

# Product Guide 2003 / 2004 for the Process Industry



*Displays* ◀

*Trip Amplifiers* ◀

*DC / AC Power Supplies* ◀

*Temperature Transmitters* ◀

*Frequency / Pulse Modules* ◀

*Signal Isolation & Signal Conversion* ◀

*Ex Modules: Analogue, Temperature & Digital* ◀

# INTRODUCTION

## PR electronics

Founded in 1974, PR electronics is today one of Europe's leading developers and suppliers of signal conditioning and process control modules. Our customers benefit from the global services provided by our sales subsidiaries, authorised agents and distributors in more than 30 countries.

## PR standard products

PR electronics offers a wide product range of analogue and digital signal conditioning and process control modules.

The majority of the modules are programmable from a standard PC or by dipswitches mounted on the PCB.

## PR services and documentation

Our sales engineers are multilingual and have a wide technical know-how from their practical experience in the processing industry. In a professional and efficient way they can help you solve complex signal conditioning applications.

Each PR module comes with a detailed 4-language manual.

## How to use the PProduct Guide

The PProduct Guide is an ideal tool for choosing the right module for the present application. The guide has 10 function groups - please see the table of contents on the next page.

Typical applications for the individual module are shown on each page under the heading "Application guide".

## Division of technical information

### OUTLINE OF FUNCTIONS:

States the signal types for "Input" and "Output". General information is given under "Features".

### TECHNICAL SPECIFICATIONS:

States the technical data for selected parameters.

A picture shows each individual module and its type of housing and front design. A block diagram shows termination and whether or not galvanic isolation is available. Galvanic isolation is illustrated by double lines.

The PProduct Guide presents the entire PR product range. If you require further technical details on the individual product types please call your local PR agent or distributor or visit [www.prelectronics.com](http://www.prelectronics.com).



## Ex MODULES

### Ex safe facts

PR electronics' complete Ex product range has been designed to meet the strictest safety requirements. All Ex interface modules are designed as isolation barriers with a high 3- / 5-port galvanic isolation.

### Future-orientated installation

As of July 1 2003 all intrinsically safe equipment must comply with the ATEX directive, and the majority of our Ex modules obtained this approval already in 1999. This means that project engineers around the world can already now use PR electronics' Ex modules for future-orientated Ex installations.

### We offer you our expert know-how

In the design of our products, our engineers have been in close contact with users in the processing industry. This means that the Ex series is designed on the basis of the industry's experiences and demands. We would like to share this know-how with you and offer our professional assistance in even complex applications.

### The most user-friendly and wide range

The Ex range is divided into 3 function groups - please see the table of contents on the next page. Our product range is clear and easy to use and you will find a solution for just about any application, whether it be a standard or special application.

### PRogrammable

All Ex modules are multi-purpose. You can configure our Ex modules yourself - either by way of dipswitches or PReset, a simple yet advanced PC-programming kit. This makes the Ex product range both user-friendly, flexible, and cost-effective at the same time.

### Safety guaranteed

The PR electronics Ex series is covered by a 5-year product warranty, and each module has been individually tested and documented.

## DIRECTIVES AND STANDARDS

### EMC policy

The EMC policy of PR electronics is based on the EU directive 89/336/EEC, which is valid as from January 1, 1996.

### Severity

The generic EMC standard EN 50 081 clearly defines the permissible emission limits for the product during test. However, according to the generic EMC standard EN 50 082, the manufacturer must define the acceptable degradation of performance level during immunity tests.

PR electronics' limit for degradation during immunity tests is typically <math>\pm 0.1\%</math> of span, but our limit is <math>< 0.5\%</math> of span for A criterion tests.

Today, many processing industries require an extended EMC immunity. Because of this, all PR modules developed since the end of 1998 have been designed to meet the NAMUR NE 21 A criterion for burst with a test voltage of 2 kV. For this reason PR modules remain your safest EMC choice today and in the future.

### Isolation

The requirements of the Low Voltage Directive for protection against hazardous electric voltages are observed for all relevant modules produced from January 1, 1997.

### CE mark

All modules fall under Installation Category II, Pollution Degree 1, and Insulation Class II. To illustrate the compliance with the relevant standards, all modules carry the CE mark.

### Observed authority requirements: Standard:

EMC 89/336/EEC, Emission.....	EN 50 081-1 and EN 50 081-2
Immunity.....	EN 50 082-2 and EN 50 082-1
Emission and immunity.....	EN 61 326
LVD 73/23/EEC.....	EN 61 010-1
PELV/SELV.....	IEC 364-4-41 and EN 60 742
ATEX 94/9/EC.....	EN 50 014 and EN 50 020



Quality System  
DS/EN ISO 9001



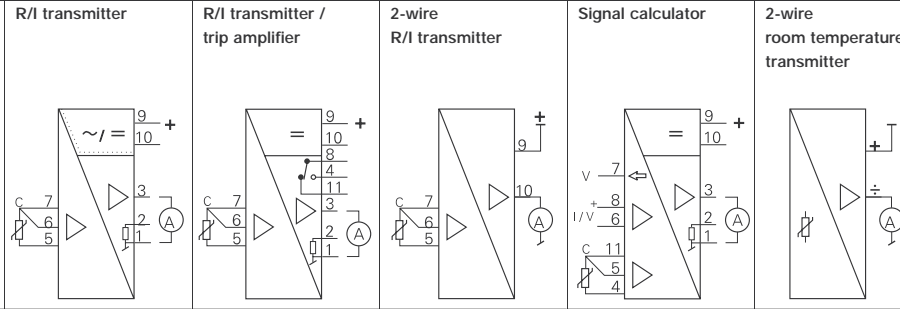
	Page
<p style="text-align: center;">TEMPERATURE TRANSMITTERS</p> <p>PR 2202, 2271, 2273, 2289B, 2914, 5102, 5111A, 5114A, 5115A, 5131A, 5133 PR 5331A, 5333A, 5334A, 5335A, 5350A, 6331A, 6333A, 6334A, 6335A, 6350A</p>	4...7
<p style="text-align: center;">SIGNAL ISOLATION</p> <p>PR 2204, 2279, 2284, 2285 PR 5104A, 5106A, 5111A, 5114A, 5115A, 5131A, 5132A, 5222, 5223A, 6185</p>	8...10
<p style="text-align: center;">DISPLAYS</p> <p>PR 5511, 5514, 5515, 5515PEAK, 5531A</p>	11
<p style="text-align: center;">TRIP AMPLIFIERS</p> <p>PR 2231, 2237, 2238, 2241, 2255, 2271, 2286A, 2286B PR 5111A, 5223A, 5225</p>	12...13
<p style="text-align: center;">FREQUENCY / PULSE MODULES</p> <p>PR 2255, 2288 PR 5222, 5223A, 5225</p>	14
<p style="text-align: center;">POWER SUPPLIES</p> <p>PR 2220, 2222, 2223, 2229, 2240</p>	15
<p style="text-align: center;">SPECIAL FUNCTIONS</p> <p>PR 2224, 2261, 2281, 2286, 2289 PR 3532, 5111HZ50, 5115, 5343, 5511WEIG</p>	16...17
<p style="text-align: center;">ANALOGUE Ex INTERFACES / Ex 2-WIRE SUPPLIES</p> <p>PR 5104B, 5105B, 5106B, 5107B, 5111B, 5114B, 5115B, 5131B</p>	18...19
<p style="text-align: center;">FIELD-MOUNTED Ex DISPLAYS / Ex TRANSMITTERS</p> <p>PR 5331B, 5333B, 5334B, 5335B, 5350B, 5531B, 6331B, 6333B, 6334B, 6335B, 6350B</p>	20...21
<p style="text-align: center;">DIGITAL Ex INTERFACES / Ex POWER SUPPLIES</p> <p>PR 5202B, 5203B, 5223B, 5420B</p>	22
<p style="text-align: center;">ACCESSORIES</p> <p>Programmings units, backplane, CJC connectors and enclosure specifications</p>	23

# TEMPERATURE TRANSMITTERS



**TYPE**                      **2202**                      **2271**                      **2273**                      **2289B**                      **2914**

**INPUT:**  
RTD, Lin. R  
**OUTPUT:**  
mA, V, relay



**OUTLINE OF FUNCTIONS:**

<b>Hardware versions</b>	Yes	Yes	No	No	No
<b>INPUT:</b>					
<b>Pt100, measurement range / min. span</b>	-200...+850°C / 50°C	-200...+850°C / 50°C	-200...+850°C / 50°C	-99...+850°C / 50°C	0...70°C / 25°C
<b>Pt1000, measurement range / min. span</b>	-200...+850°C / 50°C	-200...+850°C / 50°C	-200...+850°C / 50°C	-200...+850°C / 50°C	
<b>Ni100, measurement range / min. span</b>	-50...+250°C / 50°C	-50...+250°C / 50°C	-50...+250°C / 50°C		
<b>Lin. R, measurement range / min. span</b>	0...10 kΩ / 30 Ω	0...10 kΩ / 30 Ω	0...10 kΩ / 30 Ω		
<b>Sensor connection, wires</b>	2 - 3	2 - 3	2 - 3	2 - 3	
<b>TC types</b>					
<b>Cold junction compensation</b>					
<b>CJC connector 1 / 2 channels</b>					
<b>Max. offset</b>	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
<b>OUTPUT:</b>					
<b>mA, signal range / min. span</b>	0...20 mA / 5 mA	0...20 mA / 5 mA	4...20 mA / 16 mA	0...20 mA / 5 mA	4...20 mA / 16 mA
<b>V, signal range / min. span</b>	0...10 VDC / 0.25 VDC	0...10 VDC / 0.25 VDC		0...10 VDC / 0.25 VDC	
<b>Buffered voltage</b>					
<b>2-wire output</b>			4...20 mA		4...20 mA
<b>FEATURES:</b>					
<b>Supply</b>	DC or universal	DC	Loop-powered	DC	Loop-powered
<b>Reference voltage</b>				2.5 VDC	
<b>Relay</b>		1 x SPDT, AC: 300 VA			
<b>Display, digit / type</b>				3-digit / LED	
<b>Isolation</b>	No / Universal sup. Yes	Relay	No	No	No
<b>Channels</b>	1	1	1	1	1

**TECHNICAL SPECIFICATIONS:**

<b>Programmable</b>	No	No	No	FKP / SWP	No
<b>Ambient temperature</b>	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	0...70°C
<b>Supply voltage, universal</b>	24...230 VAC / 250 VDC				
<b>Supply voltage, DC</b>	24 VDC	24 VDC	10...35 VDC	24 VDC	8...35 VDC
<b>Consumption</b>	0.9 W	1.6 W	20 mA	2.7 W	20 mA
<b>Voltage drop</b>			10 VDC		8 VDC
<b>Isolation voltage, test / operation</b>	3.75 kVAC / 250 VAC	1.4 kVAC / 150 VAC			
<b>Programming unit</b>					
<b>Response time</b>	< 165 ms	< 165 ms	< 165 ms	< 60 ms	10 s
<b>Signal dynamics, input</b>	17 bit	17 bit	17 bit	17 bit	17 bit
<b>Basic accuracy, Pt100</b>	< ±0.3°C	< ±0.3°C	< ±0.3°C	< ±0.2°C	< ±0.3°C
<b>Basic accuracy, TC type: E J K L N T U</b>					
<b>Temperature coefficient</b>	< ±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
<b>EMC, complies with NAMUR NE 21</b>					
<b>Mounting</b>	11-pole socket	11-pole socket	11-pole socket	11-pole socket	On wall

