

## Series 1011

### Control Units:

Control Units; Supplies, Contact Protection

### TP, TD, XT, MUL, NL

Product Types



## ABOUT SERIES 1011 Control Units

Transmitters with or without HART , power supplies, digital indicators, digital loop-powered indicators, analogous loop panel meters, contact protection relays, conductive level controllers, leakage detectors and speed and frequency monitors.

### Unique Series Features

- Head-mounted 2-wire transmitters
- Intrinsically safe power supplies
- Digital indicators
- Analogue indicators
- Protection relay
- Speed monitors
- Hart-Programmable
- Profibus / Field bus
- Linearization

### Approvals:

- ✓ ATEX 94/9/EG
- ✓ Germanisch Lloyd
- ✓ Bureau Veritas
- ✓ Registro Navale Italiano
- ✓ Det Norsk Veritas
- ✓ Gost
- ✓ SIL 2

---

### TABLE OF CONTENTS

Index	
Table of contents	2
Certificates / Approvals	3
Control Units - Series 1011	4
Transmitter TP 5333	4
Transmitter TD 5335 Hart®-programmable	5
Transmitter TP 5343	6
Transmitter TP 5350 Profibus PA / Fieldbus	7
Transmitters XT-42-Si / ZMUL-2251	8
Power supplies 5104B / 5420B	9
Transmitter with relay 5111	10
Transmitter 5114	11
Transmitter MUL - D2 / MUL - D4	12
Transmitter MUL - E2 / MUL - E4	13
Digital Indicators 5514 / 5515	14
Set point relays 2231 / 2238	15
Digital Loop-powered indicator 5531	16
Digital Loop-powered indicator DAL	17
Analogous Loop Panel meter	18
Contact protection relay 5202	20
Contact protection relays NL 1755 / NL 2755	21
Contact protection relays NL 2860 / NL 2861	22
Conductive level controllers NL 1750 / NL 1751	23
Conductive level controllers NL 1750E / NL 1751E	24
Conductive level controllers NL 2750 / NL 2750E	25
Conductive level controllers NL 2850 / NL 2851	26
Leakage detector GL100 with sensor electrodes	27
Leakage detector GL110 with sensor electrodes	28
Speed and Frequency monitor 5223	29
Speed and Frequency monitor DAW-D	30
Type key	31

## Certificates / Approvals

### Certificates



#### **SCHWEIZERISCHER VEREIN FÜR QUALITÄTS- UND MANagementsYSTEME**

Certified according to ISO 9000 rev. 2000

### Approvals

The company Heinrich Kübler AG can manufacture control units to most national and industrial approvals. Therefore a wide range of instruments with approvals requirements can be produced according to customer's requests.



#### **GERMANISCHER LLOYD (Building of ships)**

Approval for the production of control units according to GL-regulations



#### **BUREAU VERITAS (Building of ships)**

Approval for the production of control units according to BV-regulations

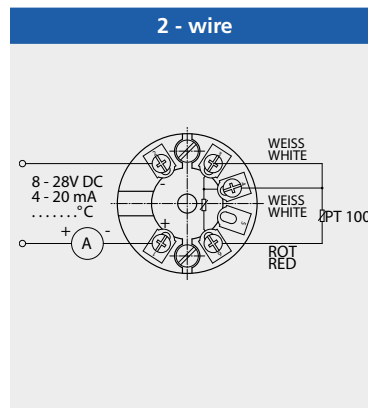
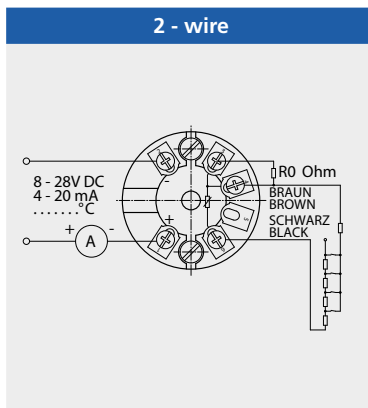


#### **REGISTRO ITALIANO NAVALE (Building of ships)**

Approval for the production of control units according to RINA-regulations

### Transmitter TP 5333

Technical data	TP 5333A	TP 5333B Ex
<b>Power Supply:</b> <b>Current output:</b> <b>Operating temperature max.:</b> <b>Error alarm:</b> <b>Input:</b>	8 ... 35 V DC 4.0 ... 20.0 mA 85 °C 3.5 ... 23.0 mA PT-100 (-200 °C ... +850 °C) Linear 0kOhm ... 10kOhm	8 ... 28 V DC 4.0 ... 20.0 mA 85 °C 3.5 ... 23.0 mA PT-100 (-200 °C ... +850 °C) Linear 0kOhm ... 10kOhm
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP68 / IP00 (housing / connection) 50 gr ø 44.0 x 20.2 mm ø 1 x 1.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP68 / IP00 (housing / connection) 50 gr ø 44.0 x 20.2 mm ø 1 x 1.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	- - - - -	U <sub>i</sub> 28 V DC I <sub>i</sub> 120 mA DC P <sub>i</sub> 0.84 W L <sub>i</sub> ≤ 10 µH C <sub>i</sub> ≤ 1nF
<b>Approval:</b>	- - -	DEMKO 99 ATEX 126964 EExia IIC T1 ... T6 FM/acc. to drawing 5300Q502
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Programming software:</b>	5905 Loop Link	5905 Loop Link
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• RTD input value</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> </ul>	<ul style="list-style-type: none"> <li>• RTD input value</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> <li>• ATEX and FM approved</li> </ul>



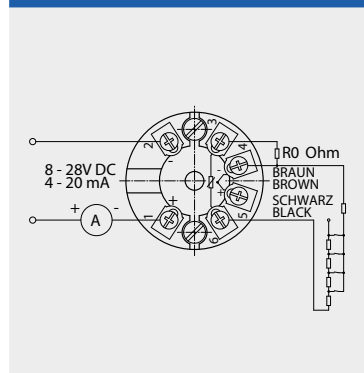
Type combination not possible

### Transmitter TD 5335 Hart®-programmable

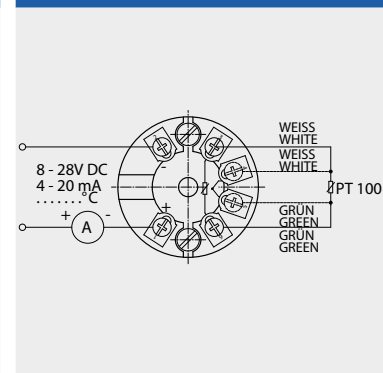
Technical data	TD 5335A	TD 5335B Ex
<b>Power Supply:</b> <b>Current output:</b> <b>Operating temperature max.:</b> <b>Error alarm:</b> <b>Input:</b>	8 ... 35 V DC 4.0 ... 20.0 mA 85 °C 3.5 ... 22.0 mA PT-100 (-200 °C ... +850 °C) Linear 0kOhm ... 7kOhm	8 ... 28 V DC 4.0 ... 20.0 mA 85 °C 3.5 ... 23.0 mA PT-100 (-200 °C ... +850 °C) Linear 0kOhm ... 7kOhm
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP68 / IP00 (housing / connection) 50 gr ø 44.0 x 20.2 mm ø 1 x 1.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP68 / IP00 (housing / connection) 50 gr ø 44.0 x 20.2 mm ø 1 x 1.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	- - - - -	U <sub>i</sub> 28 V DC I <sub>i</sub> 120 mA DC P <sub>i</sub> 0.84 W L <sub>i</sub> ≤ 10 µH C <sub>i</sub> ≤ 1nF
<b>Approval:</b>	- - - IEC 61508 SIL 2	DEMKO 99 ATEX 126965 EExia IIC T1 ... T6 FM/acc. to drawing 5300Q502 IEC 61508 SIL 2
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Programming software:</b>	5905 Loop Link & Hart®Modem	5905 Loop Link & Hart®Modem
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• RTD input value</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> <li>• Hart®- programmable</li> </ul>	<ul style="list-style-type: none"> <li>• RTD input value</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> <li>• ATEX and FM approved</li> <li>• Hart®- programmable</li> </ul>



2 - wire



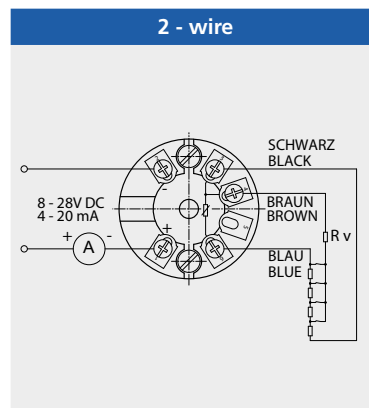
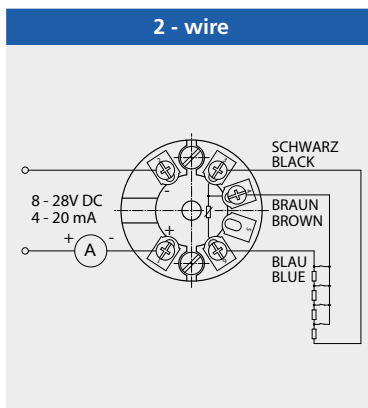
2 - wire



