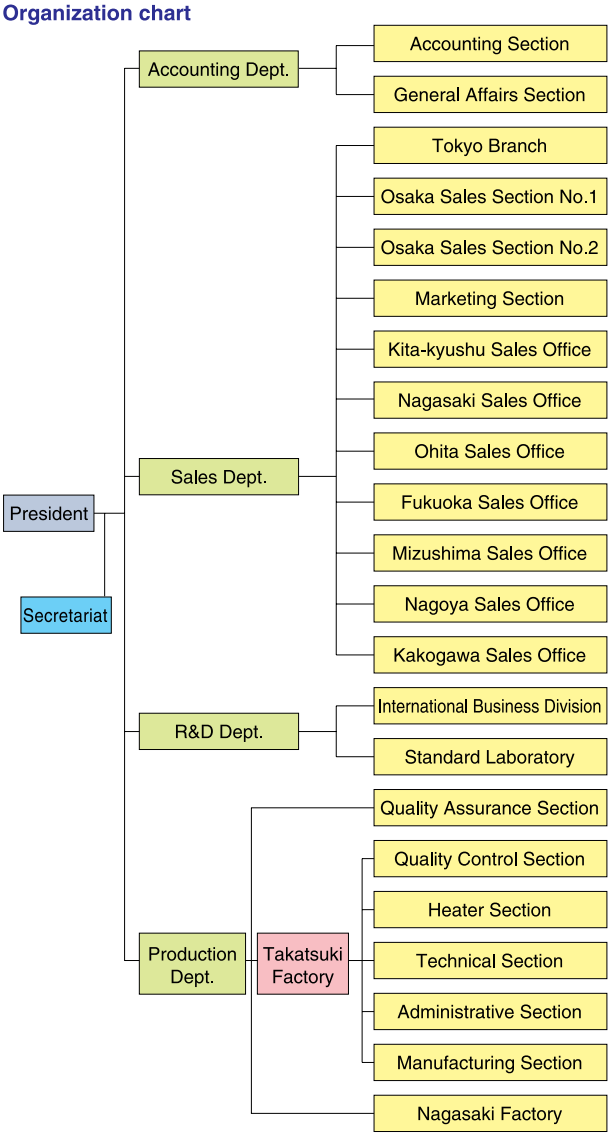
Oxygen Probes for Molten Copper (METAL-OX) ;

Dissolved Aluminum Sensors in Molten Zinc Bath (AL-SENSOR)

Precision Pitot Tubes, Yaw Probes and Fine Adjustment Traverse Machine.

Metal Turbine Blade Models for Wind Tunnel Experiments and Total Temperature, Total Pressure and Static Pressure Gauges, and Combinations Thereof.

