ACT20X – Universal, intrinsically safe signal conditioners for hazardous area applications

PC-configurable conditioners family for hazardous areas in the new Weidmüller electronics housing for installation in safe or hazardous areas of Zone 2

The ACT20X products fulfil the strict standards of the hazardous area industries and process signals from various Ex zones (Zones 0, 1, 2) for the control system.

ACT20X can be used universally. On the input side, the ACT20X can process HART® input signals, DC, RTD, thermocouple or NAMUR signals from the Ex area. On the output side, field devices in the Ex area are controlled via the ACT20X with analogue or digital signals. All ACT20X products are characterised by insulation, accuracy and high temperature stability.

The 2-channel versions with width of 22.5 mm are available with either transistor or relay output. Due to this high component density, the space requirements and installation costs are reduced accordingly.
Configuration via FDT
All modules can be quickly and conveniently configured with manufacturer-independent FDT/DTM software.

Worldwide application
Fulfills the strict standards and requirements of the process industry. Can be used worldwide due to international and local approvals ATEX, IECEX, CULUS, FM, GOST and DNV.

Intelligent connection system
Pluggable, coded, with release lever. The release lever simplifies maintenance and allows the disconnection without damaging the cables.

Alarm function
No laborious troubleshooting. Alarm function integrated for cable or sensor errors. In case of failures, a diagnostic signal is sent to the control system.

Robust
Wide ambient temperature range from –20 °C ... +60 °C.
**Intrinsically safe signal conditioners for hazardous area applications**

**ACT20X**

NAMUR isolating switching amplifier: with relay output

The ACT20X-HDI-SDO-RNO (NC) isolating switching amplifier is a specialized signal isolating converter for Namur sensor signals or for simple switching signals from the Ex Zone 0. A single relay, available optionally as NC or NO, provides the output signal in the safe zone. Single-channel or double-channel versions are also available.

**Ex label**

- **ATEX**
  - I 3 G Ex nA nC IIC T4
  - I (1) G [Ex ia] IIC/B1/1A
  - I (1) D [Ex ia D]
- **IECEx**
  - Ex nA nC IIC T4 0c
  - [Ex ia Ga] IIC/B1/1A
  - [Ex ia Da] IIC
- **FM**
  - Installation in CL I DIV2 GP A-D T4
  - Protects Ex circuits, in compliance with
  - CL I-III ABT 1/2 GP A-G or
  - CL I Zn2 AEx/Ex nA nC [ia] IIC T4.

**Note**

**Connection diagram: ACT20X HDI-SDO-RNC**

**Application: monitoring of fill level with the ACT20X HDI-SDO-RNO (relay output)**

- **Zone 0, 1, 2, 20, 21, 22 / Cl. I/II/III, div. 1 gr. A-G**
- **Zone 2 / FM Cl. 1, div. 2, gr. A-D o safe area**
NAMUR isolating switching amplifier

• Converts intrinsically safe digital signals (NAMUR / switching contact) from EX Zone 0 into digital output signals (relay output) for the safe zone
• PC configuration with FDT/DTM software, download at www.weidmüller.com
• Relay output for error alarm
• 1 or 2 channels in one module

Technical data

<table>
<thead>
<tr>
<th>Input</th>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor supply</td>
<td>Resistance</td>
</tr>
<tr>
<td>Input frequency</td>
<td>Input resistance</td>
</tr>
<tr>
<td>Triggered low / Triggered high</td>
<td>Output signal in case of wire break</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated switching voltage</td>
<td>Continuous current</td>
</tr>
<tr>
<td>Power rating</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm output</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal switching voltage</td>
<td>Continuous current</td>
</tr>
<tr>
<td>Power rating</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General data</th>
<th>Supply voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAMUR supply</td>
<td>Power consumption</td>
</tr>
<tr>
<td>Tightening torque, min. / Tightening torque, max.</td>
<td>Ambient temperature / Storage temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation coordination</td>
<td>Insulation voltage</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>Power rating</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data for Ex applications (ATEX)</th>
<th>Voltage Ue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ie</td>
<td>Power Pe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Clamping range (nominal / min. / max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length x width x height</td>
<td>mm</td>
</tr>
</tbody>
</table>

Note

NAMUR sensor, according to EN60947, Switch with or without RS, RP

8 V DC / 8 mA
RP = 750 kΩ / RS = 15 kΩ

0...5 kHz
> 0.1 ms
1 kΩ
< 1.2 mA /
< 0.1 mA, > 6.5 mA (in case of wire break)

Relay, 1 or 2 NO / NC (potential-free)