Type combination not possible

### Transmitter TP 5343

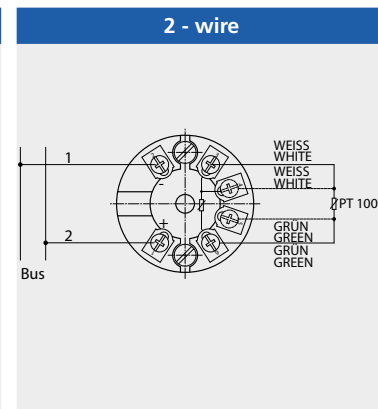
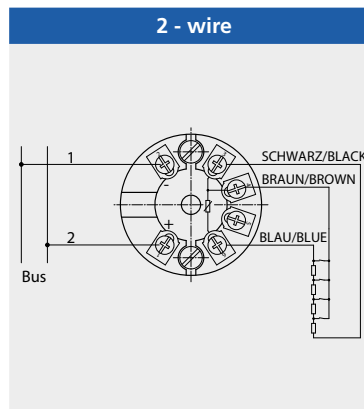
Technical data	TP 5343A	TP 5343B Ex
Power Supply:	8 ... 35 V DC	8 ... 28 V DC
Current output:	4.0 ... 20.0 mA	4.0 ... 20.0 mA
Operating temperature max.:	85 °C	85 °C
Error alarm:	3.5 ... 22.0 mA	3.5 ... 23.0 mA
Input:	3-wire potentiometer 1kOhm ... 100kOhm	3-wire potentiometer 1kOhm ... 100kOhm
Protection rating:	IP68 / IP00 (housing / connection)	IP68 / IP00 (housing / connection)
Weight:	50 gr	50 gr
Dimension:	ø 44.0 x 20.2 mm	ø 44.0 x 20.2 mm
Connection diameter max.:	ø 1 x 1.5 mm <sup>2</sup>	ø 1 x 1.5 mm <sup>2</sup>
Atmospheric humidity max.:	< 95 % RH (not condensed)	< 95 % RH (not condensed)
Intrinsically safe data:	-	Ui 28 V DC Ii 120 mA DC Pi 0.84 W Li ≤ 10 µH Ci ≤ 1nF
Approval:	-	DEMKO 99 ATEX 127088 EExia IIC T1 ... T6
EMC Directive 83/336/EC:	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
Programming software:	5999 Prelevel	5999 Prelevel
Functional description:	<ul style="list-style-type: none"> <li>• 3-wire potentiometer</li> <li>• High measuring accuracy</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> </ul>	<ul style="list-style-type: none"> <li>• 3-wire potentiometer</li> <li>• High measuring accuracy</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> <li>• ATEX approved</li> </ul>



Type combination not possible

### Transmitter TP 5350 Profibus PA / Fieldbus

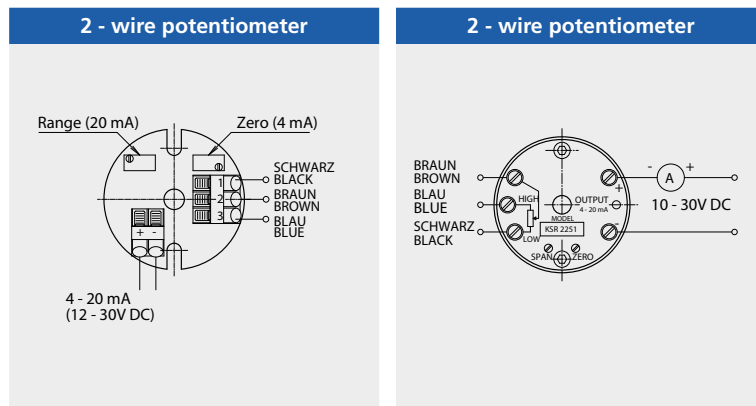
Technical data	TP 5350A	TP 5350B Ex
<b>Power Supply:</b> <b>Current output:</b>	9 ... 32 V DC Foundation Fieldbus ITK4.51 Profibus PA	9 ... 30 V DC Foundation Fieldbus ITK4.51 Profibus PA
<b>Operating temperature max.:</b> <b>Input:</b>	85 °C 3-wire potentiometer RTD input value	85 °C 3-wire potentiometer RTD input value
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP68 / IP00 (housing / connection) 50 gr ø 44.0 x 20.2 mm ø 1 x 1.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP68 / IP00 (housing / connection) 50 gr ø 44.0 x 20.2 mm ø 1 x 1.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	- - - - -	U <sub>i</sub> 28 V DC I <sub>i</sub> 120 mA DC P <sub>i</sub> 0.84 W L <sub>i</sub> ≤ 10 µH C <sub>i</sub> ≤ 1 nF
<b>Approval:</b>	- -	KEMA 02 ATEX1318 EExia IIC T1 ... T6
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020 / 50 284
<b>Programming Profibus:</b>	Siemens Simatic PDM ABB Melody / Honeywell AX Metso Damatec XD	Siemens Simatic PDM ABB Melody / Honeywell AX Metso Damatec XD
<b>Programming Fieldbus:</b>	Emerson Delta V - ABB Melody Yokogawa CS 1000 - CS 3000 Honeywell Psource	Emerson Delta V - ABB Melody Yokogawa CS 1000 - CS 3000 Honeywell Psource
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• 3-wire potentiometer</li> <li>• RTD input value</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> </ul>	<ul style="list-style-type: none"> <li>• 3-wire potentiometer</li> <li>• RTD input value</li> <li>• Programmable</li> <li>• Head mounting or DIN rail</li> <li>• ATEX approved</li> </ul>



**Type combination not possible**

### Transmitters XT-42-Si / ZMUL-2251

Technical data	XT 42 Si	ZMUL-2251 Ex
Power Supply:	12 ... 30 V DC	10 ... 30 V DC
Current output:	4.0 ... 20.0 mA	4.0 ... 20.0 mA
Operating temperature max.:	70 °C	60 °C
Error alarm:	3.7 ... 22.0 mA	3.5 ... 23.0 mA
Input:	3-wire potentiometer 1kOhm ... 100kOhm	3-wire potentiometer 1kOhm ... 100kOhm
Protection rating:	IP20 / IP00 (housing / connection)	IP20 / IP00 (housing / connection)
Weight:	40 gr	40 gr
Dimension:	ø 44.0 x 18.0 mm	ø 44.0 x 20.2 mm
Connection diameter max.:	ø 1 x 1.5 mm <sup>2</sup>	ø 1 x 1.5 mm <sup>2</sup>
Atmospheric humidity max.:	< 95 % RH (not condensed)	< 95 % RH (not condensed)
Intrinsically safe data:	1000 Ohm U <sub>b</sub> 30 V DC 700 Ohm U <sub>b</sub> 24 V DC 500 Ohm U <sub>b</sub> 12 V DC	U <sub>i</sub> 28 V DC I <sub>i</sub> 120 mA DC P <sub>i</sub> 0.84 W
Approval:	L.C.I.E. 02. ATEX 6073X ATEX EExia IIC T5 ... T6 Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano Navale (RINA)	SABS MS/N921 ATEX EExib IIC T5 ... T6
EMC Directive 83/336/EC:	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
Calibration and potentiometer:	0% and 100% alignment	0% and 100% alignment
Functional description:	<ul style="list-style-type: none"> <li>• RTD input value</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• Head mounting or DIN rail</li> <li>• ATEX approved</li> </ul>	<ul style="list-style-type: none"> <li>• RTD input value</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• Head mounting or DIN rail</li> <li>• ATEX approved</li> </ul>

