

Signal Conditioning & *Communication Interfaces* *Product Catalog*

PERFORMANCE
MADE
SMARTER



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



thermo-electra

temperature sensor solutions

PR
electronics

Our purpose

is to create market-leading site standard solutions with high signal integrity and simplicity for our customers, concentrating on innovation in six core business areas: Temperature, I.S. Interfaces, Communication Interfaces, Multifunctional, Isolation and Display.

Our products are individually outstanding, but when our point-to-point temperature measurement devices, I.S. interfaces, backplanes, multifunctional signal devices and future-proof communication interfaces are combined, our solutions are truly unrivalled.

We will be

our customer's trusted partner for the best and most innovative signal conditioning solutions in the process and factory automation industries.

We provide

a wide range of benefits to our customers through innovative solutions and close collaboration:

- The highest signal integrity from your measurement point to control system
- Maximum uptime based on our Install and Forget® philosophy
- Easy and cost-effective deployment and monitoring with intuitive communication interfaces
- Site standard devices that are easily programmable to suit your specific application
- Day-to-day delivery

Since 1974, we have been dedicated to perfecting our core competence of innovating high precision technology with low power consumption. With a dedicated R&D center that is integrated with our lean production facility at our headquarters in Denmark, we are today one of the leading companies within signal conditioning.



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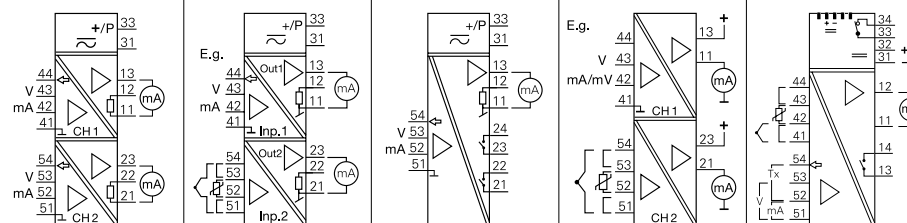
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MULTIFUNCTIONAL TRANSMITTERS



TYPE	3114	4104	4114	4116	4131	
INPUT: RTD, TC, linear resistance, mV, mA, V, potentiometer	Isolated universal converter	Universal uni-bipolar signal transmitter	Universal transmitter	Universal transmitter	Universal trip amplifier	
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	BEJKNRSTUW3W5Lr		BEJKNRSTUW3W5Lr	BEJKNRSTUW3W5Lr	BEJKNRSTUW3W5Lr	
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	4501 / 4590	4501 / 4511	4501 / 4511	4501 / 4511	4501 / 4511	
APPROVALS:						
ATEX, Zone 2	✓					
IECEX, Zone 2	✓					
FM, Zone 2 - DIV 2	✓	✓	✓	✓	✓	
CCOE	✓					
UL 61010 / 508	✓ / -	- / ✓	- / ✓	- / ✓	- / ✓	
DNV-GL	✓	✓	✓	✓	✓	
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	✓					

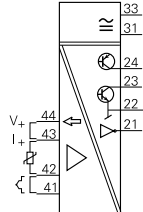
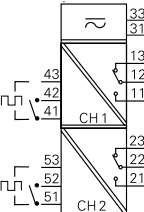
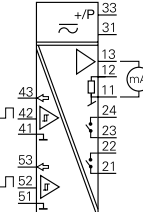
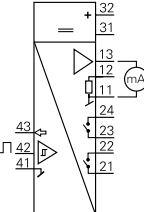
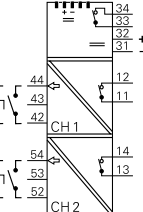


TYPE	5114A	5115A	5116A	5131A	9116A
	Programmable transmitter	Signal calculator	Programmable transmitter w. limit switch	2-wire programmable transmitter	Universal converter
INPUT:					
OUTPUT:	mA, V, relays				
INPUT:					
mA, measurement range / min. span	0...100 mA / 4 mA	0...100 mA / 4 mA	0...100 mA / 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	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr
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	22 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	4501 / 4511

APPROVALS:					
ATEX, Zone 2					✓
IECEX, Zone 2					
FM, Zone 2					
CCOE					
UL 61010 / 508			- / ✓		✓ / -
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					✓

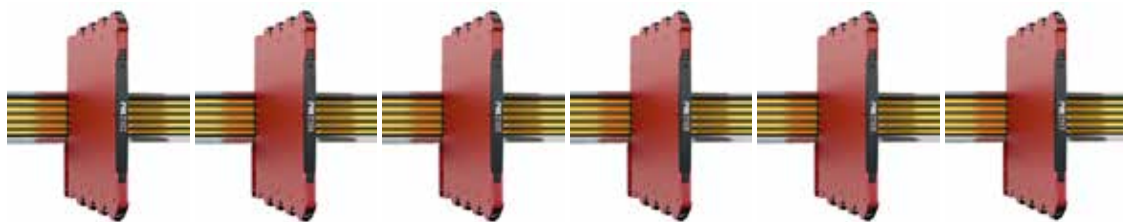


TYPE	4222	5202A	5223A	5225	9202A
INPUT: Frequency, pulse, V, mA, Pt100, TC, mV	Universal I/f converter	Pulse isolator	Programmable f/I - f/f converter	Programmable f/I - f/f converter	Pulse isolator
OUTPUT: mA, V, pulse, relays					
INPUT:					
Sensor type		NAMUR / switch	All standard sensors 	All standard 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	BEJLNRSTUW3W5Lr				
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...253V / 19.2...300V	21.6...253V / 19.2...300V	21.6...253V / 19.2...300V	- / 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	4501 / 4511	DIP switch	5909 + DIP switch	5909 + DIP switch	4501 / 4511

APPROVALS:					
ATEX, Zone 2					✓
IECEX, Zone 2					
FM, Zone 2 - DIV 2	✓				
CCOE					
UL 61010 / 508	- / ✓	- / ✓			✓ / -
DNV-GL					✓
EAC	✓	✓	✓	✓	✓
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					✓

ISOLATORS



TYPE	3103	3104	3105	3108	3109	3117
	Isolated repeater	Isolated converter	Isolated converter	Isolated repeater / splitter	Isolated converter / splitter	Bipolar isolated converter
INPUT: mA, V, potentiometer OUTPUT: mA, V						