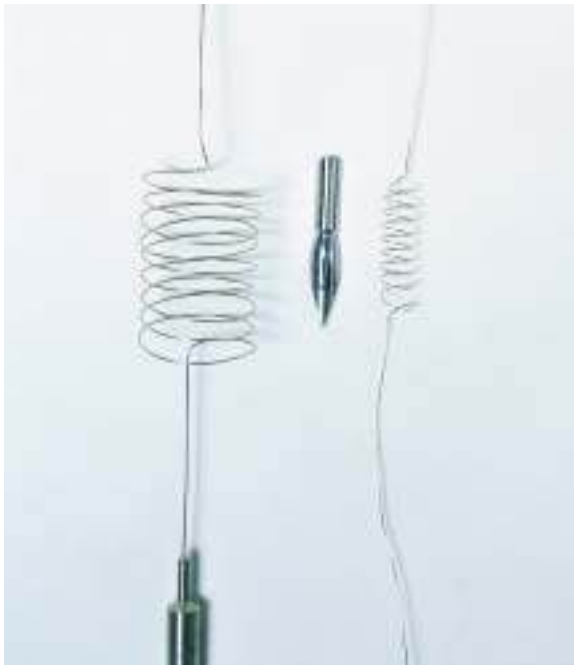
Organization chart

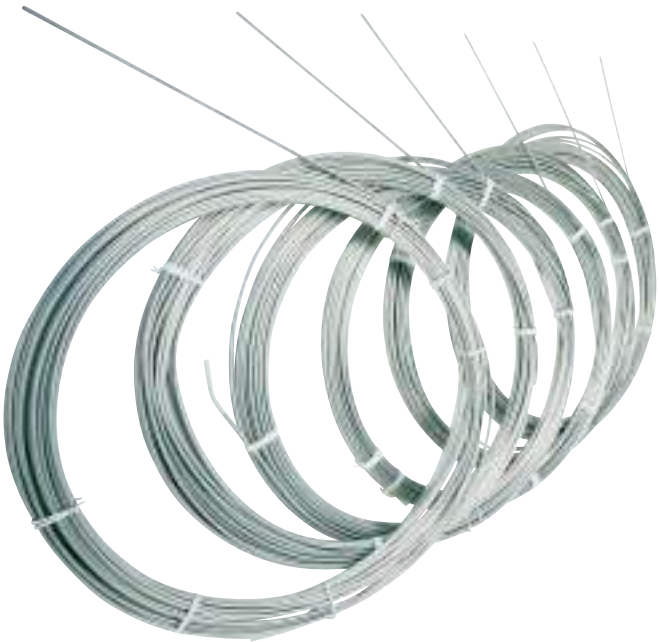


THERMIC M.I. THERMOCOUPLES

THERMIC is a trade name (trade mark registered) of various metal sheathed thermocouples manufactured by us which embody many of the latest improvements over BICC products and have enjoyed a high reputation among users since they were first placed on the market in 1962.

THERMIC cable is an integrated thermocouple material comprised of a metal sheath in which the thermoelectric elements are embeded in highly compacted magnesium oxide (MgO) insulation. The construction guarantees a superb insulating quality and a high resistance to pressure and has, in addition, an excellent flexibility which has been given to it by annealing in a proper method.





SUPERFINE THERMIC M.I. THERMOCOUPLES

Sheath O.D. : 0.25 to 0.50 mm

Features: Rapid response to very small changes in temperature; and is highly flexible.

Because of the small heat mass and high thermal conductivity, it is possible to measure temperatures of even very small objects at high accuracy with the least heat disturbance.

Various types of Thermocouple Assemblies

HT-THERMIC FOR SUPERHIGH TEMPERATURES

Recently there has been remarkable advance in the technology of heat treatment, surface treatment and sintering at very high temperatures, and the necessity of sensors for measurement of highly elevated temperatures is now widely recognized.

In view of this, we have been deeply involved in the research and delvelopment of the sensors for high temperature applications in appreciation of their importance for precision control technology.

Now based on a unique patented process, we have succeeded in introducing a new Argon sealed-in high temperature thermocouple, Model HT-THERMIC for use under vacuum, inert and H_2 reducing atmospheres, where all the Platinum-Rhodium type thermocouples are severely corroded.

Use of these HT-THERMIC series of thermocouples will enable you to carry out measurement of high temperatures up to 2000℃ over a long period of time in a stable condition.

In 1992, a heavy duty version of HT-THERMIC, “HT-270” has been developed for petro-chemical and other critical high temperature applications. “HT-270” can be used both in moisture free oxidizing and reducing atmospheres up to 1500℃ without need of “Gas Purge” system .

THERMIC M. I. THERMOCOUPLE FOR TUBE SKIN TEMPERATURES

This is a metal sheathed thermocouple specially designed for attachment to the boiler tube surface for true “Tube Skin” temperature.

This improves the durability and accuracy of skin temperature measurement.

This thermocouple offers a great advantage at thermal power stations, and heat exchangers, etc., for accurate measurement of the surface temperature of various types of furnance tubes. It is quite useful from the viewpoint of energy saving and improvement in monitoring deposit of scale inside the tubes.

SPRING-LOADED M. I. THERMOCOUPLE

This is used in cases where a protection tube, for example a thermowell, is employed, to ensure a close contact between the thermocouple and the bottom of the protection tude, and as well as preventing damage to the thermocouple from vibrations.

Our Spring-Loaded THERMIC is of such a construction that allows to simply and easily replace only the thermocouple.

THERMOWELLS AND WELDED PROTECTION TUBES

Equipped with a new efficient Dual-shaft Gun Drilling Machine, we furnish high reliability, solid bar stock type thermowells in various designs.

We are one of the few sources in the world for long thermowells and can produce up to a maximum length of 3000mm at our factory. Rigid inspections are conducted throughout the process including X-ray photograph, dye penetration and hydrostatic tests to ensure the integrity of our thermowells.