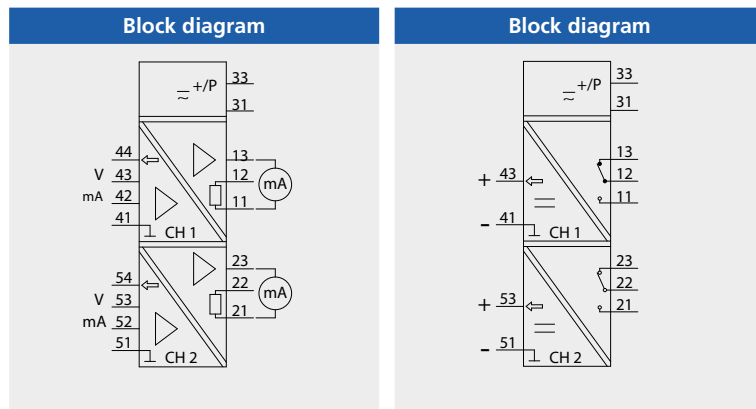


Type combination not possible



### Power supplies 5104B / 5420B

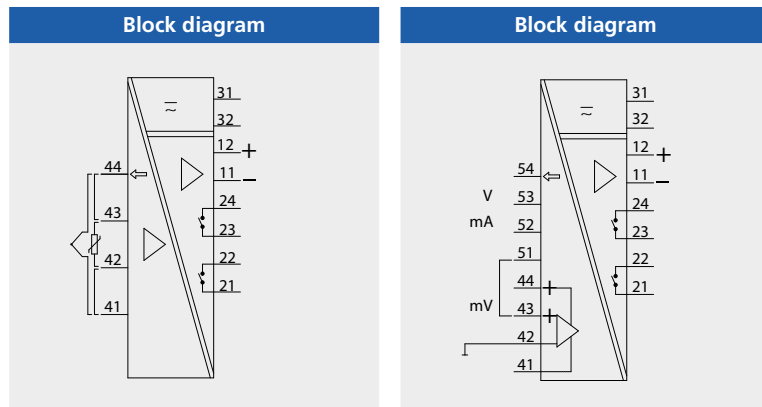
Technical data	5104B Ex	5420B Ex
<b>Power Supply:</b> <b>Current input:</b> <b>Current output:</b> <b>Operating temperature max.:</b> <b>Error alarm:</b> <b>Input:</b>	24 ... 230 V DC / AC universal 4.0 ... 20.0 mA / 2.0 ... 10.0 V DC 4.0 ... 20.0 mA / 2.0 ... 10.0 V DC 85 °C 3.5 ... 23.0 mA 2-wire	24 ... 230 V DC / AC universal 4.0 ... 20.0 mA / 2.0 ... 10.0 V DC 4.0 ... 20.0 mA / 2.0 ... 10.0 V DC 85 °C 3.5 ... 23.0 mA 2-wire
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	U <sub>m</sub> <250 V U <sub>o</sub> 28.0 V DC I <sub>o</sub> 93 mA DC P <sub>o</sub> <0.65 W L <sub>o</sub> <3 mH C <sub>o</sub> <0.08 µF	U <sub>m</sub> <250 V U <sub>o</sub> 28.0 V DC I <sub>o</sub> 93 mA DC P <sub>o</sub> <0.65 W L <sub>o</sub> <3 mH C <sub>o</sub> <0.08 µF
<b>Approval:</b>	DEMKO 99 ATEX 126013 EExia II C / II (1) G Zone 0, 1 or 2	DEMKO 99 ATEX 126256 EExia II C / II (1) G Zone 0, 1 or 2
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Measuring channels:</b>	1 or 2 measuring channels	1 or 2 meas.channels with relay
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Universal Power Supply</li> <li>• 2-wire drive</li> <li>• 1 or 2 measuring channels</li> <li>• ATEX approved</li> <li>• DIN mounting rail</li> </ul>	<ul style="list-style-type: none"> <li>• Universal Power Supply</li> <li>• 2-wire drive</li> <li>• 1 or 2 measuring channels</li> <li>• ATEX approved</li> <li>• DIN mounting rail</li> <li>• Relay alarm output</li> </ul>



Type combination not possible

### Transmitter with relay 5111

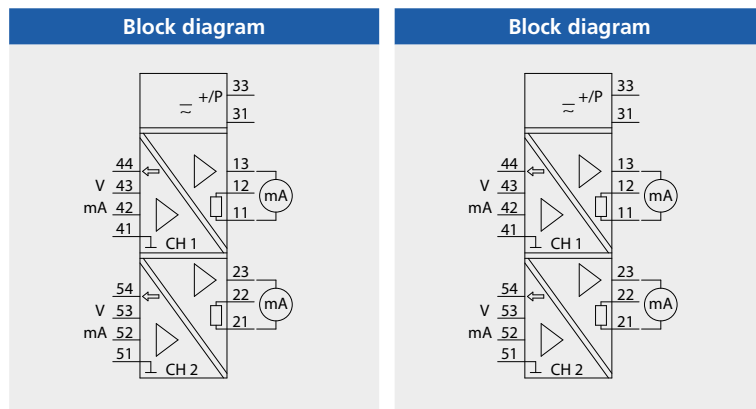
Technical data	5111A	5111B Ex
<b>Power Supply:</b> <b>Input signal:</b> <b>Output signal:</b>	24 ... 230 V AC / DC universal mA / mV / V / RTD / TC / R -20.0 ... +20.0 mA -10 ... +10 V DC	24 ... 230 V AC / DC universal mA / mV / V / RTD / TC / R -20.0 ... +20.0 mA -10 ... +10 V DC
<b>Relay:</b> <b>Operating temperature max.:</b> <b>Error alarm:</b>	2 pcs. (250 V / 500 VA / 1A) 85 °C 3.5 ... 23.0 mA	2 pcs. (250 V / 500 VA / 1A) 85 °C 3.5 ... 23.0 mA
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	-	Ui 28 V DC Ii 110 mA DC Pi 0.65 W Li ≤ 4.2 mH Ci ≤ 0.08 µF
<b>Approval:</b>	-	DEMKO 01 ATEX 130321 EExia IIC
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Programming software:</b>	5901 Opto Link Interface	5901 Opto Link Interface
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable by PC</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• Relay outputs</li> <li>• DIN mounting rail</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable by PC</li> <li>• Resistance input</li> <li>• High measuring accuracy</li> <li>• 3-wire input</li> <li>• DIN mounting rail</li> <li>• ATEX approved</li> </ul>



Type combination not possible

### Transmitter 5114

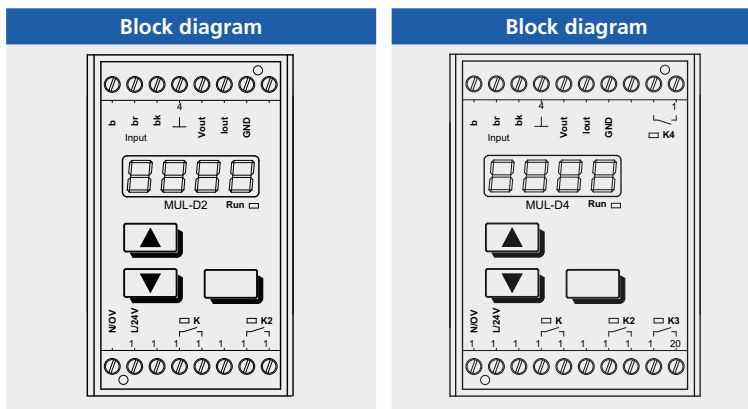
Technical data	5114A	5114B Ex
<b>Power Supply:</b> <b>Input signal:</b> <b>Output signal:</b>	24 ... 230 V AC / DC universal mA / mV / V / RTD / TC / R 0.0 ... +20.0 mA	24 ... 230 V AC / DC universal mA / mV / V / RTD / TC / R 0.0 ... +20.0 mA
<b>Operating temperature max.:</b> <b>Error alarm:</b>	0 ... +10 V DC 85 °C 3.5 ... 23.0mA	0 ... +10 V DC 85 °C 3.5 ... 23.0mA
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	- - - - - -	U <sub>m</sub> <250 V U <sub>o</sub> 28.0 V DC I <sub>o</sub> 87.0 mA DC P <sub>o</sub> <0.62 W L <sub>o</sub> <4.2 mH C <sub>o</sub> <80 nF
<b>Approval:</b>	- -	DEMKO 99 ATEX 124571 EExia IIC
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Measuring channels:</b>	1 or 2 measuring channels	1 or 2 measuring channels
<b>Programming software:</b>	5905 Loop Link	5905 Loop Link Interface
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable by PC</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 1 or 2 measuring channels</li> <li>• DIN mounting rail</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable by PC</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 1 or 2 measuring channels</li> <li>• DIN mounting rail</li> <li>• ATEX approved</li> </ul>



Type combination not possible

### Transmitters MUL - D2 / MUL - D4

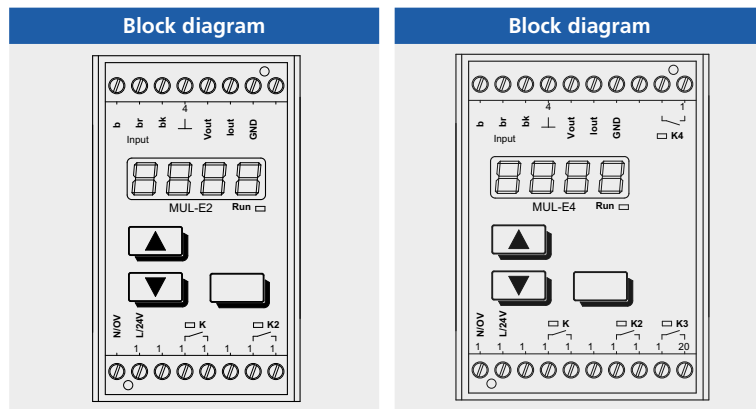
Technical data	MUL - D2	MUL - D4
<b>Power Supply:</b>	18 ... 36 V DC 24 V / 115 V / 230 V AC	18 ... 36 V DC 24 V / 115 V / 230 V AC
<b>Input signal:</b>	3-wire potentiometer 1kOhm ... 100kOhm	3-wire potentiometer 1kOhm ... 100kOhm
<b>Output signal:</b>	0.0 (4.0) ... 20.0 mA 0 (2) ... 10 V DC	0.0 (4.0) ... 20.0 mA 0 (2) ... 10 V DC
<b>Operating temperature max.:</b>	0 ... +50 °C	0 ... +50 °C
<b>Relay:</b>	2 pcs. max. 500 VA / 230 V	4 pcs. max. 500 VA / 230 V
<b>Display:</b>	4 digit 7-Segment LED display in red Size 7.6 mm Free scaling	4 digit 7-Segment LED display in red Size 7.6 mm Free scaling
<b>Power consumption:</b>	4.0 VA	4.0 VA
<b>Protection rating:</b>	IP20 / IP40	IP20 / IP40
<b>Weight:</b>	325 gr	395 gr
<b>Dimension:</b>	75.0 x 45.0 x 115.0 mm	75.0 x 55.0 x 115.0 mm
<b>Connection diameter max.:</b>	ø 1 x 2.5 mm <sup>2</sup>	ø 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)	< 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Programming software:</b>	By programming buttons	By programming buttons
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 2 relay outputs</li> <li>• DIN mounting rail</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 4 relay outputs</li> <li>• DIN mounting rail</li> </ul>