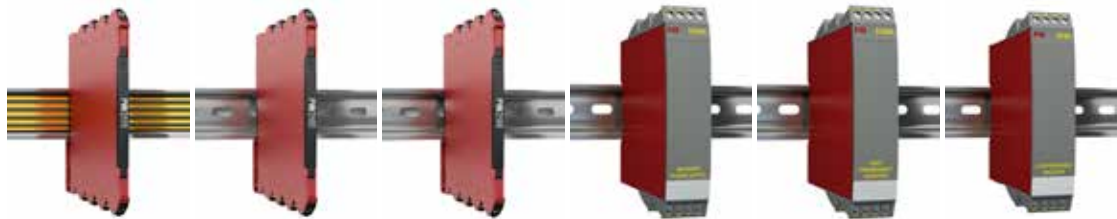
INPUT:						
mA, measurement range / min. span	0...23 mA / 1:1	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 1:1	0...23 mA / 16 mA	-23...+23 mA
V, measurement range / min. span		0...10.25 VDC / 4 VDC	0...10.25 VDC / 4 VDC		0...10.25 VDC / 4 VDC	±5 and ±10 VDC
Reference voltage / 2-wire supply		- / > 17 V			- / > 17 V	
OUTPUT:						
mA, signal range / min. span	0...23 mA / 1:1	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 1:1	0...23 mA / 16 mA	0...23 mA / 16 mA
Load (@ current output)	≤ 600 Ω	≤ 600 Ω	≤ 600 Ω	≤ 300 Ω per channel	≤ 300 Ω per channel	≤ 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	0...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
Supply voltage, AC / 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	- / 16.8...31.2 VDC
Max. required power*	0.65 W	1.2 W	0.8 W	0.75 W	1.2 W	0.8 W
Isolation voltage, test / operation	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC
Response time	< 7 ms	< 7 ms	< 7 ms	< 7 ms	< 7 ms	< 7 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	< ±0.05% of span	< ±0.2% 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	< ±0.015% 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 21
Channels	1	1	1	1	1	1
Programming	No	DIP switch	DIP switch	No	DIP switch	DIP switch

APPROVALS:						
ATEX, Zone 2	✓	✓		✓	✓	✓
IECEx, Zone 2	✓	✓		✓	✓	✓
FM, Zone 2 - DIV 2	✓	✓		✓	✓	✓
CCOE	✓	✓		✓	✓	✓
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		✓	✓		✓	✓
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

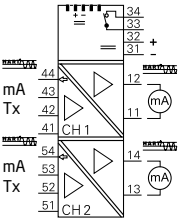


TYPE	3118	3185	3186	5104A	5106A	6185
INPUT, DC: mA, mV, V, HART communication	Bipolar isolated converter / splitter	Loop-powered isolator	2-wire transmitter isolator	Repeater / power supply	HART transparent repeater	Loop-powered isolator
OUTPUT: mA, V, HART communication						
INPUT:						
mA, measurement 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 V _{out})	- / 6...35 VDC	21.6...253 V / 19.2...300V	21.6...253 V / 19.2...300V	- / ≤ 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	✓	✓	✓			
CCOE	✓	✓	✓			
UL 61010 / 508	✓ / -	✓ / -	✓ / -	- / ✓	- / ✓	
DNV-GL	✓	✓	✓	✓	✓	
EAC	✓	✓	✓	✓	✓	✓

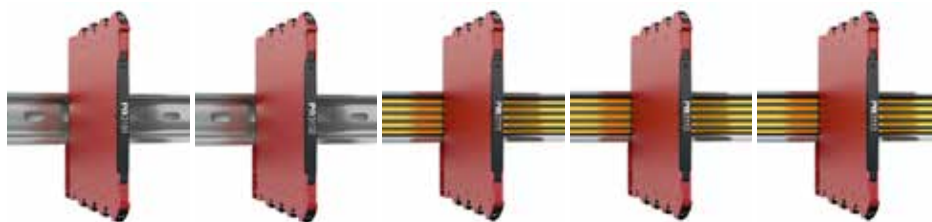
APPLICATION GUIDE:						
Signal repeater		✓	✓		✓	✓
Signal converter	✓			✓		
Signal splitter	✓					
mA / V bipolar input	✓ / ✓					
4...20 mA Tx input			✓	✓	✓	
Buffered voltage output	✓					
Active / passive input signal		✓ / -	✓ / ✓			✓ / -
mA / V output	✓ / ✓	✓ / -	✓ / -	✓ / ✓	✓ / -	✓ / -
Active / passive mA output	✓ / -	✓ / -	- / ✓	✓ / ✓	✓ / ✓	✓ / -
Mounting in Zone 2 / Div 2	✓	✓	✓			
Power rail option	✓					



TYPE		9106A				
INPUT, DC: mA, HART communication	HART transparent repeater					
						
INPUT:						
mA, measurement range / min. span	3.5...23 mA / 16 mA					
V, measurement range / min. span						
Max. offset						
Reference voltage / 2-wire supply	- / > 16 VDC					
OUTPUT:						
mA, signal range / min. span	3.5...23 mA					
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-20...+60°C					
Supply voltage, AC / DC	- / 19.2...31.2 VDC					
Max. required power, 1 / 2 channels	≤ 1.1 W / ≤ 1.9 W					
Isolation voltage, test / operation	2.6 kVAC / 250 VAC					
Response time	< 5 ms					
Signal dynamics,input	Analog signal chain					
Accuracy	≤ ±16 µA					
Temperature coefficient	≤ ±1.6 µA / °C					
NAMUR	NE 21					
Channels	1 or 2					
Programming	4501 / 4511					
APPROVALS:						
ATEX, Zone 2	✓					
IECEX, Zone 2						
FM, Zone 2 - DIV 2						
CCOE						
UL 61010 / 508	✓ / -					
DNV-GL	✓					
EAC	✓					
SIL 2/3 Full Assessment IEC 61508	✓					
APPLICATION GUIDE:						
Signal repeater	✓					
Signal converter						
Signal splitter	✓					
mA / V bipolar input						
4...20 mA Tx input	✓					
Active / passive input signal						
mA / V output	✓ / -					
Active / passive mA output	✓ / ✓					
Mounting in Zone 2 / Div 2	✓					
Power rail option	✓					



TEMPERATURE TRANSMITTERS



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	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	✓	✓	✓	✓	✓	
CCOE	✓	✓	✓	✓	✓	
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			✓	✓	✓	



