



SERIES N-131...

The *Series N-131...* isolating switching amplifiers transmit switching operations from an intrinsically safe control circuit to a non-intrinsically safe active current circuit. The control units are designed according to NAMUR-DIN 19234 or EN 60947-5-6 intrinsically safe and according to EN 50014 and EN 50020 [EExia] II C. The conformity is certified in Germany by TÜV-NORD.

Power pack, switching amplifier, electronic evaluation unit and output relay are all integrated in the 22 mm sized housing. The units are EMV-approved according to IEC 801-2 to 5. Quick mounting is possible on profile according to DIN 46 277. LED displays are integrated in the front plate for stand-by (green), state of output (yellow) and wire-break/shortcircuit of the sensor cable (red).

The isolating switching amplifiers can be actuated by NAMUR sensors, e.g. our series IAS-30... and KAS-40..., or by mechanical contacts.



Certificate: TÜV 02 ATEX 1869



Isolating Switching Amplifier N-131/1-01 230 V AC • Ex II(1) G D [EEx ia] IIC

To connect **one NAMUR-Sensor** or potential-free mechanical contact. NAMUR sensors have to be connected to terminal 5 (+) with the brown wire and 7 (-) with the blue wire.

Mechanical contacts also have to be connected to terminals 5 and 7. A wire-bridge has to be connected between terminals 5 and 6, for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω).

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

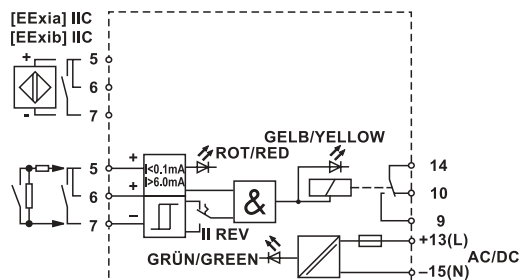
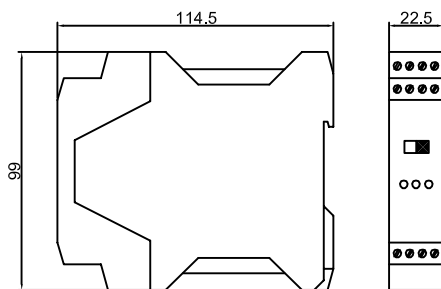
Switch position I = NO (factory set),

Switch position II = NC if a KAS-40-... is connected

The functions are reversed with connection of an IAS-30-...

Technical data

Operating voltage (U _B)	230 V AC \pm 10% 48...62 Hz
Output function	1 x change-over contact potential-free
Contact rating each relay AC max.	250 V AC/ 5 A/ 100 VA
Contact rating each relay DC max.	24 V DC/ 8 A/ 50 W
Type	N-131/1-01
Art.-No.	N00005
Connection diagram No.	see below
No-load current (I ₀)	typ. 15 mA
No-load voltage max. (U ₀)	10.5 V DC
Short-circuit current max. (I _K)	26 mA
Outer inductance max. (L ₀)	[EExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C ₀)	[EExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals



N-131/1-01
SWITCH AMPLIFIER
SCHALTERSTÄRKER

All specifications are subject to change without notice. (08/2004)



Isolating Switching Amplifier N-131/1-02 115 V AC • Ex II(1) G D [EEx ia] IIC

To connect **one NAMUR-Sensor** or potential-free mechanical contact. NAMUR sensors have to be connected to terminal 5 (+) with the brown wire and 7 (-) with the blue wire.

Mechanical contacts also have to be connected to terminals 5 and 7. A wire-bridge has to be connected between terminals 5 and 6, for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω).

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

Switch position I = NO (factory set),

Switch position II = NC if a KAS-40-... is connected

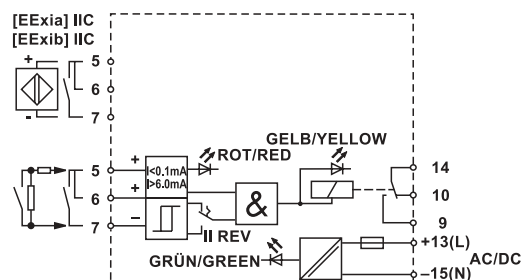
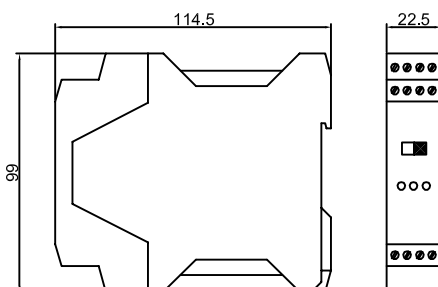
The functions are reversed with connection of an IAS-30-...