Type combination not possible

## Transmitters MUL - E2 / MUL - E4

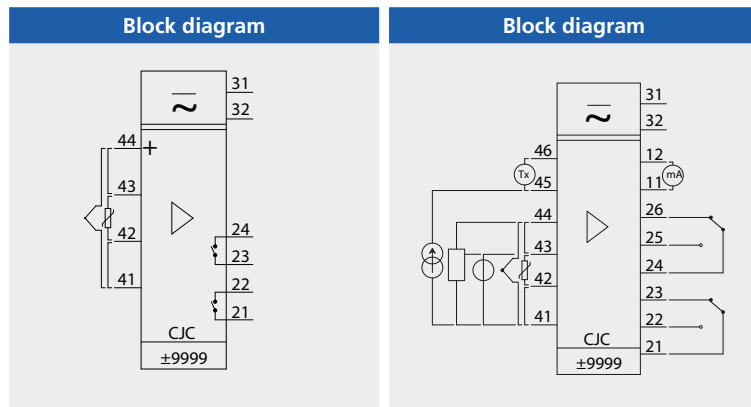
Technical data	MUL - E2	MUL - E4
<b>Power Supply:</b>	18 ... 36 V DC 24 V / 115 V / 230 V AC	18 ... 36 V DC 24 V / 115 V / 230 V AC
<b>Input signal:</b>	3-wire potentiometer 1 kOhm ... 100 kOhm	3-wire potentiometer 1 kOhm ... 100 kOhm
<b>Output signal:</b>	0.0 (4.0) ... 20.0 mA Free linearization 0 (2) ... 10 V DC Free linearization	0.0 (4.0) ... 20.0 mA Free linearization 0 (2) ... 10 V DC Free linearization
<b>Operating temperature max.:</b>	0 ... +50 °C	0 ... +50 °C
<b>Relay:</b>	2 pcs. max. 500 VA / 230 V	4 pcs. max. 500 VA / 230 V
<b>Display:</b>	4 digit 7-Segment LED display in red Size 7.6 mm Free scaling	4 digit 7-Segment LED display in red Size 7.6 mm Free scaling
<b>Power consumption:</b>	4.0 VA	4.0 VA
<b>Protection rating:</b>	IP20 / IP40	IP20 / IP40
<b>Weight:</b>	325 gr	395 gr
<b>Dimension:</b>	75.0 x 45.0 x 115.0 mm	75.0 x 55.0 x 115.0 mm
<b>Connection diameter max.:</b>	ø 1 x 2.5 mm <sup>2</sup>	ø 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)	< 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081 Immunity EN 50 082	Emission EN 50 081 Immunity EN 50 082
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Programming software:</b>	By programming buttons	By programming buttons
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 2 relay outputs</li> <li>• DIN mounting rail</li> <li>• Linearization</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 4 relay outputs</li> <li>• DIN mounting rail</li> <li>• Linearization</li> </ul>



Type combination not possible

### Digital indicators 5515 / 5714

Technical data	5515	5714
<b>Power Supply:</b> <b>Input signal:</b>	24 ... 230 V AC / DC universal mA / A / mV / V / RTD / TC / R 2-wire control units	24 ... 230 V AC / DC universal mA / A / mV / V / RTD / TC / R 2-wire control units
<b>Output signal:</b> <b>Output relays:</b>	- - -	0 / 4 m 20 mA 2 relays max. 240 V AC / 2 A / 500 VA max. 24 V DC / max. 1 A
<b>Operating temperature max.:</b> <b>Display:</b>	85 °C 4 digit LED display in red Digit height 14.2 mm Free scaling	85 °C 4 digit LED display in red Digit height 13.8 mm Free scaling
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Mounting dimensioning:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP65 330 gr 48.0 x 96.0 x 120.0 mm 44.5 x 91.5 x 120.0 mm ø 1 x 2.5 mm <sup>2</sup> < 90 % RH (not condensed)	IP65 210 gr 48.0 x 96.0 x 120.0 mm 44.5 x 91.5 x 120.0 mm ø 1 x 2.5 mm <sup>2</sup> < 90 % RH (not condensed)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 61 326 EN 61 010-1 Immunity EN 61 326 EN 61 010-1
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Programming software:</b>	By programming buttons	By programming buttons
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable by buttons</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 1 measuring channel</li> <li>• Front mounting</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable by buttons</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 1 measuring channel</li> <li>• Front mounting</li> <li>• analog output</li> </ul>



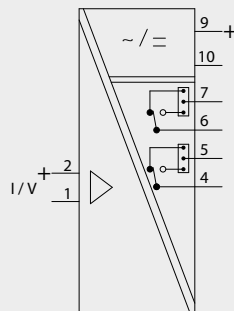
Type combination not possible

## Set point relay 2231 / 2238

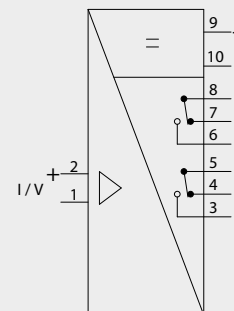
Technical data	2231	2238
<b>Power Supply:</b>	24 ... 230 V AC 24 ... 230 V AC 24 V DC	24 V DC
<b>Input signal:</b>	0.0 ... 20 mA 0.0 ... 1 A 0 ... 250 V DC 0 ... 250 V AC	0.0 ... 20 mA 0.0 ... 1 A 0 ... 250 V DC 0 ... 250 V AC
<b>Output signal:</b>	2 relays Change over Potential free max. 240 V AC / 2 A / 500 VA max. 24 V DC / 1 A	2 relays Change over Potential free max. 240 V AC / 2 A / 500 VA max. 24 V DC / 1 A
<b>Operating temperature max.:</b>	85 °C	85 °C
<b>Display:</b>	3 digit LED display in red Digit height 14.2 mm Free scaling	- - -
<b>Protection rating:</b>	IP50	IP50
<b>Weight:</b>	175 gr	175 gr
<b>Dimension:</b>	84.5 x 35.5 x 80.5 mm	84.5 x 35.5 x 80.5 mm
<b>Connection diameter max.:</b>	∅ 1 x 2.5 mm <sup>2</sup>	∅ 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)	< 95 % RH (not condensed)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Set point adjustment:</b>	By programming buttons	By turning knob
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	11-pole mounting socket needed (must be ordered separately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable by buttons</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• 1 measuring channel</li> <li>• DIN mounting rail</li> <li>• 2 set points</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable by turning knob</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• 1 measuring channel</li> <li>• DIN mounting rail</li> <li>• 2 set points</li> </ul>



Block diagram



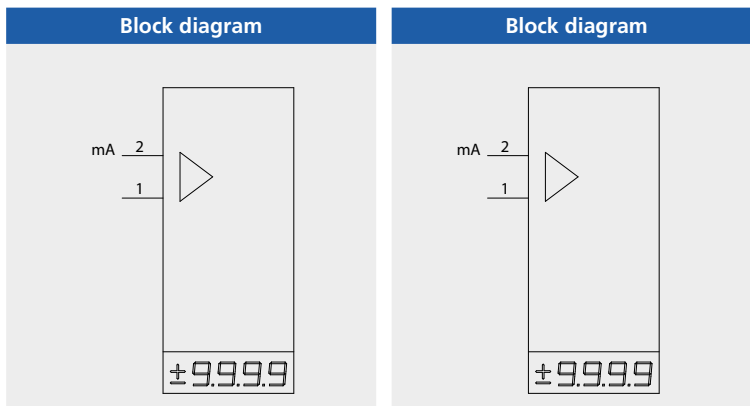
Block diagram



Type combination not possible

## Digital loop-powered indicator 5531

Technical data	5531A	5531B Ex
<b>Power Supply:</b>	Current signal scaled 4-20 mA (no auxiliary power necessary)	Current signal scaled 4-20 mA (no auxiliary power necessary)
<b>Current input:</b>	3.6 ... 23 mA	3.6 ... 23 mA
<b>Backlight:</b>	Voltage drop by: 0 % < 1.5 V DC 50 % < 6.5 V DC 100 % < 10.5 V DC	Voltage drop by: 0 % < 1.5 V DC 50 % < 6.5 V DC 100 % < 10.5 V DC
<b>Operating temperature max.:</b>	85 °C	85 °C
<b>Display:</b>	4 digit LCD Display Digit height 16.0 mm Free scaling Backlight in green	4 digit LCD Display Digit height 16.0 mm Free scaling Backlight in green
<b>Protection rating:</b>	IP65	IP65
<b>Weight:</b>	150 gr	150 gr
<b>Dimension:</b>	48.0 x 96.0 x 120.0 mm	48.0 x 96.0 x 120.0 mm
<b>Mounting dimensioning:</b>	44.5 x 91.5 mm	44.5 x 91.5 mm
<b>Connection diameter max.:</b>	ø 1 x 2.5 mm <sup>2</sup>	ø 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)	< 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	-	Ui 45 V DC Ii 500 mA DC Pi 0.90 W Li ≤ 0 µH Ci ≤ 0 nF
<b>Approval:</b>	-	DEMKO 02 ATEX 132122 II 2G EExia IIC T6
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020 EN 50 284
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Free scaling</li> <li>• Loop Power Supply</li> <li>• With backlight</li> <li>• 4 digit</li> </ul>	<ul style="list-style-type: none"> <li>• Free scaling</li> <li>• Loop Power Supply</li> <li>• With backlight</li> <li>• 4 digit</li> <li>• ATEX approved</li> </ul>