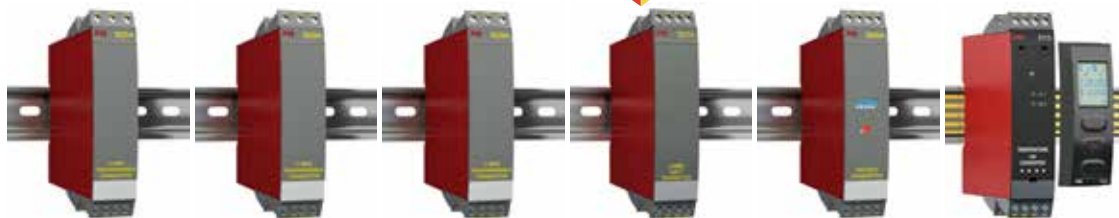
TYPE	3331	3333	3337			
INPUT: RTD, linear resistance, TC, mV OUTPUT: mA, V, HART communication	Temperature converter, loop-powered - isolated 	Pt100 converter, loop-powered 	HART 7 temperature converter, loop-powered 			
INPUT:						
RTD, measurement range / min. span	-200...+850°C / 10°C	-200...+850°C / 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			
Max. offset						
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	3.5...23 mA / 16 mA			
Load (@ current output)	$\leq (V_{\text{supply}} - 5.5) / 0.023 [\Omega]$	$\leq (V_{\text{supply}} - 3.3) / 0.023 [\Omega]$	$\leq (V_{\text{supply}} - 6.2) / 0.023 [\Omega]$			
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-25...70°C	-25...70°C	-25...70°C			
Supply voltage, DC	5.5...35 VDC	3.3...35 VDC	6.2...35 VDC			
Max. required power	0.8 W	0.8 W	0.8 W			
Isolation voltage, test / operation	2.5 kVAC / 250 VAC		2.5 kVAC / 250 VAC			
Response time	< 30 ms	< 30 ms	< 60 ms			
Signal dynamics, input / output	23 bit / 18 bit	23 bit / 18 bit	23 bit / 18 bit			
Accuracy	$\leq \pm 0.05\%$ of span	$\leq \pm 0.1\%$ of span	$\leq \pm 0.05\%$ of span			
Temperature coefficient	< $\pm 0.01\%$ of span / °C	< $\pm 0.01\%$ of span / °C	< $\pm 0.01\%$ of span / °C			
NAMUR	NE 21, NE 43	NE 21, NE 43	NE 21, NE 43			
Channels	1	1	1			
Programming	DIP switch	DIP switch	DIP switch / HART			
APPROVALS:						
ATEX, Zone 2	✓	✓	✓			
IECEx, Zone 2	✓	✓	✓			
FM, Zone 2 - DIV 2	✓	✓	✓			
CCOE	✓	✓	✓			
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			✓			

TEMPERATURE TRANSMITTERS



TYPE	5331A	5333A	5334A	5335/7A	5343A	5350A
INPUT: RTD, linear resistance, TC, mV, potentiometer OUTPUT: mA, HART communication, Profibus PA, Foundation Fieldbus	2-wire programmable transmitter 	2-wire programmable transmitter 	2-wire programmable transmitter 	2-wire transmitter with HART protocol 	2-wire level transmitter 	Profibus PA / Foundation Fieldbus transmitter
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 / -
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°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...10 kΩ / -
Potentiometer					0...100 kΩ / 1 kΩ	0...100 kΩ
Sensor connection, wires	2 - 3 - 4	2 - 3		2 - 3 - 4		2 - 3 - 4
TC types	BEJLNRSTUW3W5Lr		BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5		BEJLNRSTUW3W5
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	0.8 W	0.8 W	0.8 W	0.8 W	0.8 W	< 350 mW
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	0.33...60 s	1...60 s	1...60 s	0.33...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	19 bit / 16 bit	24 bit / -
Accuracy	≤ ±0.05% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.1% 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	≤ ±0.01% 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 43	NE 21, NE 43
Channels	1	1	1	1	1	1
Programming	5909	5909	5909	5909/HART 5/HART 7	5909	Profibus PA/Foundation F.
APPROVALS:						
ATEX, Zone 2	✓	✓	✓	✓	✓	✓
IECEX, Zone 2	✓	✓	✓	✓	✓	
CSA, Zone 2 - DIV 2						✓
FM, Zone 2 - DIV 2						✓
CCOE	✓	✓	✓			
INMETRO	✓	✓	✓	✓	✓	
NEPSI						✓
DNV-GL	✓	✓	✓	✓	✓	
EAC	✓	✓	✓	✓	✓	✓
SIL 2, Hardware Assessment				✓		
APPLICATION GUIDE:						
RTD / TC / mV input	✓ / ✓ / ✓	✓ / - / -	- / ✓ / ✓	✓ / ✓ / ✓		✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / -	✓ / -		✓ / -	✓ / ✓	✓ / ✓
Dual sensor input				✓		✓
Custom sensor linearization	✓	✓	✓	✓	✓	✓
mA / V output	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	
Loop-powered	✓	✓	✓	✓	✓	
Galvanically isolated	✓		✓	✓		✓
HART protocol				✓		
Mounting in Zone 2 / DIV 2	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -
Process signal calibration	✓	✓	✓	✓	✓	✓

TEMPERATURE TRANSMITTERS



TYPE	6331A	6333A	6334A	6335/7A	6350A	9113A
INPUT:	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire HART transmitter	Profibus PA / Foundation Fieldbus transmitter	Temperature / mA converter
RTD, linear resistance, TC, mV, mA, potentiometer						
OUTPUT:						
mA, HART communication, Profibus PA, Foundation Fieldbus						

INPUT:						
mA, measurement range / min. span					-100...+100 mA / -	0...23 mA / 16 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 / -	
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -	-200...+850°C / 25°C
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω	0...10 kΩ / 30 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	BEJKNRSTUW3W5Lr		BEJKNRSTUW3W5Lr	BEJKNRSTUW3W5	BEJKNRSTUW3W5	BEJKNRSTUW3W5Lr
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	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	Profibus PA/Foundation F.	0...23 mA / 16 mA
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-20...+60°C
Supply voltage, DC	7.2...35 VDC	8...35 VDC	7.2...35 VDC	8...35 VDC	9...32 VDC	19.2...31.2 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	< 350 mW per channel	≤ 0.8 W / ≤ 1.4 W
Isolation voltage, test / operation	1500 VAC / 50 V		1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V	2.6 kVAC / 250 VAC
Response time	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s	0.4 / 1...60 s
Signal dynamics, input / output	20 bit / 16 bit	19 bit / 16 bit	18 bit / 16 bit	22 bit / 16 bit	24 bit / -	24 bit / 16 bit
Accuracy	≤ ±0.05% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.05% of MV	≤ ±0.1% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.005% of span / °C	< ±0.002% of MV / °C	< ±0.01% of span / °C
NAMUR	NE 21, NE 43	NE 43	NE 21, NE 43	NE 21, NE 43, NE 89	NE 21, NE 43	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 / HART 7	Profibus PA/Foundation F.	4501 / 4511

