

**ACT20X-HUI-SAO-S****Weidmüller Interface GmbH & Co. KG**

Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

**Product image, Similar to illustration**

The ACT 20X HUI-SAO-S/ SAO-LP universal measurement and signal isolating converters can be configured individually.

Temperature signals from PT100 sensors and thermocouples as well as analogue DC current and voltage signals can be recorded from Ex zone 0.

On the output side, optional current/voltage (SAO-S) or 4...20 mA current loop signals (SAO-LP / SAO-S) are provided for the safe zone.

The ACT20X-HUI-SAO-S also has a relay output for configuring its switching threshold.

An integrated alarm contact is available on this device for issuing an alert in the event of a malfunction. This makes troubleshooting easier and also increases system availability.

The power supply of the signal isolating converter is either done using the integrated power supply (SAO-S) or alternatively over the output-side current loop (SAO-LP). The rail mountable devices are designed with one channel, and are optionally available in widths of 12.5 mm (SAO-LP) or 22.5 mm (SAO-S).

**General ordering data**

Version	EX signal isolating converter, Ex-output: U, I, R, 9, Safe-output: 4-20mA/ relay, 1-channel
Order No.	<a href="#">8965490000</a>
Type	ACT20X-HUI-SAO-S
GTIN (EAN)	4032248785100
Qty.	1 pc(s).

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[www.weidmueller.com](http://www.weidmueller.com)**Technical data****Dimensions and weights**

Depth	113.6 mm	Depth (inches)	4.472 inch
Height	119.2 mm	Height (inches)	4.693 inch
Width	22.5 mm	Width (inches)	0.886 inch
Net weight	202 g		

**Temperatures**

Storage temperature	-20 °C...85 °C	Operating temperature	-20 °C...60 °C
Humidity	0...95 % (no condensation)		

**Probability of failure**

SIL PAPER	SIL certificate	SIL in compliance with IEC 61508	2
MTBF	74 a		

**Assembling**

Mounting position	horizontal or vertical	Rail	TS 35
Type of mounting	Snap mounting support rail		

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## Technical data

## Input EX

Input current	0...20 mA, 4...20 mA	Input resistance	configurable, 0...10 kΩ
Input resistance, current	20 Ω + PTC 50 Ω	Input resistance, voltage	> 10 MΩ @ 600 mV, 2 MΩ @ 28 V
Input voltage	configurable, 0...1 V DC, 0,2...1 V DC, 1...5 V DC, 0...(5)10 V, 2...10 V DC	Line resistance in measuring circuit	≤ 50 Ω
Potentiometer		Sensor	2-/3-/4-wire, RTD: PT10, PT20, PT50, PT100, PT250, PT300, PT400, PT500, PT1000, Ni50, Ni100, Ni120, Ni1000, Thermocouples: B, E, J, K, N, R, S, T ; in compliance with IEC 60584-1 and L, U in compliance with DIN43710, Potentiometer, Resistance: 0 - 12 kΩ
Sensor supply	10 Ω...10 kΩ	Temperature input range	Configurable, PT100: -200...+850 °C, PT200: -200...+850 °C, PT1000: -200...+850 °C, NI100: -60°C...+250 °C, Ni120: -80 °C...+320 °C, NI1000: -60°C...+250 °C, B: +100...+1820 °C, E: (-100...+1000 °C), J: (-100...+1200 °C), K: (-180...+1372 °C), L: (-200...+900 °C), N: (-180...+1300 °C), R: (-50...+1760 °C), S: (-50...+1760 °C), T: (-200...+400 °C), U: (-200...+600 °C), W3: (0...+2300 °C), W5: (0...+2300 °C), LR: (-200...+800 °C)
Type	21.4...16.5 V DC / 0...20 mA intrinsically safe circuit, active (as current source) or passive (as current sink)		

## Output

Load impedance current	≤ 600 Ω	Output current	0...23 mA, configurable: 0...20 / 4...20 / 20...0 / 20...4 mA, configurable downscale (3.5 mA) / up-scale (23 mA) @ error
Output signal limit	3.8...20.5 mA / 0...20.5 mA (dependent on range)	Type	active (as current source) or passive (as current sink)

## Digital output

Continuous current	≤ 2 A AC/DC (safe area, Zone 2 area)	Function	Configurable switching thresholds, Window function, Sensor error
Max. switching frequency	20 Hz	Nominal switching voltage	≤ 250 V AC / 30 V DC (safe area) ≤ 32 V AC / 32 V DC (zone 2)
Power rating	≤ 500 VA / 60 W (safe area) ≤ 16 VA / 32 W (Zone 2)	Type	Relay, 1 NO

Creation date May 23, 2024 6:53:26 AM CEST

Catalogue status 18.05.2024 / We reserve the right to make technical changes.

