

C-DIAS Resolver Interface

CRI 101

The C-DIAS CRI 101 module is used to analyze resolver signals.

In addition, positions can be captured with a digital input.



Technical Data

Resolver inputs

| | | |
|---------------------------------------|--|-----------------------------|
| Number of inputs | 1 | |
| Measurement resolution | 12 / 14 / 16 bits (settable in the software) | |
| Max. Rotation speed | 970 rps at 12 bits 480 rps at 14 bits 120 rps at 16 bits | |
| Angular accuracy | ± 14 arc min + 1 LSB | |
| Resolution Linearity INL | ± 8 LSB at 14 bits | |
| Velocity accuracy | ± 10 LSB at 14 bits | |
| Input voltage USS (for SIN or COS) | Typically 4.4 V | Maximum 4.8 V |
| Output voltage USS (for EXC) | Typically 8.8 V | Maximum 9.9 V _{PP} |
| Max. output current (for EXC) | 120 mA | |
| Output frequency | 8 kHz | |
| Resolver transfer ratio | 2 : 1 or 0,5 | |

Digital Inputs

| | | |
|---------------------|------------------------------|---------------|
| Number of inputs | 1 | |
| Interrupt capable | Yes | |
| Input voltage | Typically +24 V | Maximum +30 V |
| Signal level | low: <+5 V | High : >+14 V |
| Switching threshold | Typically +11 V | |
| Input current | Typically 4.7 mA (at + 24 V) | |
| Input delay | Typically 0,1 ms | |

Electrical requirements

| | | |
|---|------------------|----------------|
| Voltage supply from C-DIAS bus | +5 V | |
| Current consumption of C-DIAS bus (+5 V supply) | Typically 120 mA | Maximum 150 mA |
| +24 VDC current consumption (EXC supply at X5) | Maximum 60 mA | |

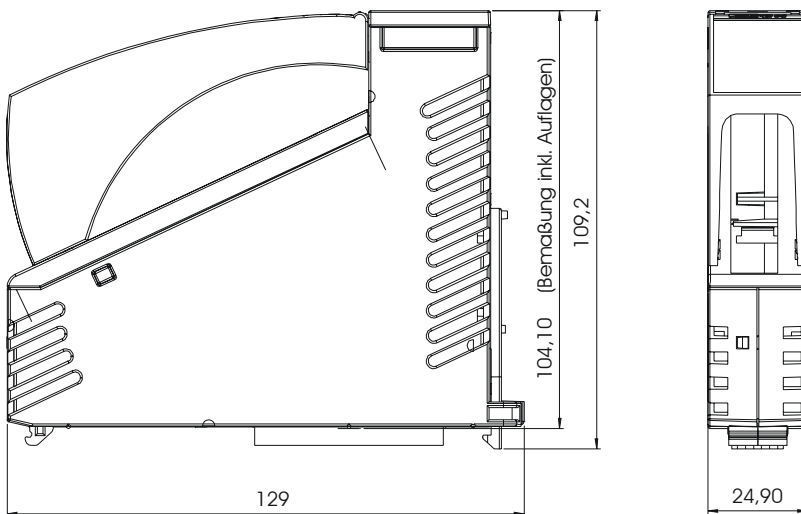
Miscellaneous

| | | |
|-----------------------------------|------------|--|
| Article number | 12-031-101 | |
| Module identification on DIAS bus | Yes | |
| Hardware version | 1.0 | |