**APPLICATION GUIDE:**

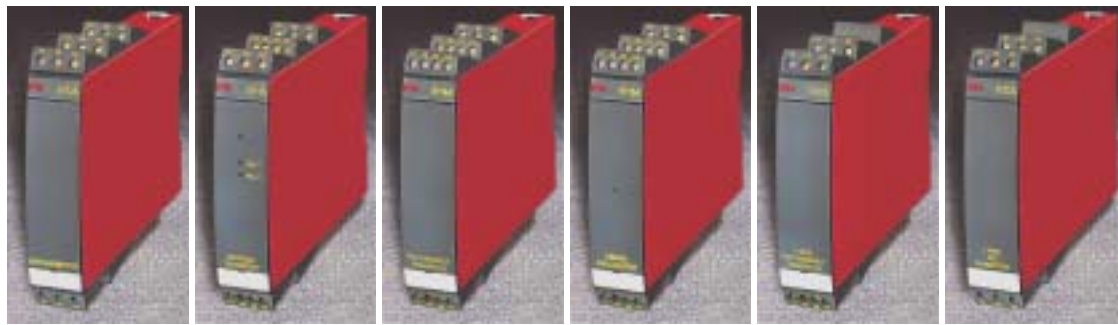
<b>RTD / R transmitter</b>	■	■	■	■	■
<b>TC / mV transmitter</b>					
<b>Potentiometer via reference voltage</b>				■	
<b>Alarm / Control</b>		■			
<b>Custom linearisation</b>					
<b>Differential temperature measurement</b>					
<b>Inverted output</b>	■	■	■	■	■
<b>Installation in PELV / SELV circuits</b>					

PCP = PC-programmable  
PCF = Process calibration feature

FKP = Front key-programmable

SWP = Switch-programmable  
Of span = Of the presently selected range

# TEMPERATURE TRANSMITTERS



TYPE	5102	5111A	5114A	5115A	5131A	5133
	RTD transmitter	Universal transmitter	Programmable transmitter	Signal calculator	2-wire programmable transmitter	2-wire RTD transmitter
<b>INPUT:</b>						
RTD, Lin. R, TC, mV						
<b>OUTPUT:</b>						
mA, V, relays						

OUTLINE OF FUNCTIONS:						
Hardware versions	Yes	Yes	Yes	No	Yes	Yes
INPUT:						
Pt100, measurement range / min. span	-200...+850°C / 50°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 50°C
Pt1000, measurement range / min. span	-200...+850°C / 50°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 50°C
Ni100, measurement range / min. span	-50...+250°C / 50°C	-60...+250°C / 25°C	-60...+250°C / 25°C	-60...+250°C / 25°C	-60...+250°C / 25°C	-50...+250°C / 50°C
Lin. R, measurement range / min. span	0...10 kΩ / 30 Ω	0...5000 Ω / 10 Ω	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...10 kΩ / 30 Ω
Sensor connection, wires	2 - 3	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4	2 - 3 - 4	2 - 3
TC types		BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	
Cold junction compensation		Internal / external	Internal / external	Internal / external	Internal / external	
CJC connector 1 / 2 channels		Type 5912 (link 41+42)	Type 5910 / 5913	Type 5910 / 5913	Type 5910 / 5913	
Max. offset	50% of selec. max. value	75% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value
OUTPUT:						
mA, signal range / min. span	0...20 mA / 5 mA	-20...+20 mA / 5 mA	0...20 mA / 10 mA	0...20 mA / 10 mA	4...20 mA / 10 mA	4...20 mA / 16 mA
V, signal range / min. span	0...10 VDC / 0.25 VDC	-10...+10 VDC / 0.25 VDC	0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC		
Buffered voltage		-10...+10 VDC				
2-wire output			4...20 mA	4...20 mA	4...20 mA	4...20 mA
FEATURES:						
Supply	DC	Universal AC / DC	Universal AC / DC	Universal AC / DC	Loop-powered	Loop-powered
Reference voltage		2.5 VDC				
Relay		2 x SPST, AC: 500 VA				
Isolation	No	Input / output / supply	Input / output / supply	Input / output / supply	Input / output	No
Channels	1 or 2	1	1 or 2	2	1 or 2	1 or 2

TECHNICAL SPECIFICATIONS:						
Programmable	PCP / PCF	PCP / SWP / PCF	PCP / SWP / PCF	PCP / SWP / PCF	PCP / SWP / PCF	PCP / PCF
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal		24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC		
Supply voltage, DC	24 VDC				7.5...35 VDC	10...35 VDC
Consumption	1.7 W	3 W	3 W (2 channels)	3 W (2 channels)	20 mA / channel	20 mA / channel
Voltage drop					7.5 VDC	10 VDC
Isolation voltage, test / operation		3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	
Programming unit	Type 5905	Type 5901	Type 5905	Type 5905	Type 5905	Type 5905
Response time	< 165 ms	50 ms...250 s	400 ms...60 s	400 ms...60 s	1...60 s	< 165 ms
Signal dynamics, input	17 bit	23 bit	22 bit	22 bit	22 bit	17 bit
Basic accuracy, Pt100	< ±0.3°C	< ±0.2°C	< ±0.2°C	< ±0.2°C	< ±0.2°C	< ±0.3°C
Basic accuracy, TC type: E J K L N T U		< ±0.5°C	< ±1°C	< ±1°C	< ±1°C	
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
EMC, complies with NAMUR NE 21			A criterion, burst	A criterion, burst	A criterion, burst	
Mounting	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail

APPLICATION GUIDE:						
RTD / R transmitter	■	■	■	■	■	■
TC / mV transmitter		■	■	■	■	
Potentiometer via reference voltage		■	■	■		
Alarm / Control		■				
Custom linearisation	■	■	■	■	■	■
Differential temperature measurement		■		■		
Redundancy measurement				■		
Inverted output	■	■	■	■	■	■
Installation in PELV / SELV circuits		■	■	■	■	

PCP = PC-programmable  
PCF = Process calibration feature

FKP = Front key-programmable

SWP = Switch-programmable  
Of span = Of the presently selected range

# TEMPERATURE TRANSMITTERS



TYPE	5331A	5333A	5334A	5335A	5350A
<b>INPUT:</b> RTD, Lin. R, TC, mV	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire transmitter with HART® protocol	Profibus® PA / Foundation™ Fieldbus transmitter
<b>OUTPUT:</b> mA HART® communication Profibus® PA Foundation™ Fieldbus					

OUTLINE OF FUNCTIONS:						
Hardware versions	Yes	No	No	No	No	
INPUT:						
Pt100, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -	
Pt1000, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -	
Ni100, measurement range / min. span	-60...+250°C / 25°C	-60...+250°C / 25°C		-60...+250°C / 10°C	-60...+250°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 / -	
Sensor connection, wires	2 - 3 - 4	3		2 - 3 - 4	2 - 3 - 4	
TC types	BEJKLNRSTUW3W5		BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	
Cold junction compensation	Internal / external		Internal	Internal / external	Internal / external	
Potentiometer via reference voltage						
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value		
OUTPUT:						
mA, signal range / min. span	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA		
V, signal range / min. span						
2-wire output	4...20 mA	4...20 mA	4...20 mA	4...20 mA		
Digital signal communication				HART® communication	Profibus® PA/Foundation™ F.	
FEATURES:						
Supply	Loop-powered	Loop-powered	Loop-powered	Loop-powered	Bus-powered	
Reference voltage						
Relay						
Isolation	Input / output	No	Input / output	Input / output	Input / output	
Channels	1	1	1	1	1	

TECHNICAL SPECIFICATIONS:						
Programmable	PCP / PCF	PCP / PCF	PCP / PCF	PCP / PCF / HART®	Profibus® PA/Foundation™ F.	
Ambient temperature	-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	9...32 VDC	
Consumption	20 mA	20 mA	20 mA	20 mA	< 11 mA	
Voltage drop	7.2 VDC	8 VDC	7.2 VDC	8 VDC		
Isolation voltage, test / operation	1500 VAC / 50 V		1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V	
Programming unit	Type 5905	Type 5905	Type 5905	Type 5905 / HART®	Profibus® PA/Foundation™ F.	
Response time	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s	
Signal dynamics, input	20 bit	19 bit	18 bit	22 bit	24 bit	
Basic accuracy, Pt100	< ±0.2°C	< ±0.3°C		< ±0.1°C	< ±0.1°C	
Basic accuracy, TC type: E J K L N T U	< ±1°C		< ±1°C	< ±0.5°C	< ±0.5°C	
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	
EMC, complies with NAMUR NE 21	A criterion, burst		A criterion, burst	A criterion, burst	A criterion, burst	
Mounting	Sensor head	Sensor head	Sensor head	Sensor head	Sensor head	

APPLICATION GUIDE:						
RTD / R transmitter	■	■		■	■	
TC / mV transmitter	■		■	■	■	
Alarm / Control					■	
Custom linearisation	■	■	■	■	■	
Differential temperature measurement				■	■	
Inverted output	■	■	■	■		
Bus communication					■	
PID controller					■	

PCP = PC-programmable

PCF = Process calibration feature

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

# TEMPERATURE TRANSMITTERS



TYPE	6331A	6333A	6334A	6335A	6350A
<b>INPUT:</b> RTD, Lin. R, TC, mV	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire HART® transmitter	Profibus® PA / Foundation™ Fieldbus transmitter
<b>OUTPUT:</b> mA HART® communication Profibus® PA Foundation™ Fieldbus					

OUTLINE OF FUNCTIONS:					
Hardware versions	Yes	Yes	Yes	Yes	Yes
INPUT:					
Pt100, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -
Pt1000, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -
Ni100, measurement range / min. span	-60...+250°C / 25°C	-60...+250°C / 25°C		-60...+250°C / 10°C	-60...+250°C / -
Lin. R, measurement range / min. span	0...5000 Ω / 30 Ω	0...10 Ω / 30 Ω		0...7000 Ω / 25 Ω	0...10 kΩ / -
Sensor connection, wires	2 - 3 - 4	3		2 - 3 - 4	2 - 3 - 4
TC types	BEJKNRSTUW3W5		BEJKNRSTUW3W5	BEJKNRSTUW3W5	BEJKNRSTUW3W5
Cold junction compensation	Internal / external		Internal	Internal / external	Internal / external
CJC connector 1 / 2 channels	Type 5910 / 5913			Type 5910 / 5913	
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	
OUTPUT:					
mA, signal range / min. span	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	
V, signal range / min. span					
2-wire output	4...20 mA	4...20 mA	4...20 mA	4...20 mA	
Digital signal communication				HART® communication	Profibus® PA/Foundation™ F.
FEATURES:					
Supply	Loop-powered	Loop-powered	Loop-powered	Loop-powered	Bus-powered
Reference voltage					
Relay					
Isolation	Input / output	No	Input / output	Input / output	Input / output
Channels	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2

TECHNICAL SPECIFICATIONS:					
Programmable	PCP / PCF	PCP / PCF	PCP / PCF	PCP / PCF / HART®	Profibus® PA/Foundation™ F.
Ambient temperature	-40...+60°C	-40...+60°C	-40...+60°C	-40...+60°C	-40...+60°C
Supply voltage, DC	7.2...35 VDC	8...35 VDC	7.2...35 VDC	8...35 VDC	9...32 VDC
Consumption	20 mA / channel	20 mA / channel	20 mA / channel	20 mA / channel	< 11 mA / channel
Voltage drop	7.2 VDC	8 VDC	7.2 VDC	8 VDC	
Isolation voltage, test / operation	1500 VAC / 50 V		1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V
Programming unit	Type 5905	Type 5905	Type 5905	Type 5905 / HART®	Profibus® PA/Foundation™ F.
Response time	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s
Signal dynamics, input	20 bit	19 bit	18 bit	22 bit	24 bit
Basic accuracy, Pt100	< ±0.2°C	< ±0.3°C		< ±0.1°C	< ±0.1°C
Basic accuracy, TC type: E J K L N T U	< ±1°C		< ±1°C	< ±0.5°C	< ±0.5°C
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
EMC, complies with NAMUR NE 21	A criterion, burst		A criterion, burst	A criterion, burst	A criterion, burst
Mounting	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail

APPLICATION GUIDE:					
RTD / R transmitter	■	■		■	■
TC / mV transmitter	■		■	■	■
Alarm / Control				■	■
Custom linearisation	■	■	■	■	■
Differential temperature measurement				■	■
Inverted output	■	■	■	■	
Bus communication					■
PID controller					■

PCP = PC-programmable

PCF = Process calibration feature

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



TYPE	2204	2279	2284	2285
<b>INPUT, DC:</b> mA, mV, V, potentiometer	Isolation amplifier	AC / DC transmitter	Isolation amplifier	Loop-powered isolator
<b>INPUT, AC:</b> A, V				
<b>OUTPUT:</b> mA, V, relays				

OUTLINE OF FUNCTIONS:					
<b>Hardware versions</b>	Yes	Yes	Yes	Yes	
<b>INPUT:</b>					
mA, DC measurement range / min. span	0...50 mA / 4 mA		-50...+50 mA / 0.53 mA	0...20 mA / 1:1	
V, DC measurement range / min. span	0...10 VDC / 200 mV		-250...+250 VDC / 27 mV		
A, AC measurement range / min. span		0...1 ARMS / 0.5 ARMS			
V, AC measurement range		0...250 VRMS			
V, AC min. span		0.5 VRMS			
Max. offset	20% of selec. max. value	50% of selec. max. value	50% of selec. max. value		
<b>OUTPUT:</b>					
mA, signal range / min. span	0...20 mA / 4 mA	0...20 mA / 4 mA	0...20 mA / 4 mA	0...20 mA / 1:1	
V, signal range / min. span	0...10 VDC / 0.2 VDC	0...10 VDC / 0.2 VDC	0...10 VDC / 0.2 VDC	0...10 VDC / 1:1	
Max. offset	20% of selec. max. value	20% of selec. max. value	20% of selec. max. value		
Relay / digital output					
Buffered voltage			0...20 VDC		
2-wire output					
<b>FEATURES:</b>					
Supply	DC or universal	DC or universal	DC or universal	Loop-powered	
Ref. / external supply / 2-wire supply			2.5 / - / 20 VDC		
Isolation	Input/output/UNI supply	Input/output/UNI supply	Input / output / supply	Input / output	
Channels	1	1	1	1 or 2	

TECHNICAL SPECIFICATIONS:					
Programmable	SWP	SWP	SWP		
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	
Supply voltage, universal	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC		
Supply voltage, DC	24 VDC	24 VDC	24 VDC		
Consumption	1.3 W / 1.8 W, UNI	1.3 W / 2.2 W, UNI	2.4 W / 2.5 W, UNI	20 mA / channel	
Voltage drop				1.8 VDC + 1 x Rload	
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	
Programming unit					
Response time	< 25 ms	< 1.5 s	< 25 ms	< 4 ms	
Signal dynamics, input					
Basic accuracy, mA	< ±4 µA	< ±4 mA	< ±0.5 µA	< ±16 µA	
Basic accuracy, V	< ±0.2 mV	< ±4 mV	< ±25 µV	< ±0.8 mV	
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	
EMC, complies with NAMUR NE 21					
Mounting	11-pole socket	11-pole socket	11-pole socket	11-pole socket	

APPLICATION GUIDE:					
Scaling / conversion	■	■	■		
Inverted output	■	■	■		
Isolation	■	■	■	■	
2-wire transmitter interface			■		
Load cell transmitter					
Potentiometer via reference voltage			■		
Custom linearisation					
Installation in PELV / SELV circuits	■	■	■	■	

PCP = PC-programmable  
UNI = Universal supply

SWP = Switch-programmable

PCF = Process calibration feature  
Of span = Of the presently selected range



TYPE	5104A	5106A	5111A	5114A	5115A
	Repeater / power supply	HART <sup>®</sup> transparent repeater	Universal transmitter	Programmable transmitter	Signal calculator
<b>INPUT:</b> mA, mV, V, potentiometer, HART <sup>®</sup> communication					
<b>OUTPUT:</b> mA, V, relays, HART <sup>®</sup> communication					

OUTLINE OF FUNCTIONS:					
Hardware versions	Yes	Yes	Yes	Yes	No
INPUT:					
mA, measurement range / min. span	0...20 mA / 16 mA	4...20 mA / 16 mA	-100...+100 mA / 2 mA	0...100 mA / 4 mA	0...100 mA / 4 mA
V, measurement range / min. span	0...10 VDC / 8 VDC		-250...+250 VDC / 5 mV	0...250 VDC / 5 mV	0...250 VDC / 5 mV
Max. offset	20% of selec. max. value		75% of selec. max. value	50% of selec. max. value	50% of selec. max. value
Digital signal communication		HART <sup>®</sup> communication			
OUTPUT:					
mA, signal range / min. span	0...20 mA / 16 mA	4...20 mA / 16 mA	-20...+20 mA / 5 mA	0...20 mA / 10 mA	0...20 mA / 10 mA
V, signal range / min. span	0...10 VDC / 0.8 VDC		-10...+10 VDC / 0.25 VDC	0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC
Max. offset	20% of selec. max. value		75% of selec. max. value	50% of selec. max. value	50% of selec. max. value
Relay / digital output			2 x SPST, AC: 500 VA		
Buffered voltage			-10...+10 VDC		
2-wire output	4...20 mA	4...20 mA		4...20 mA	4...20 mA
Digital signal communication		HART <sup>®</sup> communication			
APPROVALS:					
UL	UL 508	UL 508			
FEATURES:					
Supply	Universal AC / DC	Universal AC / DC	Universal AC / DC	Universal AC / DC	Universal AC / DC
Ref. / external supply / 2-wire supply	- / - / 18 VDC	- / - / 17 VDC	2.5 / 8 / 16 VDC	2.5 / - / > 18 VDC	2.5 / - / > 18 VDC
Isolation	Input / output / supply	Input / output / supply	Input / output / supply	Input / output / supply	Input / output / supply
Channels	1 or 2	1 or 2	1	1 or 2	2

TECHNICAL SPECIFICATIONS:					
Programmable	SWP		PCP / SWP / PCF	PCP / SWP / PCF	PCP / SWP / PCF
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC
Consumption	< 3 W / 2 channels	< 3 W / 2 channels	3 W	< 3 W / 2 channels	< 3 W / 2 channels
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
Programming unit			Type 5901	Type 5905	Type 5905
Response time	< 25 ms	< 25 ms	125 ms...250 s	250 ms...60 s	250 ms...60 s
Signal dynamics, input			23 bit	22 bit	22 bit
Basic accuracy, mA	< ±16 µA	< ±16 µA	< ±2 µA	< ±4 µA	< ±4 µA
Basic accuracy, V	< ±8 mV		< ±20 µV	< ±10 µV	< ±10 µV
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
EMC, complies with NAMUR NE 21	A criterion, burst	A criterion, burst		A criterion, burst	A criterion, burst
Mounting	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail

APPLICATION GUIDE:					
Scaling / conversion	■		■	■	■
Inverted output	■	■	■	■	■
Isolation	■	■	■	■	■
2-wire transmitter interface	■	■	■	■	■
Load cell transmitter			■		
Potentiometer via reference voltage			■	■	■
Custom linearisation			■	■	■
Installation in PELV / SELV circuits	■	■	■	■	■

PCP = PC-programmable

SWP = Switch-programmable

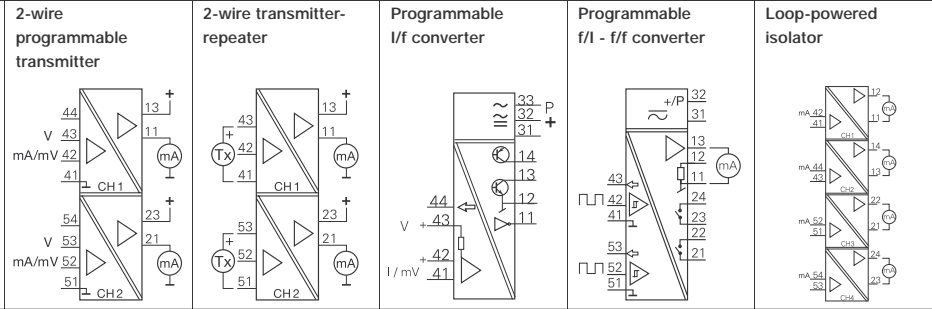
PCF = Process calibration feature  
Of span = Of the presently selected range



**TYPE**                      **5131A**                      **5132A**                      **5222**                      **5223A**                      **6185**

**INPUT:**  
mA, mV, V, Hz,  
potentiometer

**OUTPUT:**  
mA, V, relays, Hz



**OUTLINE OF FUNCTIONS:**

Hardware versions	Yes	Yes	Yes	Yes	No
<b>INPUT:</b>					
mA, measurement range / min. span	0...100 mA / 4 mA	4...20 mA / 1:1	0...100 mA / 4 mA		0...20 mA / 1:1
V, measurement range / min. span	0...250 VDC / 5 mV		0...250 VDC / 50 mV		
Hz, measurement range / min. span				0...20 kHz / 0.001 Hz	
Max. offset	50% of selec. max. value		50% of selec. max. value	90% of selec. max. value	
<b>OUTPUT:</b>					
mA, signal range / min. span	4...20 mA / 10 mA	4...20 mA / 1:1		0...20 mA / 5 mA	0...20 mA / 1:1
V, signal range / min. span				0...10 VDC / 0.25 VDC	
Hz, signal range			0.00005...25000 Hz	0...1000 Hz	
Hz, min. span			0.00005 Hz		
Max. offset	50% of selec. max. value				
Relay / digital output			NPN / PNP / TTL	Relays / NPN / PNP	
Buffered voltage					
2-wire output	4...20 mA	4...20 mA			
<b>FEATURES:</b>					
Supply	Loop-powered	Loop-powered	AC or DC	Universal AC / DC	Loop-powered
Ref. / external supply / 2-wire supply		- / - / 15 VDC	2.5 VDC / 16 VDC / -	- / 5...17 VDC / -	
Isolation	Input / output	Input / output	Input / output / supply	Input / output / supply	Input / output
Channels	1 or 2	1 or 2	1	1	1, 2 or 4

**TECHNICAL SPECIFICATIONS:**

Programmable	PCP / SWP / PCF	PCP	PCP / SWP	
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, AC			24...48VAC/80...230VAC	24...230 VAC
Supply voltage, DC	7.5...35 VDC	10...35 VDC	24...65VDC/100...250VDC	24...250 VDC
Consumption	20 mA / channel	20 mA / channel	2.6 W	3.5 W
Voltage drop	< 7.5 VDC	< 4 VDC		1.9 VDC + I x Rload
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC
Programming unit	Type 5905		Type 5905	Type 5905
Response time	250 ms...60 s	2 ms	200 ms...60 s	60 ms...1000 s
Signal dynamics, input	22 bit		20 bit	
Basic accuracy, mA	< ±4 µA	< ±16 µA	< ±5 µA	< ±16 µA
Basic accuracy, V	< ±10 µV		< ±50 µV	
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
EMC, complies with NAMUR NE 21	A criterion, burst			
Mounting	DIN rail	DIN rail	DIN rail	DIN rail