APPROVALS:						
ATEX, Zone 2	✓	✓	✓	✓	✓	✓
IECEX, Zone 2	✓	✓	✓	✓	✓	
CSA, Zone 2 - DIV 2					✓	
FM, Zone 2 - DIV 2					✓	
CCOE						
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 sensor input				✓	✓	
Custom sensor linearization	✓	✓	✓	✓	✓	
mA / V output	✓ / -	✓ / -	✓ / -	✓ / -		✓ / -
Loop-powered	✓	✓	✓	✓		
Galvanically isolated	✓		✓	✓	✓	✓
HART protocol				✓		
Mounting in Zone 2 / DIV 2	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	✓ / ✓
Process signal calibration	✓	✓	✓	✓	✓	✓
Power rail option						✓



= Full assessment acc. to IEC 61508



= FMEDA report

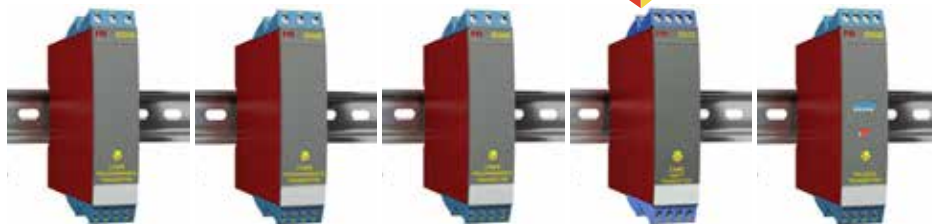
Of span = Of the presently selected range
Of MV = Of the present measurement value

I.S. TEMPERATURE TRANSMITTERS



TYPE	5331D	5333D	5334B	5335/7D	5343B	5350B
INPUT: RTD, linear resistance, TC, mV, potentiometer	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire transmitter with HART protocol	2-wire level transmitter	Profibus PA / Foundation Fieldbus transmitter
OUTPUT: mA, HART communication, Profibus PA, Foundation Fieldbus						
INPUT:						
mV, measurement range / min. span	-12...800 mV / 5 mV	-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 / 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...10 kΩ / 30 Ω	0...7000 Ω / 25 Ω	0...100 kΩ / 1 kΩ	0...10 kΩ / -
Potentiometer					1 kΩ...100 kΩ	0...100 kΩ
Sensor connection, wires	2 - 3 - 4	2 - 3	2 - 3	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4
TC types	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5	BEJLNRSTUW3W5	BEJLNRSTUW3W5
Max. offset					50% of selec. max. value	
Cold junction compensation	Internal / external	Internal / external	Internal / external	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	0.7 W	0.7 W	0.7 W	0.7 W	0.7 W	< 350 mW
Isolation voltage, test / operation	1500 VAC / 50 V	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	0.33...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	19 bit / 16 bit	24 bit / -
Accuracy	≤ ±0.05% of span	≤ ±0.1% of span	≤ ±0.05% of span	≤ ±0.05% of span	≤ ±0.1% 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	≤ ±0.01% of span / °C	< ±0.002% of MV / °C
NAMUR	NE 21, NE 43	NE 43	NE 21, NE 43	NE 21, NE 43, NE89	NE 43	NE 21, NE 43
Channels	1	1	1	1	1	1
Programming	5909	5909	5909	5909/HART 5/HART 7	5909	Profibus PA/Foundation F.
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEX	✓	✓	✓	✓	✓	✓
FM	✓	✓	✓	✓	✓	✓
CSA	✓	✓	✓	✓	✓	✓
CCOE	✓	✓	✓	✓	✓	✓
INMETRO	✓	✓	✓	✓	✓	✓
DNV-GL	✓	✓	✓	✓	✓	✓
EAC Ex	✓	✓	✓	✓	✓	✓
NEPSI	✓	✓	✓	✓	✓	✓
SIL 2 Hardware Assessment	✓	✓	✓	✓	✓	✓
APPLICATION GUIDE:						
RTD / TC / mV input	✓ / ✓ / ✓	✓ / - / -	- / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓	✓ / ✓ / ✓
Lin. R / potentiometer input	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -
Dual sensor input	✓	✓	✓	✓	✓	✓
Custom sensor linearization	✓	✓	✓	✓	✓	✓
Bus-powered PA/FF	✓	✓	✓	✓	✓	✓
Loop-powered	✓	✓	✓	✓	✓	✓
Galvanically isolated	✓	✓	✓	✓	✓	✓
HART protocol	✓	✓	✓	✓	✓	✓
Process signal calibration	✓	✓	✓	✓	✓	✓

I.S. TEMPERATURE TRANSMITTERS

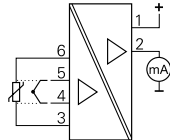


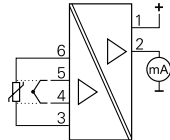
TYPE	6331B	6333B	6334B	6335/7D	6350B
INPUT:	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire HART transmitter	Profibus PA / Foundation Fieldbus transmitter
RTD, linear resistance, TC, mV, mA, potentiometer					
OUTPUT:					
mA, HART communication, Profibus PA, Foundation Fieldbus					

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 / -
RTD, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°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...10 kΩ / -
Potentiometer					0...100 kΩ / -
Sensor connection, wires	2 - 3 - 4	2 - 3		2 - 3 - 4	2 - 3 - 4
TC types	BEJKNRSTUW3W5Lr		BEJKNRSTUW3W5Lr	BEJKNRSTUW3W5	BEJKNRSTUW3W5
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	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	Profibus PA/Foundation F.
TECHNICAL SPECIFICATIONS:					
Ambient temperature	-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	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	< 350 mW per channel
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	0.33...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	24 bit / -
Accuracy	≤ ±0.05% of span	≤ ±0.1% 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	< ±0.002% of MV / °C
NAMUR	NE 21, NE 43	NE 43	NE 21, NE 43	NE 21, NE 43, NE 89	NE 21, NE 43
Channels	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2
Programming	5909	5909	5909	5909/HART 5/HART 7	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 sensor input				✓	✓
Custom sensor linearization	✓	✓	✓	✓	✓
Bus-powered PA/FF					✓ / ✓
Loop-powered	✓	✓	✓	✓	
Galvanically isolated	✓		✓	✓	✓
HART protocol				✓	
Process signal calibration	✓	✓	✓	✓	✓