Certificate: TÜV 02 ATEX 1869



Technical data

Operating voltage (U_B)	115 V AC \pm 10% 48...62 Hz
Output function	1 x change-over contact potential-free
Contact rating each relay AC max.	250 V AC/ 5 A/ 100 VA
Contact rating each relay DC max.	24 V DC/ 8 A/ 50 W
Type	N-131/1-02
Art.-No.	N00006
Connection diagram No.	see below
No-load current (I_b)	typ. 15 mA
No-load voltage max. (U_o)	10,5 V DC
Short-circuit current max. (I_k)	26 mA
Outer inductance max. (L_o)	[EExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C_o)	[EExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals



N-131/1-02 SWITCH AMPLIFIER SCHALTERSTÄRKER

All specifications are subject to change without notice. (08/2004)



Certificate: TÜV 02 ATEX 1869



Isolating Switching Amplifier N-131/1-10 20...30 V DC • Ex II(1) G D [EEx ia] IIC

To connect **one NAMUR-Sensor** or potential-free mechanical contact. NAMUR sensors have to be connected to terminal 5 (+) with the brown wire and 7 (-) with the blue wire.

Mechanical contacts also have to be connected to terminals 5 and 7. A wire-bridge has to be connected between terminals 5 and 6, for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω).

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

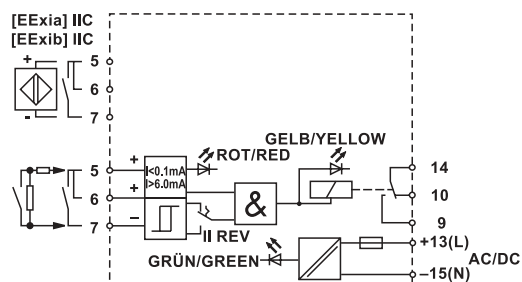
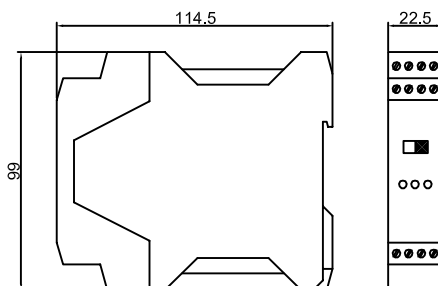
Switch position I = NO (factory set),

Switch position II = NC if a KAS-40-... is connected

The functions are reversed with connection of an IAS-30-...

Technical data

Operating voltage (U_B)	20...30 V DC
Output function	1 x change-over contact potential-free
Contact rating each relay AC max.	250 V AC/ 5 A/ 100 VA
Contact rating each relay DC max.	24 V DC/ 8 A/ 50 W
Type	N-131/1-10
Art.-No.	N00007
Connection diagram No.	see below
No-load current (I_0)	typ. 15 mA
No-load voltage max. (U_0)	10.5 V DC
Short-circuit current max. (I_k)	26 mA
Outer inductance max. (L_0)	[EExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C_0)	[EExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals



N-131/1-10
SWITCH AMPLIFIER
SCHALTERSTÄRKER

All specifications are subject to change without notice. (08/2004)



Isolating Switching Amplifier N-131/2-01 230 V AC • Ex II(1) G D [EEx ia] IIC

To connect **two NAMUR-Sensors** or potential-free mechanical contacts. NAMUR sensors have to be connected to terminals 1 or 5 (+) with the brown wire and 3 or 7 (-) with the blue wire.

Mechanical contacts also have to be connected to terminals 1, 3 (channel 2) or 5, 7 (Channel 1). A wire-bridge has to be connected between terminals 1, 2 (channel 2) or 5, 6 (channel 1), for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω).

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

Switch position I = NO (factory set).

Switch position II = NC if a KAS-40-... is connected

The functions are reversed with connection of an IAS-30-...