**APPLICATION GUIDE:**

Scaling / conversion	■		■	■	
Inverted output	■		■	■	
Isolation	■	■	■	■	■
2-wire transmitter interface		■	■		
Load cell transmitter					
Potentiometer via reference voltage			■		
Custom linearisation	■		■	■	
Installation in PELV / SELV circuits	■	■	■	■	

PCP = PC-programmable

SWP = Switch-programmable

PCF = Process calibration feature

Of span = Of the presently selected range



TYPE	5511	5514	5515	5515PEAK	5531A
	Universal indicator	Programmable LED indicator	Programmable LCD / LED indicator	Programmable LED indicator with min. / max. readout	Loop-powered LCD indicator
<b>INPUT:</b> RTD, Lin. R, TC, mV, mA, V, potentiometer					
<b>OUTPUT:</b> Display, mA, V, relays					

OUTLINE OF FUNCTIONS:					
<b>INPUT:</b>					
Hardware version	All	5514A2_:	5515_2_:	5515A2_PEAK:	No
mA, measurement range / min. span	-100...+100 mA / 2 mA	0...100 mA / 4 mA	0...100 mA / 4 mA	0...100 mA / 4 mA	3.6...23 mA / 16 mA
V, measurement range / min. span	-250...+250 VDC / 5 mV	0...250 VDC / 50 mV	0...250 VDC / 50 mV	0...250 VDC / 50 mV	
<b>Hardware version</b>	All	5514A1_:	5515_1_:	5515A1_PEAK:	
Pt100, measurement range / min. span	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	-200...+850°C / 25°C	
Ni100, measurement range / min. span	-60...+250°C / 25°C	-60...+250°C / 25°C	-60...+250°C / 25°C	-60...+250°C / 25°C	
Lin. R, measurement range / min. span	0...5000 Ω / 10 Ω	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	0...5000 Ω / 30 Ω	
TC types	BEJLNRSTUW3W5	BEJLNRSTUW3W5	BEJLNRSTUW3W5	BEJLNRSTUW3W5	
Cold junction compensation	Internal / external	Internal / external	Internal / external	Internal / external	
CJC connector	Type 5911	Type 5914	Type 5914	Type 5914	
<b>OUTPUT:</b>					
Display, digit / type	4½-digit / LED or LCD	4-digit / LED	4-digit / LED or LCD	4-digit / LED	4-digit / LCD
Display, digit height LED / LCD	14 mm / 12 mm	14.2 mm / -	14.2 mm / 16 mm	14.2 mm / -	- / 16 mm
<b>Hardware version</b>	5511_2_:	All			
mA, signal range / min. span	-20...+20 mA / 5 mA				
V, signal range / min. span	-10...+10 VDC / 0.25 VDC				
Relay	2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA			
<b>FEATURES:</b>					
Supply	Universal AC / DC	AC or DC	AC or DC	AC or DC	Loop-powered
Isolation	Input / output / supply	Input / supply / relays	Input / supply	Input / supply	
Hardware version	All	5514A2_:	5515_2_:	5515A2_PEAK:	
Ref. / external supply / 2-wire supply	2.5 / 8 / 16 VDC	- / - / > 20 VDC	- / - / > 20 VDC	- / - / > 20 VDC	

TECHNICAL SPECIFICATIONS:					
Programmable	PCP / FKP / SWP / PCF	PCP / FKP / PCF	PCP / FKP / PCF	PCP / FKP / PCF	FKP / SWP
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal	24...230 VAC / 250 VDC				
Supply voltage, AC		24 / 115 / 230 VAC	24 / 115 / 230 VAC	24 / 115 / 230 VAC	
Supply voltage, DC		24 VDC	24 VDC	24 VDC	
Consumption	3 W / 2 W (LCD)	3.5 W	3 W / 1.5 W (LCD)	3 W	20 mA
Voltage drop					< 1.5 VDC
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	
Programming unit	Type 5901	Type 5905	Type 5905	Type 5905	
Response time	250 ms...250 s	1...60 s	1...60 s	1...60 s	< 1 s
Basic accuracy, mA	< ±2 µA	< ±5 µA	< ±5 µA	< ±5 µA	< ±8 µA
Basic accuracy, Pt100	< ±0.2°C	< ±0.2°C	< ±0.2°C	< ±0.2°C	
Basic accuracy, TC type: E J K L N T U	< ±0.5°C	< ±1°C	< ±1°C	< ±1°C	
Tightness, front	IP65	IP65	IP65	IP65	IP65
Mounting	Panel 48 x 96 mm	Panel 48 x 96 mm	Panel 48 x 96 mm	Panel 48 x 96 mm	Panel 48 x 96 mm

APPLICATION GUIDE:					
RTD / R input	■	■	■	■	
TC / mV input	■	■	■	■	
Load cell transmitter	■				
Alarm / control	■	■			
Custom linearisation	■	■	■	■	
Differential temperature measurement	■				
Scaling / conversion	■	■	■	■	■
Min. / max. readout	■			■	
Installation in PELV / SELV circuits	■	■	■	■	

PCP = PC-programmable  
PCF = Process calibration feature

FKP = Front key-programmable

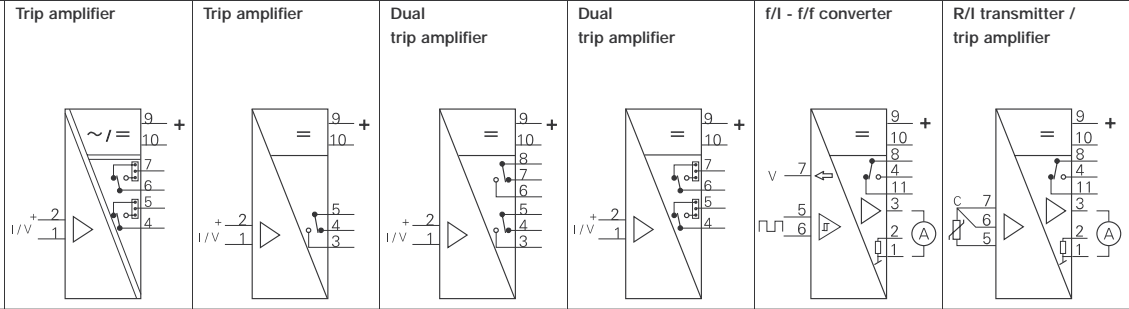
SWP = Switch-programmable  
Of span = Of the presently selected range

# TRIP AMPLIFIERS



**TYPE**                      **2231**                      **2237**                      **2238**                      **2241**                      **2255**                      **2271**

**INPUT, DC:**  
mA, mV, V, Pt100  
**INPUT, AC:**  
A, V, Hz  
**OUTPUT:**  
Relays, mA, V



**OUTLINE OF FUNCTIONS:**

<b>Hardware versions</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>INPUT: PV / SP</b>						
<b>mA, DC measurement range / min. span</b>	0...20 mA / 10 mA	0...50 mA / 1 mA	0...50 mA / 1 mA	0...50 mA / 1 mA		
<b>V, DC measurement range / min. span</b>	0...250 VDC / 0.5 VDC	0...24 VDC / 0.8 VDC	0...24 VDC / 0.8 VDC	0...24 VDC / 0.8 VDC		
<b>A, AC measurement range / min. span</b>	0...1 ARMS / 0.5 ARMS					
<b>V, AC measurement range</b>	0...250 VRMS					
<b>V, AC min. span</b>	0.5 VRMS					
<b>Pt100, measurement range / min. span</b>						-200...+850°C / 50°C
<b>Hz, measurement range / min. span</b>					0...20 kHz / 0.001 Hz	
<b>Max. offset</b>	50% of selec. max. value	20% of selec. max. value	20% of selec. max. value	20% of selec. max. value	90% of selec. max. value	50% of selec. max. value
<b>External setpoint</b>						
<b>OUTPUT:</b>						
<b>Relays</b>	2 x SPST, AC: 500 VA	1 x SPDT, AC: 300 VA	2 x SPDT, AC: 300 VA	2 x SPST, AC: 500 VA	1 x SPDT, AC: 300 VA	1 x SPDT, AC: 300 VA
<b>Relay function</b>	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing
<b>Relay function</b>	Hold		Hold			
<b>Relay function</b>	Window				Window	
<b>mA, signal range / min. span</b>					0...20 mA / 5 mA	0...20 mA / 5 mA
<b>V, signal range / min. span</b>					0...10 VDC / 0.25 VDC	0...10 VDC / 0.25 VDC
<b>FEATURES:</b>						
<b>Supply</b>	DC or universal	DC	DC	DC	DC	DC
<b>Setpoint adjustment</b>	Front keys	Knob / notch	Knob / notch	Knob / notch	Front keys	Knob / notch
<b>Display, digit / type</b>	3-digit / LED				3-digit / LED	
<b>Isolation</b>	Input / relays / supply	Relay	Relays	Relays	Relay	Relay
<b>Channels</b>	1 input, 2 relays	1 input, 1 relay	1 input, 2 relays	1 input, 2 relays	1 input, 1 relay	1 input, 1 relay

**TECHNICAL SPECIFICATIONS:**

<b>Programmable</b>	FKP / SWP	SWP	SWP	SWP	FKP / SWP	Relay SWP
<b>Ambient temperature</b>	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
<b>Supply voltage, universal</b>	24...230 VAC / 250 VDC					
<b>Supply voltage, DC</b>	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
<b>Consumption</b>	1.5 W DC / 2 W, UNI	0.75 W	1.2 W	1.2 W	2.4 W	1.6 W
<b>Isolation voltage, test / operation</b>	3.75 kVAC / 250 VAC	1.4 kVAC / 150 VAC	1.4 kVAC / 150 VAC	3.75 kVAC / 250 VAC	1.4 kVAC / 150 VAC	1.4 kVAC / 150 VAC
<b>Programming unit</b>						
<b>Response time</b>	250 ms...60 s	< 80 ms	< 80 ms	< 80 ms	60 ms...999 s	< 165 ms
<b>External reference voltage</b>						
<b>Setpoint adjustment / repetition</b>	0.1% / 0.1%	5% / 0.5%	5% / 0.5%	5% / 0.5%	0.1% / 0.1%	5% / 0.5%
<b>Delay</b>	0...99.9 s	No	No	No	0...99.9 s	No
<b>Hysteresis</b>	0...99.9%	1%	1%	1%	0...99.9%	1...10%
<b>Temperature coefficient</b>	< ±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
<b>EMC, complies with NAMUR NE 21</b>						
<b>Mounting</b>	11-pole socket	11-pole socket	11-pole socket	11-pole socket	11-pole socket	11-pole socket

**APPLICATION GUIDE:**

<b>Alarm / control of DC signals</b>	■	■	■	■		
<b>Alarm / control of AC signals</b>	■					
<b>Frequency alarm</b>					■	
<b>Speed control</b>					■	
<b>Alarm / control of Pt100 sensor</b>						■
<b>Comparison of DC signals</b>						
<b>Alarm / control with external setpoint</b>						
<b>Installation in PELV / SELV circuits</b>	■			■		

FKP = Front key-programmable

SWP = Switch-programmable

Of span = Of the presently selected range  
UNI = Universal supply



TYPE	2286A	2286B	5111A	5223A	5225
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	Signal controller	Signal controller	Universal transmitter	Programmable f/I - f/f converter	Programmable f/I - f/f converter
<b>INPUT, DC:</b> mA, mV, V, potentiometer, Pt100, TC					
<b>INPUT, AC:</b> Hz					
<b>OUTPUT:</b> Relays, mA, V					

