

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

Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

**Product image, Similar to illustration**

The ACT20X-HAI-SAO/2HAI-2SAO HART-protocol transparent current-supply isolators are capable of transmitting 4...20 mA signals from Ex zone 0 into the safe zone.

External sensors can be supplied with power through the device.

Integrated alarm contacts issue an alert in the event of a malfunction; this makes troubleshooting easier and increases system availability.

The rail mounted current-supply isolators are optionally available in one- or two-channel versions.

With 11 mm width per channel, the devices need little space in the electrical cabinet.

**General ordering data**

|            |                                                                                           |
|------------|-------------------------------------------------------------------------------------------|
| Version    | EX signal isolating converter, HART®, 1-channel, Ex-input: 4 - 20 mA, Safe-output: 4-20mA |
| Order No.  | <a href="#">8965430000</a>                                                                |
| Type       | ACT20X-HAI-SAO-S                                                                          |
| GTIN (EAN) | 4032248785049                                                                             |
| 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 | 186 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      | 177 a           | SFF                              | 80 % |

**Assembling**

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

**Input EX**

|                                |                                                                                     |                                     |           |
|--------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|-----------|
| Input current                  | 4...20mA                                                                            | Output signal in case of wire break | <1 mA     |
| Residual ripple (current loop) | <7.5 mV <sub>eff</sub>                                                              | Sensor supply                       | > 16 V DC |
| Type                           | intrinsically safe circuit, active (as current source) or passive (as current sink) | Voltage drop not powered            | <6 V      |
| Voltage drop powered           | <4.5 V                                                                              |                                     |           |

**Output**

|                        |                                                         |                     |                               |
|------------------------|---------------------------------------------------------|---------------------|-------------------------------|
| Load impedance current | ≤ 600 Ω                                                 | Load stability      | ≤ 0.01 % of end value / 100 Ω |
| Output current         | 4...20 mA                                               | Output signal limit | <28 mA                        |
| Type                   | active (as current source) or passive (as current sink) |                     |                               |

**Digital output**

|                          |      |  |  |
|--------------------------|------|--|--|
| Max. switching frequency | 0 Hz |  |  |
|--------------------------|------|--|--|

**Alarm output**

|                           |                                                                                        |                    |                                                                 |
|---------------------------|----------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------|
| Alarm function            | Signal limit exceeded, Line interruption at the 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)<br>≤ 32 V AC / 32 V DC (zone 2)                      | Power rating       | ≤ 62.5 VA / 32 W (safe area)<br>≤ 16 VA / 32 W (Zone 2)         |
| Type                      | Status relay, 1 NC (voltage-free)                                                      |                    |                                                                 |

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## Technical data

### General specifications

|                                                 |                        |                    |                                                                                      |
|-------------------------------------------------|------------------------|--------------------|--------------------------------------------------------------------------------------|
| Accuracy                                        |                        | Configuration      | With FDT/DTM software,<br>Requires configuration<br>adapter 8978580000<br>CBX200 USB |
|                                                 | <0.1% span             |                    |                                                                                      |
| HART® transparency supported                    | Yes                    | Humidity           | 0...95 % (no condensation)                                                           |
| Operating altitude                              | ≤ 2000 m               | Power consumption  | ≤ 1.0 W                                                                              |
| Protection degree                               | IP20                   | Step response time | ≤ 5 ms                                                                               |
| Temperature coefficient                         | <0.01% of span/°C (TU) | Type of connection | Screw connection                                                                     |
| Type of signal forwarding according to<br>HART® | unchanged              | 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 | Surge voltage category | II                      |

### Data for Ex applications (ATEX)

|                        |                                                                                       |                       |                                             |
|------------------------|---------------------------------------------------------------------------------------|-----------------------|---------------------------------------------|
| Current I <sub>0</sub> | Current loop 93 mA / ex-<br>ternally 10 mA                                            | Installation location | Device installed in safe<br>area, zone 2    |
| Marking                | II (1) G [Ex ia Ga] IIC/IIB/<br>IIA, II (1) D [Ex ia Da] IIIC, I<br>(M1) [Ex ia Ma] I | Power P <sub>0</sub>  | Current loop 0.65 W / ex-<br>ternally 0.1 W |
| Voltage U <sub>0</sub> | Current loop 28 V / exter-<br>nally 10 V                                              |                       |                                             |