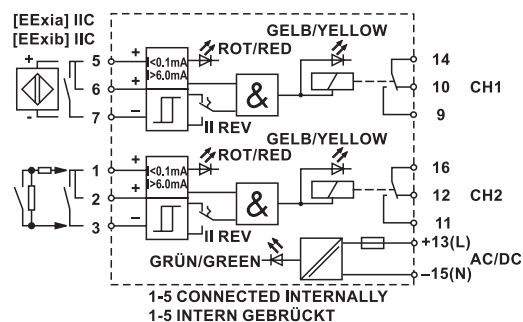
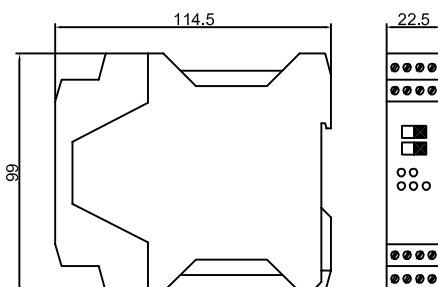
Certificate TÜV 02 ATEX 1869



Technical data

Operating voltage (U_b)	230 V AC \pm 10% 48...62 Hz
Output function	2 x change-over contacts potential-free
Contact rating each relay AC max.	250 V AC/ 5 A/ 100 VA
Contact rating each relay DC max.	24 V DC/ 8 A/ 50 W
Type	N-131/2-01
Art.-No.	N00001
Connection diagram No.	see below
No-load current (I_b)	typ. 15 mA
No-load voltage max. (U_o)	10.5 V DC
Short-circuit current max. (I_k)	26 mA
Outer inductance max. (L_o)	[EExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C_o)	[EExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals

All specifications are subject to change without notice. (08/2004)



N-131/2-01
SWITCH AMPLIFIER
SCHALTERSTÄRKER



Certificate: TÜV 02 ATEX 1869



Isolating Switching Amplifier N-131/2-02 115 V AC • Ex II(1) G D [Ex ia] IIC

To connect **two NAMUR-Sensors** or potential-free mechanical contacts. NAMUR sensors have to be connected to terminals 1 or 5 (+) with the brown wire and 3 or 7 (-) with the blue wire.

Mechanical contacts also have to be connected to terminals 1, 3 (channel 2) or 5, 7 (channel 1). A wire-bridge has to be connected between terminals 1, 2 (channel 2) or 5, 6 (channel 1), for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω).

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

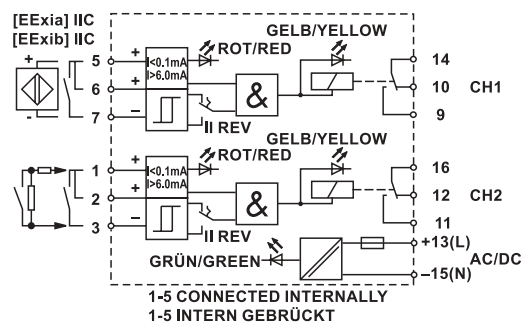
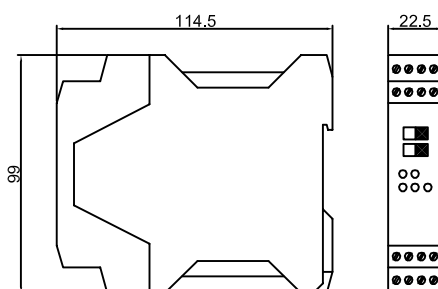
Switch position I = NO (factory set),

Switch position II = NC if a KAS-40... is connected

The functions are reversed with connection of an IAS-30...

Technical data

Operating voltage (U_B)	115 V AC \pm 10% 48...62 Hz
Output function	2 x change-over contacts potential-free
Contact rating each relay AC max.	250 V AC/ 5 A/ 100 VA
Contact rating each relay DC max.	24 V DC/ 8 A/ 50 W
Type	N-131/2-02
Art.-No.	N00002
Connection diagram No.	see below
No-load current (I_0)	typ. 15 mA
No-load voltage max. (U_0)	10.5 V DC
Short-circuit current max. (I_k)	26 mA
Outer inductance max. (L_0)	[EExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C_0)	[EExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals



N-131/2-02
SWITCH AMPLIFIER
SCHALTERVERSTÄRKER

All specifications are subject to change without notice. (08/2004)



Isolating Switching Amplifier N-131/2-10 20...30 V DC • Ex II(1) G D [EEx ia] IIC

To connect **two NAMUR-Sensors** or potential-free mechanical contacts. NAMUR sensors have to be connected to terminals 1 or 5 (+) with the brown wire and 3 or 7 (-) with the blue wire.