OUTLINE OF FUNCTIONS:						
<b>Hardware versions</b>	No	No	Yes	Yes	Yes	
<b>INPUT:</b>						
mA, measurement range / min. span	0...20 mA / 4 mA	0...20 mA / 4 mA	-100...+100 mA / 2 mA			
V, measurement range / min. span	0...10 VDC / 0.2 VDC	0...10 VDC / 0.2 VDC	-250...+250 VDC / 5 mV			
Pt100, measurement range / min. span			-200...+850°C / 25°C			
TC types			BEJKLNRSTUW3W5			
Hz, measurement range / min. span				0...20 kHz / 0.001 Hz	0...20 kHz / 0.001 Hz	
Max. offset	50% of selec. max. value	50% of selec. max. value	75% of selec. max. value	90% of selec. max. value	90% of selec. max. value	
External setpoint	mA / V / potm.	mA / V / potm.				
Sensor type				All standard sensors	All standard sensors	
<b>OUTPUT:</b>						
Relays	2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA	
Relay function	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing	Increasing / decreasing	
Relay function	Deviation in %	Deviation in %	Hold	Window	Window	
Relay function	Window	Window	Sensor error			
mA, signal range / min. span			-20...+20 mA / 5 mA	0...20 mA / 5 mA	0...20 mA / 5 mA	
V, signal range / min. span			-10...+10 VDC / 0.25 VDC	0...10 VDC / 0.25 VDC	0...10 VDC / 0.25 VDC	
<b>FEATURES:</b>						
Supply	DC	DC	Universal AC / DC	Universal AC / DC	DC	
Setpoint adjustment	Front keys	Front keys	PC-programmable	PC-programmable	PC-programmable	
Display, digit / type	3-digit / LED	3-digit / LED				
Isolation	Relays	Relays	Input / relays / supply	Input / relays / supply	Relays	
Channels	2 inputs, 2 relays	2 inputs, 2 relays	1 input, 2 relays	1 input, 2 relays	1 input, 2 relays	

TECHNICAL SPECIFICATIONS:						
Programmable	FKP / SWP	FKP / SWP	PCP / SWP / PCF	PCP / SWP / PPW	PCP / SWP / PPW	
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	
Supply voltage, universal			24...230 VAC / 250 VDC	24...230 VAC / 250 VDC		
Supply voltage, DC	24 VDC	24 VDC			24 VDC	
Consumption	3 W	3 W	3 W	3.5 W	3.5 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	
Programming unit			Type 5901	Type 5905	Type 5905	
Response time	60 ms...999 s	60 ms...999 s	125 ms...250 s	60 ms...1000 s	60 ms...1000 s	
External reference voltage	2.5 VDC	2.5 VDC	2.5 VDC			
Setpoint adjustment / repetition	0.1% / 0.1%	0.1% / 0.1%	0.1% / 0.1%	0.1% / 0.1%	0.1% / 0.1%	
Delay	No	No	0...999 s	0...999 s	0...999 s	
Hysteresis	0...25%	0...25%	0...99.9%	0...99.9%	0...99.9%	
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	
EMC, complies with NAMUR NE 21						
Mounting	11-pole socket	11-pole socket	DIN rail	DIN rail	DIN rail	

APPLICATION GUIDE:						
Alarm / control of DC signals	■		■			
Alarm / control of AC signals						
Frequency alarm				■	■	
Speed control				■	■	
Alarm / control of temperature sensor		■	■			
Comparison of DC signals	■					
Alarm / control with external setpoint	■	■				
Installation in PELV / SELV circuits	■	■	■	■	■	

PCP = PC-programmable  
PCF = Process calibration feature

FKP = Front key-programmable  
PPW = Programmable pulse width

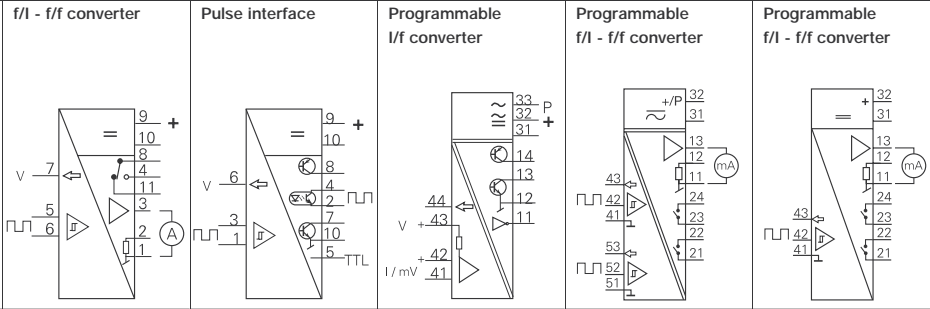
SWP = Switch-programmable  
Of span = Of the presently selected range



**TYPE**                      **2255**                      **2288**                      **5222**                      **5223A**                      **5225**

**INPUT:**  
Frequency, pulse, V, mA,  
Pt100, TC, mV

**OUTPUT:**  
mA, V, pulse, relays



**OUTLINE OF FUNCTIONS:**

<b>Hardware versions</b>	Yes	No	Yes	Yes	Yes
<b>INPUT:</b>					
<b>Sensor type</b>	All standard sensors $\square$	All standard sensors $\square$		All standard sensors $\square$	All standard sensors $\square$
<b>Hz, measurement range / min. span</b>	0...20 kHz / 0.001 Hz	0...10 kHz		0...20 kHz / 0.001 Hz	0...20 kHz / 0.001 Hz
<b>Min. pulse width</b>	25 $\mu$ s	50 $\mu$ s		25 $\mu$ s	25 $\mu$ s
<b>mA, measurement range / min. span</b>			0...100 mA / 4 mA		
<b>V, measurement range / min. span</b>			0...250 VDC / 50 mV		
<b>Pt100, measurement range / min. span</b>			-200...+850°C / 25°C		
<b>Lin. R, measurement range / min. span</b>			0...5000 $\Omega$ / 30 $\Omega$		
<b>TC types</b>			BEJLNRSTUW3W5		
<b>Max. offset</b>	90% of selec. max. value		50% of selec. max. value	90% of selec. max. value	90% of selec. max. value
<b>OUTPUT:</b>					
<b>mA, signal range / min. span</b>	0...20 mA / 5 mA			0...20 mA / 5 mA	0...20 mA / 5 mA
<b>V, signal range / min. span</b>	0...10 VDC / 0.25 VDC			0...10 VDC / 0.25 VDC	0...10 VDC / 0.25 VDC
<b>Hz, signal range / min. span</b>			0...25 kHz / 0.00005 Hz		
<b>Pulse output</b>	NPN	NPN / PNP / TTL / Opto	NPN / PNP / TTL	NPN / PNP / relays	NPN / PNP / relays
<b>Relays</b>	1 x SPDT, AC: 300 VA			2 x SPST, AC: 500 VA	2 x SPST, AC: 500 VA
<b>Max. output frequency</b>	1000 Hz	10 kHz / Opto 5 kHz	25 kHz	1000 Hz	1000 Hz
<b>FEATURES:</b>					
<b>Supply</b>	DC	DC	AC or DC	Universal AC / DC	DC
<b>Sensor supply</b>	8 or 15 VDC	8 or 27 VDC	2.5 VDC or 16 VDC	5...17 VDC	5...17 VDC
<b>Isolation</b>	Relay	Opto	Input / output / supply	Input / output / supply	Relays
<b>Channels</b>	1	1	1	1	1

**TECHNICAL SPECIFICATIONS:**

<b>Programmable</b>	FKP / SWP / PPW	SWP / PPW	PCP / PPW	PCP / SWP / PPW	PCP / SWP / PPW
<b>Ambient temperature</b>	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
<b>Supply voltage, AC</b>			24...48VAC/80...230VAC	24...230 VAC	
<b>Supply voltage, DC</b>	24 VDC	24 VDC	24...65VDC/100...250VDC	24...250 VDC	24 VDC
<b>Consumption</b>	2.4 W	1 W	2.6 W	3.5 W	3.5 W
<b>Isolation voltage, test / operation</b>	1.4 kVAC / 150 VAC	1.4 kVAC / 150 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC
<b>Programming unit</b>			Type 5905	Type 5905	Type 5905
<b>Response time</b>	60 ms...999 s		200 ms...60 s	60 ms...1000 s	60 ms...1000 s
<b>Signal dynamics, input</b>			20 bit		
<b>Basic accuracy, Pt100</b>			< $\pm$ 0.2°C		
<b>Basic accuracy, TC type: E J K L N T U</b>			< $\pm$ 1°C		
<b>Temperature coefficient</b>	< $\pm$ 0.01% of span / °C		< $\pm$ 0.01% of span / °C	< $\pm$ 0.01% of span / °C	< $\pm$ 0.01% of span / °C
<b>EMC, complies with NAMUR NE 21</b>					
<b>Mounting</b>	11-pole socket	11-pole socket	DIN rail	DIN rail	DIN rail

**APPLICATION GUIDE:**

<b>Speed measurement / alarm</b>	■			■	■
<b>Pulse divider / multiplier</b>	■			■	■
<b>Pulse stretching</b>	■	■		■	■
<b>Pulse inversion</b>		■		■	■
<b>Frequency generator</b>	■		■	■	■
<b>Concurrent f/I - f/f conversion</b>					■
<b>Cable error detection / alarm</b>	■			■	■
<b>Installation in PELV / SELV circuits</b>			■	■	■

PCP = PC-programmable                      FKP = Front key-programmable                      SWP = Switch-programmable  
PPW = Programmable pulse width                      Of span = Of the presently selected range



TYPE	2220	2222	2223	2229	2240
	Switchmode power supply	Switchmode power supply	Dual switchmode power supply	Switchmode voltage regulator	Transformer
<b>INPUT:</b> AC, DC voltage					
<b>OUTPUT:</b> Stabilised VDC Transformer AC					

OUTLINE OF FUNCTIONS:						
<b>INPUT:</b>						
Supply voltage	24 VAC ±10%	115 VAC +15%, -11%	24 VAC ±10%	28 VAC max.	115 VAC ±15%	
50...60 Hz	110 VAC ±10%	230 VAC ±10%	115 VAC ±10%	Min. AC: (Vout. + 5)/1.2	230 VAC ±10%	
	120 VAC ±10%		230 VAC ±10%	40 VDC max.		
	230 VAC ±10%			Min. DC: (Vout. + 5)		
<b>OUTPUT:</b>						
Voltage	5...24 VDC ±5%	24 VDC ±5%	2 x 5...24 VDC ±10%	5...24 VDC ±10%	24 VAC	
		15 VDC ±5%			12 VAC	
Current	1 A / 5 VDC		0.5 A / 5 VDC	2.5 A / 5 VDC		
	0.55 A / 12 VDC		0.37 A / 12 VDC	2.5 A / 12 VDC	2.5 A / 12 VAC	
	0.45 A / 15 VDC	2 A / 15 VDC	0.30 A / 15 VDC	2.5 A / 15 VDC		
	0.30 A / 24 VDC	2 A / 24 VDC	0.18 A / 24 VDC	1.7 A / 24 VDC	1.25 A / 24 VAC	
Power, max.	7 W	48 W	7.5 W	40 W	30 VA	
<b>FEATURES:</b>						
External voltage adjustment	No	No	No	Via potentiometer	No	
Isolation	Supply / output	Supply / output	Supply / output	No	Supply / output	
Channels	1	1	2	1	1	