≤ 250 V AC / 30 V DC (safe area)
≤ 32 V AC / 32 V DC (Zone 2)
≤ 2 A AC/DC (safe area, Zone 2 area)
≤ 500 VA / 60 W (safe area)
≤ 16 VA / 32 W (Zone 2)

Relay, 1 NO (voltage-free)

≤ 120 V AC / 110 V DC (safe area)
≤ 32 V AC / 32 V DC (Zone 2)
≤ 0.5 A AC / 1 A DC, (safe area, Zone 2)
≤ 62.5 V AC / 32 W (safe area)
≤ 16 VA / 32 W (Zone 2)

≤ 19...31.2 V DC
≤ 8 V DC / 8 mA
≤ 3 W (2 channels)
≤ 0.4 Nm / 0.6 Nm
-20 °C...+60 °C / -20 °C...+85 °C

cULus, CE, ATEX, EEx, FM

2.6 kW (input / output)
300 V
DIN EN 61326

10.6 V DC
12 mA DC
32 W

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT20X-HDI-SDO-RNO-S / RNC-S</td>
<td>1</td>
<td>8965340000</td>
</tr>
<tr>
<td>ACT20X-2HDI-2SDO-RNO-S / RNC-S</td>
<td>1</td>
<td>8965350000</td>
</tr>
<tr>
<td>ACT20X-2HDI-2SDO-RNO-S</td>
<td>1</td>
<td>8965370000</td>
</tr>
<tr>
<td>ACT20X-2HDI-2SDO-RNC-S</td>
<td>1</td>
<td>8965380000</td>
</tr>
<tr>
<td>CBX200 USB configuration interface</td>
<td>1</td>
<td>8978580000</td>
</tr>
</tbody>
</table>
NAMUR isolating switching amplifier: with NPN transistor output

The ACT20X-HDI-SDO isolating switching amplifier is a specialized signal isolating converter for Namur sensor signals or for simple switching signals from the Ex Zone 0. A plus-switching (NPN) transistor provides the output signal in the safe zone. Single-channel or double-channel versions are also available.

Connection diagram: ACT20X HDI-SDO

Ex label

- **ATEX**: I 3 G Ex nA nC IIC T4
- **IECEx**: Ex nA nC IIC T4 6c
- **FM**: Installation in CL I DIV2 GP A-D T4

Note

Application: monitoring the fill level with isolating switching amplifier
Intrinsically safe signal conditioners for hazardous area applications

**NAMUR isolating switching amplifier**

- Converts intrinsically safe digital signals (NAMUR / switching contact) from EX Zone 0 into digital output signals (transistor output) for the safe zone
- PC configuration with FDT/DTM software, download at www.weidmueller.com
- Relay output for error alarm
- 1 or 2 channels in one module

### Technical data

**Input**

- Sensor
- Sensor supply
- Resistance
- Input frequency
- Pulse duration
- Input resistance
- Trigger level low / Trigger level high
- Output signal in case of wire break

**Output**

- Type
- Switching frequency
- Pulse duration
- Rated switching voltage
- Power rating
- Voltage drop at max. load

**Alarm output**

- Type
- Nominal switching voltage
- Continuous current
- Power rating

**General data**

- Supply voltage
- NAMUR supply
- Power consumption
- Tightening torque, min. / Tightening torque, max.
- Ambient temperature / Storage temperature

**Approvals**

- Approvals
- Insulation coordination
- Insulation voltage
- Rated voltage
- EMC standards

**Data for Ex applications (ATEX)**

- Voltage U_A
- Current I_A
- Power P_A

**Ordering data**

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-channel version</td>
<td>1</td>
<td>8965360000</td>
</tr>
<tr>
<td>2-channel version</td>
<td>1</td>
<td>8965390000</td>
</tr>
</tbody>
</table>

**Ordering data**

- CBX200 USB configuration interface - 8978580000

---

**ACT20X-HDI-SDO-S / 2HDI-2SDO-S**

with transistor output

- NAMUR sensor, according to EN60947, Switch with or without RS, RP
- 8 V DC / 8 mA
- RP = 750 Ω / RS = 15kΩ
- 0...5 kHz
- > 0.1 mA
- 1 HD
- > 1.2 mA / > 2.1 mA
- < 0.1 mA, > 6.5 mA (in case of wire break)

- NPN transistor output
- 5 kHz
- > 10 μs
- ≤ 80 V DC
- ≤ 80 mA / ≤ 2 W
- ≤ 2.5 V DC