Mechanical contacts also have to be connected to terminals 1, 3 (channel 2) or 5, 7 (channel 1). A wire-bridge has to be connected between terminals 1, 2 (channel 2) or 5, 6 (channel 1), for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω).

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

Switch position I = NO (factory set).

Switch position II = NC if a KAS-40-... is connected

The functions are reversed with connection of an IAS-30-...

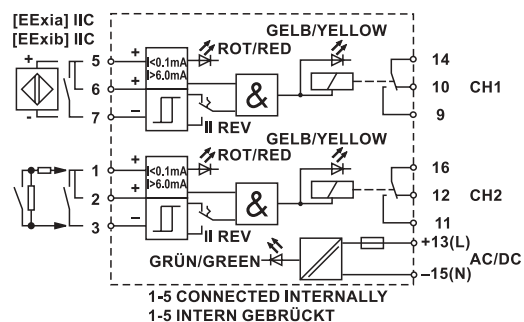
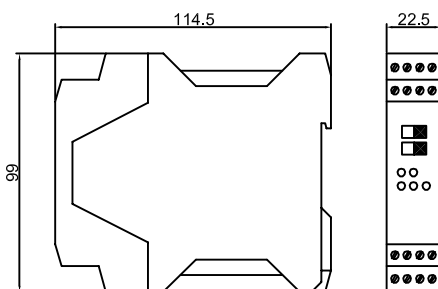
Certificate: TÜV 02 ATEX 1869



Technical data

Operating voltage (U_B)	20...30 V DC
Output function	2 x change-over contacts potential-free
Contact rating each relay AC max.	250 V AC/ 5 A/ 100 VA
Contact rating each relay DC max.	24 V DC/ 8 A/ 50 W
Type	N-131/2-10
Art.-No.	N00003
Connection diagram No.	see below
No-load current (I_0)	typ. 15 mA
No-load voltage max. (U_0)	10.5 V DC
Short-circuit current max. (I_k)	26 mA
Outer inductance max. (L_0)	[EExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C_0)	[EExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals

All specifications are subject to change without notice. (08/2004)



N-131/2-10
SWITCH AMPLIFIER
SCHALTERSTÄRKER



Certificate: TÜV 02 ATEX 1869



Isolating Switching Amplifier • PNP Output N-131/2-E-10 20...30 V DC • Ex II(1) G D [Ex ia] IIC

To connect **two NAMUR-Sensors** or potential-free mechanical contacts. NAMUR sensors have to be connected to terminals 1 or 5 (+) with the brown wire and 3 or 7 (-) with the blue wire. Mechanical contacts also have to be connected to terminals 1, 3 (channel 2) or 5, 7 Channel 1). A wire-bridge has to be connected between terminals 1, 2 (channel 2) or 5, 6 (channel 1), for switching off the wire-break/short-circuit control or a resistor connection has to be made (in series to the contact 2,7 k Ω and parallel to the contact 10 k Ω). The active electrical outputs are connected to terminal 9 (channel 1) and 11 (channel 2). The terminals 14 and 16 are internally bridged to terminal 13 (+24V),

The NO/NC-programming of the output relay is possible by means of coding switches in the front plate:

Switch position I = NO (factory set),

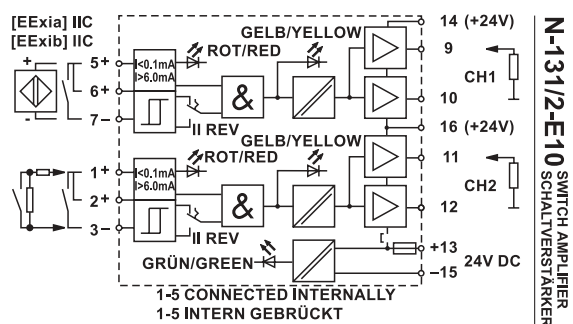
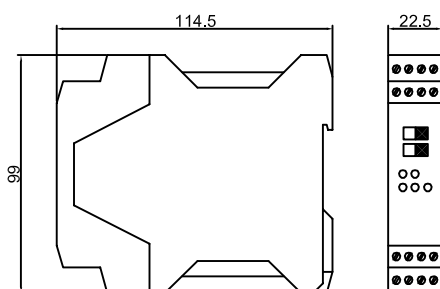
Switch position II = NC if a *KAS-40...* is connected

The functions are reversed with connection of an IAS-30...