TECHNICAL SPECIFICATIONS:						
Programmable	IPo		IPo	IPo / EPo		
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	
Internal consumption	4 W	12 W	4 W	10 W		
Isolation, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	No	3.75 kVAC / 250 VAC	
Power reduction	No	0.48 W / °C > 40°C	No	No	0.4 VA / °C > 25°C	
Short circuit protection	2.2 A	2.5 A	1.5 A	5.8 A	No	
Thermal fuse	100°C	100°C	100°C		100°C	
Output ripple	< 20 mVRMS	< 40 mVRMS	< 20 mVRMS	< 20 mVRMS		
Stability error: supply ±10%	< ±30 mVDC	< 1%	< ±30 mVDC	< ±30 mVDC		
Stability error: load 0...100%	< 1.5% / A	< 1.5% / A	< 1.5% / A	< 1.5% / A		
Temperature coefficient	0.05% / °C	0.05% / °C	0.05% / °C	0.05% / °C		
EMC, complies with NAMUR NE 21						
Dimensions (HxWxD)	80.5 x 35.5 x 84.5 mm	80.5 x 35.5 x 84.5 mm	80.5 x 35.5 x 84.5 mm	80.5 x 35.5 x 84.5 mm	80.5 x 35.5 x 84.5 mm	
Weight	425 g	210 g	400 g	170 g	600 g	
Mounting	11-pole socket	11-pole socket	11-pole socket	11-pole socket	11-pole socket	

APPLICATION GUIDE:						
Mains connection	■	■	■		■	
DC connection				■		
Fixed output		■			■	
Adjustable output	■		■	■		
External adjustable output				■		
AC / AC transformer					■	
General DC supply	■	■	■	■		
Installation in PELV / SELV circuits	■	■	■		■	

IPo = Internal potentiometer

EPo = External potentiometer



## TYPE

**2224**

**2261**

**2281**

**2286**

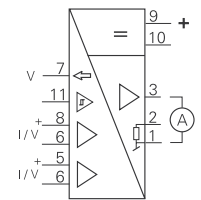
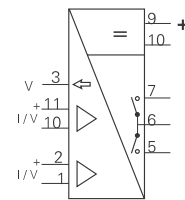
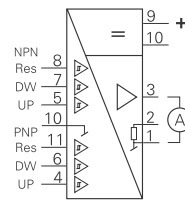
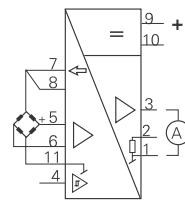
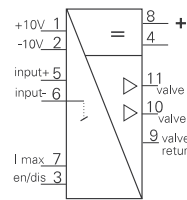
**2289**

### INPUT:

Joystick, 2-phase encoder, mA, V, mV, potm., Pt100

### OUTPUT:

mA, V, relays



### FUNCTIONS:

Proportional valve control, analogue

Load cell amplifier, mV amplifier

Up-down ramp control, Position transmitter via 2-phase encoder

On / Off PID controller, Comparison of signals, Leakage surveillance, External setpoint

Analogue PID controller, Analogue multiplexer, Calculation functions +, -, /,  $\sqrt[n]{x}$ ,  $x^n$ ; Peak measurement

### INPUT:

mA, measurement range / min. span	0...20 mA / 16 mA			0...20 mA / 4 mA	0...20 mA / 4 mA
mV, measurement range / min. span		-40...+100 mV / 10 mV			
V, measurement range / min. span	-10...+10 VDC / 0.8 VDC			0...10 VDC / 0.2 VDC	0...10 VDC / 0.2 VDC
Pt100, measurement range / min. span				B: -99...+850°C / 50°C	B: -99...+850°C / 50°C
Max. offset	20% of selec. max. value	70% of selec. max. value		50% of selec. max. value	50% of selec. max. value
Digital input	3 x PNP	1 x NPN / 1 x PNP	3 x NPN / 3 x PNP		1 x NPN / 1 x PNP
Potentiometer	> 1 kΩ			> 170 Ω	> 170 Ω

### OUTPUT:

mA, signal range	3000 mA	0...20 mA	0...20 mA		0...20 mA
mA, min. span		5 mA	5 mA		5 mA
V, signal range	Supply - 0.5 VDC	0...10 VDC	0...10 VDC		0...10 VDC
V, min. span		0.25 VDC	0.25 VDC		0.25 VDC
Max. offset		50% of selec. max. value	50% of selec. max. value		50% of selec. max. value
Relays				2 x SPST, AC: 500 VA	

### FEATURES:

Supply	DC	DC	DC	DC	DC
Excitation / reference voltage	- / -10...+10 VDC	5...13 VDC / -	- / -	- / A: 2.5 VDC	- / A: 2.5 VDC
Display, digit / type	3-digit / LED	3-digit / LED	3-digit / LED	3-digit / LED	3-digit / LED
Isolation	No	No	No	Relays	No
Channels	1 or 2 outputs	1	1	2 inputs	2 inputs

### TECHNICAL SPECIFICATIONS:

Programmable	FKP / SWP	FKP / SWP	FKP / SWP	FKP / SWP	FKP / SWP
Supply voltage, DC	12 or 24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Consumption	2.2 W	2.2 W / max. 7.2 W	2.7 W	3 W	2.7 W
Isolation voltage, test / operation				3.75 kVAC / 250 VAC	
Programming unit					
Response time	< 75 ms	60 ms...999 s	< 60 ms	60 ms...999 s	60 ms...999 s
Signal dynamics, input		17 bit		20 bit	20 bit
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
Mounting	11-pole socket	11-pole socket	11-pole socket	11-pole socket	11-pole socket

FKP = Front key-programmable

SWP = Switch-programmable

PCF = Process calibration feature

Of span = Of the presently selected range



TYPE	3532	5111HZ50	5115	5343	5111WEIG
<b>INPUT:</b> 2-phase encoder, mA, V, mV, potm., Pt100, TC	<b>Valve position transmitter</b> 	<b>Universal transmitter</b> 	<b>Signal calculator</b> 	<b>2-wire level transmitter</b> 	<b>Universal indicator</b> 
<b>OUTPUT:</b> mA, V, relays					
<b>FUNCTIONS:</b>	<p>Position transmitter for e.g. valves</p> <p>Voltage measurement with extreme suppression of 50 Hz</p> <p>Redundancy measurement, Arithmetical oper. +, -, *, /; Duplication of input</p> <p>Level transmitter for ohmic level sensors, Transmitter for potentiometers up to 100 kΩ</p> <p>Weight indicator with front taring button, Display / transmitter with 0% calibration via front button</p>				
<b>INPUT:</b>					
mA, measurement range / min. span			0...100 mA / 4 mA		-100...+100 mA / 2 mA
Load cell, measurement range / min. span					-70...+70 mV / 5 mV
V, measurement range / min. span		-2,5...+2,5 VDC / 5 mV	0...250 VDC / 5 mV		-250...+250 VDC / 5 mV
Pt100, measurement range / min. span			-200...+850°C / 25°C		
Lin. R, measurement range / min. span			0...5000 Ω / 30 Ω	0...100 kΩ / 1 kΩ	
TC types			BEJLNRSTUW3W5		
Max. offset		75% of selec. max. value	50% of selec. max. value	50% of selec. max. value	75% of selec. max. value
Digital input	2-phase encoder				
Potentiometer			>170 Ω	> 1 kΩ, < 100 kΩ	> 170 Ω
<b>OUTPUT:</b>					
mA, signal range / min. span	0...20 mA / 16 mA	-20...+20 mA / 5 mA	0...20 mA / 10 mA	4...20 mA / 16 mA	-20...+20 mA / 5 mA
V, signal range / min. span		-10...+10 VDC / 0.25 VDC	0...10 VDC / 0.5 VDC		-10...+10 VDC / 0.25 VDC
Max. offset	20% of selec. max. value	75% of selec. max. value	50% of selec. max. value		75% of selec. max. value
2-wire output			4...20 mA	4...20 mA	
Buffered voltage		-10...+10 VDC			-10...+10 VDC
Relays		2 x SPST, AC: 500 VA			2 x SPST, AC: 500 VA
<b>FEATURES:</b>					
Supply	DC	Universal AC / DC	Universal AC / DC	Loop-powered	Universal AC / DC
Excitation / reference voltage		8 / 2.5 VDC	- / 2.5 VDC		8 / 2.5 VDC
Display, digit / type					4½-digit / LED
Isolation	Calibration inputs	Input / output / supply	Input / output / supply	No	Input / output / supply
Channels	1	1	2	1	1
<b>TECHNICAL SPECIFICATIONS:</b>					
Programmable	SWP / PCF	PCP / SWP / PCF	PCP / SWP / PCF	PCP / PCF	PCP / FKP / SWP / PCF
Supply voltage, DC	24 VDC			8...35 VDC	
Supply voltage, universal		24...230 VAC / 250 VDC	24...230 VAC / 250 VDC		24...230 VAC / 250 VDC
Consumption	1.5 W	3 W	< 3 W / 2 channels	20 mA	3 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
Programming unit		Type 5901	Type 5905	Type 5905	Type 5901
Response time	< 120 ms	500 ms...250 s	250 ms...60 s	0.33...60 s	165 ms...250 s
Signal dynamics, input		23 bit	22 bit	19 bit	23 bit
Mounting	Box	DIN rail	DIN rail	Sensor head	Panel 48 x 96 mm

PCP = PC-programmable  
PCF = Process calibration feature

FKP = Front key-programmable

SWP = Switch-programmable  
Of span = Of the presently selected range



TYPE	5104B	5105B	5106B	5107B	5111B
	Ex Repeater / power supply	Ex-isolated driver	HART® transparent repeater	HART® transparent driver	Universal transmitter
<b>INPUT:</b> mA, mV, V, potentiometer, RTD, Lin. R, TC, HART® communication					
<b>OUTPUT:</b> mA, V, relays, HART® communication					

OUTLINE OF FUNCTIONS:						
<b>INPUT:</b>						
mA, measurement range / min. span	0...20 mA / 16 mA	0...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	-100...+100 mA / 2 mA	
V, measurement range / min. span	0...10 VDC / 8 VDC	0...10 VDC / 8 VDC			-250...+250 VDC / 5 mV	
Pt100, measurement range / min. span					-200...+850°C / 25°C	
Lin. R, measurement range / min. span					0...5000 Ω / 10 Ω	
TC types					BEJLNRSTUW3W5	
Max. offset	20% of selec. max. value	20% of selec. max. value			75% of selec. max. value	
Digital signal communication			HART® communication	HART® communication		
<b>OUTPUT:</b>						
To Ex zone	No	0, 1, or 2	No	0, 1, or 2	No	
mA, signal range / min. span	0...20 mA / 16 mA	0...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	-20...+20 mA / 5 mA	
mA, max. load	20 mA / 600 Ω	20 mA / 770 Ω	20 mA / 600 Ω	20 mA / 770 Ω	20 mA / 600 Ω	
V, signal range / min. span	0...10 VDC / 0.8 VDC	0...10 VDC / 0.8 VDC			-10...+10 VDC / 0.25 VDC	
Max. offset	20% of selec. max. value	20% of selec. max. value			75% of selec. max. value	
Relays					2 x SPST, AC: 100 VA	
Digital signal communication			HART® communication	HART® communication		
<b>APPROVALS:</b>						
EEx approval CENELEC, DEMKO	99 ATEX 126013	99 ATEX 126014	00 ATEX 127483	01 ATEX 127484	01 ATEX 130321	
ATEX	0539 Ex II (1) G [EEx ia] IIC	0539 Ex II (1) G [EEx ia] IIC	0539 Ex II (1) G [EEx ia] IIC	0539 Ex II (1) G [EEx ia] IIC	0539 Ex II (1) G [EEx ia] IIC	
UL	UL 913 / UL 508	UL 913 / UL 508	UL 913 / UL 508	UL 913 / UL 508	UL 913 / UL 508	
<b>FEATURES:</b>						
2-wire supply	> 18 VDC		> 17 VDC		> 16 VDC	
Reference voltage					2.5 VDC	
Isolation	Input / output / supply	Input / output / supply	Input / output / supply	Input / output / supply	Input / output / supply	
Channels	1 or 2	1 or 2	1 or 2	1 or 2	1	

