

Signal conditioning & Communication *Product catalog*

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

PR
electronics

Devices for special applications

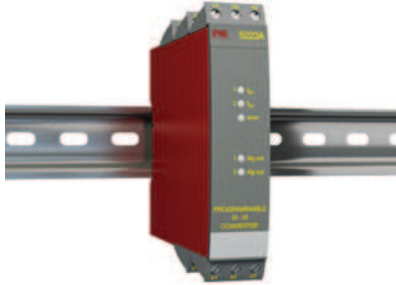
Since 1974, we have provided the process industry with ingenious devices for special applications. We have done this in close cooperation with our customers, ensuring that the designs provide the optimal smart solutions for their industry standard.

These special devices include: valve controllers, transmitters, ramp generators, up-down ramp controls, limit switches, trip amplifiers, load cell amplifiers, power supplies, etc.



Special devices

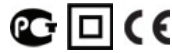
5223A - Programmable f/l-f/f converter	G.2
5225 - Programmable f/l-f/f converter	G.4
2231 - Trip amplifier	G.6
2255 - f/l-f/f converter	G.8
2220 - Switchmode power supply	G.10
2222 - Switchmode power supply	G.12
2223 - Dual switchmode power supply	G.14
2229 - Switchmode voltage regulator	G.16
2240 - Transformer	G.18
2224 - Valve controller	G.20
2261 - mV transmitter	G.22
2281 - Ramp generator	G.24
2286 - Signal controller	G.26
2289 - Signal calculator	G.28
3405 - Power connector unit	G.30
5343A - 2-wire level transmitter	G.32
5343B - 2-wire level transmitter	G.34
9410 - Power control unit	G.36
9420 - Power supply	G.38



Programmable f/I-f/f converter

5223A

- Pulse calculator
- Frequency generator
- Galvanic isolation
- Analog current and voltage output
- PNP / NPN output, optional relays
- Universal supply



Advanced features

- The 5223 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.

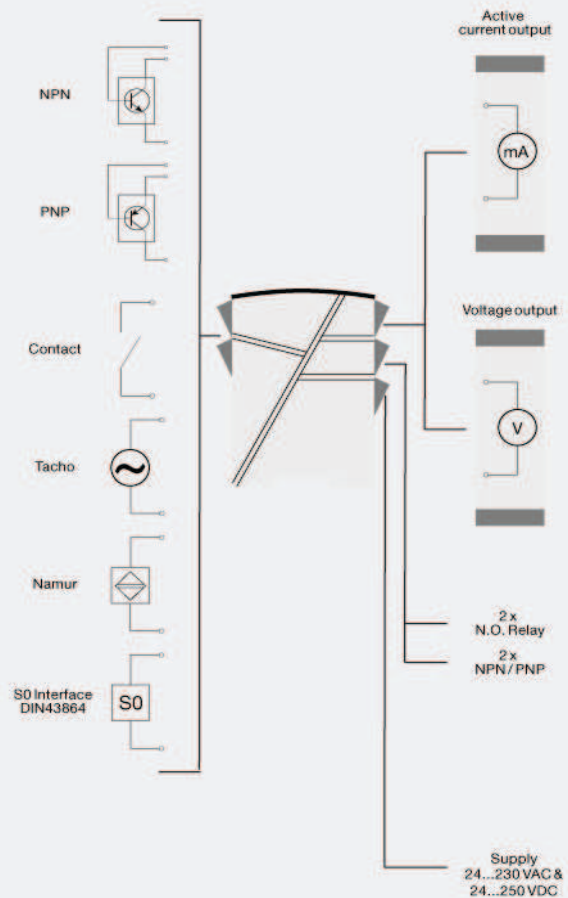
Application

- The f/I function performs frequency to current and voltage conversion.
- The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
- A scale factor may be entered in all functions. Using both digital inputs, pulse addition or subtraction are possible.
- The frequency generator function is used as e.g. a time base or clock generator.
- Input and supply polarity reversal protection.
- Current and voltage output signals galvanically separated from the supply and the inputs.
- Programmable digital outputs including NPN, PNP or relay options.

Technical characteristics

- 5 front LEDs, indicating f1 and f2 active inputs (not NPN), Dig.out.1 and 2 active outputs, and a programmable error signal.
- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.

Connections



Order:

Type	Output
5223A	Analog + NPN / PNP : 1
	Analog + relay output : 2

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 130 mm
Weight approx.....	240 g
DIN rail type.....	DIN 46277
Wire size.....	1 x 2.5 mm ² stranded wire
Screw terminal torque.....	0.5 Nm

Common specifications

Supply voltage, universal.....	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse.....	400 mA SB / 250 VAC
Max. power consumption.....	3.5 W
Internal consumption.....	3 W
Isolation voltage, test / working.....	3.75 kVAC / 250 VAC
Power-up delay.....	0...999 s
Warm-up time.....	1 min.
Communications interface.....	Loop Link
Signal / noise ratio.....	Min. 60 dB
Response time, analog.....	< 60 ms + period
Response time, digital output.....	< 50 ms + period
Signal dynamics, output.....	16 bit
Effect of supply voltage change.....	< 0.005% of span / VDC
Auxiliary voltage: NAMUR supply.....	8.3 VDC ±0.5 VDC / 8 mA
S0 supply.....	17 VDC / 20 mA
NPN / PNP supply.....	17 VDC / 20 mA
Special supply (programmable).....	5...17 VDC / 20 mA
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
EMC immunity influence.....	< ±0.5%

Input specifications

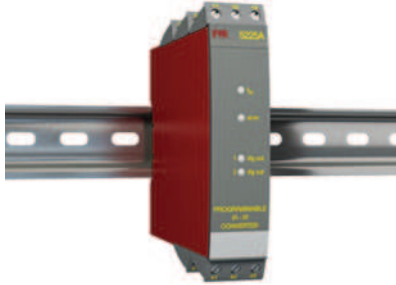
Max. offset.....	90% of selected max. frequency
Measurement range.....	0...20 kHz
Min. measurement range.....	0.001 Hz
Max. frequency, with input filter ON.....	50 Hz
Min. period time with input filter ON.....	20 ms
Input types.....	NAMUR acc. to DIN 19234
Input types.....	Tacho
Input types.....	NPN / PNP
Input types.....	2-phase encoder
Input types.....	TTL
Input types.....	S0 acc. to DIN 43864

Output specifications

Max. offset.....	50% of selected max. value
Current output: Signal range.....	0...20 mA
Min. signal range.....	5 mA
Updating time.....	20 ms
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Current limit.....	< 23 mA
Voltage output through internal shunt.....	See manual for details
Other output types.....	Active outputs (NPN / PNP)
Other output types.....	f/f converter output
Other output types.....	Frequency generator
Relay output: Max. switching frequency.....	20 Hz
Max. voltage.....	250 VRMS
Max. current.....	2 AAC
Max. AC power.....	100 VA
Max. load at 24 VDC.....	1 A
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
PELV/SELV.....	IEC 364-4-41 and EN 60742
ATEX.....	KEMA 04ATEX1001
GOST R.....	Yes
GOST Ex.....	Yes



Programmable f/I-f/f converter

5225

- Pulse conditioning
- Frequency generator
- Concurrent f/I and f/f function
- Analog current and voltage output
- PNP / NPN output, optional relays
- Programmable by PC and Loop Link



Advanced features

- The 5225 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.

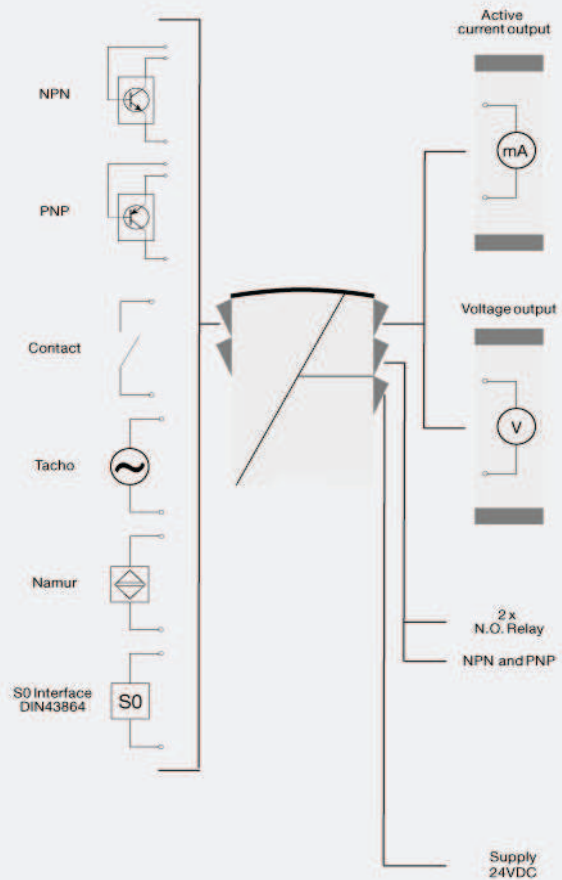
Application

- The f/I function performs frequency to current and voltage conversion.
- The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
- The concurrent f/I and f/f functions enable a scaled digital output signal in conjunction with the analog output.
- The frequency generator function is used as e.g. a time base or clock generator.
- Input and supply polarity reversal protection.
- Current and voltage output signals galvanically separated from the supply and the inputs.
- Programmable digital outputs including NPN, PNP or relay options.

Technical characteristics

- 4 front LEDs, indicating f in active inputs (not NPN), Dig.out.1 (NPN or relay 1) and Dig.out 2 (relay 2) outputs, and a NAMUR input error signal.
- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.