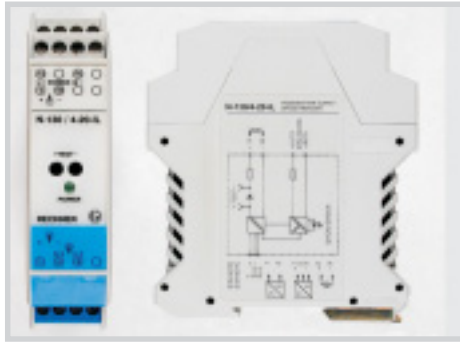
• Because of the PNP output, suitable for switching frequency **up to 1 kHz**.

Technical data

Operating voltage (U_B)	20 - 30 V DC
Output function	2 x transistor output pnp
Operating voltage max.	35 V DC
Operating current max.	100 mA
Switching capacity max.	3,5 W
Type	N-131/2-E-10
Art.-No.	N00004
Connection diagram No.	see below
No-load current (I_0)	typ. 15 mA
No-load voltage max. (U_0)	10.5 V DC
Short-circuit current max. (I_k)	26 mA
Outer inductance max. (L_0)	[EEExia] IIC 45 mH/ IIB 160 mH
Outer capacitance max. (C_0)	[EEExia] IIC 2.41 μ F/ IIB 16.8 μ F
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60°C
Display	red/yellow and green
Degree of protection IEC 529	housing: IP 30 terminals: IP 20
Connection	screw terminals



All specifications are subject to change without notice. (08/2004)



Transmitter Power Supply
N-130/4-20-IL - Analogue Output 4...20 mA
⊕ Ex II (1) G [EEx ia] IIC

- For connection of ATEX certified 2-wire analogue sensors e. g. our KAS-40...IL with 4...20 mA output signal
- Safe galvanic separation between input/output and auxiliary energy (power)
- At the panel socket "Test" it is possible to loop in an ammeter

Certificate: TÜV 99 ATEX 1435



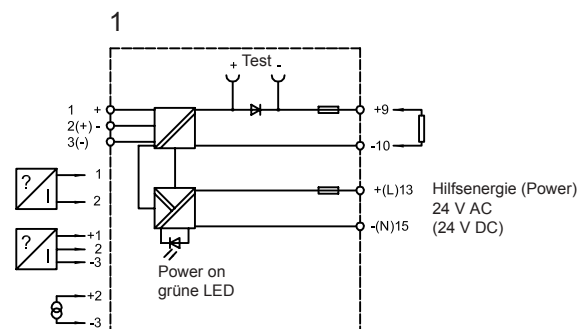
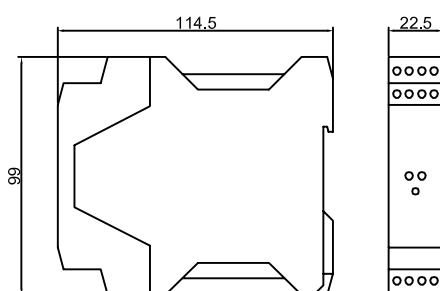
Technical data

Maximum input voltage	$U_0 = 28 \text{ V}$
Maximum input (power)	$I_0 = 93 \text{ mA}$ ($P_0 = 650 \text{ mW}$)
Type	N-130/4-20-IL
Art.-No.	513780
Connection diagram No.	1
Power supply	20 - 26.4 V AC / 20 - 30 V DC
Power consumption	3.1 VA / 2.2 W
Output signal range	0/4...20 mA
Load	1000 Ω
Test socket: max. R_i of the measuring instrument	$R_i = 15 \Omega$
Output ripple	< 0.5 %
Non-linearity	< 0.1 %
Temperature coefficient	< 0.1 % / 10 K
Step response	2.2 ms (10 - 90 %)
Digital bandwidth	0 - 12 kHz
Adjustability: Zero and Span	+/- 5 %
Permissible operating temperature	-20°C...+60 °C
Mounting category to IEC 654	B_x
Climatic category to DIN 40 040	HSF

Galvanic isolation

**input-output
input (output)-power supply**

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All specifications are subject to change without notice. (05/2004)

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