TECHNICAL SPECIFICATIONS:						
Programmable	SWP	SWP			PCP / SWP / PCF	
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C	
Supply voltage, universal	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	
Consumption	< 3 W / 2 channels	< 3 W / 2 channels	< 3 W / 2 channels	< 3 W / 2 channels	3 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	
Programming unit					Type 5901	
Response time	< 25 ms	< 25 ms	< 25 ms	< 25 ms	125 ms...250 s	
Signal dynamics, input					23 bit	
Basic accuracy, mA	< ±16 µA	< ±16 µA	< ±16 µA	< ±16 µA	< ±2 µA	
Basic accuracy, V	< ±8 mV	< ±8 mV			< ±20 µV	
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	
EMC, complies with NAMUR NE 21	A criterion, burst	A criterion, burst	A criterion, burst	A criterion, burst		
Mounting	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail	

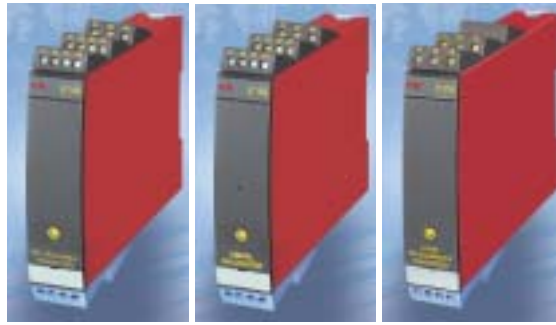
APPLICATION GUIDE:						
Ex safety barrier	■	■	■	■	■	
Receive signals from Ex area	■		■		■	
Transmit signals to Ex area		■		■		
2-wire transmitter interface	■		■		■	
Load cell transmitter					■	
Potentiometer via reference voltage					■	
Custom linearisation					■	
Installation in PELV / SELV circuits	■	■	■	■	■	

PCP = PC-programmable

SWP = Switch-programmable

PCF = Process calibration feature

Of span = Of the presently selected range



TYPE	5114B	5115B	5131B
	Programmable transmitter	Signal calculator	2-wire programmable transmitter
INPUT:			
mA, mV, V, potentiometer, RTD, Lin. R, TC			
OUTPUT:			
mA, V			

OUTLINE OF FUNCTIONS:			
INPUT:			
mA, measurement range / min. span	0...100 mA / 4 mA	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	0...250 VDC / 5 mV
Pt100, measurement range / min. span	-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
TC types	BEJKNRSTUW3W5	BEJKNRSTUW3W5	BEJKNRSTUW3W5
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value
OUTPUT:			
To Ex zone	No	No	No
mA, signal range / min. span	0...20 mA / 10 mA	0...20 mA / 10 mA	4...20 mA / 10 mA
mA, max. load	20 mA / 600 Ω	20 mA / 600 Ω	20 mA / 800 Ω / 24 VDC
V, signal range / min. span	0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC	0...10 VDC / 0.5 VDC
Max. offset	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value
APPROVALS:			
EEx approval CENELEC, DEMKO	99 ATEX 124571	00 ATEX 128567	99 ATEX 124572
ATEX	0539  II (1) G	0539  II (1) G	0539  II (1) G
	[EEx ia] IIC	[EEx ia] IIC	[EEx ia] IIC
FEATURES:			
2-wire supply	> 18 VDC	> 18 VDC	> 18 VDC
Reference voltage	2.5 VDC	2.5 VDC	2.5 VDC
Isolation	Input / output / supply	Input / output / supply	Input / output
Channels	1 or 2	2	1 or 2

TECHNICAL SPECIFICATIONS:			
Programmable	PCP / SWP / PCF	PCP / SWP / PCF	PCP / SWP / PCF
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC
Supply voltage, DC			7.5...35 VDC
Consumption	< 3 W / 2 channels	< 3 W / 2 channels	20 mA / channel
Voltage drop			< 7.5 VDC
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC
Programming unit	Type 5905	Type 5905	Type 5905
Response time	250 ms...60 s	250 ms...60 s	250 ms...60 s
Signal dynamics, input	22 bit	22 bit	22 bit
Basic accuracy, mA	< ±4 µA	< ±4 µA	< ±4 µA
Basic accuracy, V	< ±10 µV	< ±10 µV	< ±10 µV
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
EMC, complies with NAMUR NE 21	A criterion, burst	A criterion, burst	A criterion, burst
Mounting	DIN rail	DIN rail	DIN rail

APPLICATION GUIDE:			
Ex safety barrier	■	■	■
Receive signals from Ex area	■	■	■
Transmit signals to Ex area	■	■	■
Redundancy measurement		■	
2-wire transmitter interface	■	■	■
Mathematical calculation functions		■	
Potentiometer via reference voltage	■	■	■
Custom linearisation	■	■	■
Installation in PELV / SELV circuits	■	■	■

PCP = PC-programmable

SWP = Switch-programmable

PCF = Process calibration feature  
Of span = Of the presently selected range



TYPE	5331B	5333B	5334B	5335B	5350B
<b>INPUT:</b> mA, RTD, Lin. R, TC, mV	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire transmitter with HART <sup>®</sup> protocol	Profibus <sup>®</sup> PA / Foundation <sup>™</sup> Fieldbus transmitter
<b>OUTPUT:</b> mA, HART <sup>®</sup> communication, Profibus <sup>®</sup> PA, Foundation <sup>™</sup> Fieldbus					

OUTLINE OF FUNCTIONS:					
<b>INPUT:</b>					
mA, measurement range / min. span					
Pt100, 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 / -
Pt1000, 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 / -
Ni100, measurement range / min. span	-60...+250°C / 25°C	-60...+250°C / 25°C	-60...+250°C / 25°C	-60...+250°C / 10°C	-60...+250°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...10 kΩ / -
Sensor connection, wires	2 - 3 - 4	3	3	2 - 3 - 4	2 - 3 - 4
TC types	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5
Cold junction compensation	Internal / external	Internal / external	Internal / external	Internal / external	Internal / external
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
<b>OUTPUT:</b>					
mA, signal range / min. span	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA
2-wire output	4...20 mA	4...20 mA	4...20 mA	4...20 mA	4...20 mA
Digital signal communication				HART <sup>®</sup> communication	Profibus <sup>®</sup> PA/Foundation <sup>™</sup> F
Display, digit / type / digit height					
<b>APPROVALS:</b>					
EEx approval CENELEC, DEMKO	99 ATEX 126962	99 ATEX 126964	99 ATEX 126963	99 ATEX 126965	KEMA 02ATEX1318
ATEX	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G
	EEx ia IIC T1...T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6
FM	IS, CL. I, DIV. 1&2, GP. A-D	IS, CL. I, DIV. 1&2, GP. A-D	IS, CL. I, DIV. 1&2, GP. A-D	IS, CL. I, DIV. 1&2, GP. A-D	IS, CL. I, DIV. 1&2, GP. A-D
CSA	Class I, Zone 0/1, Gr. IIC	Class I, Zone 0/1, Gr. IIC	Class I, Zone 0/1, Gr. IIC	Class I, Zone 0/1, Gr. IIC	Class I, Zone 0/1, Gr. IIC
UL					UL 913 / UL 508
<b>FEATURES:</b>					
Supply	Loop-powered	Loop-powered	Loop-powered	Loop-powered	Bus-powered
Isolation	Input / output	No	Input / output	Input / output	Input / output
Channels	1	1	1	1	1

TECHNICAL SPECIFICATIONS:					
Programmable	PCP / PCF	PCP / PCF	PCP / PCF	PCP / PCF / HART <sup>®</sup>	Profibus <sup>®</sup> PA/Foundation <sup>™</sup> F
Ambient temperature	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C	-40...+85°C
Supply voltage, DC	7.2...28 VDC	8...28 VDC	7.2...28 VDC	8...28 VDC	9...32 VDC
Consumption	20 mA	20 mA	20 mA	20 mA	< 11 mA
Voltage drop	7.2 VDC	8 VDC	7.2 VDC	8 VDC	8 VDC
Isolation voltage, test / operation	1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V
Programming unit	Type 5905	Type 5905	Type 5905	Type 5905 / HART <sup>®</sup>	Profibus <sup>®</sup> PA/Foundation <sup>™</sup> F
Response time	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s
Signal dynamics, input	20 bit	19 bit	18 bit	22 bit	24 bit
Basic accuracy, mA					
Basic accuracy, Pt100	< ±0.2°C	< ±0.3°C	< ±0.2°C	< ±0.1°C	< ±0.1°C
Basic accuracy, TC type: E J K L N T U	< ±1°C	< ±1°C	< ±1°C	< ±0.5°C	< ±0.5°C
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
EMC, complies with NAMUR NE 21	A criterion, burst	A criterion, burst	A criterion, burst	A criterion, burst	A criterion, burst
Mounting	Sensor head	Sensor head	Sensor head	Sensor head	Sensor head

APPLICATION GUIDE:					
Receive signals from Ex area	■	■	■	■	■
Alarm / control					■
RTD / R transmitter	■	■		■	■
TC / mV transmitter	■		■	■	■
Display					■
Custom linearisation	■	■	■	■	■
Bus communication					■
PID controller					■

PCP = PC-programmable      SWP = Switch-programmable      PCF = Process calibration feature  
 Of span = Of the presently selected range      Of MV = Of the present measurement value



TYPE	5531B	6331B	6333B	6334B	6335B	6350B
<b>INPUT:</b> mA, RTD, Lin. R, TC, mV	Loop-powered LCD indicator	2-wire programmable transmitter	2-wire programmable transmitter	2-wire programmable transmitter	2-wire HART® transmitter	Profibus® PA / Foundation™ Fieldbus transmitter
<b>OUTPUT:</b> Display mA HART® communication Profibus® PA Foundation™ Fieldbus						

OUTLINE OF FUNCTIONS:						
<b>INPUT:</b>						
mA, measurement range / min. span	3.6...23 mA / 16 mA					
Pt100, measurement range / min. span		-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -
Pt1000, measurement range / min. span		-200...+850°C / 25°C	-200...+850°C / 25°C		-200...+850°C / 10°C	-200...+850°C / -
Ni100, measurement range / min. span		-60...+250°C / 25°C	-60...+250°C / 25°C		-60...+250°C / 10°C	-60...+250°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 / -
Sensor connection, wires		2 - 3 - 4	3		2 - 3 - 4	2 - 3 - 4
TC types		BEJKLNRSTUW3W5		BEJKLNRSTUW3W5	BEJKLNRSTUW3W5	BEJKLNRSTUW3W5
Cold junction compensation		Internal / external		Internal	Internal / external	Internal / external
Max. offset		50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	50% of selec. max. value	
<b>OUTPUT:</b>						
mA, signal range / min. span		4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	4...20 mA / 16 mA	
2-wire output		4...20 mA	4...20 mA	4...20 mA	4...20 mA	
Digital signal communication					HART® communication	Profibus® PA/Foundation™ F
Display, digit / type / digit height	4-digit / LCD / 16 mm					
<b>APPROVALS:</b>						
EEx approval CENELEC, DEMKO	02 ATEX 132122	99 ATEX 126958	99 ATEX 126959	99 ATEX 126960	99 ATEX 126961	KEMA 03ATEX1012
ATEX	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G	0539 Ex II 1 G
FM	EEx ia IIC T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6	EEx ia IIC T1...T6
CSA					Class I, Div 1&2, GP A-D	Class I, Div 1&2, GP A-D
					Class I, Zone 0/1, Gr. IIC	Class I, Zone 0/1, Gr. IIC
<b>FEATURES:</b>						
Supply	Loop-powered	Loop-powered	Loop-powered	Loop-powered	Loop-powered	Bus-powered
Isolation		Input / output	No	Input / output	Input / output	Input / output
Channels	1	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2