TYPE		7501				
INPUT: RTD, linear resistance, TC, mV, potentiometer OUTPUT: mA, HART communication, Profibus PA, Foundation Fieldbus		Field mounted HART temperature transmitter 				
INPUT:						
RTD, measurement range / min. span		-200...+850°C / 10°C				
Lin. R, measurement range / min. span		0...7000 Ω / 25 Ω				
Sensor connection, wires		2 - 3 - 4				
TC types		BEJKNRSTUW3W5				
OUTPUT:						
mA, signal range / min. span		3.5...23 mA / 16 mA				
TECHNICAL SPECIFICATIONS:						
Ambient temperature		-40...+85°C				
Supply voltage, DC		10 / 12...30 / 35 VDC				
Max. required power						
Isolation voltage, test / operation		1500 VAC / 50 V				
Signal dynamics, input / output		22 bit / 16 bit				
Response time		1...60 s				
Accuracy		≤ ±0.05% of span				
Temperature coefficient		< ±0.005% of span / °C				
NAMUR		NE 21, NE 43				
Channels		1				
Programming		LOI / HART				
APPROVALS:						
ATEX		✓				
IECEX		✓				
FM		✓				
CSA		✓				
CCOE						
INMETRO		✓				
EU-RO marine		✓				
EAC Ex		✓				
NEPSI		✓				
APPLICATION GUIDE:						
RTD / TC / mV input		✓ / ✓ / ✓				
Lin. R / potentiometer input		✓ / -				
Dual sensor input		✓				
Custom sensor linearization		✓				
Bus-powered PA/FF						
Loop-powered		✓				
Galvanically isolated		✓				
HART protocol		✓				
Process signal calibration		✓				

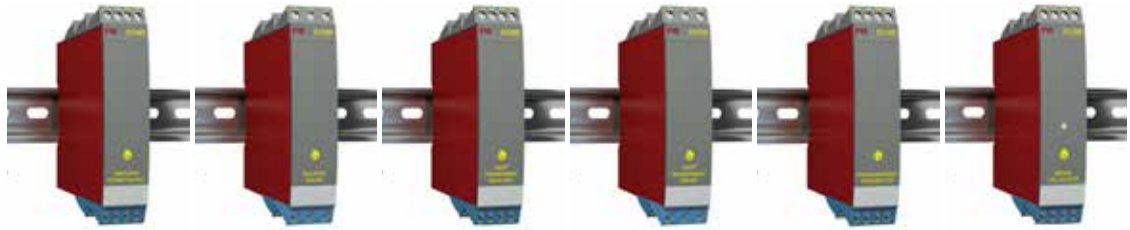


TYPE	9106B	9107B	9113B	9116B	9202B	9203B
INPUT:	HART transparent repeater					
mA, mV, V, potentiometer, RTD, Lin. R, TC, Hz, HART communication	HART transparent driver					
OUTPUT:	Temperature / mA converter					
mA, relays, HART communication	Universal converter					
	Pulse isolator					
	Solenoid / alarm driver					
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			BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr		
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	4501 / 4590	4501 / 4511	4501 / 4511	4501 / 4511	4501 / 4511	4501 / 4511
APPROVALS:						
ATEX	✓	✓	✓	✓	✓	✓
IECEx	✓	✓	✓	✓	✓	✓
FM	✓	✓	✓	✓	✓	✓
CCOE	✓	✓	✓	✓	✓	✓
INMETRO	✓	✓	✓	✓	✓	✓
UL 61010	✓	✓	✓	✓	✓	✓
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	✓	✓	✓	✓	✓	✓

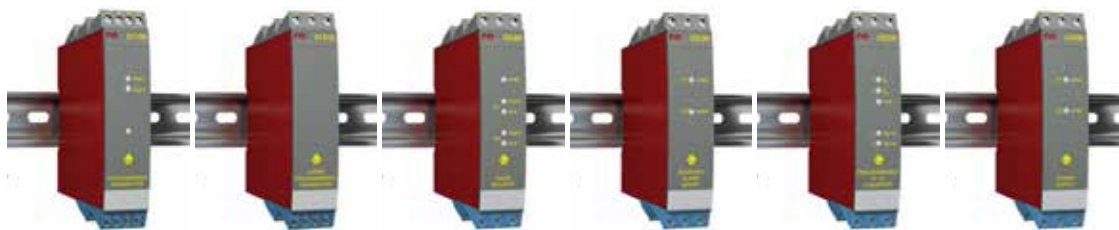


= Full assessment acc. to IEC 61508

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					BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr
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...253V / 19.2...300V	21.6...253V / 19.2...300V	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 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						



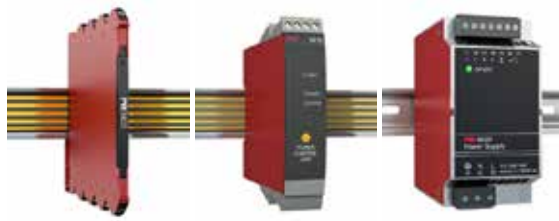
TYPE	5116B	5131B	5202B	5203B	5223B	5420B
	Programmable transmitter	2-wire programmable transmitter	Pulse isolator	Ex solenoid / alarm driver	Programmable f/I - f/f converter	Ex power supply for 2-wire Tx
INPUT:						
mA, mV, V, potentiometer, RTD, linear resistance, TC, Hz						
OUTPUT:						
mA, V, 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	BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr				
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	✓	✓			✓	
Power rail option						