Type combination not possible

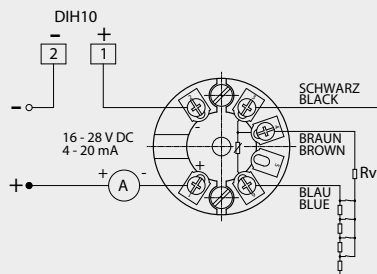


## Digital loop-powered indicator DAL

Technical data	DALA	DALB Ex
<b>Power Supply:</b>	Current signal scaled 4-20 mA (no auxiliary power necessary)	Current signal scaled 4-20 mA (no auxiliary power necessary)
<b>Current input:</b>	4.0 ... 20 mA	4.0 ... 20 mA
<b>Operating temperature max.:</b>	60 °C	60 °C
<b>Display:</b>	4 digit LED display in red Digit height 8.0 mm Free scaling Overflow = HI / Underflow = LO ... °C / ... °F or ... %	4 digit LED display in red Digit height 8.0 mm Free scaling Overflow = HI / Underflow = LO ... °C / ... °F or ... %
<b>Input resistor by 20mA:</b>	<250 Ohm	<250 Ohm
<b>Indicating interval:</b>	0.1 / 1.0 / 10.0 sec. adjustable	0.1 / 1.0 / 10.0 sec. adjustable
<b>Temperature drift:</b>	100 ppm/K	100 ppm/K
<b>Housing material:</b>	Aluminium coated	Aluminium coated
<b>Display cover:</b>	Macrolon	Macrolon
<b>Protection rating:</b>	IP65	IP65
<b>Weight:</b>	400 gr	400 gr
<b>Dimension:</b>	130 x 75 mm	130 x 75 mm
<b>Mounting:</b>	NPT ½" Muffe	NPT ½" Muffe
<b>Connection diameter max.:</b>	ø 1 x 1.5 mm <sup>2</sup>	ø 1 x 1.5 mm <sup>2</sup>
<b>Cable entry:</b>	M20 x 1.5mm / NPT ½"	M20 x 1.5mm / NPT ½"
<b>Atmospheric humidity max.:</b>	< 90 % RH (not condensed)	< 90 % RH (not condensed)
<b>Approval:</b>	-	ATEX II 2G EExia IIC T6 ATEX II 2G EExd IIC T6 (AB 2005)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Free scaling</li> <li>• Loop Power Supply</li> <li>• LED display in red</li> <li>• 4 digit</li> <li>• For mounting onto Level Sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Free scaling</li> <li>• Loop Power Supply</li> <li>• LED display in red</li> <li>• 4 digit</li> <li>• For mounting onto Level Sensor</li> <li>• ATEX approved</li> </ul>



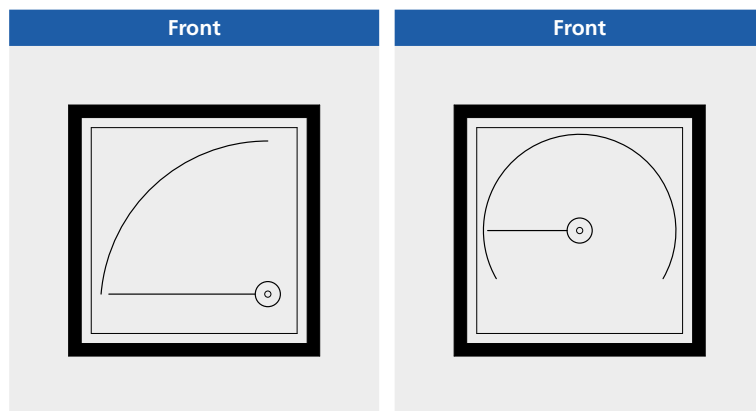
### Block diagram



Type combination not possible

### Analogous loop panel meter

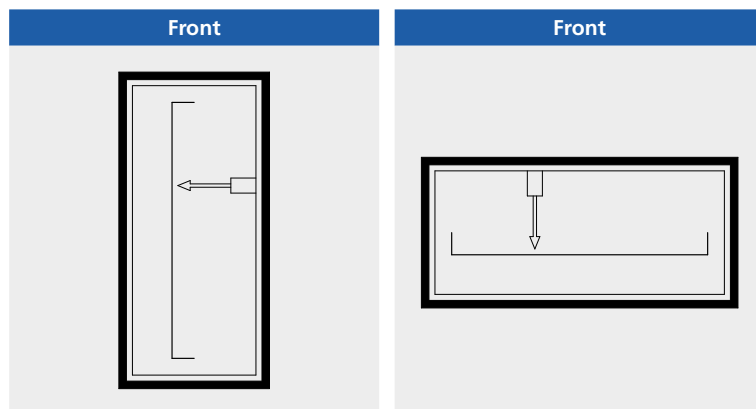
Technical data	A .. 90° Square scale	A .. - K 240° Square scale
<b>Current input:</b>	0.0 ... 100.0 $\mu$ A 0.0 ... 20.0 mA 4.0 ... 20.0 mA	0.0 ... 100.0 $\mu$ A 0.0 ... 20.0 mA 4.0 ... 20.0 mA
<b>Operating temperature max.:</b>	85 °C	85 °C
<b>Scaling:</b>	0 ... 100 % Special calibration possible	0 ... 100 % Special calibration possible
<b>Operating temperature:</b>	85 °C	85 °C
<b>Display angle:</b>	90 °	240 °
<b>Front dimensions:</b>	Type A 48 48.0 x 48.0 mm Type A 72 72.0 x 72.0 mm Type A 96 96.0 x 96.0 mm Type A144 144.0 x 144.0 mm	Type A 48-K 48.0 x 48.0 mm Type A 72-K 72.0 x 72.0 mm Type A 96-K 96.0 x 96.0 mm Type A144-K 144.0 x 144.0 mm
<b>Mounting dimensions:</b>	Type A 48 42.0 x 42.0 mm Type A 72 66.0 x 66.0 mm Type A 96 90.0 x 90.0 mm Type A144 137.0 x 137.0 mm	Type A 48-K 42.0 x 42.0 mm Type A 72-K 66.0 x 66.0 mm Type A 96-K 90.0 x 90.0 mm Type A144-K 137.0 x 137.0 mm
<b>Housing material:</b>	Aluminium	Aluminium
<b>Display cover:</b>	Macrolon or glass	Macrolon or glass
<b>Protection rating:</b>	IP52	IP52
<b>Terminal protection:</b>	IP20	IP20
<b>Connection diameter:</b>	$\varnothing$ 1 x 2.5 mm <sup>2</sup>	$\varnothing$ 1 x 2.5 mm <sup>2</sup>
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Front mounting</li> <li>• Panel Meter</li> <li>• Special calibrations</li> <li>• Norm sizes acc. to DIN</li> <li>• Display angle 90°</li> </ul>	<ul style="list-style-type: none"> <li>• Front mounting</li> <li>• Panel Meter</li> <li>• Special calibrations</li> <li>• Norm sizes acc. to DIN</li> <li>• Display angle 240°</li> </ul>



Type combination not possible

### Analogous loop panel meter

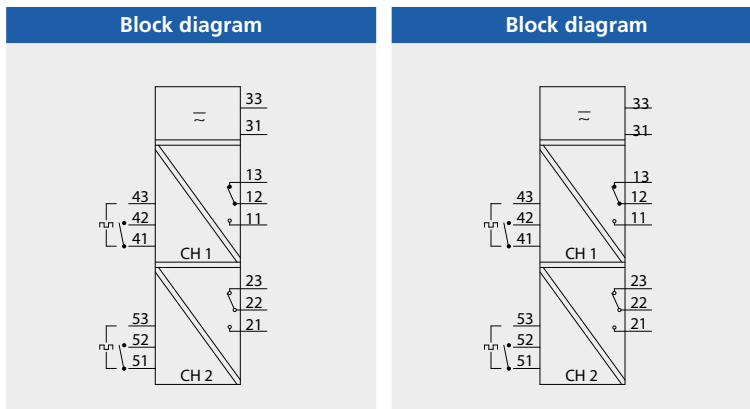
Technical data	A .. - V Vertical scale	A .. - Q Horizontal scale
<b>Current input:</b>	0.0 ... 100.0 $\mu$ A 0.0 ... 20.0 mA 4.0 ... 20.0 mA	0.0 ... 100.0 $\mu$ A 0.0 ... 20.0 mA 4.0 ... 20.0 mA
<b>Operating temperature max.:</b>	85 °C	85 °C
<b>Scaling:</b>	0 ... 100 % Special calibration possible	0 ... 100 % Special calibration possible
<b>Operating temperature:</b>	85 °C	85 °C
<b>Display angle:</b>	Vertical	Horizontal
<b>Front dimensions:</b>	Type A 96/48-V 76.0 x 48.0 mm Type A144/36-V 144.0 x 36.0 mm Type A144/72-V 144.0 x 72.0 mm Type A192/96-V 192.0 x 96.0 mm	Type A 96/48-Q 76.0 x 48.0 mm Type A144/36-Q 144.0 x 36.0 mm Type A144/72-Q 144.0 x 72.0 mm Type A192/96-Q 192.0 x 96.0 mm
<b>Mounting dimensions:</b>	Type A 96/48-V 91.5 x 44.5 mm Type A144/36-V 138.0 x 32.0 mm Type A144/72-V 137.0 x 67.5 mm Type A192/96-V 185.5 x 92.0 mm	Type A 96/48-Q 91.5 x 44.5 mm Type A144/36-Q 138.0 x 32.0 mm Type A144/72-Q 137.5 x 67.5 mm Type A192/96-Q 185.5 x 92.0 mm
<b>Housing material:</b>	Aluminium	Aluminium
<b>Display cover:</b>	Macrolon or glass	Macrolon or glass
<b>Protection rating:</b>	IP52	IP52
<b>Terminal protection:</b>	IP20	IP20
<b>Connection diameter:</b>	$\varnothing$ 1 x 2.5 mm <sup>2</sup>	$\varnothing$ 1 x 2.5 mm <sup>2</sup>
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Front mounting</li> <li>• Panel Meter</li> <li>• Special calibrations</li> <li>• Norm sizes acc. to DIN</li> <li>• Display vertical</li> </ul>	<ul style="list-style-type: none"> <li>• Front mounting</li> <li>• Panel Meter</li> <li>• Special calibrations</li> <li>• Norm sizes acc. to DIN</li> <li>• Display horizontal</li> </ul>