Connections



Order:

Type	Output
5225	Analog + NPN / PNP : 1 Analog + relay output : 2

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 130 mm
Weight approx.....	190 g
DIN rail type.....	DIN 46277
Wire size.....	1 x 2.5 mm ² stranded wire
Screw terminal torque.....	0.5 Nm

Common specifications

Supply voltage.....	19.2...28.8 VDC
Max. power consumption.....	3.5 W
Internal consumption.....	1.7 W
Warm-up time.....	30 s
Power-up delay.....	0...999 s
Communications interface.....	Loop Link
Signal / noise ratio.....	Min. 60 dB
Response time, analog.....	< 60 ms + period
Response time, digital output.....	< 50 ms + period
Response time, concurrent f/I and f/f.....	< 80 ms + period
Signal dynamics, output.....	16 bit
Effect of supply voltage change.....	< ±0.002% of span / %V
Auxiliary voltage: NAMUR supply.....	8.3 VDC ±0.5 VDC / 8 mA
S0 supply.....	17 VDC / 20 mA
NPN / PNP supply.....	17 VDC / 20 mA
Special supply (programmable).....	5...17 VDC / 20 mA
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
EMC immunity influence.....	< ±0.5%

Input specifications

Max. offset.....	90% of selected max. frequency
Measurement range.....	0...20 kHz
Min. measurement range.....	0.001 Hz
Low cut-off frequency.....	0.001 Hz
Max. frequency, with input filter ON.....	50 Hz
Min. period time with input filter ON.....	20 ms
Input types.....	NAMUR acc. to DIN 19234
Input types.....	Tacho
Input types.....	NPN / PNP
Input types.....	TTL
Input types.....	S0 acc. to DIN 43864

Output specifications

Max. offset.....	50% of selected max. value
Current output: Signal range.....	0...20 mA
Min. signal range.....	5 mA
Updating time.....	20 ms
Updating time.....	40 ms for concurrent f/I and f/f
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Current limit.....	< 23 mA
Voltage output through internal shunt.....	See manual for details
Other output types.....	Active outputs (NPN / PNP)
Other output types.....	f/f converter output
Other output types.....	Frequency generator
Relay output: Max. switching frequency.....	20 Hz
Relay output: Isolation, test / working.....	3.75 kVAC / 250 VAC
Max. voltage.....	250 VRMS
Max. current.....	2 AAC
Max. AC power.....	500 VA
Max. load at 24 VDC.....	1 A
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
PELV/SELV.....	IEC 364-4-41 and EN 60742
GOST R.....	Yes



Trip amplifier

2231

- AC/DC trip amplifier
- 2 adjustable alarm limits
- Galvanically isolated 3.75 kVAC
- Front-programmable
- 3-digit LED display
- 24 VDC or universal supply



Advanced features

- The front-operated push buttons are used for programming the different standard functions.
- A password can prevent access for changing parameters.

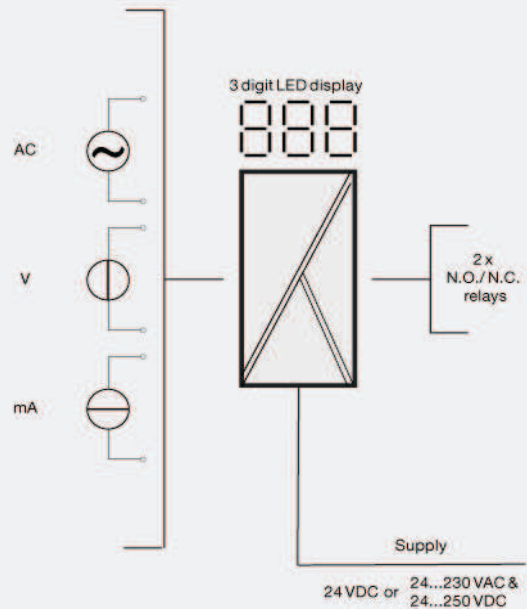
Application

- Alarm detector in connection with measurement of AC/DC current or voltage signals.
- The unit is used where accurate setpoint setting and different alarm functions are required.
- The unit can be used as a single or dual trip amplifier.
- Used in applications where programmable parameters such as hysteresis, setpoint, reset, active relay for increasing or decreasing signal, delay and input signal need to be set.

Technical characteristics

- 3-digit display showing the input signal in %.
- Two LED indicating relay status.
- 3 pushbuttons for programming.
- Standard DC current input signals in the range 0...20 mA.
- DC voltage signals in the range 0...250 VDC.
- AC current signals up to 1 A.
- True RMS measurement of AC voltage signals in the range 0...250 VAC.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Supply
2231	24 VDC : D 24...230 VAC / : P 24...250 VDC

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight DC / universally supplied.....	125 g / 175 g

Common specifications

Supply voltage.....	19.2...28.8 VDC
Supply voltage, universal.....	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Internal consumption.....	1.5 W (2231D)
Internal consumption.....	2 W (2231P)
Isolation voltage, test / working.....	3.75 kVAC / 250 VAC
Response time (programmable).....	0.25...60 s (DC)
Response time (programmable).....	0.75...60 s (AC)
Updating time.....	100 ms
Signal dynamics, input.....	16 bit
Effect of supply voltage change.....	< ±0.002% of span / %V
Temperature coefficient.....	< ±0.01% of span /°C (DC signals)
Temperature coefficient.....	< ±0.02% of span /°C (AC signals)
Linearity error.....	< 0.1% of span
Linearity error.....	< ±0.35% of span 50...1000 Hz (AC sine wave signals)
EMC immunity influence.....	< ±0.5%

Input specifications

Max. offset.....	50% of selected max. value
Current input: Measurement range.....	0...20 mA
Min. measurement range (span), current input.....	10 mA
Input resistance, current input.....	50 Ω
AC current input: Measurement range.....	0...1 ARMS
Min. measurement range (span), AC current.....	0.5 ARMS
Input resistance, AC current.....	1 Ω / 2 W
Voltage input: Measurement range.....	0...250 VDC
Min. measurement range (span), voltage input.....	0.5 VDC
Input resistance, voltage input.....	Nom. 5 MΩ
AC voltage input: Measurement range.....	0...250 VRMS
Min. measurement range (span), AC voltage.....	0.5 VRMS
Input resistance, AC voltage.....	Nom. 5 MΩ

Output specifications

Relay outputs: Setpoint setting.....	0...99.9% of span
Hysteresis.....	0...99.9% of span
Updating time.....	100 ms
ON and OFF delay.....	0.0...99.9 s
Max. voltage.....	250 VRMS
Max. current.....	2 AAC
Max. AC power.....	500 VA
Max. load at 24 VDC.....	1 A
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
PELV/SELV.....	IEC 364-4-41 and EN 60742
GOST R.....	Yes

f/I-f/f converter



2255

- Programmable f/I converter
- Programmable decimal divider / decimal multiplier
- Programmable frequency generator
- Relay output as option
- Supply voltage 24 VDC



Advanced features

- The user programmable version has a multifunction user interface consisting of three pushbuttons and a 3-digit LED displays.

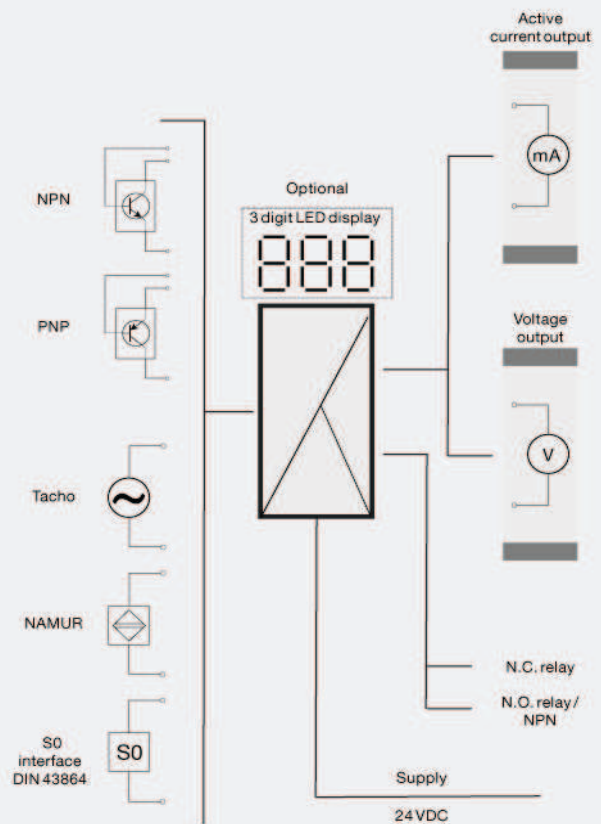
Application

- Typical signalling devices may be pulse generators, for instance flow meters, tacho-generators or inductive sensors.
- The f/I function is used for frequency to current / voltage conversion.
- The f/f function is used for division or multiplication of pulses and as a buffer for fast pulse trains.
- A frequency generator function e.g. used as a time base or a clock generator.