TYPE	5531A	5531B1	5714	5715	5725	
INPUT: RTD, TC, mV, mA, V, potentiometer, frequency, pulse OUTPUT: Display, mA, relays	Loop-powered LCD indicator 	Loop-powered LCD indicator in I.S. enclosure 	Programmable LED indicator 	Programmable LED indicator 	Programmable frequency indicator 	
INPUT:						
mA, measurement range / min. span	3.6...23 mA / 16 mA	3.6...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	0...12 VDC / 0.8 V		
Sensor type					All standard sensors	
Hz, measurement range / min. span					0...50 kHz / 0.001 Hz	
Min. pulse width					25 µs	
RTD, measurement range / min. span			-200...+850°C	-200...+850°C		
Lin. R, measurement range / min. span			0...10000 Ω / -	0...10000 Ω / -		
Potentiometer			10 Ω...100 kΩ	10 Ω...100 kΩ		
Sensor connection, wires			2 - 3 - 4	2 - 3 - 4		
TC types			BEJLNRSTUW3W5Lr	BEJLNRSTUW3W5Lr		
Cold junction compensation			Internal	Internal		
Reference voltage / 2-wire supply			- / >15 VDC	- / >15 VDC		
Sensor supply					5...17 VDC	
OUTPUT:						
Display, digit / type	4-digit / LCD	4-digit / LCD	4-digit / LED	4-digit / LED	4-digit / LED	
Display, digit height	16 mm	16 mm	13.8 mm	13.8 mm	13.8 mm	
mA, signal range / min. span			0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 16 mA	
Relay			2 x SPDT, AC: 500 VA	4 x SPDT, AC: 500 VA	2 x SPDT, 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	- / 1.5 VDC	- / 1.5 VDC	21.6...253V / 19.2...300V	21.6...253V / 19.2...300V	21.6...253V / 19.2...300V	
Max. required power	<35 mW	<35 mW	3.5 W	3.8 W	3.6 W	
Isolation voltage, test / operation			2.3 kVAC / 250 VAC	2.3 kVAC / 250 VAC	2.3 kVAC / 250 VAC	
Response time	< 1 s	< 1 s	< 400 ms / < 1 s	< 400 ms / < 1 s	1...60 s	
Accuracy	± 0.1% of span	± 0.1% of span	± 0.1% of reading	± 0.1% of reading	± 0.1% of reading	
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	± 0.01% of reading / °C	± 0.01% of reading / °C	± 0.01% of reading / °C	
NAMUR			NE 43	NE 43	NE 43	
Programming	Switch / front keys	Switch / front keys	Front keys	5909 / front keys	Front keys	
APPROVALS:						
ATEX, Zone 2	✓	✓				
UL 508			✓	✓	✓	
DNV-GL			✓	✓	✓	
EAC	✓	✓	✓	✓	✓	
APPLICATION GUIDE:						
mA / V / mV input	✓ / - / -	✓ / - / -	✓ / ✓ / -	✓ / ✓ / -		
Temperature input			✓	✓		
Lin. R / potentiometer input			✓ / ✓	✓ / ✓		
Frequency input					✓	
Custom sensor linearization				✓		
4...20 mA Tx input			✓	✓		
Loop-powered	✓	✓				
mA output			✓	✓	✓	
2 / 4 relay outputs			✓ / -	- / ✓	✓ / -	
Process signal calibration	✓	✓	✓	✓	✓	
Mounting in Zone 2	✓	✓				

Of span = Of the presently selected range

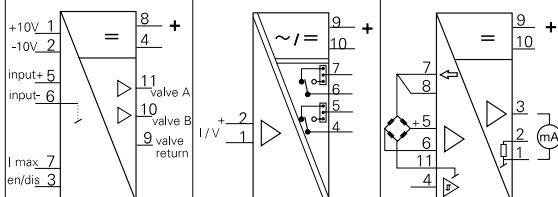
[illegible]



TYPE	3405	9410	9420			
INPUT: AC, DC voltage OUTPUT: Stabilized VDC	Power connector unit 	Power control unit 	Power supply 			
INPUT:						
Supply voltage, AC			85...132 VAC or 187...264 VAC			
Supply voltage, DC	16.8...31.2 VDC	21.6...26.4 VDC				
Supply voltage, back-up		21.6...26.4 VDC				
OUTPUT:						
Voltage	16.8...31.2 VDC	21.6...26.4 VDC	24 VDC			
Current		4 ADC	4.8 ADC			
Power, max.		96 W	115 W			
Status relay		1 x SPDT, AC: 500 VA				
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-25...+70°C	-20...+60°C	-20...+60°C			
Max. required power		96 W	< 135 W			
Isolation, test		2.6 kVAC	4.3 kVAC			
Short circuit protection	No	Yes	Yes			
Output ripple	Same as input	Same as input	200 mV peak / peak			
Channels	1	1	1			
Programming	No	No	No			
APPROVALS:						
ATEX, Zone 2	✓	✓	✓			
IECEX, Zone 2	✓	✓				
CSA, Zone 2 - DIV 2			✓			
FM, Zone 2 - DIV 2	✓	✓				
CCOE	✓					
UL 61010 / 508	✓ / -	✓ / -	- / ✓			
DNV-GL	✓	✓				
EAC	✓	✓	✓			
INMETRO, Zone 2		✓				
SIL 2 Full Assessment IEC 61508						
APPLICATION GUIDE:						
115 / 230 VAC mains supply			✓			
24 VDC output			✓			
60 W power rail connector unit	✓					
96 W power rail connector unit		✓				
Redundancy power rail function		✓				
Collective status signal monitor		✓				
Internal fuse		✓	✓			
Mounting in Zone 2 / Div 2	✓	✓	✓			



TYPE	2224	2231	2261			
INPUT, DC: mA, V, potentiometer, frequency, pulse, joystick, load cell, mV	Valve controller	Trip amplifier	mV transmitter			
INPUT, AC: A, V						
OUTPUT: mA, V, relays						