Type combination not possible

### Contact protection relays 5202

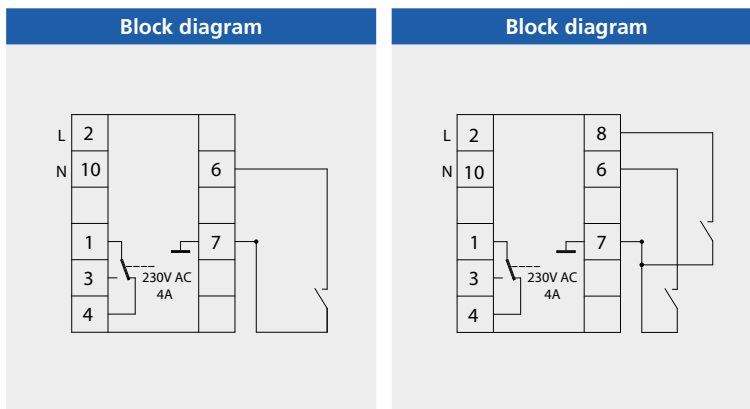
Technical data	5202A	5202B Ex
<b>Power Supply:</b> <b>Current input:</b>	24 ... 230 V AC / DC universal Potential free contact	24 ... 230 V AC / DC universal Potential free contact
<b>Current output:</b>	Change over potential free 250 V AC / 2 A AC / 100 VA by 24 V DC max. 1 A	Change over potential free 250 V AC / 2 A AC / 100 VA by 24 V DC max. 1 A
<b>Operating temperature max.:</b> <b>Error alarm:</b>	85 °C Cable error alarm by LED	85 °C Cable error alarm by LED
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 215 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 225 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Intrinsically safe data:</b>	- - - - -	U <sub>m</sub> <250 V U <sub>o</sub> 10.6 V DC I <sub>o</sub> 13.8 mA DC P <sub>o</sub> <0.038 W L <sub>o</sub> <160 mH C <sub>o</sub> <1.9 µF
<b>Approval:</b>	- -	DEMKO 99 ATEX 127186 II (1)G (EExia) II C
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Measuring channels:</b>	2 measuring channels	2 measuring channels
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Cable error alarm</li> <li>• Galvanic isolation</li> <li>• Universal Power Supply</li> <li>• 2 measuring channels</li> <li>• DIN mounting rail</li> </ul>	<ul style="list-style-type: none"> <li>• Cable error alarm</li> <li>• Galvanic isolation</li> <li>• Universal Power Supply</li> <li>• 2 measuring channels</li> <li>• DIN mounting rail</li> <li>• ATEX approved</li> </ul>



Type combination not possible

### Contact protection relay NL 1755 / NL 2755

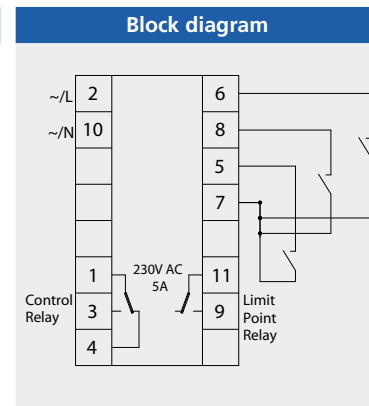
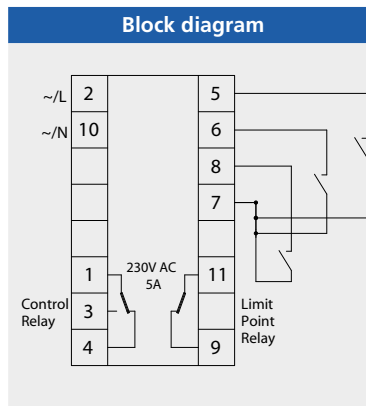
Technical data	NL 1755	NL 2755
<b>Power Supply:</b> <b>Protection isolation:</b> <b>Input:</b> <b>Output:</b>  <b>Relay output:</b> <b>Operating temperature max.:</b> <b>Responsiveness:</b> <b>Switching delay:</b> <b>LED display:</b>  <b>Function:</b>	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact Change over Potential free 250 V AC / 5 A Active by unwetted probe 70 °C 100 kOhm 2.0 sec. For power supply (green) For output signal (red) 1-point level controller e.g. alarm functions	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact Change over Potential free 250V AC / 5 A Active by unwetted probe 70 °C 100 kOhm 0.1 sec. For power supply (green) For output signal (red) 2-point level controller e.g. pump control
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 150 gr 45.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 150 gr 45.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	11-pole mounting socket needed (must be ordered separately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> </ul>



Type combination not possible

### Contact protection relay NL 2860 / NL 2861

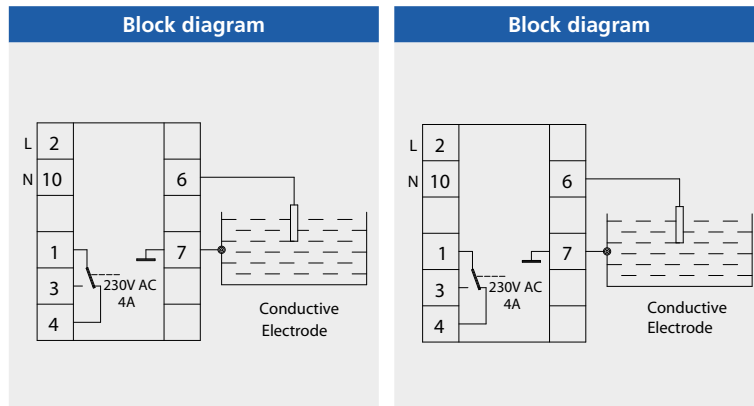
Technical data	NL 2860	NL 2861
<b>Power Supply:</b>	24 V AC / 115 V AC / 230 V AC	24 V AC / 115 V AC / 230 V AC
<b>Protection isolation:</b>	4 kV	4 kV
<b>Input:</b>	Potential free contact	Potential free contact
<b>Output:</b>	2 change overs	2 change overs
	Potential free	Potential free
	250 V AC/5 A	250 V AC/5 A
<b>Relay output:</b>	Active by wetted probe	Active by wetted probe
<b>Operating temperature max.:</b>	70 °C	70 °C
<b>Responsiveness:</b>	100 kOhm	100 kOhm
<b>Switching delay:</b>	0.1 sec.	0.1 sec.
<b>Resistance:</b>	240 kOhm	-
<b>LED display:</b>	For power supply (green) For control relay (orange) For alarm relay (red)	For power supply (green) For control relay (orange) For alarm relay (red)
<b>Function:</b>	3-point level controller Level controller with high alarm e.g. pump control with high alarm	3-point level controller Level controller with low alarm e.g. pump control with low alarm
<b>Protection rating:</b>	IP20 / IP50	IP20 / IP50
<b>Weight:</b>	250 gr	250 gr
<b>Dimension:</b>	68.0 x 36.0 x 75.0 mm	68.0 x 36.0 x 75.0 mm
<b>Connection diameter max.:</b>	ø 1 x 2.5 mm <sup>2</sup>	ø 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)	< 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	11-pole mounting socket needed (must be ordered separately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> </ul>



Type combination not possible

## Conductive level controllers NL 1750 / NL 1751

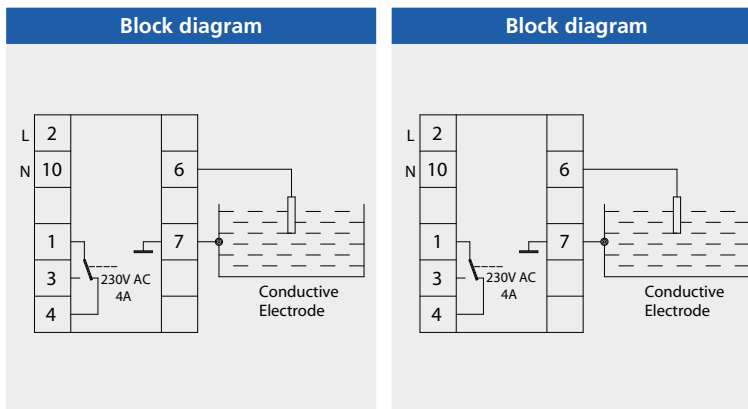
Technical data	NL 1750	NL 1751
<b>Power Supply:</b>	24 V AC / 115 V AC / 230 V AC	24 V AC / 115 V AC / 230 V AC
<b>Protection isolation:</b>	4 kV	4 kV
<b>Input:</b>	Potential free contact	Potential free contact
<b>Output:</b>	Change over / potential free 250 V AC / 5 A	Change over / potential free 250 V AC / 5 A
<b>Relay output:</b>	Active by unwetted probe	Active by wetted probe
<b>Operating temperature max.:</b>	70 °C	70 °C
<b>Responsiveness:</b>	20.0 ... 200.0 kOhm	20.0 ... 200.0 kOhm
<b>Switching delay:</b>	0.1 ... 10.0 sec.	0.1 ... 10.0 sec.
<b>LED display:</b>	For power supply (green) For output signal (red)	For power supply (green) For output signal (red)
<b>Function:</b>	1-point level controller e.g. alarm functions	1-point level controller e.g. alarm functions
<b>Protection rating:</b>	IP20 / IP50	IP20 / P50
<b>Weight:</b>	150 gr	150 gr
<b>Dimension:</b>	45.0 x 36.0 x 75.0 mm	45.0 x 36.0 x 75.0 mm
<b>Connection diameter max.:</b>	ø 1 x 2.5 mm <sup>2</sup>	ø 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)	< 95 % RH (not condensed)
<b>Approvals:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	11-pole mounting socket needed (must be ordered separately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> <li>• Simple operation</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> <li>• Simple operation</li> </ul>