Our weld-closed protection tubes are processed by a special hot spinning device developed at our factory. With this technology, perfect uniformity in metal structure and wall thickness of the end closure are ensured to give an optimum service life in the field. Available in every grade of stainless steel, non-ferrous and a variety of high temperature super alloys.

THERMOCOUPLE WIRES OF VARIOUS TYPES

In addition to the standardized thermocouple wires in accordance with the JIS (Japanese Industrial Standards) , IEC, ANSI, ASTM, BS and DIN, such as K, J, E, T, N, R, S, B, and W5 types, we also furnish various types of special thermocouple wires including Nickel-Molybdenum, platinel and cryogenic Chromel-AuFe combinations, etc.

BESTA - DIESSE - TIAN MIN

(LEVEL GAUGE - LEVEL SWITCH - LEVEL GLASS)

PT. Instrumentation Engineering and Services

(Your Instrumentation Partner)

Address : Ruko 1000 , Komplek Taman Palem Lestari , Block V No. 3.
Jl. Kamal Raya Outer Ring Road - Jakarta 11730

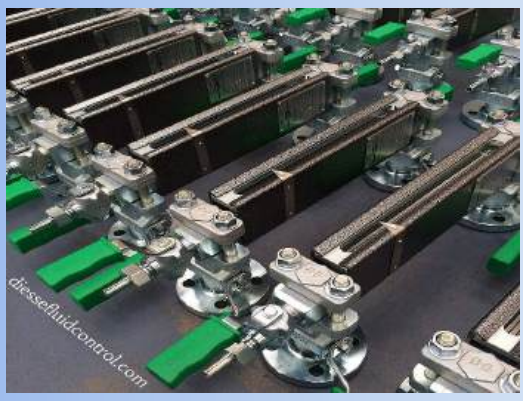
Telphone : +62 8111-371-373

Mobile No : +62 8111-371-371

Email : sales@pt-ies.com & danny@pt-ies.com

Website : www.instrumentation.id

REFLEX GLASS GAUGES



Operating limits / Conditions:

Process:
Max. pressure: 160 bar @ 38°C (with GR18, MT18 or SHV type valves)
Max. temperature: 300°C (max. temperature allowed by borosilicate glasses as per the DIN 7081 standard - see page 1.69)
Steam: (see page 1.59)
Max. pressure: 22 bar (with GR18, MT18 or SHV type valves)
Max. temperature: 216°C (saturated steam @ 22 bar)

For saturated steam values > 20 bar, a low-maintenance transparent level gauge with mica shield protection should be used (see graph "glass loss caused by boiler water" for the estimated glass life).
Not only does the glass life depend on the temperature, it depends on the pH of the water (the higher the value, the shorter the glass life).

TRANSPARENT GLASS GAUGES

Operating limits / Conditions:

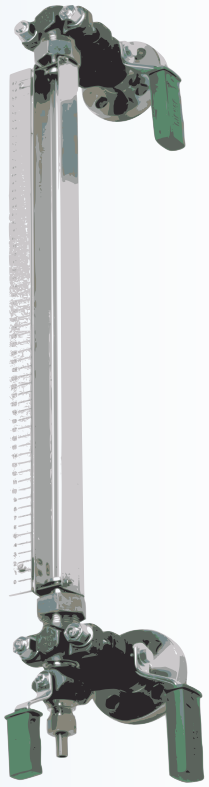
Process:
Max. pressure: 160 bar @ 38°C (with cylindrical plug cocks or globe valves)
Max. temperature: 300°C (max. temperature allowed by borosilicate glasses as per the DIN 7081 standard - see page 1.69)
Steam: (see page 1.59)
Max. pressure: 70 bar (with cylindrical plug cocks or globe valves)
Max. temperature: 280°C

This type of gauge is recommended:
- for use with corrosive fluids (protective shield for the glass is required)
- for steam with an operating pressure > 20 bar (protective shield for the glass is required)
- if repeated thermal shocks are likely (protective shield for the glass is required)
- for checking the interface (level of separation between two immiscible fluids)
- for checking the colour of a fluid
- for dirty / oily fluids