Technical characteristics

- 3 front LEDs, indicating f.in active input (not NPN), Dig.out (NPN or relay 1) active output and a NAMUR input error signal.
- Analog current output can be configured within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC by use of internal jumpers.
- Feature include input filter, contact filter and an auxiliary supply for sensor such as NAMUR and S0.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Version	Output
2255	Programmable : B	Analog + NPN output : 1 Analog + relay output : 2

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	125 g

Common specifications

Supply voltage.....	19.2...28.8 VDC
Internal consumption.....	2.4 W
Isolation voltage, test / working.....	1.4 kVAC / 150 VAC
Warm-up time.....	1 min.
Signal / noise ratio.....	Min. 60 dB
Response time (programmable).....	60 ms to 999 s + period time
Signal dynamics, output.....	16 bit
Effect of supply voltage change.....	< 0.005% of span / VDC
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
S0 supply.....	15 VDC / 25 mA
Special supply (programmable).....	5...15 VDC / 30 mA (acc. to order)
EMC immunity influence.....	< ±0.5%

Input specifications

Max. offset.....	90% of selec. max. value
Measurement range.....	0...20 kHz
Min. measurement range.....	0.001 Hz
Low cut-off frequency.....	0.001 Hz
Min. pulse length.....	25 µs
Input types.....	NAMUR acc. to DIN 19234
Input types.....	Tacho
Input types.....	NPN / PNP
Input types.....	TTL
Input types.....	S0 acc. to DIN 43864

Output specifications

Max. offset.....	50% of selected max. value
Current output: Signal range.....	0...20 mA
Min. signal range.....	5 mA
Updating time.....	20 ms
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Voltage output through internal shunt.....	See manual for details
Max. current, NPN output.....	130 mA
Max. voltage, NPN output.....	28 VDC
Frequency output range.....	0...1000 Hz
Min. pulse length.....	500 µs
Max. pulse length.....	999 ms
Max. duty cycle.....	50%
Frequency generator: Pulse length f < 50 Hz.....	Min. 10 ms
Frequency generator: Pulse length f < 50 Hz.....	Max. 999 s
Pulse length f ≥ 50 Hz.....	50% duty cycle
Relay output: Max. switching frequency.....	20 Hz
Max. voltage.....	150 VRMS
Max. current.....	2 AAC
Max. AC power.....	300 VA
Max. load at 24 VDC.....	1 A
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
GOST R.....	Yes



Switchmode power supply



2220

- Mains voltage input
- Isolation 3.75 kVAC
- Short-circuit protection
- Thermal overload protection
- Standard 11-pole relay socket



Advanced features

- The power supply is based on secondary switchmode technology to achieve a high efficiency.
- The output is adjustable from front potentiometer in the range 5...24 VDC.

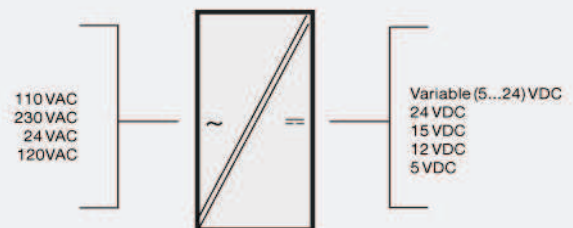
Application

- General power supply for smaller measurement systems requiring fixed stabilized 24 VDC, or supply for any other sensors, transmitters or as a general variable power supply 5 to 24 VDC.
- Two units may be connected in series for plus / minus or higher output voltage.
- Suitable for PELV/SELV applications.

Technical characteristics

- A green LED indicates active output.
- Double-isolated safety transformer.
- Isolation test voltage between input and output is 3.75 kVAC.
- The input circuit is protected with a thermal fuse.
- Output short circuit protection with current limiter.

Connections



Order:

Type	Version	Output
2220	110 VAC : A	Special (5...24 V) : 0
	230 VAC : B	24 VDC : 1
	24 VAC : D	15 VDC : 2
	120 VAC : F	12 VDC : 3
		5 VDC : 4

Environmental Conditions

Specifications range..... -20°C to +60°C
 Relative humidity..... < 95% RH (non-cond.)
 Protection degree..... IP50

Mechanical specifications

Dimensions (HxWxD)..... 80.5 x 35.5 x 84.5 mm (D is
 without pins)
 Weight approx..... 425 g

Common specifications

Internal consumption..... 4 W
 Isolation voltage, test /
 working..... 3.75 kVAC / 250 VAC
 Transformer..... EN 60742
 Effect of supply voltage change..... < ±30 mV (±10%)
 Transient stability (10%-max.
 load)..... < 250 mV
 Temperature coefficient..... 0.05% / °C
 EMC immunity influence..... < ±0.5%

Input specifications

Input voltage (AC)..... 21.6...26.4 VAC
 Input voltage (AC)..... 99...121 VAC
 Input voltage (AC)..... 108...132 VAC
 Input voltage (AC)..... 207...253 VAC
 Frequency..... 50...60 Hz

Output specifications

Output voltage..... 4.75...25.2 VDC
 Output power..... Max. 7 W
 Output current..... 1 A / 5 VDC
 Output current..... 0.55 A / 12 VDC
 Output current..... 0.45 A / 15 VDC
 Output current..... 0.3 A / 24 VDC
 Load effect (10%-max. load)..... < 1.5% / A
 Current limit..... Typ. 2.2 A (short circuit)
 Output ripple..... < 20 mVRMS

Approvals

EMC..... EN 61326-1
 LVD..... EN 61010-1
 PELV/SELV..... IEC 364-4-41 and EN 60742
 GOST R..... Yes



Switchmode power supply

2222

- 230 or 115 VAC primary voltage
- 24 or 15 VDC output voltage
- Double isolation by 3.75 kVAC
- 48 Watt output power, short circuit-protected
- Thermal protection against overload



Advanced features

- The power supply is based on primary switchmode technology to achieve a high efficiency.
- An internally mounted potentiometer allows for a $\pm 5\%$ adjustment of the output voltage.

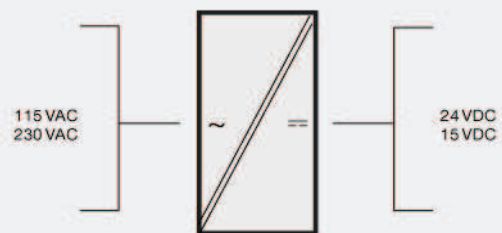
Application

- General 24 or 15 VDC supply for equipment that requires a stabilised DC voltage.
- Two units can be connected in series to achieve a plus / minus supply or a higher output voltage.
- Separation of circuits in safety installations according to the PELV/SELV norm.
- Galvanic isolation between the primary and the secondary voltage is achieved through the double-isolated safety transformer.

Technical characteristics

- A green LED in the front of the module indicates an active primary voltage.
- Input circuit protected with a thermal fuse.
- DC output short circuit protection with current limiter.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Input	Output
2222	115 VAC : A	24 VDC : 1
	230 VAC : B	15 VDC : 2

Environmental Conditions

Specifications range..... -20°C to +60°C
 Relative humidity..... < 95% RH (non-cond.)
 Protection degree..... IP30

Mechanical specifications

Dimensions (HxWxD)..... 80.5 x 35.5 x 84.5 mm (D is
 without pins)
 Weight approx..... 210 g

Common specifications

Fuse..... 1 A SB / 250 VAC
 Max. power consumption..... 60 VA
 Isolation voltage, test /
 working..... 3.75 kVAC / 250 VAC
 Effect of supply voltage change..... < 1% ($\pm 10\%$)
 Efficiency..... $\geq 80\%$
 Thermal overload protection..... 100°C
 Power derating..... 1% / °Camb. (Tamb. > 40°C)
 Transient stability (10%-max.
 load)..... < 500 mV
 Temperature coefficient..... 0.05% / °C
 EMC immunity influence..... < $\pm 0.5\%$

Input specifications

Supply voltage..... 207...253 VAC
 Supply voltage..... 102.4...132.2 VAC
 Frequency..... 50...60 Hz

Output specifications

Output voltage..... 24 or 15 VDC
 Adjustment..... $\pm 5\%$
 Output power..... 48 W (max.)
 Output current..... 2 A / 24 VDC
 Output current..... 2 A / 15 VDC
 Load effect, (0-max. load)..... < 1.5% / A
 Current limit..... Nom. 2.5 A (electronic)
 Output ripple..... ≤ 40 mVRMS (100 kHz)

Approvals

EMC..... EN 61326-1
 LVD..... EN 61010-1
 PELV/SELV..... IEC 364-4-41 and EN 60742
 GOST R..... Yes





Dual switchmode power supply

2223

- 24 / 115 / 230 VAC supply voltage
- 3.75 kVAC isolation
- 2 adjustable 5...24 VDC outputs
- Output: $\pm 5...24$ VDC, 10...48 VDC
- Short-circuit protection
- Thermal protection against overload



Advanced features

- The power supply is based on primary switch mode technology to achieve a high efficiency.
- The outputs are adjustable by 2 front potentiometers in the ranges 5...24 VDC.

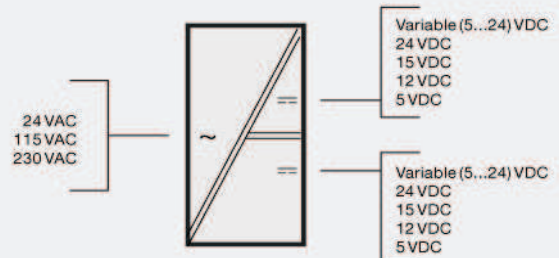
Application

- Supply for small measuring systems that demand 2 stabilized voltages.
- Either as a combination of positive and negative voltages, or as 2 separate supplies as required.
- The two supplies are galvanically separated with 500 VAC test voltage and can be connected in series or used as two independent supplies with or without common gnd.
- Separation of circuits in safety installations according to PELV/SELV.
- Galvanic isolation between the primary and the secondary voltage is achieved through the double-isolated safety transformer.