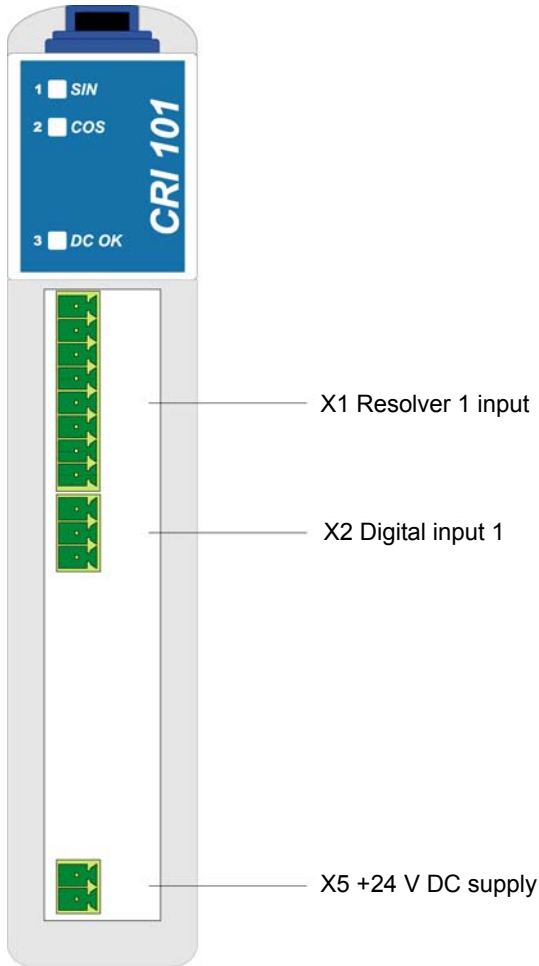
Environmental conditions

| | | |
|-----------------------|--|----------------------|
| Storage temperature | -20 – +85 °C | |
| Operating temperature | 0 – +60 °C | |
| Humidity | 0 - 95 %, uncondensed | |
| EMV stability | According to EN 61000-6-2:2001 (industrial area) | |
| Shock resistance | EN 60068-2-27 | 150 m/s ² |
| Protection Type | EN 60529 | IP 20 |

Mechanical Dimensions

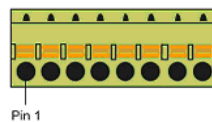


Connector Layout

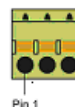


X1: Connection for resolver 1


| Pin | Function |
|-----|----------------|
| 1 | SINE + |
| 2 | SINE - |
| 3 | COSINE + |
| 4 | COSINE - |
| 5 | EXC + |
| 6 | EXC - |
| 7 | Shield / Earth |
| 8 | Shield / Earth |


X2: Digital input 1


| Pin | Function |
|-----|----------|
| 1 | Dig IN 1 |
| 2 | +24 V DC |
| 3 | GND |


X5: +24 V DC supply for field winding


| Pin | Function |
|-----|----------|
| 1 | +24 V DC |
| 2 | GND |


Applicable connectors

X1: Phoenix FK-MCP1,5/8-ST-3,5

X2: Phoenix FK-MCP1,5/3-ST-3,5

X5: Phoenix FK-MCP1,5/2-ST-3,5

Status Displays



| LED-Nr. | LED color | Definition | |
|---------|-----------|------------|---|
| 1 | GREEN | SIN | Lights during the positive half wave of the sine signal from resolver 1 (=> blinks when the resolver's runner is in motion) |
| 2 | GREEN | COS | Lights during the positive half wave of the cosine signal from resolver 1 (=> blinks when the resolver's runner is in motion) |
| 3 | GREEN | DCOK | Lights when the module's voltage supply is ok. |

Error Detection

The CRI 101 can detect various error conditions in the signal, which can be read from the "Fault Register".

| Bit | Description |
|-----|--|
| D7 | Sine/cosine inputs clipped |
| D6 | Sine/cosine inputs below LOS threshold LOS = Loss of signal Default = 2.2 V |
| D5 | Sine/cosine inputs exceed DOS over range threshold DOS = Degradation of signal Default = 4.1 V |
| D4 | Sine/cosine inputs exceed DOS mismatch threshold DOS = Degradation of signal Default = 380 mV |
| D3 | Tracking error exceeds LOT threshold LOT = Loss of Tracking Detection |
| D2 | Velocity exceeds maximum tracking rate |
| D1 | Phase error exceeds phase lock range Default = $\pm 44^\circ$ |
| D0 | Configuration parity error |

For more information on setting options and registers, see the data sheet for AD2S1210 from "Analog Devices".

Shielding Recommendation for Resolver Cables