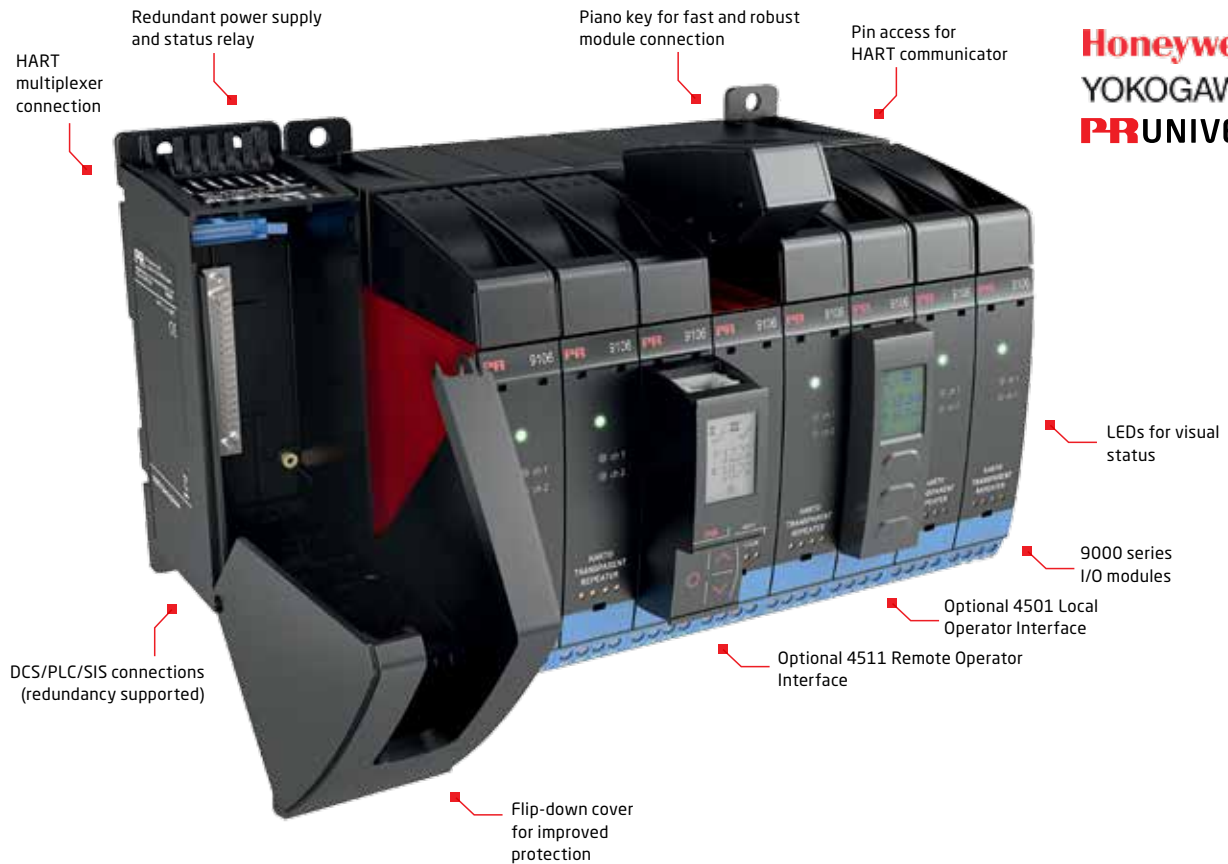
INPUT:						
mA, DC measurement range / min. span	0...20 mA / 16 mA	0...20 mA / 10 mA				
V, DC measurement range / min. span	-10...+10 VDC / 0.8 VDC	0...250 VDC / 0.5 VDC	-40...+100 mV / 10 mV			
A, AC measurement range / min. span		0...1 ARMS / 0.5 ARMS				
V, AC measurement range / min. span		0...250 VRMS / 0.5 VRMS				
Potentiometer	> 1 kΩ					
Digital input	3 x PNP		1 x NPN / 1 x PNP			
Max. offset	20% of selec. max. value		70% of selec. max. value			
Excitation / reference voltage	- / -10...+10 VDC		5...13 VDC / -			
OUTPUT:						
mA, signal range / min. span	3000 mA		0...20 mA / 5 mA			
V, signal range / min. span	Supply-0.5 VDC		0...10 VDC / 0.25 VDC			
Max. offset			50% of selec. max. value			
Relays		2 x SPST, AC: 500 VA				
Display, digit / type	3-digit / LED	3-digit / LED	3-digit / LED			
TECHNICAL SPECIFICATIONS:						
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C			
Supply voltage, universal AC / DC		21.6...253V / 19.2...300V				
Supply voltage, DC	12 or 24 VDC	19.2...28.8 VDC	19.2...28.8 VDC			
Max. required power	2.2 W	1.5 W DC / 2 W, UNI	2.2 W / max. 7.2 W			
Isolation voltage, test / operation		3.75 kVAC / 250 VAC				
Response time	< 75 ms	250 ms...60 s	60 ms...999 s			
Signal dynamics, input / output	12 bit / -	16 bit / -	17 bit / 16 bit			
Setpoint adjustment / repetition		0.1% / 0.1%				
Delay / hysteresis		0...99.9 s / 0...99.9%				
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C			
Channels	1 or 2 outputs	1 input, 2 relays	1			
Programming	Switch / front keys	Switch / front keys	Switch / front keys			

APPROVALS:						
DNV-GL		✓				
EAC	✓	✓	✓			

APPLICATION GUIDE:						
mA / V / mV input	✓ / ✓ / -	✓ / ✓ / -	- / - / ✓			
AC signal input		✓				
Digital ON/OFF signal input	✓		✓			
Controller / regulator function	✓	✓				
Load cell applications			✓			
Proportional valve applications	✓					
Frequency / pulse applications						
mA / V output			✓			
Relay output		✓				

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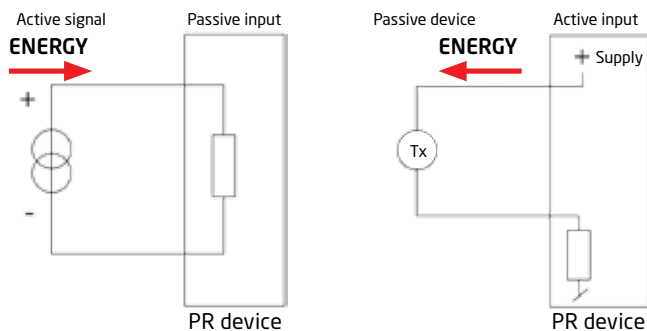
A user-friendly and reliable mounting solution between the *DCS/PLC/SIS system and isolators/I.S. interfaces*