Technical characteristics

- Two green LEDs, Power ON 1 and Power ON 2, indicate active outputs.
- By connecting the two outputs in series, 10...48 VDC or $\pm 5...24$ VDC can be achieved.
- The Input circuit is protected with a bimetal thermal fuse.
- DC output short circuit protection with current limiter.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Version	Output 1	Output 2
2223	115 VAC : A	Special (5...24 VDC) : 0	Special (5...24 VDC) : 0
	230 VAC : B	24 VDC : 1	24 VDC : 1
	24 VAC : D	15 VDC : 2	15 VDC : 2
		12 VDC : 3	12 VDC : 3
		5 VDC : 4	5 VDC : 4

Environmental Conditions

Specifications range.....	-20°C to +60°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP30

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	400 g

Common specifications

Internal consumption.....	4 W
Isolation voltage, test / working.....	3.75 kVAC / 250 VAC
Isolation output 1 / 2, test / working.....	500 VAC / 50 VAC (75 VDC)
Effect of supply voltage change.....	< ±30 mV (±10%)
Transformer.....	EN 60742
Transient stability (10%-max. load).....	< 250 mV
Temperature coefficient.....	0.05% / °C
EMC immunity influence.....	< ±0.5%

Input specifications

Supply voltage.....	21.6...26.4 VAC
Supply voltage.....	103.5...126.5 VAC
Supply voltage.....	207...253 VAC
Frequency.....	50...60 Hz

Output specifications

Output voltage.....	4.75...25.2 VDC
Output power.....	Max. 7.5 W (total)
Output current, per channel.....	0.5 A / 5 VDC (2.5 W)
Output current, per channel.....	0.37 A / 12 VDC (4.5 W)
Output current, per channel.....	0.30 A / 15 VDC (4.5 W)
Output current, per channel.....	0.18 A / 24 VDC (4.3 W)
Load effect (10%-max. load).....	< 1.5% / A
Current limit.....	Typ. 100 mA (short circuit)
Output ripple.....	< 20 mVRMS

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
PELV/SELV.....	IEC 364-4-41 and EN 60742
GOST R.....	Yes



Switchmode voltage regulator



2229

- AC/DC input voltage
- Adjustable output 5...24 VDC, max. 40 W
- Adjustable from external potentiometer
- Short-circuit protection
- Thermal overload protection
- Standard 11-pole relay socket



Advanced features

- The regulator is based on primary switchmode technology to achieve a high efficiency.
- The outputs are adjustable from a front potentiometer in the range 5...24 VDC or from an external potentiometer.

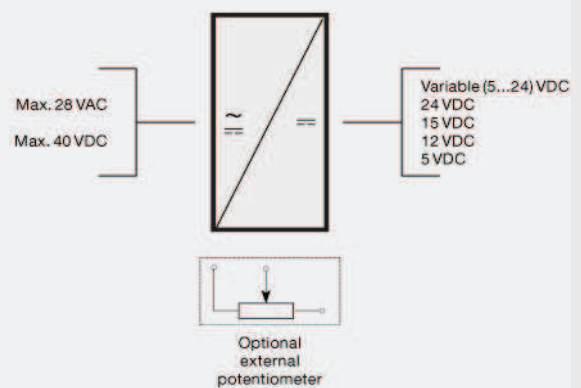
Application

- General voltage regulator for external transformer used in connection with measurement systems requiring fixed stabilized 24 VDC.
- Supply for any other sensors, transmitters or a general variable voltage regulator in the range 5...24 VDC.
- Used as a power efficient pre-regulator for 5 VDC linear regulator (e.g. from 32 V to 8 V).
- Used as adjustable power supply controlled from external potentiometer.

Technical characteristics

- A green LED indicates active output.
- AC or DC input voltages.
- A rectifier bridge allows free choice of polarity for the DC input.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Version	Output
2229	AC or DC : A	Special (5...24 V) : 0
		24 VDC : 1
		15 VDC : 2
		12 VDC : 3
		5 VDC : 4

Environmental Conditions

Specifications range..... -20°C to +60°C
 Relative humidity..... < 95% RH (non-cond.)
 Protection degree..... IP30

Mechanical specifications

Dimensions (HxWxD)..... 80.5 x 35.5 x 84.5 mm (D is
 without pins)
 Weight approx..... 170 g

Common specifications

Internal consumption..... 10 W
 Transient stability (10%-max.
 load)..... < 250 mV
 Temperature coefficient..... 0.05% / °C
 EMC immunity influence..... < ±0.5%

Input specifications

Input voltage (AC)..... Max. 28 VAC
 Input voltage (AC)..... Min. VAC = (Vout. + 5) / 1.2
 Input voltage (DC)..... Max. 40 VDC
 Input voltage (DC)..... Min. VDC = (Vout. + 5)
 Frequency..... 50...60 Hz

Output specifications

Output voltage..... 4.5...26.4 VDC
 Output power..... Max. 40 W
 Output current..... Max. 2.5 A / 5 VDC
 Output current..... Max. 2.5 A / 12 VDC
 Output current..... Max. 2.5 A / 15 VDC
 Output current..... Max. 1.7 A / 24 VDC
 Load effect, (0-max. load)..... < 1.5% / A
 Current limit..... Typ. 5.8 A (short circuit)
 Output ripple..... < 20 mVRMS

Approvals

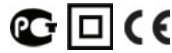
EMC..... EN 61326-1
 GOST R..... Yes



Transformer

2240

- Double-isolated transformer
- 3.75 kVAC isolation voltage
- 30 VA ring core transformer
- Thermal overload protection
- 12 or 24 VAC secondary voltage
- Standard 11-pole relay socket



Advanced features

- Two transformers may be paralleled for higher output power.

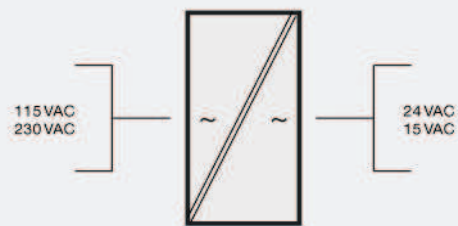
Application

- Transformer for supply of components with 12 or 24 VAC supply voltage.
- Transformer for stabilized DC power supplies, e.g. type 2229.

Technical characteristics

- Standard primary input voltages of 115 or 230 VAC with special primary voltages to order.
- Standard secondary voltages of 12 or 24 VAC with special secondary voltages to order.
- Ring core transformer with separate 3.75 kVAC isolation voltage between primary and secondary windings.
- Fitted with a thermal fuse.
- The device is supplied with a retention clip for a safe attachment to the relay socket.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Input	Output
2240	115 VAC : A	Special : 0
	230 VAC : B	24 VAC : 1
	Special : X	12 VAC : 2

Environmental Conditions

Specifications range..... -20°C to +60°C
 Relative humidity..... < 95% RH (non-cond.)
 Protection degree..... IP50

Mechanical specifications

Dimensions (HxWxD)..... 80.5 x 35.5 x 84.5 mm (D is
 without pins)
 Weight approx..... 600 g

Common specifications

Isolation voltage, test /
 working..... 3.75 kVAC / 250 VAC
 Power derating..... Tamb. > 25°C, 0.4 VA/°C
 EMC immunity influence..... < ±0.5% of span

Input specifications

Primary voltage..... 207...253 VAC
 Primary voltage..... 97.75...132.25 VAC
 Frequency..... 50...60 Hz

Output specifications

Secondary voltage (loaded)..... 24 VAC / 1.25 A
 Secondary voltage (unloaded)..... 28 VAC
 Secondary voltage (loaded)..... 12 VAC / 2.50 A
 Secondary voltage (unloaded)..... 14 VAC
 *of span..... = of the presently selected
 range

Approvals

EMC..... EN 61326-1
 PELV/SELV..... IEC 364-4-41 and EN 60742
 GOST R..... Yes

Valve controller

2224



- Front-programmable
- mA, V, and Ω programmable input
- Ramp times, jump values, reversal, chopper frequency, and deadband
- 3-digit LED display shows I-valve % value
- 1 or 2 channels



Advanced features

- Multifunction user interface consisting of three pushbuttons and a 3-digit LED display.
- All parameters are protected against unauthorized changes with a password.

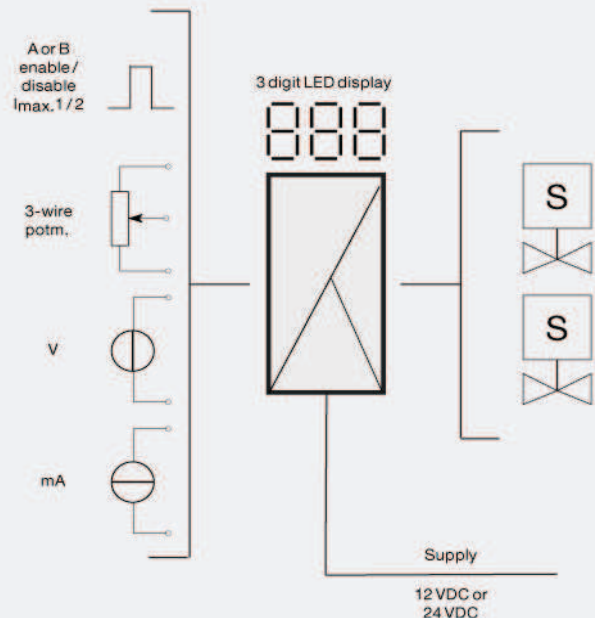
Application

- Control and regulation of single- or double-coil hydraulic and pneumatic proportional valves used for accurate oil flow regulation, linear soft acceleration and deceleration, modulated output signal, and programmable deadband.
- Is highly suitable for joystick regulation of A/B movements.
- Where changes to A and B need to be selected directly or according to the value of an input signal.