- Relay, 1 NO (voltage-free)
- ≤ 12 V AC / 110 V DC (safe area)
- ≤ 32 V AC / 32 V DC (Zone 2)
- ≤ 0.5 A AC / 0.6 A DC (safe area, Zone 2)
- ≤ 62.5 V AC / 32 W (safe area)
- ≤ 16 W / 32 W (Zone 2)

- 19...31.2 V DC
- 8 V DC / 8 mA
- ≤ 5 W (2 channels)
- 0.4 Nm / 0.6 Nm
- -25 °C...+90 °C / -25 °C...+85 °C

- cULus, CE, ATEX, ECEx, FM
- 2.6 kV (input / output)
- 300 V
- DIN EN 61326
- 2.6 V DC / 8 mA
- 12 mA DC
- 32 W

**Dimensions**

- Clamping range (nominal / min. / max.) mm²
- Length x width x height mm

**Note**

- Screw connection
- 2.5 / 3.5 / 2.5
- 119.2 / 22.5 / 113.6

---

**ACT20X**

Weidmüller
**Intrinsically safe signal conditioners for hazardous area applications**

**ACT20X**

**Solenoid driver for ignition protection IIC, 35 mA**

The ACT20X-SDI-HDO solenoid driver has an input in the safe zone and an output in the Ex zone 0. This driver is suitable for switching solenoid valves or alarm transmitters. It is optionally available in a single-channel or double-channel version.

**Connection diagram: ACT20X SDI-HDO**

- **Channel 1:**
  - Alarm: 14 e, 13 e, 12 e, 11 e
  - Solenoid: 14 e

- **Channel 2:**
  - Alarm: 24 e, 23 e, 22 e, 21 e
  - Solenoid: 24 e

- **Input Signals**
  - 44: +V
  - 43: +V
  - 42: +V
  - 41: +V

- **Output Signals**
  - 11-12: Min. 24 V, Min. 12.5 V, 35 mA
  - 11-13: Min. 24 V, Min. 13.5 V, 35 mA
  - 11-14: Min. 24 V, Min. 14.5 V, 35 mA

- **Power Supply**
  - 51: Gnd. –
  - 52: +19.2...31.2 V DC
  - 53: Module status
  - 54: Module status

- **Ex Output Signals**
  - Zone 0, 1, 20, 21, 22 / Cl. I/II/III, div. 1 gr. A-G

- **Zone 2 / Cl. 1, div. 2, gr. A-D or safe area

**Ex label**

- ATEX I 3 G Ex nA nC IIC T4
- I (1) G [Ex ia] IIC/IIA
- I (1) D [Ex iaD]

- IECEx Ex nA nC IIC T4 Gc
- Ex ia Ga IIC/IIB/IIA
- Ex ia Da IIIC

- FM
  - Installation in Cl. I DIV2 GP A-D T4
  - Protects Ex circuits, in compliance with Cl. I-III ABT 1/2 GP A-G or Cl. I 2z2 AExEx nA nC [ia] IIC T4.

**Output data: Solenoid driver for ignition protection group IIC (< 35 mA)**

**Connection terminal**

<table>
<thead>
<tr>
<th>Channel 1</th>
<th>U without load</th>
<th>U with load</th>
<th>I max</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-12</td>
<td>Min. 24 V</td>
<td>Min. 12.5 V</td>
<td>35 mA</td>
</tr>
<tr>
<td>11-13</td>
<td>Min. 24 V</td>
<td>Min. 13.5 V</td>
<td>35 mA</td>
</tr>
<tr>
<td>11-14</td>
<td>Min. 24 V</td>
<td>Min. 14.5 V</td>
<td>35 mA</td>
</tr>
</tbody>
</table>

**Note**

**Connection terminal**

<table>
<thead>
<tr>
<th>Channel 2</th>
<th>U without load</th>
<th>U with load</th>
<th>I max</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-22</td>
<td>Min. 24 V</td>
<td>Min. 12.5 V</td>
<td>35 mA</td>
</tr>
<tr>
<td>21-23</td>
<td>Min. 24 V</td>
<td>Min. 13.5 V</td>
<td>35 mA</td>
</tr>
<tr>
<td>21-24</td>
<td>Min. 24 V</td>
<td>Min. 14.5 V</td>
<td>35 mA</td>
</tr>
</tbody>
</table>

**Note**

**Application: Inflow control in Ex zone with ignition protection group IIC**

- **Control system**
  - A.C. supply
  - DC Power supply
  - 19.2-31.2 V DC

- **Safe zone**
  - Channel 1 digital input
  - Channel 2 digital input

- **Ex Zone Ignition protection group IIC**
  - Ex alarm siren
  - Alarm signal
  - Valve open/closed signal
  - Solenoid valve