WELD - ON

Operating limits / Conditions:
Process:
Max. pressure:ANSI 300 rating (A105: 51 bar; AISI 316L: 49.6 bar) @ 38°C
Max. temperature:300°C (max. temperature allowed by borosilicate glasses as per the DIN 7081 standard - see page 1.69)
On request: ANSI 600 rating (A105: 102 bar; AISI 316L: 99.3 bar) @ 38°C

TUBULAR GLASS GAUGE



Operating limits / Conditions:
Process:
Max. pressure: 5 bar @ 38°C
(the max. pressure also depends on the length and temperature)
Max. temperature: 120°C

The product is NOT suitable for use in the following instances:
- if it is likely to be exposed to vibrations (glass tube will break)
- if the installation is situated by a walkway (possibility of blows/impact)
- if exposed to steam (shortens glass tube life)

GLASS LEVEL GAUGES

Type: DS LG-RBR GR18

Service conditions
Max. pressure: PN25 and PN40
Max. temperature: 280/300°C

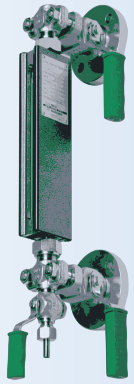
View
Standard: adjustable on 360°

Distance (C to C)
Standard or on request

Material (Standard)
Execution: CS/CS or SS/CS
Gauge & cock body: A105 or 316L
Cock trim: A303 or A316
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Shut-off cocks
DS GR18 or DS MT18

Process connection
Flanged or threaded
Vent: blind or option
Drain: cock D12 threaded 1/2" or option



Type: DS LG-RBF GR18

Service conditions
Max. pressure: PN25 and PN40
Max. temperature: 280/300°C

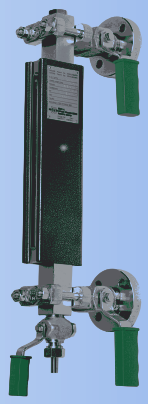
View
Standard: front on request lateral

Distance (C to C)
Standard or on request

Material (Standard)
Execution: CS/CS or SS/CS
Gauge & cock body: A105 or 316L
Cock trim: A303 or A316
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Shut-off cocks
DS GR18

Process connection
Flanged or threaded
Vent: threaded 1/2" with plug or option
Drain: cock D12 threaded 1/2" or option



Type: DS LG-RCR GR18

Service conditions
Max. pressure: max PN40
Max. temperature: 280/300°C

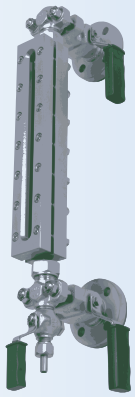
View
Standard: adjustable on 360°

Distance (C to C)
Standard or on request

Material (Standard)
Execution: CS/CS or SS/CS
Gauge & cock body: A105 or 316L
Cock trim: A303 or A316
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Shut-off cocks
DS GR18

Process connection
Flanged or threaded
Vent: blind or option
Drain: cock D12 threaded 1/2" or option



Type: DS LG-RTR GR18/MT18

Service conditions
Max. pressure: PN16
Max. temperature: 280/300°C

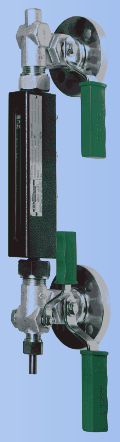
View
Standard: adjustable on 360°

Distance (C to C)
Standard or on request

Material (Standard)
Execution: CS/CS
Gauge & cock body: A105
Cock trim: A303
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Shut-off cocks
DS GR18 or MT18

Process connection
Flanged or threaded
Vent: blind or option
Drain: cock D12 threaded 1/2" or option



Type: DS LG-TCR GR18

Service conditions
Max. pressure: PN25 and PN40
Max. temperature: 280/300°C

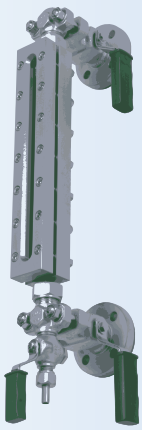
View
Standard: adjustable on 360°

Distance (C to C)
Standard or on request

Material (Standard)
Execution: CS/CS or SS/CS
Gauge & cock body: A105 or 316L
Cock trim: A303 or A316
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Shut-off cocks
DS GR18

Process connection
Flanged or threaded
Vent: blind or option
Drain: cock D12 threaded 1/2" or option