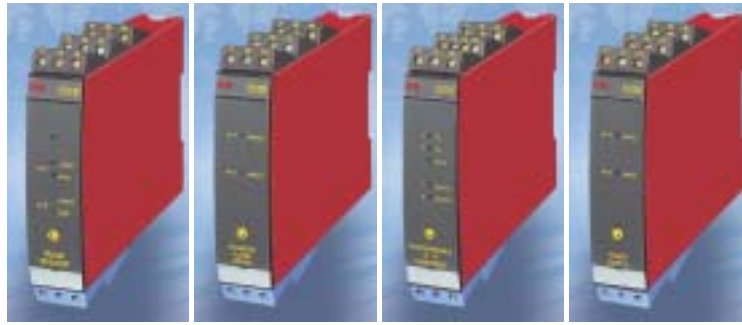
TECHNICAL SPECIFICATIONS:						
Programmable	FKP / SWP	PCP / PCF	PCP / PCF	PCP / PCF	PCP / PCF / HART®	Profibus® PA/Foundation™ F
Ambient temperature	-20...+60°C	-40...+60°C	-40...+60°C	-40...+60°C	-40...+60°C	-40...+60°C
Supply voltage, DC		7.2...28 VDC	8...28 VDC	7.2...28 VDC	8...28 VDC	9...32 VDC
Consumption	20 mA	20 mA / channel	20 mA / channel	20 mA / channel	20 mA / channel	< 11 mA / channel
Voltage drop	< 1.5 VDC	7.2 VDC	8 VDC	7.2 VDC	8 VDC	
Isolation voltage, test / operation		1500 VAC / 50 V		1500 VAC / 50 V	1500 VAC / 50 V	1500 VAC / 50 V
Programming unit		Type 5905	Type 5905	Type 5905	Type 5905 / HART®	Profibus® PA/Foundation™ F
Response time	< 1 s	1...60 s	0.33...60 s	1...60 s	1...60 s	1...60 s
Signal dynamics, input	15 bit	20 bit	19 bit	18 bit	22 bit	24 bit
Basic accuracy, mA	< ±8 µA					
Basic accuracy, Pt100		< ±0.2°C	< ±0.3°C		< ±0.1°C	< ±0.1°C
Basic accuracy, TC type: E J K L N T U		< ±1°C		< ±1°C	< ±0.5°C	< ±0.5°C
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	< ±0.002% of MV / °C
EMC, complies with NAMUR NE 21		A criterion, burst		A criterion, burst	A criterion, burst	A criterion, burst
Mounting	Panel 48 x 96 mm	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail

APPLICATION GUIDE:						
Receive signals from Ex area	■	■	■	■	■	■
Alarm / control						■
RTD / R transmitter		■	■		■	■
TC / mV transmitter		■		■	■	■
Display	■					
Custom linearisation		■	■	■	■	■
Bus communication						■
PID controller						■

FKP = Front key-programmable  
PCF = Process calibration feature

SWP = Switch-programmable  
Of span = Of the presently selected range

PCP = PC-programmable  
Of MV = Of the present measurement value



TYPE	5202B	5203B	5223B	5420B
	2-channel pulse isolator	Ex solenoid / alarm driver	Programmable f/I - f/f converter	Ex power supply
<b>INPUT:</b> Frequency, pulse, AC mains voltage				
<b>OUTPUT:</b> mA, V, pulse, relays, DC voltage				
<b>OUTLINE OF FUNCTIONS:</b>				
Hardware versions	Yes	Yes	Yes	No
INPUT:				
From Ex zone	0, 1, or 2	No	0, 1, or 2	No
Sensor type	NAMUR / switch	NPN / PNP / switch	NAMUR / switch	
Hz, measurement range / min. span	0...5 kHz		0...20 kHz / 0.001 Hz	
Min. pulse width	100 µs		25 µs	
Max. offset			90% of selec. max. value	
OUTPUT:				
To Ex zone	No	0, 1, or 2	No	0, 1, or 2 (not relay)
mA, signal range / min. span			0...20 mA / 5 mA	
Pulse output	NPN / relay		NPN / PNP / relay	
Hz, signal range	0...5 kHz		0...1000 Hz	
Relays	2 x SPDT, AC: 100 VA		2 x SPST, AC: 100 VA	1 x SPDT, AC: 100 VA
Voltage / current		Acc. to application		> 18 VDC / 20 mA
<b>APPROVALS:</b>				
EEx approval CENELEC, DEMKO	99 ATEX 127186	99 ATEX 126257	97D.121583	99 ATEX 126256
ATEX	0539  II (1) G	0539  II (1) G		0539  II (1) G
UL	[EEx ia] IIC UL 913 / UL 508	[EEx ia] IIC UL 913 / UL 508	[EEx ia] IIC	[EEx ia] IIC
<b>FEATURES:</b>				
Supply	Universal AC / DC	Universal AC / DC	Universal AC / DC	Universal AC / DC
Sensor supply	8 VDC		8 VDC	
Isolation	Input / output / supply	Input / output / supply	Input / output / supply	Input / output / supply
Channels	2	1 or 2	1	2
<b>TECHNICAL SPECIFICATIONS:</b>				
Programmable	SWP		PCP / SWP / APW	
Ambient temperature	-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Supply voltage, universal	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC	24...230 VAC / 250 VDC
Consumption	1.6 W	4 W / 2 channels	3.5 W	4 W / 2 channels
Isolation voltage, test / operation	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC	3.75 kVAC / 250 VAC
Programming unit			Type 5905	
Response time			60 ms...1000 s	
Temperature coefficient			< ±0.01% of span / °C	
EMC, complies with NAMUR NE 21	A criterion, burst	A criterion, burst		A criterion, burst
Mounting	DIN rail	DIN rail	DIN rail	DIN rail
<b>APPLICATION GUIDE:</b>				
Ex safety barrier	■	■	■	■
Receive signals from Ex area	■		■	
Transmit signals to Ex area		■		■
Pulse isolation	■		■	
Speed measurement / alarm			■	
Supply for ON / OFF valves		■		
Installation in PELV / SELV circuits	■		■	■

PCP = PC-programmable

SWP = Switch-programmable

APW = Adjustable pulse width

Of span = Of the presently selected range

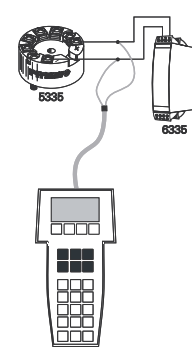
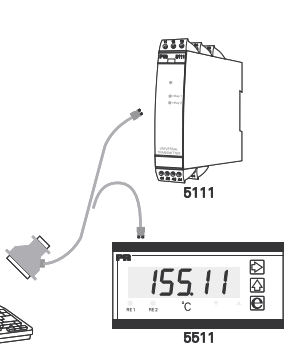
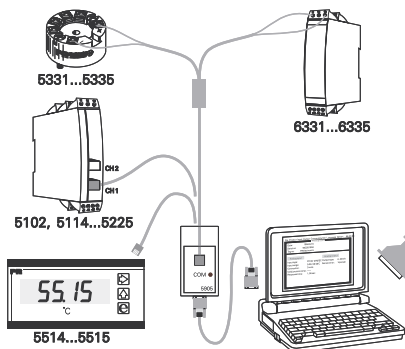


TYPE: **5905** **5901** **275D**

Loop Link

Opto Link

HART® communicator



**PROGRAMMING UNITS**

**PRset**

The set-up of PR products is carried out via a standard PC and a programming interface. An easy-to-use menu-driven software program is available for the set-up, which gives large flexibility for each product. When the menus are completed, the data is transmitted to the unit, and immediately after the unit is ready for use without any need for re-calibration.

Three types of programming interfaces are available:

**Loop Link**

Opto Link is an interface unit built in a standard sub D-plug. The unit is supplied from the PC-RS232 port. The Opto Link accumulates energy for the communication between the PR unit and the PC. A 2-wire opto cable between the Opto Link unit and the PR module ensures galvanically separated communication in both directions and thereby protects both the PC and the PR module. Opto Link is only used for programming PRetrans type 5111 and PReview type 5511.

**Loop Link**

Loop Link is a battery-operated communications interface. Loop Link is connected to the PC by a standard RS232 cable/plug. Two cables for connection to the PR module are included: One for the PRetop transmitter and one for PRetrans and PReview units (plugs in each end). Loop Link has a built-in relay, which ensures an automatic switch-over to the loop after a new set-up is transmitted. However, interruption of the loop is always necessary when connecting Loop Link.

**HART® communicator**

With a standard HART® communicator the programming of PRetop 5335 and PRetrans 6335 is made easy and universal. The HART® communicator must be loaded with the appropriate DDL driver for 5335 and 6335. This can be ordered from the HART® Communication Foundation or PR electronics. For help getting on-line with PRetop 5335 and PRetrans 6335, please contact PR electronics or your local PR agent.

**ACCESSORIES**



**7101A Backplane**  
with 8 modules / 16 channels  
(also exists as 7101B with  
16 modules / 32 channels)

- 7000 Front frame
- 7002 Spring clip for SYSTEM 2200
- 7005 0.1 Ω resistor 1%, 20 W
- 7006 1.0 Ω resistor 1%, 20 W
- 7007 2-digit digital potentiometer, 10 kΩ
- 7008 3-digit digital potentiometer, 10 kΩ
- 7014 0.5 Ω resistor 1%, 20 W
- 7023 11-pole relay socket, coding facility
- 7101A Backplane for 8 modules / 16 channels
- 7101B Backplane for 16 modules / 32 channels

- 7202 Adapter board with 56-pole Elco connector
- 7203 Adapter board with 37-pole SUB D connector
- 7204 Adapter board with 2x16-pole terminal block
- 7205 2x2x16-pole terminal block mounted on assembly board
- 7206 Adapter board with 50-pole SUB D connector
- 7207 Adapter board with 32-pole 3M flat cable
- 7208 Adapter board with 25-pole SUB D connector
- 5901 Opto Link, communications interface for type 5111 and 5511
- 5905 Loop Link, programming unit for type 5102, 5114, 5115, 5131 5133, 5222, 5223, 5225, 5331, 5333, 5335, 6331, 6333, 6334, 6335, 5514 and 5515
- 5906 Complete programming kit for SYSTEM 5000  
Incl. Opto Link and Loop Link
- 5910 CJC connector channel 1 for:  
5114, 5115, 5131, 5222, 6331 and 6335
- 5911 CJC connector for 5511
- 5912 CJC connector for 5111
- 5913 CJC connector channel 2 for:  
5114, 5115, 5131, 5222, 6331 and 6335
- 5914 CJC connector for 5514, 5515
- 5917 Special connector for 6335 with 16 V zener diode
- 276D HART® modem

**ENCLOSURE SPECIFICATIONS**

Dimensions (mm)	PR plug-in cassette	PR small DIN cabinet	PR DIN cabinet	PR wall cabinet	PRetop cabinet	PReview square	PReview rectangle
Height	80.5	109	109	70	20.2	48	48
Width	35.5	23.5	23.5	120	Ø44	48	96
Depth	84.5+socket	104	130	25	-	120	120
Panel cut-out	-	-	-	-	-	44.5 x 44.5	44.5 x 91.5
Material	Cycology/Noryl	Cycology	Cycology	ABS/PBT	Cycology	Noryl	Noryl

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