Technical characteristics

- During operation the display shows the present output signal as a % of the I valve.
- Programmable current or voltage input for standard signals acc. to order schedule, joystick / potentiometer or a special non-programmable input.
- Digital inputs for external control functions.
- A pulsating current output prevents the connected valve from sticking.
- Optional programming of the modulation frequency (PWM) between 8 and 400 Hz.
- Multiple adjustable parameters such as output currents, ramp times, jump values, chopper frequency, reversal, deadband, and ON/OFF functions.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Input	Supply	Option
2224	0...20 mA	: A	12 V : 1
	4...20 mA	: B	24 V : 2
	0...1 V	: C	Single valve (A) : A
	0.2...1 V	: D	Double valve (A/B) : B
	0...10 V	: E	
	2...10 V	: F	
	±10 V potentiometer	: G	
	0...10 V potentiometer	: H	

Environmental Conditions

Specifications range.....	-20°C to +60°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	130 g

Common specifications

Supply voltage.....	9.6...14.4 or 19.2...28.8 VDC
Internal consumption.....	2 W / 24 V
Internal consumption.....	1,8 W / 12 V
Communication.....	Front-programmable
Updating time.....	30 ms
Temperature coefficient.....	0.01%/°C
Linearity error.....	0.2%
EMC immunity influence.....	< 2% of span

Input specifications

Current input: Measurement range.....	0...20 mA
Current input: Measurement range.....	4...20 mA
Input resistance, current input.....	50 Ω + PTC (54 Ω)
Voltage input: Measurement range.....	0/0.2...1 V and 0/2...10 V
Input resistance, voltage input.....	10 MΩ
Potentiometer input.....	0...10 V or ±10 V / 10 kΩ
Operation / shutdown.....	PNP / 2.2 kΩ, 12 / 24 V
I _{max.1} & I _{max.2}	PNP / 2.2 kΩ, 12 / 24 V
A / B channel.....	PNP / 2.2 kΩ, 12 / 24 V
Deadband.....	0...99.9% of input span

Output specifications

Output voltage.....	Supply voltage-0.5 V (max.)
Output power.....	36 W (max.)
Output current.....	3000 mA mean
Current peak.....	7 A
Reference voltage.....	10 VDC (A valve)
Reference voltage.....	±10 VDC (A & B valve)
Ramp up & down.....	Time 0...10.0 s
PWM frequency.....	8...400 Hz in steps of 1 Hz
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
GOST R.....	Yes



mV transmitter

2261

- Load cell amplifier
- mV to current / voltage conversion
- Front-programmable / LED display
- Relative calibration of input span
- NPN / PNP input for external taring
- Supply for standard transducers



Advanced features

- A multifunction user interface consisting of three pushbuttons and a 3-digit LED display for programming.

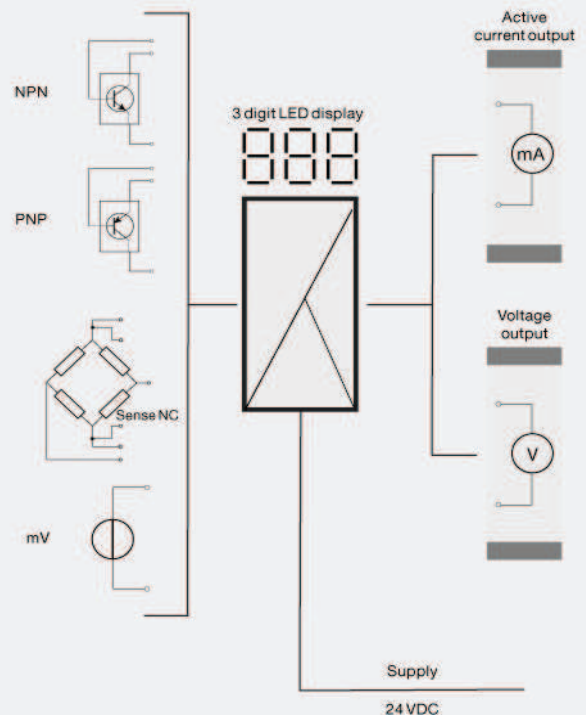
Application

- The 2261 converts bipolar mV signals from transducers supplied directly by the device to standard current / voltage signals.
- The 2261 is suitable for load cell application as well as other applications such as tank filling and draining, weighing with a taring function, measurement of cable tensile force, level control, signal conversion / amplification etc.

Technical characteristics

- Front error LED.
- The analog input can be programmed for voltage in the range -40...100 mVDC.
- The digital signal can be selected as either NPN or PNP.
- Taring can either be by way of the digital input or from the front interface.
- The analog output can be programmed to current in the range 0...20 mA or voltage in the range 0...10 VDC.
- Short circuit protected transducer supply which can be programmed to 5...13 VDC from the front.
- Sense input (with transducer supply used) for compensation for cable resistance to the transducer.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type
2261

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	130 g

Common specifications

Supply voltage.....	19.2...28.8 VDC
Max. power consumption.....	7.2 W
Internal consumption.....	2.2 W
Signal / noise ratio.....	Min. 60 dB
Response time (programmable).....	0.06...999 s
Updating time.....	20 ms
Signal dynamics, input.....	17 bit
Signal dynamics, output.....	16 bit
Effect of supply voltage change.....	< ±0.002% of span / %V
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
Auxiliary voltage: Transducer supply.....	5...13 VDC
Load (max.).....	230 mA
EMC immunity influence.....	< ±0.5% of span

Input specifications

Max. offset.....	70% of selec. max. value
Voltage input: Measurement range.....	-40...100 mV
Min. measurement range (span), voltage input.....	10 mV
Input resistance, voltage input.....	> 10 MΩ
Overrange.....	0...999% of selected measurement range
NPN, digital input.....	Pull up 24 VDC / 6.9 mA
PNP, digital input.....	Pull down 0 VDC / 6.9 mA
Trig level low, NPN/PNP.....	< 6 VDC
Trig level high, NPN/PNP.....	> 10.5 VDC
Pulse length.....	> 30 ms

Output specifications

Max. offset.....	50% of selected max. value
Current output: Signal range.....	0...20 mA
Min. signal range.....	5 mA
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Current limit.....	< 23 mA
Voltage output through internal shunt.....	See manual for details
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
GOST R.....	Yes



Ramp generator

2281



- Multiple functions
- Programmable from front
- 3-digit LED display
- NPN and PNP inputs
- Internal ramp time or external pulses
- Reset or preset function



Advanced features

- The user interface consists of a 3-digit display and 3 function keys in the front to change a function, ramp time or an output signal range.

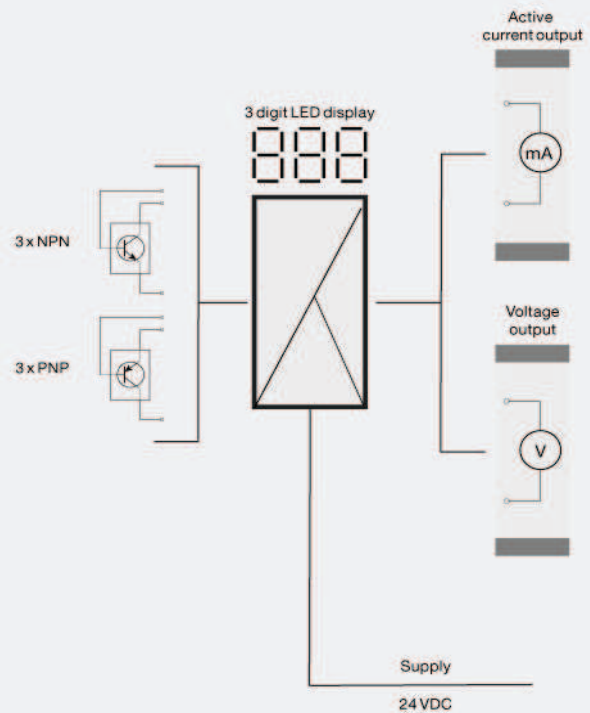
Application

- To convert digital signals to a time-controlled analog signal with either internally entered up/down time or with external pulses for up/down function.
- 2-phase encoder.
- Ramp generator with internal time measurement.
- Ramp generator with external pulses.

Technical characteristics

- LED's for up, reset and down.
- 6 digital inputs make it possible to choose reset and up/down functions as either NPN or PNP input (+24 VDC).
- Via an analog switch the up and down inputs can be switched between input filters for a pulse length > 10 ms or > 0.5 ms. The 10 ms filter is used for elimination of contact-bounce.
- Analog standard current output of 0/4...20 mA or jumper selectable 0/2...10 mA, and standard voltages of 0/0.2...1 VDC, 0/2...10 VDC or special.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type
2281

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	120 g

Common specifications

Supply voltage.....	19.2...28.8 VDC
Max. power consumption.....	2.7 W
Internal consumption.....	2.4 W
Signal / noise ratio.....	Min. 60 dB
Response time.....	< 60 ms
Signal dynamics, output.....	16 bit
Up ramp time.....	0.1...999999 s
Down ramp time.....	0.1...999999 s
External pulses.....	1...15,615,744
Effect of supply voltage change.....	< 0.005% of span / VDC
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
EMC immunity influence.....	< ±0.5%

Input specifications

Digital input.....	Up / down inputs
NPN, digital input.....	Pull up 24 VDC / 6.9 mA
PNP, digital input.....	Pull down 0 VDC / 6.9 mA
Pulse length.....	>10 ms / > 0.5 ms (programmable)
Input frequency.....	50 Hz / 1 kHz (max.)
Digital input.....	Reset inputs
Pulse length.....	> 30 ms
Input frequency.....	16 Hz

Output specifications

Max. offset.....	50% of selected max. value
Current output: Signal range.....	0...20 mA
Min. signal range.....	5 mA
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Current limit.....	20.5 mA
Voltage output through internal shunt.....	See manual for details
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
GOST R.....	Yes



Signal controller



2286

- Multiple functions
- Programmable from front
- 3-digit LED display
- Analog or Pt100 input
- Relay outputs
- Max. 50% offset



Advanced features

- Programmed via the user interface which consists of a 3-digit display and 3 function keys in the front panel.