### Safety-related basic specifications

|                                                                              |                                               |                                                                          |                                        |
|------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------|----------------------------------------|
| Description of the "safe state"                                              | analogue Output ≤ 3.6 mA<br>or output ≥ 21 mA | Device type                                                              | A                                      |
| T <sub>proof</sub>                                                           | 5 a                                           | Total failure rate for safe detected failures<br>(λ <sub>SD</sub> )      | 0 FIT                                  |
| Hardware fault tolerance (HFT)                                               | 0                                             | Safety category                                                          | SIL 2                                  |
| Safe Failure Fraction (SFF)                                                  | 80 %                                          | Mean Time To Repair (MTTR)                                               | 24 h                                   |
| Total failure rate for safe undetected fail-<br>ures (λ <sub>SU</sub> )      | 0 FIT                                         | Total failure rate for dangerous detected<br>failures (λ <sub>DD</sub> ) | 173 FIT                                |
| Total failure rate for dangerous undetect-<br>ed failures (λ <sub>DU</sub> ) | 41 FIT                                        | Probability of outage PFH                                                | 4.1 x 10 <sup>-8</sup> h <sup>-1</sup> |
| Demand mode                                                                  | High                                          |                                                                          |                                        |

### Safety-related specifications Low demand mode

|                                                                     |                                                                                                                                                                                                                         |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Average Probability of Failure on De-<br>mand (PFD <sub>avg</sub> ) | 1.92 x 10 <sup>-4</sup> (T <sub>proof</sub> = 1<br>year), 3.67 x 10 <sup>-4</sup> (T <sub>proof</sub> =<br>2 years), 8.92 x 10 <sup>-4</sup> (T <sub>proof</sub> =<br>5 years), additional data<br>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 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,<br>min. | AWG 26               | Wire connection cross section AWG,<br>max. | AWG 12              |

Creation date May 20, 2025 3:58:48 AM CEST

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|               |         |
|---------------|---------|
| Time interval | 3 years |
|---------------|---------|

**Classifications**

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| ETIM 6.0    | EC002653    | ETIM 7.0    | EC002653    |
| ETIM 8.0    | EC002653    | ETIM 9.0    | EC002653    |
| ETIM 10.0   | 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 | ECLASS 14.0 | 27-21-01-20 |
| ECLASS 15.0 | 27-21-01-20 |             |             |

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Technical data

Tender specification sheets

Long specification

**Ex supply isolator for standard DC current signals, 2-channel, HART transparent 2-channel supply isolator in 22.5 mm width with external power supply, for transmitting and isolating 4...20 mA standard signals from Ex Zones 0,1,2 to the safe zones. The component has an active and passive input. External sensors can be supplied with > 15 VDC. The 4...20 mA output circuit can be operated either passively or actively. Status and error messages are available 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**  
**4...20 mA**  
**>**  
**15 V DC sensor supply**  
**Output**  
**ac-**  
**tive**  
**mA**  
**passive 4...20 mA current loop max. 26 V DC**  
**Load**  
**<**  
**600 Ohm**  
**Accuracy**  
**<**  
**0,1 % v.E**  
**Temperature coefficient**  
**< 0,01% v.E./°C**  
**(Tu)**  
**Alarm output relay 1**  
**NO contact**  
**250**  
**V AC / 30 V DC @ 2A**  
**safe zone**  
**32**  
**V AC @ 0.5 A/ 32 VDC @**  
**1 A Zone 2**  
**Auxiliary power**  
**er**  
**19...31.2 V DC**  
**48 V AC approx. 1.8**  
**W**  
**Ambient**  
**temperature range 20**  
**°C...+60 °C**

Short specification

4...20

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

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| RoHS Compliance Status               | Compliant with exemption             |
| RoHS Exemption (if applicable/known) | 7a, 7cl                              |
| REACH SVHC                           | Lead 7439-92-1                       |
| SCIP                                 | 2f6dd957-421a-46db-a0c2-cf1609156924 |

