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,θ, Safe-output: 4-20mA/ relay, 1-channel
Order No.	8965490000
Type	ACT20X-HUI-SAO-S
GTIN (EAN)	4032248785100
Qty.	1 pc(s).

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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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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	10 Ω...10 kΩ	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	21.4...16.5 V DC / 0...20 mA	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	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

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Alarm output

Alarm function	Short circuit at input, Open circuit at input, No supply voltage, Device error	Continuous current	≤ 0.5 A AC / 0.3 A DC (safe zone), ≤ 0,5 A AC / 1 A DC (zone 2)
Nominal switching voltage	≤ 125 V AC / 110 V DC (safe area) ≤ 32 V AC / 32 V DC (zone 2)	Power rating	≤ 62.5 VA / 32 W (safe area) ≤ 16 VA / 32 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	≤ 2.1 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 ≤ 3.6 mA or output ≥ 21 mA, de-energized (relay output)	Device type	B
Diagnostic test interval	30 s	T_{proof}	4 a
Total failure rate for safe detected failures (λ_{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 (λ_{SU})	278 FIT	Total failure rate for dangerous detected failures (λ_{DD})	352 FIT
Total failure rate for dangerous undetected failures (λ_{DU})	43 FIT	Probability of outage PFH	$4.33 \times 10^{-8}\ h^{-1}$
Demand mode	High	Demand rate	3,000 s
Demand response time	Signal input: <0.5 s (opto output), Temperature input: <1.1 s (opto output)		

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Safety-related specifications Low demand mode

Average Probability of Failure on Demand (PFD_{avg})	2.82×10^{-4} (T_{proof} = 1 year), 4.63×10^{-4} (T_{proof} = 2 years), 1.00×10^{-3} (T_{proof} = 5 years), additional data in the safety manual

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 mm²
Clamping range, min.	0.25 mm²	Clamping range, max.	2.5 mm²
Wire connection cross section AWG, min.	AWG 26	Wire connection cross section AWG, max.	AWG 12

Guarantee

Time interval	3 years

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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Tender specification sheets

Long specification		Short 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 mm²** **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** **0(4)...20 mA active** **0(4)...20 mA / 20...0 mA configurable**	

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

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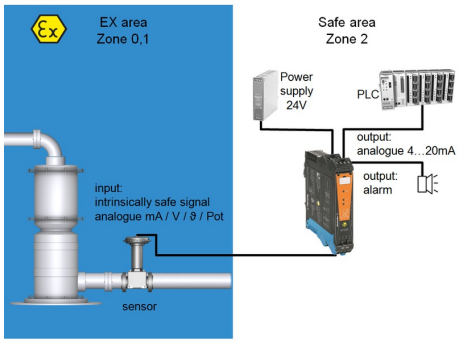
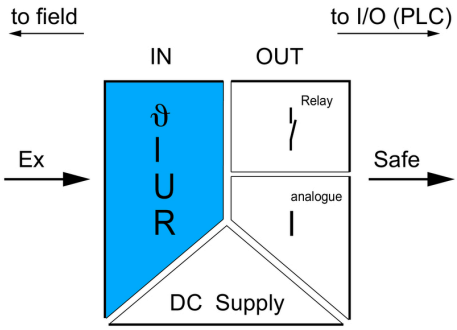
Drawings

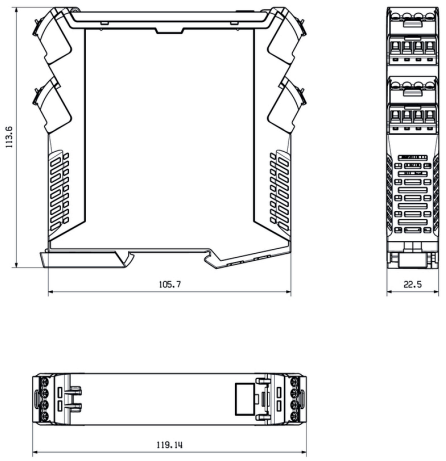
Application

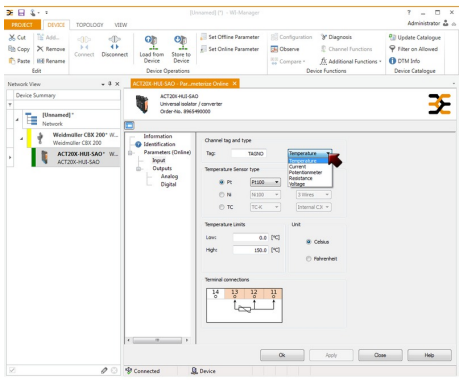


Block diagram

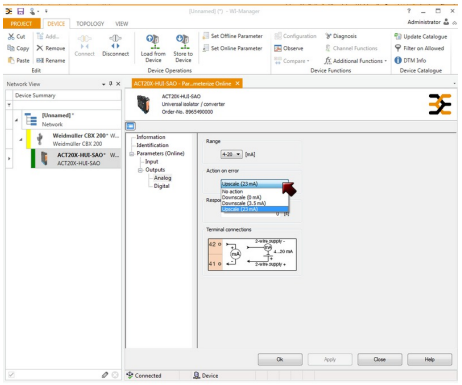


Dimensioned drawing





screenshot of temperature input configuration with FDT2 / DTM software



screenshot of output configuration with FDT2 / DTM software

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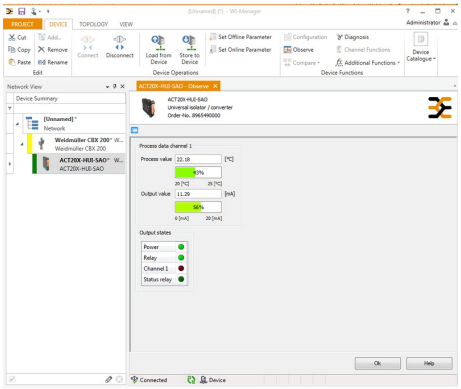
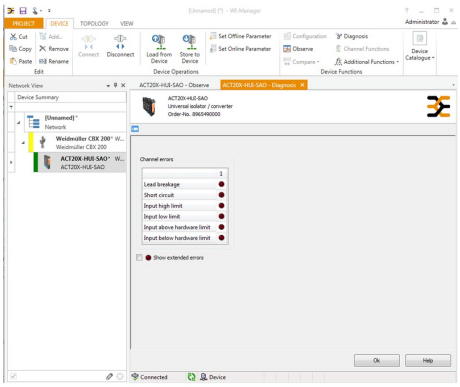


screenshot of "observe" with FDT2 / DTM software



screenshot of "diagnosis" with FDT2 / DTM software

Connection diagram