Type: DS LG-TCF GR18

Service conditions
Max. pressure: PN40
Max. temperature: 280/300°C

View
Standard: front on request lateral

Distance (C to C)
Standard or on request

Material (Standard)
Execution: CS/CS or SS/CS
Gauge & cock body: A105 or 316L
Cock trim: A303 or A316
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Shut-off cocks
DS GR18

Process connection
Flanged or threaded
Vent: threaded 1/2" with plug or option
Drain: cock D12 threaded 1/2" or option

Type: DS LG-RCW / TCW

Service conditions
Max. pressure: PN25 and PN100
Max. temperature: 280/300°C

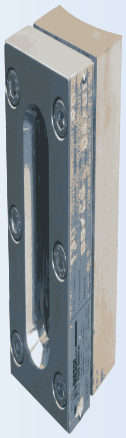
Total length
Max 1080 mm

Process connection
Standard drilling on the hole or option

Execution of housing to be weld
Standard: flat or option

Material (Standard)
Execution: CS/CS or SS/CS
Housing body: A105 or 316L
Cover: A105 or A316
Gaskets: graphite / copper or option

Glasses
Reflex and Transparent,
Borosilicate glass



Type: DS LG-TVR GR18/MT18

Service conditions
Max. pressure: 5 barg
Max. temperature: 120 °C

View
Standard: adjustable on 360°

Distance C to C
Standard or oon request

Material (Standard)
Execution: CS/CS or SS/CS
Cock body: A105 or 316L
Cock trim: A303 or A316
Non wetted parts: CS galvanized
Gaskets: graphite / copper or option

Glass tube
Standard: borosilicate glass 3.3
Ø 16mm, thickness 2.5 mm

Shutt-off cocks
DS GR18 / DS MT18

Process connection
Flanged or threaded
Vent: blind or option
Drain: cock D12 threaded 1/2"
or option

The unique modular level switch system

What you need ...

Besta's modular design is a unique deviation from conventional level switch construction. This modular system allows individual and numerous combinations of float, flange and switch modules to suit your specific requirements.
Switch modules are available with electric, electronic or pneumatic output signals. Switch housings are standard to IP65 enclosure, but depending on environmental conditions IP67 or IP68 must be chosen. For hazardous areas, hermetically sealed microswitches, flameproof housings or pneumatic switch modules can be used.

... is quickly installed ...

Trimod Besta flange modules are available in various standards. The Industrial and Plastic Flange ranges are manufactured according to international standards such as EN/DIN, ANSI, BS or JIS. The benefit of the hinged cover, the captive screws and the selflifting terminal clamps is an easy installation. For convenience of wiring, the connection diagram is shown on the inside of the hinged lid. The interchangeability of the single modules allows high flexibility regarding maintenance or changing application requirements.

... and lasts forever.

So far, hundreds of thousands of Trimod Besta level switches are on duty worldwide. The float movement caused by the rise and fall of the liquid level is transmitted by two repelling, permanent AlNiCo magnets.
The sturdy design and the double snap effect as a result of the magnetic repulsion and the snap action of the microswitch guarantee a virtually unlimited lifetime.
The float modules, like all wetted parts, are made of stainless steel, Hastelloy C or high quality plastics. A wide range of floats is available to suit various viscosity-, temperature- and pressure ranges for almost any process condition.

With modular compatibility all options are open

Side mount combinations

01 with microswitch or proximity switch, also available in explosion proof version

02 pneumatic switch module with ON/OFF or proportional output

03 with enclosure IP68 for underwater installation

04 for explosion proof applications in a pressure-capsulated housing with microswitch or proximity switch

05 with heat exchanger for very high or very low operating temperatures

06 square standard flanges made of CrNiMo, 92 mm pitch circle diameter

07 industrial flange acc. to EN/DIN, ANSI, BS and JIS made of PP and PTFE

08 industrial flange acc. to EN/DIN, ANSI, BS and JIS made of CrNiMo and Hastelloy