**Approvals**

Approvals



|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Approvals               | DNVGL;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Approvals MAMID         | <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319222/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319222/-T1z1mm-S800/</a> <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319228/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319228/-T1z1mm-S800/</a> <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319213/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319213/-T1z1mm-S800/</a> <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319234/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319234/-T1z1mm-S800/</a> <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319237/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319237/-T1z1mm-S800/</a> <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319238/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319238/-T1z1mm-S800/</a> <a href="https://mdcop.weidmueller.com/mediadelivery/rendition/900_319240/-T1z1mm-S800/">https://mdcop.weidmueller.com/mediadelivery/rendition/900_319240/-T1z1mm-S800/</a> |
| ROHS                    | Conform                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| UL File Number Search   | UL Website                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Certificate no. (cULus) | E337701                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Downloads**

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

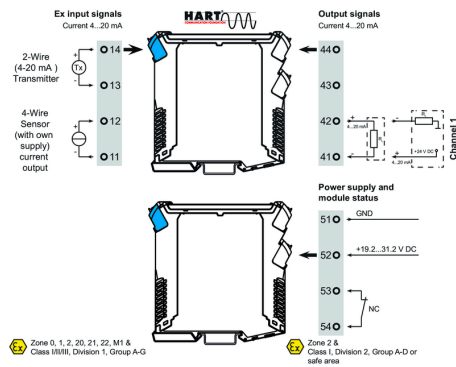
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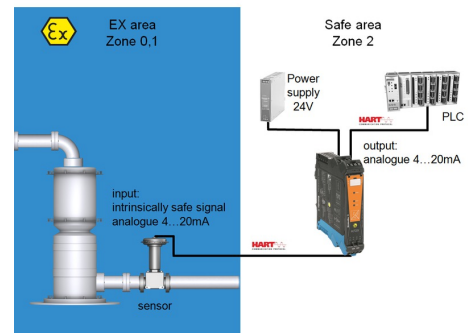
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## Drawings

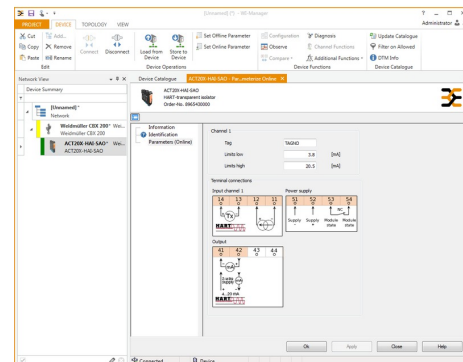
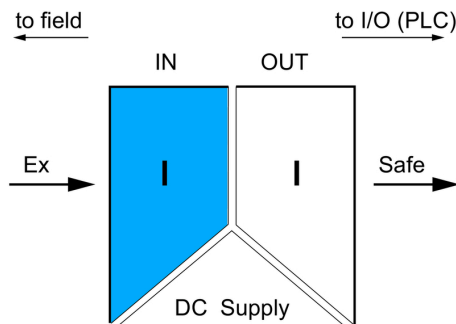
### Connection diagram



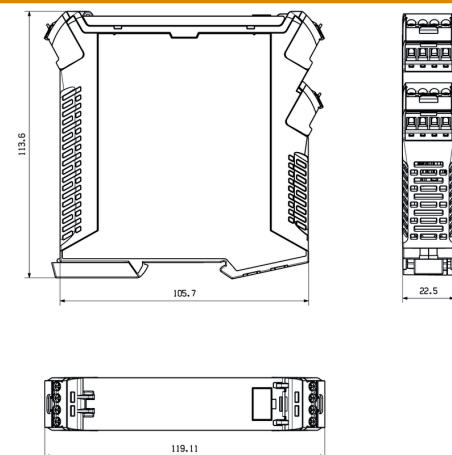
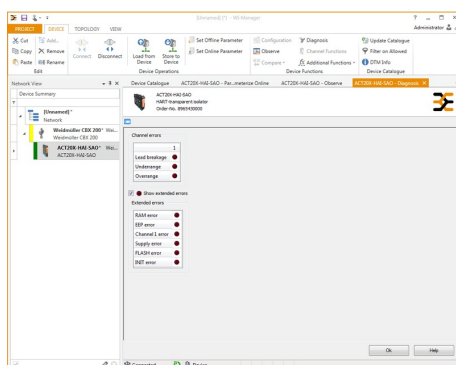
### Application



### Block diagram



### Dimensioned drawing



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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 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).                 |                                                   |



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**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              | pluggable                                                  |
| Qty.       | 5 pc(s).                   |                                                            |

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

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

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## Drawings



Removable terminals with coding