Type combination not possible

## Conductive level controllers NL 1750E / NL 1751E

Technical data	NL 1750E	NL 1751E
<b>Power Supply:</b> <b>Protection isolation:</b> <b>Input:</b> <b>Output:</b>  <b>Relay output:</b> <b>Operating temperature max.:</b> <b>Responsiveness:</b> <b>Switching delay:</b> <b>LED display:</b>  <b>Function:</b>	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact Change over / potential free 250 V AC / 5 A Active by unwetted probe 70 °C 100.0 ... 1000.0 kOhm 0.1 ... 10.0 sec. For power supply (green) For output signal (red) 1-point level controller e.g. alarm functions	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact Change over / potential free 250 V AC / 5 A Active by wetted probe 70 °C 100.0 ... 1000.0 kOhm 0.1 ... 10.0 sec. For power supply (green) For output signal (red) 1-point level controller e.g. pump control
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IIP20 / IP50 150 gr 45.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 150 gr 45.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	11-pole mounting socket needed (must be ordered separately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> <li>• Simple operation</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> <li>• Simple operation</li> </ul>

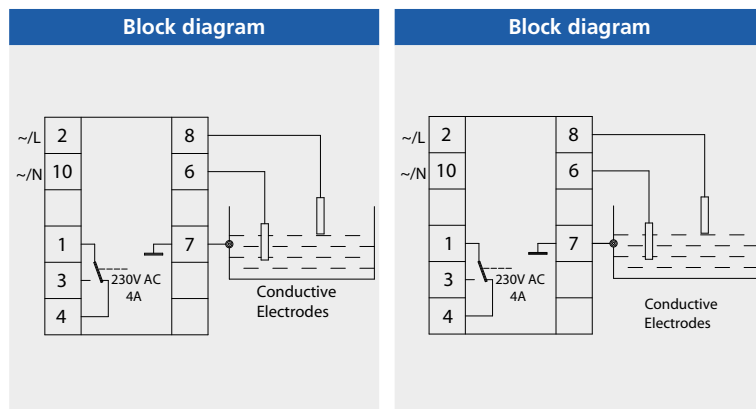


Type combination not possible



## Conductive level controllers NL 2750 / NL 2750E

Technical data	NL 2750	NL 2750E
<b>Power Supply:</b> <b>Protection isolation:</b> <b>Input:</b> <b>Output:</b>	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact Change over / potential free 250 V AC / 5 A	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact Change over / potential free 250 V AC / 5 A
<b>Relay output:</b>	Active by unwetted probe Active by wetted probe	Active by unwetted probe Active by wetted probe
<b>Operating temperature max.:</b> <b>Responsiveness:</b> <b>Switching delay:</b> <b>LED display:</b>	70 °C 100 kOhm 0.1 ... 10.0 sec. For power supply (green) For output signal (red)	70 °C 1000 kOhm 0.1 ... 10.0 sec. For power supply (green) For output signal (red)
<b>Function:</b>	2-point level controller e.g. pump control	2-point level controller e.g. pump control
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IIP20 / IP50 150 gr 45.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 150 gr 45.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	11-pole mounting socket needed (must be ordered separately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> <li>• Simple operation</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> <li>• Cost-effective</li> <li>• Simple operation</li> </ul>



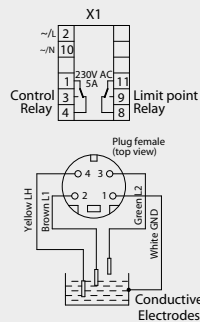
Type combination not possible

## Conductive level controllers NL 2850 / NL 2851

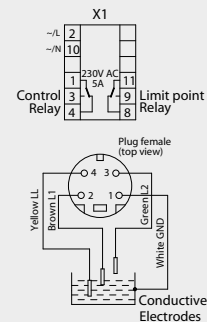
Technical data	NL 2850	NL 2851
<b>Power Supply:</b> <b>Protection isolation:</b> <b>Input:</b> <b>Output:</b>	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact 2 change overs Potential free 250 V AC / 5A	24 V AC / 115 V AC / 230 V AC 4 kV Potential free contact 2 change overs Potential free 250 V AC / 5A
<b>Relay output:</b> <b>Operating temperature max.:</b> <b>Responsiveness:</b> <b>Switching delay:</b> <b>Resistance:</b> <b>LED display:</b>	Active by wetted probe 70 °C 100 kOhm/33.0 kOhm 0.1 ... 10.0 sec. 240 kOhm	Active by wetted probe 70 °C 100 kOhm/33.0 kOhm 0.1 ... 10.0 sec. -
<b>Function:</b>	For power supply (green) For control relay (orange) For alarm relay (red) 3-point level controller Level controller with high alarm e.g. pump control with high alarm	For power supply (green) For control relay (orange) For alarm relay (red) 3-point level controller Level controller with low alarm e.g. pump control with low alarm
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 250 gr 68.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	IP20 / IP50 250 gr 68.0 x 36.0 x 75.0 mm ø 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel	1 measuring channel
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered seperately)	11-pole mounting socket needed (must be ordered seperately)
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> </ul>



**Block diagram**



**Block diagram**



**Type combination not possible**

## Leakage detector GL100 with sensor electrodes

### Technical data

**Power Supply:**  
**Protection isolation:**  
**Input:**

**Output:**

**Operating temperature max.:**  
**Responsiveness:**  
**Switching delay:**  
**Resistance:**  
**LED display:**

**Function:**

**Protection rating:**  
**Weight:**  
**Dimension:**  
**Connection diameter max.:**  
**Atmospheric humidity max.:**

**Approval:**

**EMC Directive 83/336/EC:**

**Mounting:**

**Functional description:**

### GL100

24 V AC / 115 V AC / 230 V AC  
4 kV  
Floor electrodes  
Type FE (cascade electrode)  
Type AFE (end electrode)  
1 change over (alarm)  
Potential free 250 V AC / 5A  
1 normally open (output) 250 V AC  
50 °C  
100 kOhm / 33.0 kOhm  
3.0 sec.  
240 kOhm  
For power supply (green)  
For wire break (orange)  
For alarm relay (red)  
Leakage detector for  
e.g. ingress of water etc.  
- with test function button  
- external reset key

IP20 / IP50  
250 gr  
68.0 x 36.0 x 75.0 mm  
ø 1 x 2.5 mm<sup>2</sup>  
< 95 % RH (not condensed)

Germanischer Lloyd (GL)  
Bureau Veritas (BV)  
Registro Italiano (RINA)

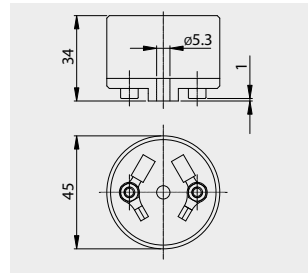
Emission EN 50 081-1  
EN 50 081-2  
Immunity EN 50 082-1  
EN 50 082-2

11-pole mounting socket needed  
(must be ordered separately)

- Simple installation
- Functional display by LED
- High switching capacity
- Cable error monitoring
- Simple operation

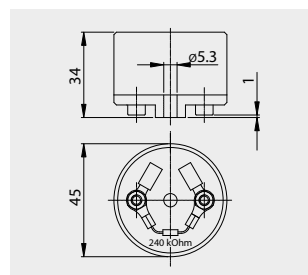
### FE (cascade electrode)

Dimensions: ø 45.0 x 34.0 mm  
Material: PVC / stainless steel  
Electrode distance: 1.0 mm  
Temperature: -40 °C ... +60 °C  
Mounting bore: ø 5.0 mm

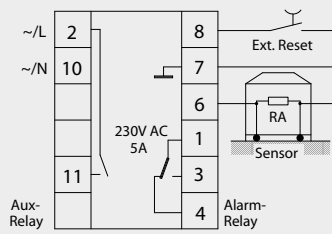


### AFE (end electrode)

Dimensions: ø 45.0 x 34.0 mm  
Material: PVC / stainless steel  
Electrode distance: 1.0 mm  
Temperature: -40 °C ... +60 °C  
Mounting bore: ø 5.0 mm  
Resistance: 240 kOhm

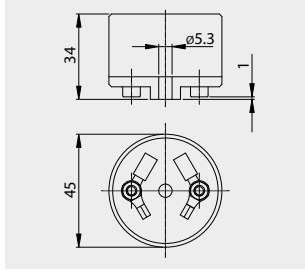
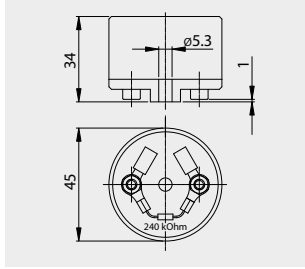