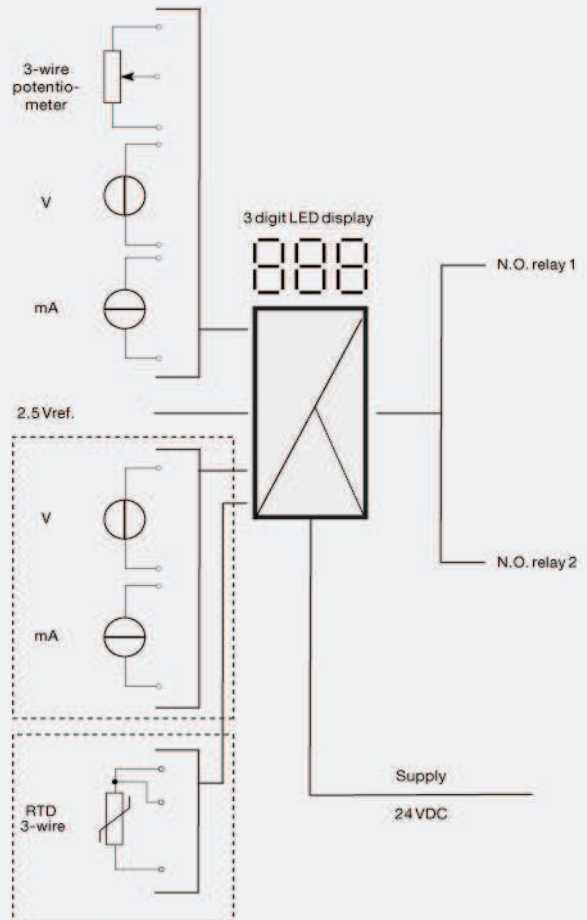
Application

- PID on/off controller, PI step controller or 3-band controller with analog or Pt100 input.
- As trip amplifier with setpoint adjustment through external current / voltage signal with neutral zone surrounding the setpoint.

Technical characteristics

- The A and B channels can be freely programmed via the front keys and JP1 and JP2 to current in the range 0...20 mA or voltage in the range 0...10 VDC.
- Linearized Pt100 temperature input in the range with 3-wire connection.
- PID on/off controller with accurate setting of the regulation parameters XP (proportional band), TI (integrating time) and TD (differentiating time).
- Functions include PI step and band controller, dI/dt function and comparator or trip amplifier with an external setpoint.
- 2 relay outputs with a make contact connected to a common point.
- Relay outputs can be installed in PELV/SELV circuits.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying.

Connections



Order:

Type	Input
2286	Voltage / current : A
	Temperature : B

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	140 g

Common specifications

Supply voltage.....	19.2...28.8 VDC
Max. power consumption.....	3 W
Internal consumption.....	2.5 W
Isolation voltage, test / working.....	3.75 kVAC / 250 VAC
Signal / noise ratio.....	Min. 60 dB
Response time.....	< 60 ms
Signal dynamics, input.....	20 bit
Effect of supply voltage change.....	< ±0.002% of span / %V
Proportional band (XP).....	0.01...999%
Gain, 1/XP =.....	0.1...10000
Integrating time (TI).....	0...999 s
Differentiating time (TD).....	0...999 s
Neutral zone (nEU).....	0...99.9 %
Pulse time (TP).....	0.01...400 s
Min. pulse time (TP).....	0.01...10 s
Auxiliary voltages: Reference voltage.....	2.5 VDC ±0.5% / 15 mA
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
EMC immunity influence.....	< ±0.5%

Input specifications

Max. offset.....	50% of selected max. value
Current input: Measurement range.....	0...20 mA
Min. measurement range (span), current input.....	4 mA
Input resistance, current input.....	50 Ω
Voltage input: Measurement range.....	0...10 VDC
Min. measurement range (span), voltage input.....	200 mV
Input resistance, voltage input.....	Nom. 10 MΩ
RTD input.....	Pt100 (2286B)
Cable resistance per wire (max.), RTD.....	25 Ω
Sensor current, RTD.....	Nom. 1.25 mA

Output specifications

Relay output: Relay functions.....	Setpoint
Max. voltage.....	250 VRMS
Max. current.....	2 AAC
Max. AC power.....	500 VA
Max. load at 24 VDC.....	1 A
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
PELV/SELV.....	IEC 364-4-41 and EN 60742
GOST R.....	Yes

Signal calculator

2289



- Two analog inputs
- Multiple functions
- Front-programmable
- 3-digit LED display
- Version with a Pt100 input
- Analog output



Advanced features

- Programmed via the user interface which consists of a 3-digit display and 3 function keys in the front panel.

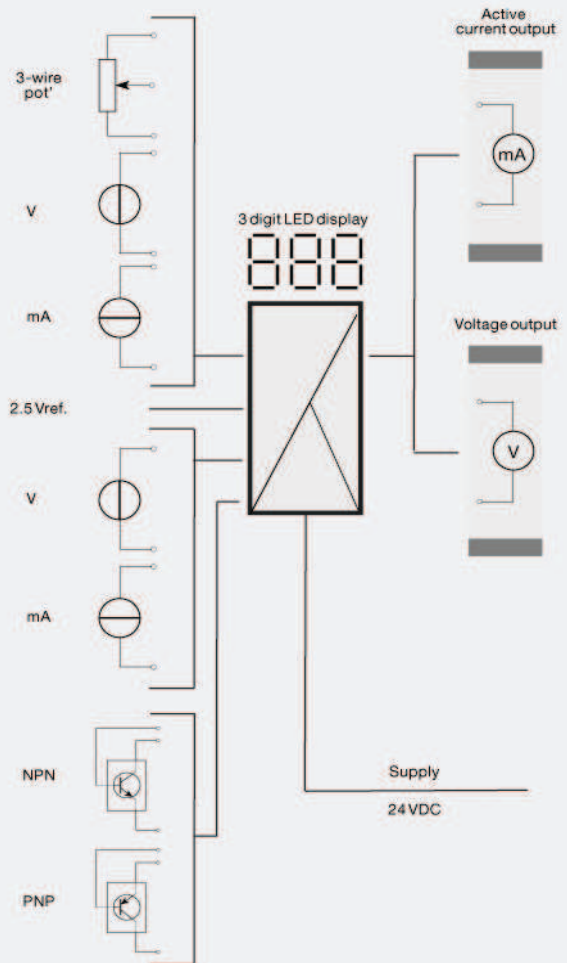
Application

- Operates as a PID controller with an analog or a Pt100 input.
- Functions include a manual / automatic controller, an analog calculator with a scale function on both inputs, a samplehold transmitter, a peak-hold transmitter, a delay transmitter, a signal limiter, averaging of noisy signals, monitoring of a signal's slope, or an analog multiplexer.

Technical characteristics

- The A and B inputs can be programmed to receive current signals in the range 0...20 mA (eg. 4...20 mA), or voltage signals in the range 0...10 VDC.
- Input A is a linearized Pt100 with a 3-wire connection. input B is an analog current / voltage input.
- Digital inputs are jumper selectable NPN or PNP.
- Analog standard current / voltage output of 0/4...20 mA / 0/2...10 VDC.
- Both the input signals and the output signal can be inverted.
- Mounting for a standard 11-pole socket which can be adapted for DIN rail or plate use with PR's 7023 adaptor and 7024 mounting keying. In environments with strong vibrations the PR 7002 can be mounted as an additional safety catch for system 2200 devices on the relay socket.

Connections



Order:

Type	Input
2289	Current / voltage : A
	Pt100 & current / voltage : B

Environmental Conditions

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP50

Mechanical specifications

Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm (D is without pins)
Weight approx.....	130 g

Common specifications

Supply voltage.....	19.2...28.8 VDC
Max. power consumption.....	2.7 W
Internal consumption.....	2.4 W
Signal / noise ratio.....	Min. 60 dB
Response time.....	< 60 ms
Updating time.....	20 ms
Signal dynamics, input.....	20 bit
Signal dynamics, output.....	16 bit
Proportional band (XP).....	0.01...999%
Gain, 1/XP =.....	0.1...10000
Integrating time (TI).....	0...999 s
Differentiating time (TD).....	0...999 s
Effect of supply voltage change.....	< ±0.002% of span / %V
Auxiliary voltages: Reference voltage.....	2.5 VDC ±0.5% / 15 mA
Temperature coefficient.....	< ±0.01% of span / °C
Linearity error.....	< 0.1% of span
EMC immunity influence.....	< ±0.5%

Input specifications

Max. offset.....	50% of selected max. value
Current input: Measurement range.....	0...20 mA
Min. measurement range (span), current input.....	4 mA
Input resistance, current input.....	Nom. 50 Ω
Voltage input: Measurement range.....	0...10 VDC
Min. measurement range (span), voltage input.....	200 mV
Input resistance, voltage input.....	Nom. 10 MΩ
NPN, digital input.....	Pull up 24 VDC / 6.9 mA
PNP, digital input.....	Pull down 0 VDC / 6.9 mA
Pulse length.....	> 50 ms
RTD input.....	Pt100 (2289B)
Cable resistance per wire (max.), RTD.....	25 Ω
Sensor current, RTD.....	Nom. 1.25 mA

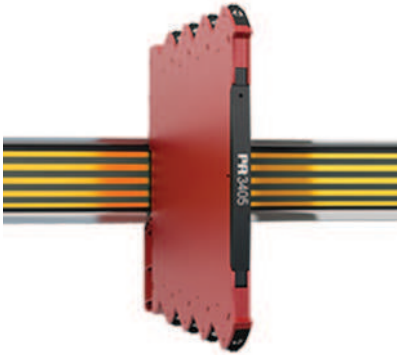
Output specifications

Max. offset.....	50% of selected max. value
Current output: Signal range.....	0...20 mA
Min. signal range.....	5 mA
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Current limit.....	20.5 mA
Voltage output through internal shunt.....	See manual for details
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
GOST R.....	Yes





Power connector unit

3405

- Slimline housing of 6 mm
- Supplies DIN rail from supply terminals
- Can pass up to 2.5 A
- Up to 100 units can be powered
- User-friendly label design



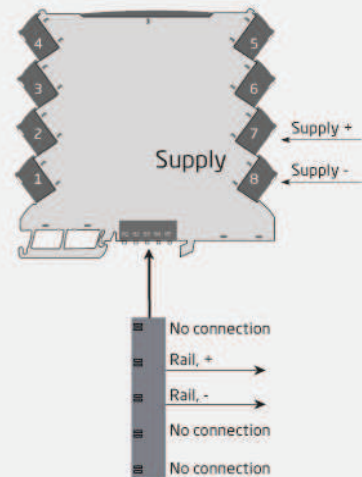
Applications

- Power can be connected to the DIN rail from supply terminals.
- Alternatively a powered DIN rail can supply power to the terminals
- Installation in ATEX Ex zone 2 / IECEx zone 2 / FM division 2.
- Suitable for environments with high vibration stress, e.g. ships.