09 with fixed operating differential

10 with rod extension for longer operating differentials

11 rod extension for switch point correction

12 with protective bellows for media with solids content

13 with adjustable operating differential for pump control

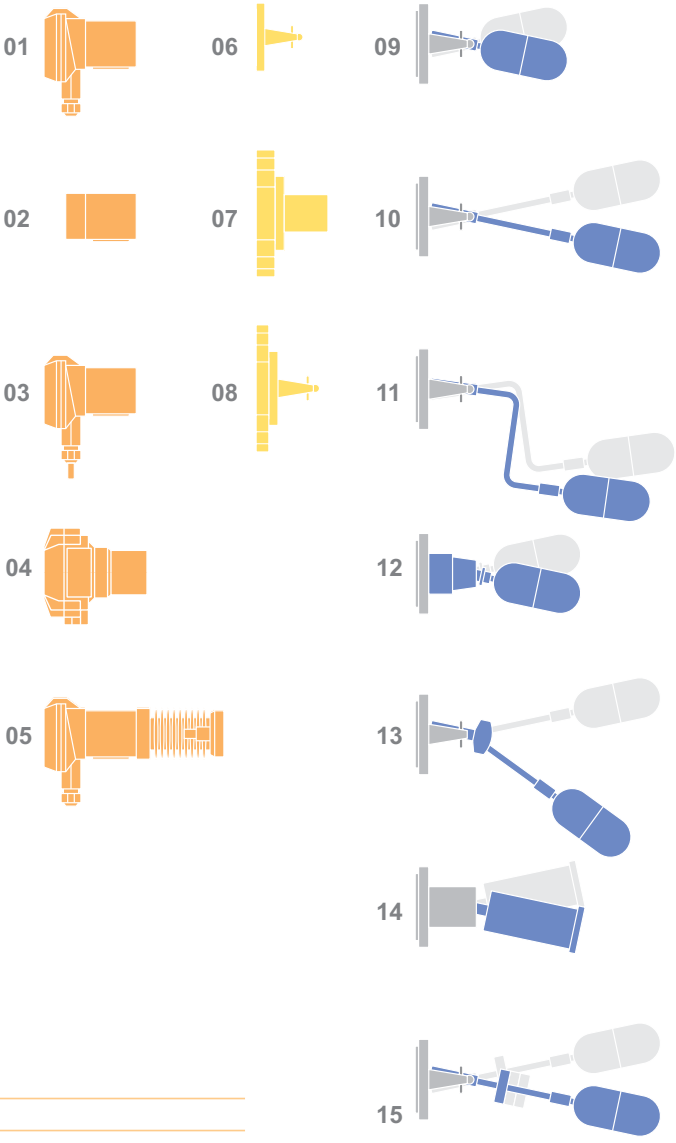
14 plastic versions for aggressive media