- **Tank**
  - Zone 0

- **ACT20X-2SDI-2HDO**
  - Channel 1 digital output
  - Channel 2 digital output
### Technical data

#### Input
- **Type**: NPN, PNP switching signal
- **Input voltage**: ≤ 28 V DC
- **Input resistance, voltage**: ≤ 3.5 kΩ
- **Trigger level low**: ≤ 2.0 V DC (NPN), ≤ 8.0 V DC (PNP)
- **Trigger level high**: ≥ 4.0 V DC (PNP), ≥ 10 V DC (PNP)

#### Alarm output
- **Type**: Relay, 1 NO (voltage-free)
- **Nominal switching voltage**: ≤ 125 V AC / 110 V DC (safe area)
- **Continuous current**: ≤ 0.5 A AC / 1 A DC (safe area, Zone 2)
- **Power rating**: ≤ 62.5 V AC / 32 W (safe area)
- **Ambient temperature / Storage temperature**: ≤ 16 VA / 32 W (Zone 2)

#### General data
- **Supply voltage**: 19…31.2 V DC
- **Power consumption**: ≤ 3 W (2 channels)
- **Tightening torque, min. / max.**: 0.4 Nm / 0.6 Nm
- **Ambient temperature**: -20 °C...+60 °C
- **Storage temperature**: -20 °C...+85 °C

#### Approvals
- **cULus, CE, ATEX, IECEX, FM**

#### Insulation coordination
- **Insulation voltage**: 2.6 kV (input / output)
- **Rated voltage**: 300 V
- **EMC standards**: DIN EN 61326

#### Data for Ex applications (ATEX)
- **Voltage U**: 28 V DC
- **Current I**: ≤ 135 mA
- **Power P**: ≤ 0.95 W

#### Dimensions
- **Clamping range (nominal / min. / max.):** 2.5 / 0.3 / 2.5
- **Length x width x height**: 119.2 / 22.5 / 113.6 mm

---

### ACT20X-SDI-HDO / 2SDI-2HDO

For gas group IIC 35 mA

### Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-channel version</td>
<td>1</td>
<td>8965400000</td>
</tr>
<tr>
<td>2-channel version</td>
<td>1</td>
<td>8965420000</td>
</tr>
</tbody>
</table>

CBX200 USB configuration interface - 8978580000
Intrinsically safe signal conditioners for hazardous area applications

ACT20X

Solenoid driver for ignition protection group IIB, <60 mA

The ACT20X-SDI-HDO solenoid driver has an input in the safe zone and an output in the Ex zone 0. This driver is suitable for switching solenoid valves or alarm transmitters.

Connection diagram: ACT20X-SDI-HDO, for ignition protection group IIB, <60 mA

Ex label

ATEX
II 3 G Ex nA nC IIC T4
II (1) G (Ex ia) IIC/IIB/IA
II (1) D (Ex i WD)

IECEx
Ex nA nC IIC T4 Gc
[Ex ia Ga] IIC/IIB/IA
[Ex ia Da] IIC

FM
Installation in CL I DV3 GP A-D T4

Protects Ex circuits, in compliance with Cl. I-III ABT 1/2 GP A-G or Cl. I Zn2 AEx/Ex nA nC [ia] IIC T4.

Note

Output data: Solenoid driver for ignition protection group IIC (< 60 mA)

Application: Inflow control in Ex zone with ignition protection group IIB
Solenoid driver

- The solenoid driver controls intrinsically safe valves, LEDs, acoustic alarms, etc.
- PC configuration with FDT/DTM software, download at www.weidmüller.com
- Output current is limited to 60 mA for gas group IIB
- Relay output for error alarm

**Technical data**

**Input**
- Type
- Input voltage
- Input resistance, voltage
- Trigger level low
- Trigger level high

**Alarm output**
- Type
- Nominal switching voltage
- Continuous current
- Power rating

**General data**
- Supply voltage
- Power consumption
- Tightening torque, min. / max.
- Ambient temperature / Storage temperature

**Approvals**
- Insulation coordination
- Insulation voltage
- Rated voltage
- EMC standards

**Data for Ex applications (ATEX)**
- Voltage $U_0$
- Current $I_0$
- Power $P_0$

**Dimensions**
- Clamping range (nominal / min. / max.) mm²
- Length x width x height mm

**Ordering data**

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-channel version</td>
<td>1</td>
<td>8965410000</td>
</tr>
</tbody>
</table>

**Screw connection**

| 2.5 / 0.5 / 2.5 | 119.2 / 22.5 / 113.6 |