Absolute Shaft Encoders
AI 25 SSI
Installation instructions

For ACURO AI2512133X22X01
And AI2512133X22X02

Rytec Special
- Cover rated IP67, bearings rated IP64
- Cable rated 600V / 105°C
- Outer cable diameter: 8mm +/-0.3mm
- Customer specific wiring
- Numeric wire markers
- 12mm Hubshaft

Art. No.: 2-565-276
Edition.: 3020904Ste

AI2512133X22X01 (10 meter cable)
G0566884, Rytec # 0-014-1021
AI2512133X22X02 (15 meter cable)
G0566883, Rytec # 0-014-1022

1. Preface

These installation instructions are provided for the connection and starting procedure of your Hubshaft encoder.
You will get further information from the Acuro datasheet, on request or on download from our Internet site.

www.dynapar-encoders.com

2. Safety

Authorised persons
The encoder should only be assembled and dismantled by a qualified electrician, as the unit contains sensitive electronic circuits.

Risk of injury due to rotating shafts
Hair and items of clothing may become caught up in rotating shafts.
Prior to commencing all works, disconnect all power supplies and ensure that the working environment is Safe!

Risk of destruction due to static electricity
The CMOS modules contained in the encoder are very sensitive to high voltages such as can arise due to friction of the clothing.
Do not touch plug contacts or electronic components!

Risk of destruction due to mechanical overload
Rigid mounting will give rise to constraining forces which will permanently overload the bearings.
Never restrict the freedom of movement of the encoder! Use only the enclosed sheet steel springs or a suitable coupling to secure the unit!

Risk of destruction due to mechanical shock
Violent shocks, e.g. due to hammer blows, can lead to the destruction of the optical sensing system and the ball bearings.
Never use force! Assembly is simple provided that correct procedure is followed.

Risk of destruction due to overloading
The unit may only be operated within the limits specified in the technical data.

Fields of application: industrial processes and controls.
Overvoltage at the connecting terminals must be limited to overvoltage-class-II values (SELV).
The connecting cable is not for dragline mounting, only for fix mounting.
This encoder is a supply part destined for mounting to an appliance (motor, machine). It is not provided for customer sale.
Manufacturers integrating this encoder to their facilities are responsible as well for compliance with CE guidelines as for the CE mark.

3. Assembly

- Spring plate, hub shaft -
### 4. Mechanical data •

| Fa | Bore = 12 mm >100,000 h @ 6000 RPM |
| Fr | Bore = 12 mm >100,000 h @ 6000 RPM |

- Short term = 12 000 RPM
- Continuous duty = 10 000 RPM

| Fa < 20N | Fr < 40N |

- Vibration: 100 m/s² (10 ... 500 Hz) 1 000 m/s² (6 ms)
- Shock: -

### 6. Electrical data •

- Bore = 12 mm
- >100,000 h @ 6000 RPM

### 5. Electrical data •

- U_{in} = 10 ... 30 VDC

### 6. Cable Connection

<table>
<thead>
<tr>
<th>Marker</th>
<th>Color</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>brown</td>
<td>10 to 30 VDC</td>
</tr>
<tr>
<td>34</td>
<td>white</td>
<td>COM</td>
</tr>
<tr>
<td>35</td>
<td>gray</td>
<td>Data</td>
</tr>
<tr>
<td>36</td>
<td>pink</td>
<td>Data</td>
</tr>
<tr>
<td>37</td>
<td>black</td>
<td>Clock</td>
</tr>
<tr>
<td>38</td>
<td>blue</td>
<td>Clock</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LED</th>
<th>Encoder</th>
<th>Color</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green / Red</td>
<td>O.K. / Error</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7. Malfunction •

The operational state of the encoder is displayed by a green LED. The occurrence of a malfunction will be indicated by a red LED.

**Preset**
Press the Preset button with a blunt item to set the absolute position without a time delay to the preset value. Behaviour is dynamic, i.e. the preset command is independent of how long the button is held down and is effective once the button is pressed. The LED however signals the actuation of the button by a continuous red and green light while the button is pressed.

### 6.2 Explanation of terms •

<table>
<thead>
<tr>
<th>Power</th>
<th>+U_{L} = 10 to 30 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 V =</td>
<td>COM</td>
</tr>
</tbody>
</table>

- LSB = Least Significant Bit
- MSB = Most Significant Bit
- S0, S1, ... = Data bits for resolution per turn
- M0, M1, ... = Data bits for number of turns

### 8. Ordering data •

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A125</td>
<td></td>
<td>Multi-Turn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- A125
- Size 25
- Acuro Absolute Encoder

- Multi-Turn
- 12 Bit Multi-Turn, 13 Bit Single-Turn

### 8. Ordering data •

<table>
<thead>
<tr>
<th>Bits</th>
<th>T1 - T12</th>
<th>T13 - T21</th>
<th>T22</th>
<th>T23</th>
<th>T24</th>
<th>T25</th>
<th>T26</th>
<th>T27</th>
<th>T28</th>
<th>T29</th>
</tr>
</thead>
<tbody>
<tr>
<td>S9, S8</td>
<td>Data Bits</td>
<td>S12 - S4</td>
<td>S3</td>
<td>S2</td>
<td>S1</td>
<td>S0</td>
<td>0</td>
<td>M11</td>
<td>M10</td>
<td>M9</td>
</tr>
<tr>
<td>S9 - S0</td>
<td>Data Bits</td>
<td>M11, M10</td>
<td>Data Bits</td>
<td>12 turn Data Bits</td>
<td>M11, M9, M8, Etc.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### SSI Data Format

<table>
<thead>
<tr>
<th>Bits</th>
<th>T1 - T12</th>
<th>T13 - T21</th>
<th>T22</th>
<th>T23</th>
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<th>T25</th>
<th>T26</th>
<th>T27</th>
<th>T28</th>
<th>T29</th>
</tr>
</thead>
<tbody>
<tr>
<td>1213</td>
<td>M11 - M0</td>
<td>S12 - S4</td>
<td>S3</td>
<td>S2</td>
<td>S1</td>
<td>S0</td>
<td>0</td>
<td>M11</td>
<td>M10</td>
<td>M9</td>
</tr>
</tbody>
</table>

- S9, S8 Data Bits for resolution per turn.
- M11, M10 Data Bits for number of turns.
- T1, T2 SSI Clock number

- ESD