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## Technical data

### Alarm output

Alarm function	Short circuit at input, Open circuit at input, No supply voltage, Device error	Continuous current	$\leq 0.5 \text{ A AC} / 0.3 \text{ A DC}$ (safe zone), $\leq 0.5 \text{ A AC} / 1 \text{ A DC}$ (zone 2)
Nominal switching voltage	$\leq 125 \text{ V AC} / 110 \text{ V DC}$ (safe area) $\leq 32 \text{ V AC} / 32 \text{ V DC}$ (zone 2)	Power rating	$\leq 62.5 \text{ VA} / 32 \text{ W}$ (safe area) $\leq 16 \text{ VA} / 32 \text{ W}$ (Zone 2)
Type	Status relay, 1 NC (voltage-free)		

### General specifications

Configuration	With FDT/DTM software, Requires configuration adapter 8978580000 CBX200 USB	Humidity	0...95 % (no condensation)
Power consumption	$\leq 2.1 \text{ W}$	Protection degree	IP20
Type of connection	Screw connection	Voltage supply	19.2...31.2 V DC

### Insulation coordination

EMC standards	EN 61326-1	Insulation voltage	2.6 kV (input / output)
Pollution severity	2	Rated voltage	300 V
Standards	EN 61010-1		

### Data for Ex applications (ATEX)

Current $I_0$	18.4 mA	Installation location	Device installed in safe area, zone 2
Marking	II (1) G [Ex ia Ga] IIC/IIB/IIA, I (M1) [Ex ia Ma] I, II (1) G [Ex ia Ga] IIC, II (1) D [Ex ia Da] IIIC	Power $P_0$	40 mW
Voltage $U_0$	8.7 V DC		

### Safety-related basic specifications

Description of the "safe state"	analogue Output $\leq 3.6 \text{ mA}$ or output $\geq 21 \text{ mA}$ , de-energized (relay output)	Device type	B
Diagnostic test interval	30 s	$T_{\text{proof}}$	4 a
Total failure rate for safe detected failures ( $\lambda_{SD}$ )	0 FIT	Hardware fault tolerance (HFT)	0
Safety category	SIL 2	Relay lifetime	100000 times
Safe Failure Fraction (SFF)	93 %	Mean Time To Repair (MTTR)	24 h
Total failure rate for safe undetected failures ( $\lambda_{SU}$ )	278 FIT	Total failure rate for dangerous detected failures ( $\lambda_{DD}$ )	352 FIT
Total failure rate for dangerous undetected failures ( $\lambda_{DU}$ )	43 FIT	Probability of outage PFH	$4.33 \times 10^{-8} \text{ h}^{-1}$
Demand mode	High	Demand rate	3,000 s
Demand response time	Signal input: $<0.5 \text{ s}$ (opto output), Temperature input: $<1.1 \text{ s}$ (opto output)		

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**Technical data****Safety-related specifications Low demand mode**

Average Probability of Failure on Demand (PFD <sub>avg</sub> )	$2.82 \times 10^{-4}$ ( $T_{\text{proof}} = 1$ year), $4.63 \times 10^{-4}$ ( $T_{\text{proof}} = 2$ years), $1.00 \times 10^{-3}$ ( $T_{\text{proof}} = 5$ years), additional data in the safety manual
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**Connection data**

Type of connection	Screw connection	Tightening torque, min.	0.4 Nm
Tightening torque, max.	0.6 Nm	Clamping range, rated connection	2.5 mm <sup>2</sup>
Clamping range, min.	0.25 mm <sup>2</sup>	Clamping range, max.	2.5 mm <sup>2</sup>
Wire connection cross section AWG, min.	AWG 26	Wire connection cross section AWG, max.	AWG 12

**Guarantee**

Time interval	3 years
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**Classifications**

ETIM 6.0	EC002653	ETIM 7.0	EC002653
ETIM 8.0	EC002653	ETIM 9.0	EC002653
ECLASS 9.0	27-21-01-20	ECLASS 9.1	27-21-01-20
ECLASS 10.0	27-21-01-20	ECLASS 11.0	27-21-01-20
ECLASS 12.0	27-21-01-20	ECLASS 13.0	27-21-01-20