15 for separation layer monitoring of two media with different densities

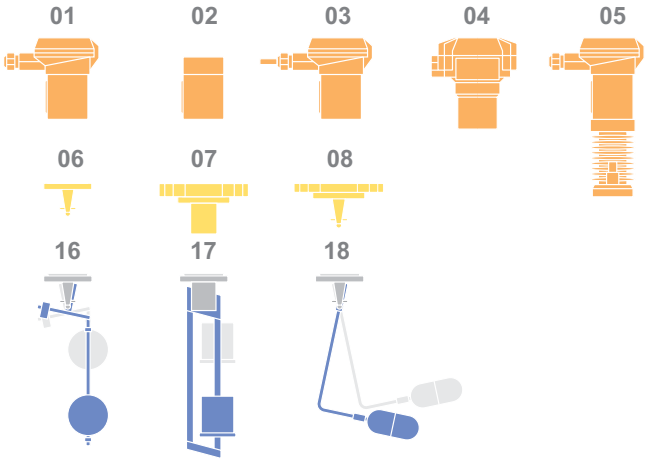
16 for vertical mounting

17 for vertical mounting in plastics

18 for vertical mounting with rod extension



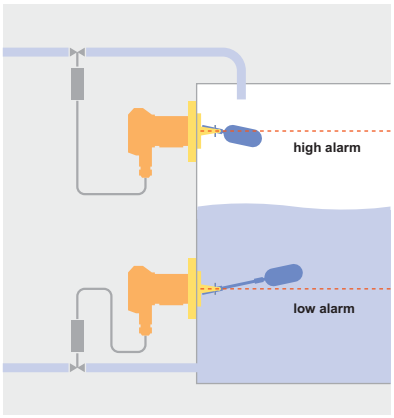
Top mount combinations



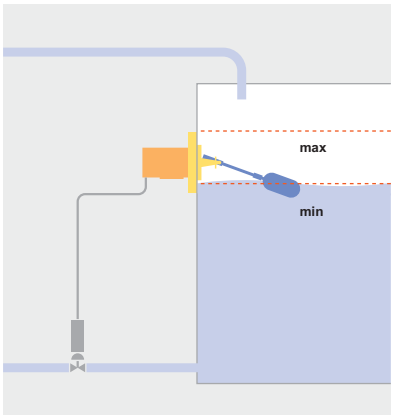
Application examples

Alarm, limit and control functions with Trimod Besta

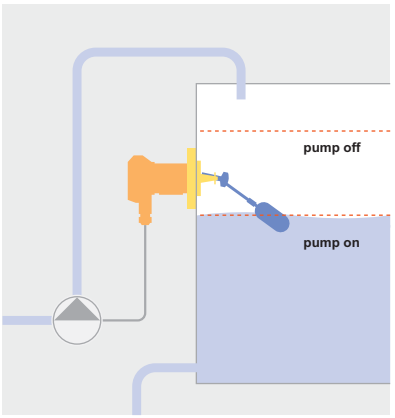
max/min limits



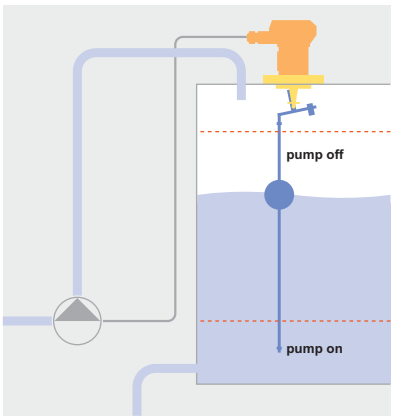
pneumatic control



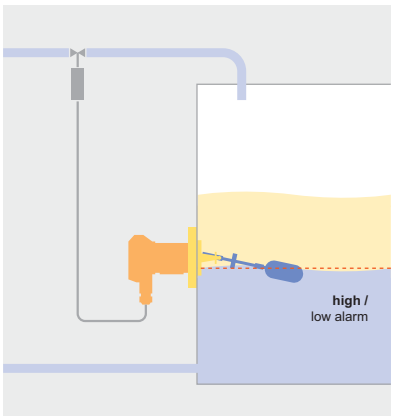
pump and valve control



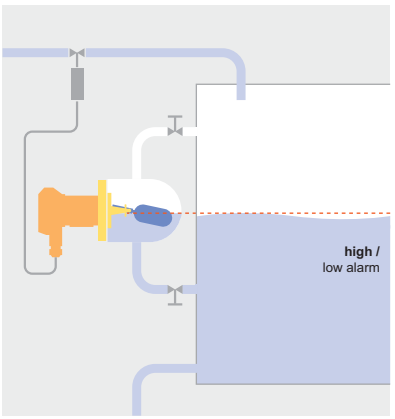
pump and valve control



separation layer control



external level control



KSR Level Sensor

Continuous level measurement with 3-wire potentiometer circuit for external control units

2-wire level transmitters

Head-mounted transmitter 4 – 20 mA

Programmable

HART®-Protocol, PROFIBUS® PA, FOUNDATION™ Fieldbus

High precision, magnetostrictive level sensors, accuracy < 1.0 mm

KSR Magnetic Switch

Detection of one or more discrete levels

Reed contact bistable

Reed contact NAMUR, DIN 60947-5-6

Inductive for safety applications

Pneumatic

Technical Advantages

Simple, robust, and solid design

Display proportional to the height of the level or the contents of the vessel

Pressure- and gas-proof separation of chamber and display

Available for applications in all areas of industry through versatile design and corrosion-resistant materials

Pressure range to 420 bar

Temperature range to 450 °C

S.G. ≥ 400 kg/m^3

Explosion-proof designs

Interface and product level measurement at S.G. Δ ≥ 50 kg/m^3

Problem Solution
&
Technical Consultation

Our strengths

- One-stop Shopping & Solution .
- High quality of products & service
- Complete Products
- Technical Support
- Technical Consultant
- Price and Delivery

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Website : www.instrumentation.id

Please Remember :

“ WE CAN DO IT FOR YOU “