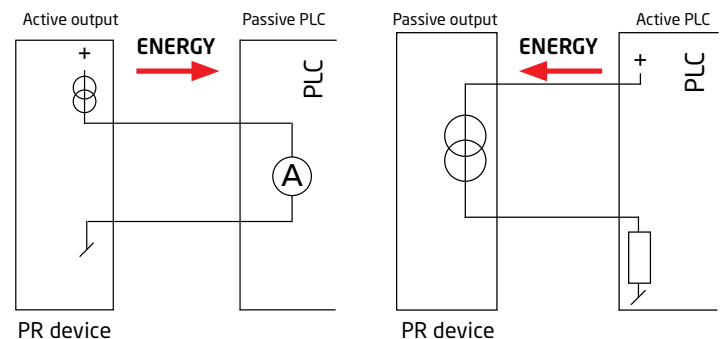
Honeywell
YOKOGAWA 
PR UNIVERSAL

SIGNAL TYPES

INPUT



OUTPUT



4501 DISPLAY FRONT



PR 4104, 4114, 4116, 4131, 4222



PR 9106, 9107, 9113, 9116, 9202, 9203



PR 4104, 4114, 4116, 4131, 4222



PR 9106, 9107, 9113, 9116, 9202, 9203

4511 COMMUNICATION ENABLER

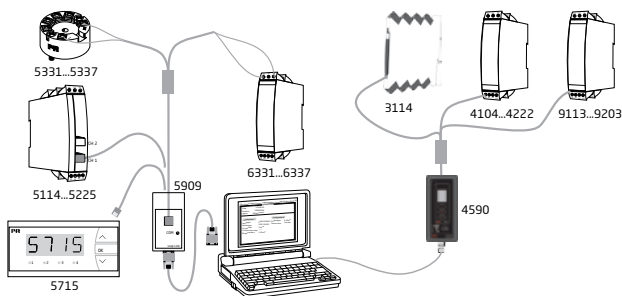


4590 CONFIGMATE



PR 3114
PR 4104, 4114, 4116, 4131, 4222
PR 9106, 9107, 9113, 9116, 9202, 9203

SOFTWARE



5909 LOOP LINK



Display / programming front 4501

Communications interface with front keys for modification of operational parameters in the 4000 and 9000 series. The scrolling help text in the display is available in 7 languages and guides the user effortlessly through all the configuration steps. The 4501 is easily moved from one device to another whereby the configuration can be copied to other devices of the same type. When mounted in the process, the 4501 displays process data and device status.

Communication enabler 4511

Wired or wireless, locally or remotely, analog and digital, this advanced device enables easy and cost-effective access to your process values from your existing 4000 and 9000 devices. You can manage processes onsite, connect to Modbus RTU devices, connect to any major communication protocols via gateway or remotely using the PR Process Supervisor (PPS) app. The 4511 offers the same advantages as the 4501 with the added feature of digital communication.

ConfigMate 4590

The 4590 is an adapter unit for the display / programming front 4501. It is used to program the 3114 and connect to this device with a jack plug. The 4590 is battery-driven or driven by the USB port of the PC. It can be used both for programming and as a diagnostic tool to display process parameters, when the 4501 is mounted. The 4590 is easily moved from one device to another.

PReset

PReset is an easy-to-use menu-driven software program for set-up of PR products via a standard PC and a programming interface. PReset gives a high degree of flexibility for each product and when the menus are completed, the data is transmitted to the unit which is then ready for operation.

Loop Link 5909

Loop Link 5909 is a USB communications interface for configuration and monitoring of PR electronics' PC-programmable devices. PR devices available in the configuration program PReset ver. 5.0 or higher, can be programmed by way of Loop Link 5909.

POWER RAIL

The data sheet specifies the maximum required power at nominal operating values, e.g. 24 V supply voltage, 60°C ambient temperature, 600 Ω load, and 20 mA output current.

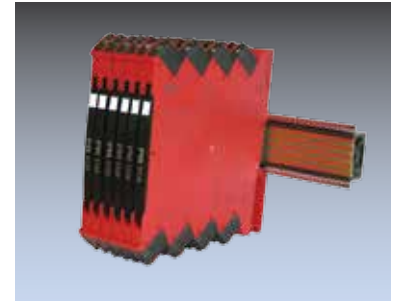
In typical applications, the devices are not running at worst-case conditions, specifically when many devices are located together. For engineering purposes, 70% (P70%) of maximum required power is often used.

3000 power rail

The number of 3000 devices that can be powered from different power sources is listed in the table below:

	Using a PR converter device as power feed-in	3405 power feed-in	9410 power feed-in
P70%	Up to 25 devices	Up to 160 devices	Up to 250 devices
P100%	Up to 18 devices	Up to 115 devices	Up to 184 devices

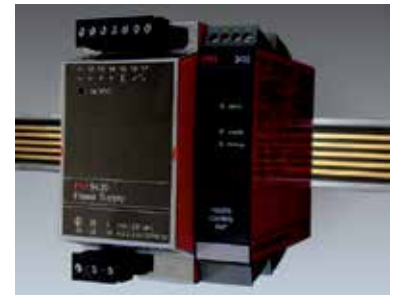
The devices can be stacked vertically or horizontally.



9000 power rail

The number of 9000 devices that can be powered from the 9400 power sources is listed in the table below:

	9410 power feed-in
P70%	Up to 150 devices
P100%	Up to 120 devices



ENVIRONMENTAL SPECIFICATIONS

	PR 2200 series	PR 3000 series	PR 4000 series	PR 5000 series	PR 5300 series
Specifications range	-20°C to +60°C	-25°C to +70°C (3105: 0°C to +70°C)	-20°C to +60°C	-20°C to +60°C	-40°C to +85°C
Relative humidity	< 95% RH (non-cond.)	< 95% RH (non-cond.)	< 95% RH (non-cond.)	< 95% RH (non-cond.)	< 95% RH (non-cond.)
Protection degree	IP50	IP20	IP20	IP20	IP68 / IP00
	PR 5500 / 5700 series	PR 6300 series	PR 7500 series	PR 9000 series	
Specifications range	-20°C to +60°C	-40°C to +85°C	-20 / -40°C to +85°C	-20°C to +60°C	
Relative humidity	< 95% RH (non-cond.)	< 95% RH (non-cond.)	0...100% RH (cond.)	< 95% RH (non-cond.)	
Protection degree	IP65 from front (5500) IP65 / Type 4X, UL50E	IP20	IP54 / IP66 / IP68 / type 4X	IP20	

ENCLOSURE SPECIFICATIONS

Dimensions (mm)	PR 2200 series	PR 3000 series	PR 4000 / 6000 / 9000 series	PR 5000 series	PR 5300 series	PR 5500 / 5700 series	PR 7500 series
Height	80.5	113	109	109	20.2	48	109
Width	35.5	6.1	23.5	23.5	Ø44	96	145
Depth	84.5+socket	115	104	130		120	125.5
Panel cut-out						44.5 x 91.5	
Material	Cycoloy/Noryl	Cycoloy	Cycoloy	Cycoloy	Cycoloy	Noryl	Aluminum

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PR electronics is the leading technology company specialized in making industrial process control safer, more reliable and more efficient. Since 1974, we have been dedicated to perfecting our core competence of innovating high precision technology with low power consumption. This dedication continues to set new standards for products communicating, monitoring and connecting our customers' process measurement points to their process control systems.

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