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## Technical data

## Tender specification sheets

## Long specification

**Ex universal measurement isolating transformer and trip amplifier for RTD-/ TC temperature and DC-current/ voltage signals**  
**1-channel measurement isolating transformer and trip amplifier in 22.5 mm width with external power supply, for capturing and isolating RTD- / TC sensors, resistors, potentiometers and DC current signals**  
**0(4)...20 mA and voltages 0...12 V from Ex zones 0,1,2. Sensors can be supplied via the 0...20 mA current loop. The output can be operated as either an active 0(4)...20 mA signal or as a passive 4...20 mA current loop.**  
**A relay contact (NO) is available on the output side for limit value monitoring.**  
**Status/error messages are issued via a relay contact (NO).**  
**The component can be configured using standard FDT/DTM software.**

**Add-on housing for TS35 rail mounting**  
**Dimensions: L/W/H**  
**119.2/ 22.5/ 113.6**  
**Screw connection/**  
**Nominal cross-section**  
**2.5 mm<sup>2</sup>**  
**Protection degree: IP**  
**20**  
**Input** **RTD:**  
**PT100, PT500, PT1000,**  
**Ni50, Ni100, Ni120,**  
**Ni1000**

**Resistance 0...10**  
**kOhm / Potentiometer**  
**10 Ohm... 10 kOhm** **TC-**  
**Type: B, E, J, K, N, R, S,**  
**T, U, L**

0(4)...20 mA

**0...12 V/ 2...10 V**  
**Sensor supply 28...16.5**  
**VDC / 0...20 mA**

## Short specification

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**Technical data****Environmental Product Compliance**

REACH SVHC	Lead 7439-92-1
SCIP	2f6dd957-421a-46db-a0c2-cf1609156924

**Approvals**

Approvals



Approvals	DNVGL;
ROHS	Conform
UL File Number Search	UL Website
Certificate no. (cULus)	E337701

**Downloads**

Approval/Certificate/Document of Conformity	<a href="#">Certification SIL</a> <a href="#">Certification DNV GL</a> <a href="#">Certification ATEX</a> <a href="#">Certification IECEX</a> <a href="#">Certification UL</a> <a href="#">Declaration of Conformity</a>
Engineering Data	<a href="#">CAD data – STEP</a>
Software	<a href="#">WI-Manager, DTM-Library for online installation</a> <a href="#">Release notes for Weidmueller FDT-DTM Software version</a>
User Documentation	<a href="#">Instruction sheet</a> <a href="#">Safety Manual for SIL application</a> <a href="#">Handbuch ACT20X- Serie, deutsch</a> <a href="#">Manual ACT20X- series, english</a> <a href="#">20210120 Security Advisory - WI-Manager affected by MundM Software fdtCONTAINER vulnerability</a>
Catalogues	<a href="#">Catalogues in PDF-format</a>
Brochures	

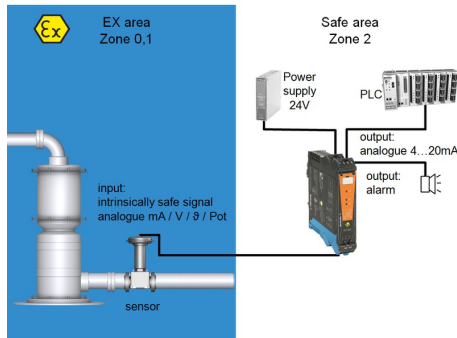
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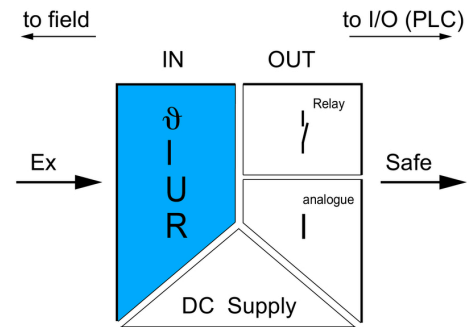
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# Drawings

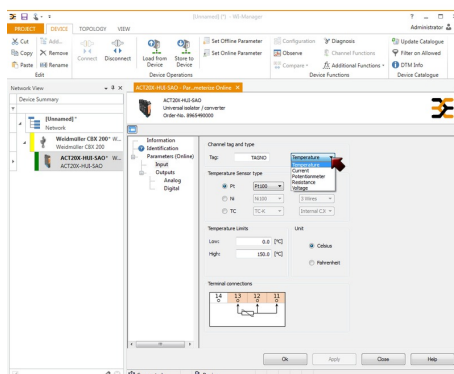
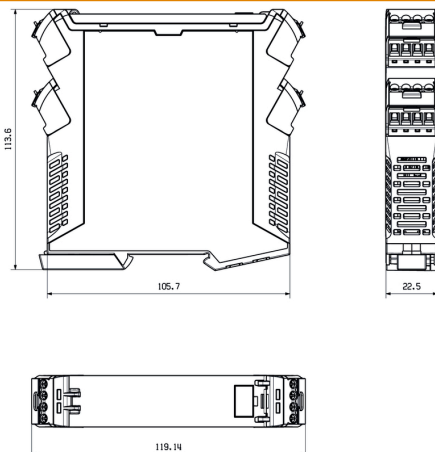
## Application