Technical characteristics:

- 3405 can pass up to 2.5 A
- With 3405, up to 100 units can be powered.

Connections



Order:

Type
3405

Environmental Conditions

Specifications range..... -25°C to +70°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 113 x 6.1 x 115 mm
Weight approx..... 65 g
DIN rail type..... DIN EN 60715/35 mm
Wire size..... 0.13 x 2.5 mm² stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage..... 16.8...31.2 VDC
Internal consumption..... 0.25 W (max.)
Required external fuse..... 2.5 A

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
ATEX..... KEMA 10ATEX0147 X
IECEX..... KEM 10.0068X
FM..... 3041043-C
UL..... UL 61010-1
DNV Marine..... Stand. f. Certific. No. 2.4
GL..... V1-7-2





2-wire level transmitter

5343A

- Potentiometer or Ohmic input
- Programmable sensor error value
- High measurement accuracy
- Unique process calibration function
- Programmable via standard PC



Application

- Conversion of resistance variation to standard analog current signals, e.g. from Ohmic level sensors or valve positions.
- User-defined linearization function can be activated.

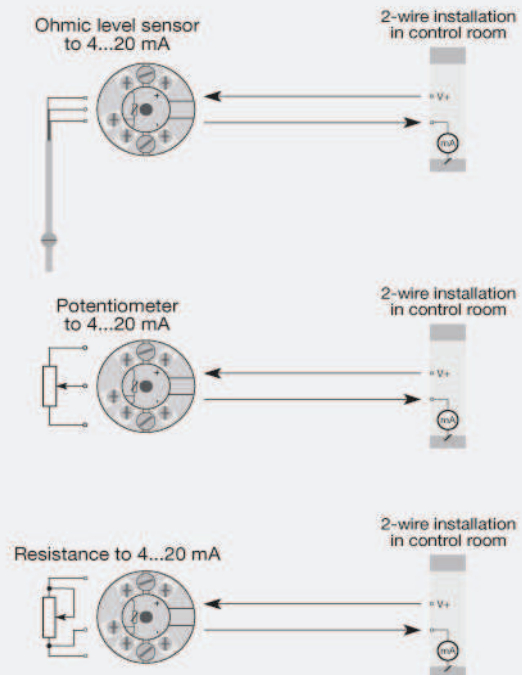
Technical characteristics

- Within a few seconds the user can program PR5343A to measure within the defined Ohmic values.
- Continuous check of vital stored data for safety reasons.
- The transmitter is protected against polarity reversal.
- PR5343A is configured to the current task by way of a PC, the PRreset software and the communications interface Loop Link.
- The PRlevel configuration tool included in the PRreset software has been developed specifically for the configuration of level applications. Among other things, it contains a function for "on line" measurement of input span as well as a linearization function for volume linear output from horizontal cylindrical tanks.

Mounting / installation

- For DIN form B sensor head or DIN rail mounting with a special fitting.

Connections



Order:

Type
5343A

Environmental Conditions

Specifications range.....	-40°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree (encl./terminal).....	IP68 / IP00

Mechanical specifications

Dimensions.....	Ø 44 x 20.2 mm
Weight approx.....	50 g
Wire size.....	1 x 1.5 mm ² stranded wire
Screw terminal torque.....	0.4 Nm
Vibration.....	IEC 60068-2-6 : 2007
Vibration: 2...25 Hz.....	±1.6 mm
Vibration: 25...100 Hz.....	±4 g

Common specifications

Supply voltage.....	8.0...35 VDC
Internal consumption.....	25 mW...0.8 W
Voltage drop.....	8.0 VDC
Warm-up time.....	5 min.
Communications interface.....	Loop Link
Signal / noise ratio.....	Min. 60 dB
Accuracy.....	Better than 0.1% of selected range
Response time (programmable).....	0.33...60 s
Signal dynamics, input.....	19 bit
Signal dynamics, output.....	16 bit
Effect of supply voltage change.....	< 0.005% of span / VDC
EMC immunity influence.....	< ±0.5% of span

Input specifications

Max. offset.....	50% of selected max. value
Linear resistance input: Measurement range / min. range (span).....	0...100 kΩ / 1 kΩ
Min. measurement range.....	1 kΩ
Cable resistance per wire (max.), lin. R.....	100 Ω
Sensor current, lin. R.....	> 25 µA, < 120 µA
Effect of sensor cable resistance (3-wire), lin R.....	< 0.002 Ω / Ω
Sensor error detection, lin. R.....	Yes

Output specifications

Current output: Signal range.....	4...20 mA
Min. signal range.....	16 mA
Updating time.....	135 ms
Load resistance, current output.....	≤ (Vsupply - 8) / 0.023 [Ω]
Load stability, current output.....	≤0.01% of span / 100 Ω
Sensor error indication, current output.....	Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.....	23 mA / 3.5 mA
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
ATEX.....	KEMA 10ATEX0004 X
IECEX.....	DEK 13.0036X
INMETRO.....	DEKRA 13.0002 X
GOST R.....	Yes
DNV Marine.....	Stand. f. Certific. No. 2.4



2-wire level transmitter

5343B

- Potentiometer or Ohmic input
- Programmable sensor error value
- High measurement accuracy
- Unique process calibration function
- Programmable via standard PC



Application

- Conversion of resistance variation to standard analog current signals, e.g. from Ohmic level sensors or valve positions.
- User-defined linearization function can be activated.

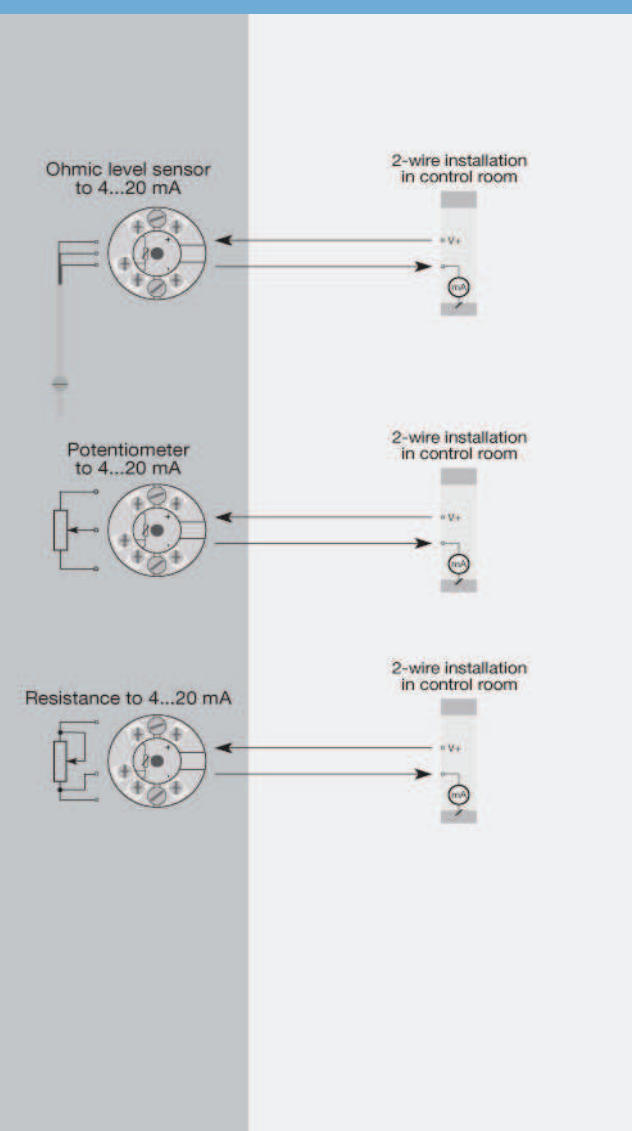
Technical characteristics

- Within a few seconds the user can program PR5343B to measure within the defined Ohmic values.
- Continuous check of vital stored data for safety reasons.
- The transmitter is protected against polarity reversal.
- PR5343B is configured to the current task by way of a PC, the PRreset software and the communications interface Loop Link.
- The PRlevel configuration tool included in the PRreset software has been developed specifically for the configuration of level applications. Among other things, it contains a function for "on line" measurement of input span as well as a linearization function for volume linear output from horizontal cylindrical tanks.