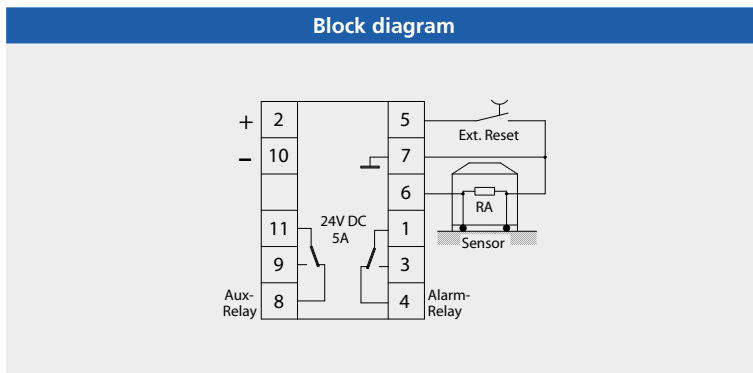
### Block diagram



Type combination not possible

## Leakage detector GL110 with sensor electrodes

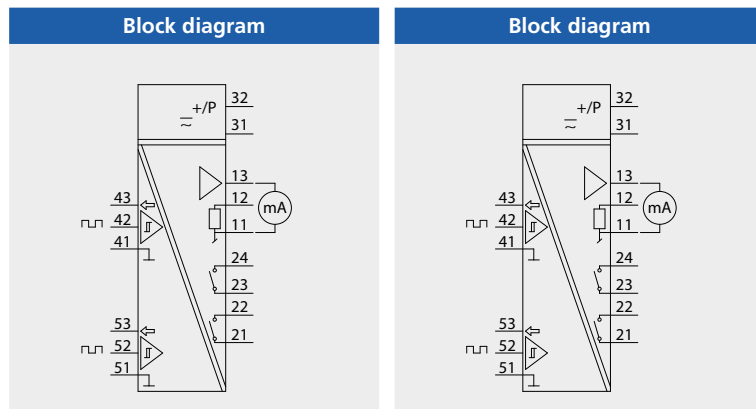
Technical data	GL110	FE (cascade electrode)
<b>Power Supply:</b> <b>Protection isolation:</b> <b>Input:</b>	24 V DC 4 kV Floor electrodes	Dimensions: $\varnothing$ 45.0 x 34.0 mm Material: PVC / stainless steel Electrode distance: 1.0 mm Temperature: -40 °C ... +60 °C Mounting bore: $\varnothing$ 5.0 mm
<b>Output:</b>	Type FE (cascade electrode) Type AFE (end electrode) 1 change over (alarm) Potential free 250 V AC / 5 A 1 change over (output) Potential free 250 V AC / 5 A 50 °C	
<b>Operating temperature max.:</b> <b>Responsiveness:</b> <b>Switching delay:</b> <b>Resistance:</b> <b>LED display:</b>	100kOhm/ 33.0kOhm 240 kOhm 3.0 sec. 240 kOhm	
<b>Function:</b>	For power supply (green) For wire break (orange) For alarm relay (red) Leakage detector for e.g. ingress of water etc. - with test function button - external reset key	
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 250 gr 68.0 x 36.0 x 75.0 mm $\varnothing$ 1 x 2.5 mm <sup>2</sup> < 95 % RH (not condensed)	<b>AFE (end electrode)</b> Dimensions: $\varnothing$ 45.0 x 34.0 mm Material: PVC / stainless steel Electrode distance: 1.0 mm Temperature: -40 °C ... +60 °C Mounting bore: $\varnothing$ 5.0 mm Resistance: 240 kOhm
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)	
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	
<b>Mounting:</b>	11-pole mounting socket needed (must be ordered separately)	
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Simple installation</li> <li>• Functional display by LED</li> <li>• High switching capacity</li> <li>• Cable error monitoring</li> </ul>	



Type combination not possible

### Speed and Frequency monitor 5223

Technical data	5223A	5223B Ex
<b>Power Supply:</b> <b>Input:</b> <b>Output:</b>	24 ... 230 V AC / DC universal 0.1 ... 20'000Hz 0.0 (4.0) ... 20.0 mA 0 (2) ... 10 V DC	24 ... 230 V AC / DC universal 0.1 ... 20'000Hz 0.0 (4.0) ... 20.0 mA 0 (2) ... 10 V DC
<b>Relay:</b> <b>Operating temperature max.:</b>	2 pcs. (250 V / 500 VA / 1 A) 85 °C	2 pcs. (250 V / 500 VA / 1 A) 85 °C
<b>Protection rating:</b> <b>Weight:</b> <b>Dimension:</b> <b>Connection diameter max.:</b> <b>Atmospheric humidity max.:</b>	IP20 / IP50 240 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 90 % RH (not condensed)	IP20 / IP50 240 gr 109.0 x 23.5 x 130 mm ø 1 x 2.5 mm <sup>2</sup> < 90 % RH (not condensed)
<b>Intrinsically safe data:</b>	- - - -	UM 250 VRMS / DC U max. 13.5 V DC I max. 35.0 mA Lext ≤30 mH Ci ≤0.08 µF
<b>Approval:</b>	- -	DEMKO 97D. 121583 EExia IIC
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2 ATEX EN 50 014 EN 50 020
<b>Programming software:</b>	5905 Loop Link	5905 Loop Link
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable by PC</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 2 relays and output</li> <li>• DIN mounting rail</li> </ul>	<ul style="list-style-type: none"> <li>• Programmable by PC</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 2 relays and output</li> <li>• DIN mounting rail</li> <li>• ATEX approved</li> </ul>



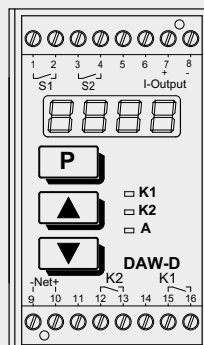
Type combination not possible

## Speed and Frequency monitor DAW-D

Technical data	DAW-D
<b>Power Supply:</b>	18 ... 36 V DC 24 V / 115 V / 230 V AC
<b>Input:</b>	Potential free contact 30 ... 9999 Hz/min.
<b>Output:</b>	0.0 (4.0) ... 20.0 mA 0 (2) ... 10 V DC
<b>Operating temperature max.:</b>	-20 °C ... +70 °C
<b>Relay:</b>	2 pcs. max. 500 VA / 30 V Normally open or normally closed
<b>Display:</b>	4 digit 7-Segment LED display red Size 7.6 mm Free scaling
<b>Power consumption:</b>	4.0 VA
<b>Protection rating:</b>	IP20 / IP40
<b>Weight:</b>	325 gr
<b>Dimension:</b>	75.0 x 45.0 x 115.0 mm
<b>Connection diameter max.:</b>	∅ 1 x 2.5 mm <sup>2</sup>
<b>Atmospheric humidity max.:</b>	< 95 % RH (not condensed)
<b>Approval:</b>	Germanischer Lloyd (GL) Bureau Veritas (BV) Registro Italiano (RINA)
<b>EMC Directive 83/336/EC:</b>	Emission EN 50 081-1 EN 50 081-2 Immunity EN 50 082-1 EN 50 082-2
<b>Measuring channels:</b>	1 measuring channel
<b>Programming software:</b>	By programming buttons
<b>Functional description:</b>	<ul style="list-style-type: none"> <li>• Programmable</li> <li>• Multifunctions</li> <li>• High measuring accuracy</li> <li>• Universal Power Supply</li> <li>• 2 relay outputs</li> <li>• Current output</li> <li>• Differential measurement possible</li> </ul>



### Block diagram




Type combination not possible

## Type key

Code	Type	Transmitters 2-wire	ATEX
ZMU		XT-42-SI	
ZMUP		956045 (no data sheet)	
ZMUL		2251	
TP		TP 5333B	
TPA		TP 5333A	
TP43		TP 5343B	
TP43A		TP 5343A	
TP50		TP 5350B	
TP50A		TP 5350A	
TD		TD 5335B	
TDA		TD5335A	
...		Various	
Code	Type	Power supplies	ATEX
5104B		5104B	
5420B		5420B	
...		Various	
Code	Type	Transmitters	ATEX
5111		5111	
5111B		5111B	
5114		5114	
5114B		5114B	
...		Various	
Code	Type	Digital - Transmitters	ATEX
MUL - D2		MUL - D2	
MUL - D4		MUL - D4	
MUL - E2		MUL - E2	
MUL - E4		MUL - E4	
...		Various	
Code	Type	Digital - Indicators	ATEX
5515		5515	
5714		5714	
...		Various	
Code	Type	Digital - Set point relays	ATEX
2231		2231	
2238		2238	
...		Various	
Code	Type	Digital - Loop - Indicators	ATEX
5531		5531	
5531B		5531B	
DALA		DALA	
DALB		DALB	
...		Various	


## Type key

Code	Type	Analogous - Loop - Indicators	ATEX
A48		A48	
A72		A72	
A96		A96	
A144		A144	
A48-K		A48-K	
A72-K		A72-K	
A96-K		A96-K	
A144-K		A144-K	
496/48		496/48	
A144/36		A144/36	
A144/72		A144/72	
A192/96		A192/96	
...		Various	

Code	Type	Contact protection relays	ATEX
5202		5202	
5202B		5202B	
1755		1755	
2755		2755	
2860		2860	
2861		2861	
...		Various	

Code	Type	Conductive level controllers	ATEX
1750		1750	
1751		1751	
2750		2750	
1750 (E)		1750 (E)	
1751 (E)		1751 (E)	
2750 (E)		2750 (E)	
2850		2850	
2851		2651	
...		Various	

Code	Type	Leakage detectors	ATEX
GL 100		GL 100	
GL 110		GL 110	
...		Various	

Code	Type	Speed monitors	ATEX
DAW - D		DAW - D	
5223A		5223A	
5223B		5223B	
...		Various	