ACT20P – Overview

ACT20P Strain gauge transmitter for reading load cells

The ACT20P Bridge converts strain gauge measurement signals to standard analogue signals.

The ACT20P family offers the customer precise and functional signal converters in a compact design. The ACT20P bridge is the first product from this new line of signal converters.

Load cells, or so-called force transducers, are used for weighing all types of industrial products. Most of these are made of a metallic spring bellow. The spring deformations are recorded by a strain gauge and converted into a mV signal. The ACT20P Bridge reads these signals and converts them to a standard signal 0(4) – 20 mA or 0 – 10 V. This secure separation also protects against counterfeit signals. A control signal at the tare input can be used to set the empty weight.

Features

- Adjust to load cells using the push button
- Easy tare calibration using the integrated control input
- Intelligent pluggable connection method
- The release lever simplifies maintenance and enables the connection to be unplugged without any wire damage.
- Integrated captive coding with the unique „auto-set“ function
**Exact measurement**
The input with 6-conductor connection and very high accuracy (0.05 % of the measurement range) enables precise signal processing.

**Conversion**
Conversion of the bridge voltage in standardised analogue signals.

**Tare calibration**
Simple calibration of the empty (tare) weight can be done on-site by using the button under the front plate or with an external connection via a PLC output.

**On-site calibration**
Simple and reliable calibration on-site. The ACT20P Bridge is adjusted to the different load cells by means of a push button behind the hinged panel.

**Protection**
Protection against noise from the field. The 3-way isolation separates the input, the voltage supply and the output with 5.7 kV isolation voltage.
ACT20P – Strain gauge transmitter

ACT20P – Strain gauge transmitter for reading from load cells

ACT20P bridge – Strain gauge transmitter for reading from load cells

General

The ACT20P Bridge is a DIN rail mounted, signal conditioner for industrial measuring bridges. It provides a precise excitation voltage for the bridge, and converts the input measurement to an isolated current/voltage signal. Strain gauge transmitter are used for various measurements like weight, force, tension, pressure, torque, and deflection.

Bridge excitation supply

Voltage sense connections are provided so that the excitation voltage can be measured at the bridge. Known as ‘remote sensing’ this method compensates for cabling and contact resistance errors. It is recommended for all new installations or where an upgrade is possible. Remote sensing wiring requires three twisted pairs.

TARE adjustment

The installed strain gauge is normally subjected to an initial load independent of the measurement taken. The TARE connection allows you to correct for this initial loading by operating a switch. Alternatively there is a button on the front of the unit (under the front cover) that performs the same function. Press for two seconds to correct for the initial load (the ‘CAL HI’ LED will light for one second).

Gauge factor

Every strain gauge has a ‘gauge factor’ which gives the output voltage at full-scale for a one volt excitation voltage (given in mV/V). You multiply this by the bridge excitation voltage to get the output voltage when the gauge is fully loaded. For example, a load cell with 10V excitation and 2mV/V gauge factor will give 20mV when fully loaded. The meaning of a 20mV output depends on the type of the strain gauge. If it was designed to measure 0-1000Kg then 20mV indicates a 1000Kg load.

Setup

The ACT20P Bridge has internal switch settings that determine the excitation voltage (5V or 10V) and Input range limits. Select the appropriate settings from the table below. Once you have set the DIP switches, you simply calibrate the unit to the input and output range for your application.

Calibration

There are three options for calibrating the ACT20P Bridge:

• Bench calibrate using a bridge simulator (if you know the gauge factor)
• Calibrate on-site by loading the actual installed strain gauge
• Bench calibrates using a mV source (if you know the gauge factor).

For more information please read the manual from the web page: www.weidmüller.com
**Configurable**

Strain gauge transmitter for reading from load cells

- 3-way isolation
- Supply for measuring bridges up to 4 x 350 Ω
- Simple calibration of the tare weight using external switch or PLC input
- Input and output ranges adjustable via DIP switch

**Technical data**

**Input**
- Type: Bridge sensitivity
- Bridge supply voltage
- Input measurement range
- Input resistance
- Sensor supply

**Output**
- Type: Output voltage / Output current
- Load impedance, voltage/current

**General data**
- Supply voltage
- Power consumption
- Linearity
- Humidity
- Temperature coefficient
- Long-term drift
- Ambient temperature / Storage temperature
- Approvals

**Insulation coordination**
- Standards
- EMC standards
- Rated voltage
- Impulse withstand voltage
- Pollution severity

**Resistance measuring bridge**
- ± 10 mV / ± 20 mV / ± 30 mV / ± 50 mV (adjustable)
- > 1 MD
- 120 mA @ 10 V (= 4 x 350 Ω bridge resistors)
- 5 V or 10 V

**Technical data**

- Voltage and current output (configurable)
- 0 ... 11 V (adjustable) / 0...22 mA (adjustable)

**Front panel DIP Switch settings**

<table>
<thead>
<tr>
<th>Switch</th>
<th>Action if On</th>
<th>Action if Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 V Excitation</td>
<td>5 V Excitation</td>
</tr>
<tr>
<td>2</td>
<td>mA Output</td>
<td>Voltage Output</td>
</tr>
<tr>
<td>3</td>
<td>10 mA Span</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>20 mA Span</td>
<td>Turn off for other ranges</td>
</tr>
<tr>
<td>5</td>
<td>30 mA Span</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>50 mA Span</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>4-wire Measurement</td>
<td>6-wire Measurement</td>
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**Connections**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Input signal</th>
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</thead>
<tbody>
<tr>
<td>11</td>
<td>Signal -</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Signal +</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Sense +</td>
<td>Bridge Excitation Voltage</td>
</tr>
<tr>
<td>14</td>
<td>Sense -</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Excitation +</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Excitation -</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Tare +</td>
<td>External Tare switch</td>
</tr>
<tr>
<td>24</td>
<td>Tare -</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>mA Output -</td>
<td>Output signal</td>
</tr>
<tr>
<td>42</td>
<td>Output +</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>mA Test Point +</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Voltage Output -</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>mA Test Point -</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>-</td>
<td>Power Supply</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Clamping range (nominal / min. / max.)</th>
<th>mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length x width x height</td>
<td>mm</td>
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**Note**

**Ordering data**

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty.</th>
<th>Order No.</th>
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<tbody>
<tr>
<td>ACT20P-BRIDGE-S</td>
<td>1</td>
<td>1067250000</td>
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**Accessories**

**Screw connection**

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