Mounting / installation

- For DIN form B sensor head or DIN rail mounting with a special fitting.
- NB: As I.S. / Ex barrier for 5343B we recommend 5104B, 5114B or 5116B.

Connections



Order:

Type
5343B

Environmental Conditions

Specifications range.....	-40°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree (encl./terminal).....	IP68 / IP00

Mechanical specifications

Dimensions.....	Ø 44 x 20.2 mm
Weight approx.....	50 g
Wire size.....	1 x 1.5 mm ² stranded wire
Screw terminal torque.....	0.4 Nm
Vibration.....	IEC 60068-2-6 : 2007
Vibration: 2...25 Hz.....	±1.6 mm
Vibration: 25...100 Hz.....	±4 g

Common specifications

Supply voltage.....	8.0...30 VDC
Internal consumption.....	25 mW...0.8 W
Voltage drop.....	8.0 VDC
Warm-up time.....	5 min.
Communications interface.....	Loop Link
Signal / noise ratio.....	Min. 60 dB
Response time (programmable).....	0.33...60 s
Accuracy.....	Better than 0.1% of selected range
Signal dynamics, input.....	19 bit
Signal dynamics, output.....	16 bit
Effect of supply voltage change.....	< 0.005% of span / VDC
EMC immunity influence.....	< ±0.5% of span

Input specifications

Max. offset.....	50% of selected max. value
Linear resistance input: Measurement range / min. range (span).....	0...100 kΩ / 1 kΩ
Min. measurement range.....	1 kΩ
Cable resistance per wire (max.), lin. R.....	100 Ω
Sensor current, lin. R.....	> 25 µA, < 120 µA
Effect of sensor cable resistance (3-wire), lin R.....	< 0.002 Ω / Ω
Sensor error detection, lin. R.....	Yes

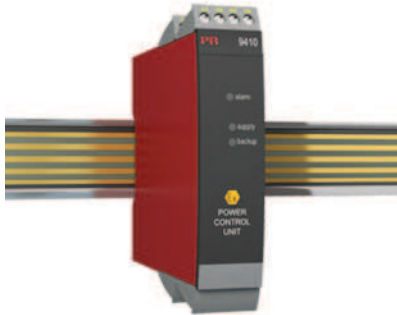
Output specifications

Current output: Signal range.....	4...20 mA
Min. signal range.....	16 mA
Updating time.....	135 ms
Load resistance, current output.....	≤ (Vsupply - 8) / 0.023 [Ω]
Load stability, current output.....	≤0.01% of span / 100 Ω
Sensor error indication, current output.....	Programmable 3.5...23 mA
NAMUR NE 43 Upscale/Downscale.....	23 mA / 3.5 mA
*of span.....	= of the presently selected range

Approvals

EMC.....	EN 61326-1
ATEX.....	KEMA 03ATEX1538
FM.....	2D5A7
IECEx.....	DEK 13.0036X
INMETRO.....	DEKRA 13.0002 X
GOST R.....	Yes
GOST Ex.....	Yes
DNV Marine.....	Stand. f. Certific. No. 2.4





Power control unit

9410

- Distributes supply voltage to the power rail
- Optional connection of backup supply
- Approved for installation in I.S. / Ex zone 2 / Div. 2
- Optional redundant supply for the power rail
- Must be installed on power rail, PR type 9400



Application and advanced features

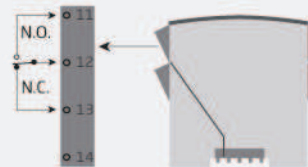
- The power control unit detects errors from any of the devices mounted on the power rail and transmits a collective alarm to the control system via the internal status relay.
- Optional connection of two power supplies - a primary supply and a backup supply.
- Redundant supply for the power rail can be obtained by mounting two 9410 devices connected to 2 separate power supplies (e.g. PR 9420).

Technical characteristics

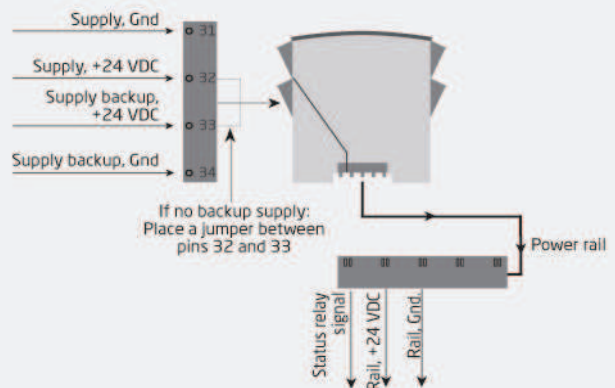
- The status relay will be energised when the following three conditions are met: 1. Supply voltage is present on pins 31 and 32. 2. Backup supply voltage is present on pins 34 and 33. (If the backup supply is not in use, a jumper must be placed between pins 32 and 33 - the jumper is delivered with the device). 3. There are no error messages from the devices connected to the power rail.
- When a collective alarm is activated via the power rail, the status relay in the 9410 will be de-energized (pins 11, 12 and 13).
- Two green front LEDs indicate connection of supply and backup.
- A red LED indicates error status.

Connections

Device status relay from power rail



Power connections



Zone 2 / FM Cl. 1, div. 2 or safe area

Order:

Type
9410

Environmental Conditions

Specifications range.....	-20°C to +60°C
Storage temperature.....	-20°C to +85°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Weight approx.....	140 g
Wire size.....	0.13...2.08 mm ² AWG 26...14 stranded wire
Screw terminal torque.....	0.5 Nm

Common specifications

Max. power consumption.....	96 W
Internal consumption.....	2 W (max.)
Efficiency.....	> 97.9%

Input specifications

Supply voltage.....	21.6...26.4 VDC (double / reinforced isolation)
Backup supply.....	21.6...26.4 VDC

Output specifications

Output voltage.....	Input voltage-0.5 VDC (@ 4 A)
Output power.....	96 W (max.)
Output current.....	4 A (max.)
Output ripple.....	Same as input ripple
Max. voltage, status relay.....	250 / 30 VDC
Max. current, status relay.....	2 AAC / 2 ADC
Max. AC power, status relay.....	500 VA / 60 W

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
ATEX.....	KEMA 07ATEX0152 X
IECEx.....	KEM 08.0025X
FM.....	3034431-C
INMETRO.....	NCC 12.1308 X
UL.....	UL 61010-1
GOST R.....	Yes
DNV Marine.....	Stand. f. Certific. No. 2.4





Power supply

9420

- Supply voltage 100...132 VAC or 187...264 VAC
- Optional connection of backup supply
- Approved for installation in I.S. / Ex zone 2 / Div. 2
- Active signal output
- Optional parallel connection



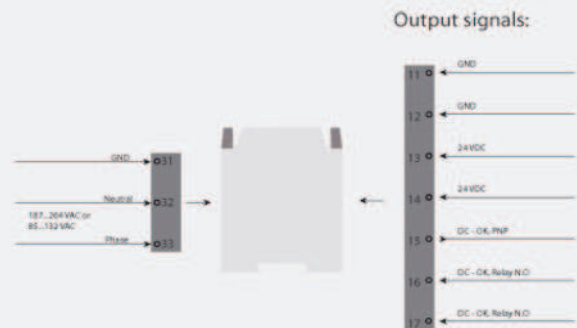
Application

- 2 DC-OK outputs for monitoring of device functions.
- Floating signal contacts and an active DC-OK signal are available.
- The DC-OK LED enables visual evaluation of the function locally in the process.

Technical characteristics

- The 100...240 VAC connection is made by using pin no. 31, 32 and 33
- The 24 VDC connection is made using the “+” and “-” connections.
- 22 VDC \pm 2 VDC is applied on “DC-OK” - pin 15, 20 mA max. This signal output is referenced to -Vout (gnd.) and signals when the output voltage drops between 18 and 22 VDC.
- Maximum 5 devices of the same type can be connected in parallel to enable increased output power.
- The DC-OK LED is a two colour LED which indicates the status of the output and enables visual evaluation of the function locally in the control cabinet.
- DC-OK LED green – normal operation. DC-OK LED red – output failure if input mains is still present.

Connections



Zone 2, FM Cl. 1, div. 2 or safe area

Order:

Type
9420

Environmental Conditions

Specifications range.....	-10°C to +60°C
Storage temperature.....	-20°C to +85°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

Mechanical specifications

Dimensions (HxWxD).....	110 x 54 x 114 mm
Weight approx.....	700 g
Weight approx.....	260 g
Wire size.....	0.5...2.50 mm ² / AWG 24...12 stranded wire
Screw terminal torque.....	0.5 Nm
Vibration.....	IEC 60068-2-6: 1 g, 10...55 Hz, 3 axis sine sweep
Vibration.....	Shock, IEC 60068-2-27: 15 g, 3 axis half sine, 11 ms

Common specifications

Max. power consumption.....	350 VA
Fuse.....	4 A H / 250 VAC
Inrush current, max. (at 25°C, <2 ms).....	25.0 AAC
Efficiency.....	Typ. 88%
Thermal overload protection.....	Automatic restart
Effect of supply voltage change.....	< 0.5% (Vin. min....Vin. max.)
Temperature coefficient.....	0.02%/°C

Input specifications

Supply voltage.....	187...264 VAC or 85...132 VAC (auto-range)
Frequency.....	50...60 Hz

Output specifications

Output voltage.....	24 VDC
Output power.....	120 W (max.)
Output current.....	5 A
Load stability (10%...max. load).....	< 0.5 %
Output ripple.....	≤ 200 mV pk-pk (Vin nom. and Iout max.)

Approvals

EMC.....	EN 61326-1
LVD.....	EN 61010-1
ATEX.....	BUREAU VERITAS 08-002X
CSA.....	1893479
UL.....	UL 508