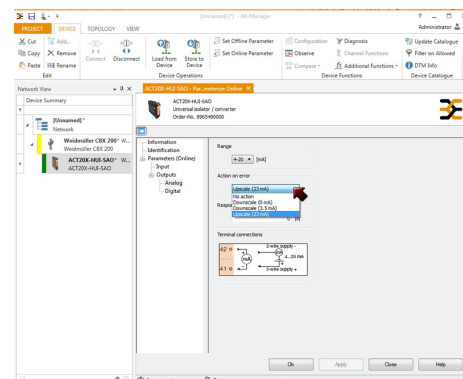
## Block diagram



## Dimensioned drawing



screenshot of temperature input configuration with FDT2 / DTM software



screenshot of output configuration with FDT2 / DTM software

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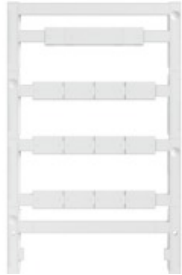


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[www.weidmueller.com](http://www.weidmueller.com)**Accessories****Blank**

ESG is the tried-and-tested marker in MultiCard format for use on many well-known electrical devices. The result is high-quality device marking with a high-contrast appearance.

Various types are available for devices from manufacturers like Siemens, ABB, Beckhoff etc.

Advantages at a glance:

- Tags for universal usage, self-adhesive or clip-on tags, depending on type
- For aligned equipment, e.g. circuit breakers, we supply ESG markers for clipping onto tag rails
- Individual laser-quality printing according to specifications

**For custom printing:** Please send us a file of our labeling software M-Print PRO or M-Print PRO Online (without installation) for your labeling specifications.

**General ordering data**

Type	ESG 8/13.5/43.3 SAI AU	Version
Order No.	<a href="#">1912130000</a>	ESG, Device markers x 13.5 mm, PA 66, Colour: Transparent
GTIN (EAN)	4032248541164	
Qty.	5 pc(s).	

**Cold-junction compensation terminals****General ordering data**

Type	ACT20X-CJC-HTI-S PRT 21	Version
Order No.	<a href="#">1160650000</a>	(CJC) cold-junction compensation terminal for ACT20X thermal
GTIN (EAN)	4032248948352	module, built-in PT100 sensor, Labelling for channel 2 (21, 22, 23,
Qty.	1 pc(s).	24)

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**General ordering data**

Type	ESG 6.6/20 BHZ 5.00/04	Version
Order No.	<a href="#">1082540000</a>	ESG, Device markers x 20 mm, PA 66, Colour: white
GTIN (EAN)	4032248845439	
Qty.	200 pc(s).	

**Configuration interfaces****General ordering data**

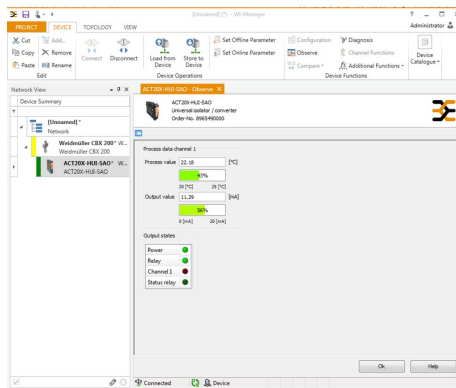
Type	CBX200 USB
Order No.	<a href="#">8978580000</a>
GTIN (EAN)	4032248813759
Qty.	1 pc(s).

# ACT20X-HUI-SAO-S

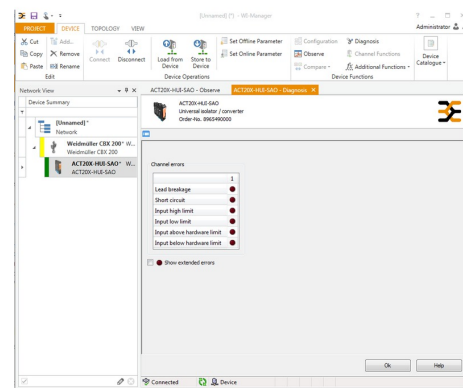
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## Drawings



screenshot of "observe" with FDT2 / DTM software



screenshot of "diagnosis" with FDT2 / DTM software

## Connection diagram

