

**Technical Documentation**

Version: 1.4  
 Date: 2017-01-09  
 Language: EN  
 Article no.: TDmlAX-572x-0000-0400

Beckhoff Automation GmbH & Co.KG  
 Hülshorstweg 20  
 33415 Verl  
 Germany

Phone: +49(0)5246/963-0  
 Fax: +49(0)5246/963-198  
 E-mail: [Info@beckhoff.com](mailto:Info@beckhoff.com)  
 Internet: [www.beckhoff.com](http://www.beckhoff.com)

Please read carefully before commissioning!

**Foreword**

**Notes on the documentation**

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards. It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components. It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning. The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

**Disclaimer**

The documentation has been prepared with care. The products described are, however, constantly under development. We reserve the right to revise and change the documentation at any time and without prior announcement. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

**Appropriate use**

The digital encoder cards are exclusively intended for application in the optional rear slot of a servo drive from the AX5000 series. The cards are installed together with the servo drive as components in electrical systems and machinery and may only be used in this way.

**Security**

**Safety rules**

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations and guidelines.

 <b>DANGER</b>	<p><b>Caution – Danger of death!</b></p> <p>Due to the DC link capacitors dangerous voltage (875VDC) may persist at the DC link contacts “ZK+ and ZK- (DC+ and DC-)“ and “RB+ and RB-“ after the servo drive has been disconnected from the mains supply. After disconnecting the servo drive wait at AX5101 - AX5125 and AX520x; <b>5 minutes</b>, at AX5140/AX5160/AX5172; <b>15 minutes</b>, at AX5190/AX5191; <b>30 minutes</b> and at AX5192/AX5193; <b>45 minutes</b> and measure the voltage at the DC link contacts ZK+ and ZK- (DC+ and DC-). The device is safe once the voltage has fallen below 50 V.</p>
 <b>WARNING</b>	<p><b>Caution – Risk of injury!</b></p> <p>Electronic equipment is not fail-safe. The machine manufacturer is responsible for ensuring that the connected motors and the machine are brought into a safe state in the event of a fault in the drive system.</p>
 <b>Attention</b>	<p><b>Destruction of the digital encoder card through electrostatic charging!</b></p> <p>The digital encoder card is an ESD-sensitive component. Follow the usual ESD safety procedures when handling the card (anti-static wrist straps, earthing of the relevant components, etc.).</p>

**Personnel qualification**

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards. Knowledge of machine safety legislation is compulsory.

**Product description**

 <b>Note</b>	<p><b>No safety functions</b></p> <p>Safety functions cannot be implemented with the encoder option card.</p>
-----------------	---

The encoder option card enables the connection of one digital feedback system per channel. The sockets X41 or X42 respectively are not plug-compatible with the front sockets X11 or X21 respectively of the AX5000. The following interfaces are supported:

1. EnDat 2.2
2. BiSS „C“ Mode

**Firmware version**

AX5000: 2.06 or higher and AX572x: 2.06 or higher

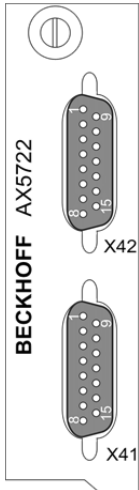
**Type key**

AX5721 – High Resolution Digital Encoder Option Card for single-channel servo drives  
 AX5722 – High Resolution Digital Encoder Option Card for dual-channel servo drives

## Technical data

Max. single turn resolution: 32 bit

### Overview of sockets X41 (channel A) und X42 (channel B)

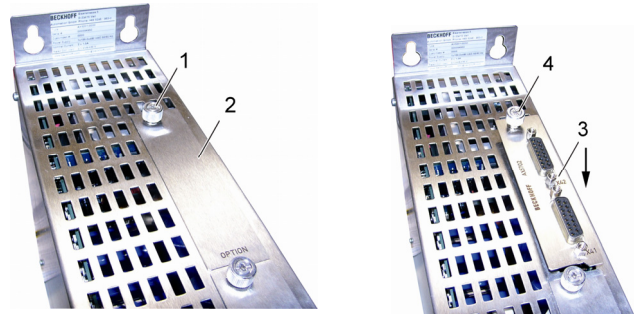


Pin	Endat 2.2	BiSS C	Output current
1	n.c	n.c	0,25 A / channel
2	GND	GND	
3	n.c	n.c	
4	5V+ ±10%	5V+ ±10%	
5	Data+	Data+	
6	12 V	12 V	
7	n.c	n.c	
8	CLK+	CLK+	
9	n.c.	n.c.	
10	GND sense	GND sense	
11	n.c.	n.c.	
12	5V sense ±10%	5V sense ±10%	
13	Data-	Data-	
14	n.c.	n.c.	
15	CLK-	CLK-	

### Installation of the digital encoder card

 <b>CAUTION</b>	<p><b>Caution – Do not work on live equipment!</b></p> <p>Disconnect the equipment at all poles from live parts and secure it against being switched on again, so that there is no possibility of uncontrolled movements of the equipment occurring.</p>
 <b>DANGER</b>	<p><b>Caution – Danger of death!</b></p> <p>Due to the DC link capacitors dangerous voltage (875VDC) may persist at the DC link contacts “ZK+ and ZK- (DC+ and DC-)” and “RB+ and RB-“ after the servo drive has been disconnected from the mains supply. After disconnecting the servo drive wait at AX5101 - AX5125 and AX520x; <b>5 minutes</b>, at AX5140/AX5160/AX5172; <b>15 minutes</b>, at AX5190/AX5191; <b>30 minutes</b> and at AX5192/AX5193; <b>45 minutes</b> and measure the voltage at the DC link contacts ZK+ and ZK- (DC+ and DC-). The device is safe once the voltage has fallen below 50 V.</p>
 <b>Attention</b>	<p><b>Destruction of the digital encoder card through electrostatic charging!</b></p> <p>The digital encoder card is an ESD-sensitive component. Follow the usual ESD safety procedures when handling the card (anti-static wrist straps, earthing of the relevant components, etc.).</p>

- Fully release the bolt (1).
- Remove the panel (2).
- Carefully insert the digital card (3) into the opening in the direction of the arrow. The slot has guides for the card on the short sides. Ensure that the card is inserted into these guides.
- Tighten the bolt (4).



### Error messages related to the Encoder Option Card

- F870 “Encoder not ready” – execute the RESET command (S-0-0099)
- F872 “Error flag active” – status changes to “Safe op”. Restart required
- F873 „Get position timeout“ – status changes to “Safe op”. Restart required
- F874 „ Crc memory error – execute the RESET command (S-0-0099)
- F875 „No EnDat 2.2 encoder connected“ – execute the RESET command (S-0-0099)
- F876 „UART Error“ – execute the RESET command (S-0-0099)
- F877 „Out of memory“ – execute the RESET command (S-0-0099)
- F879 „Calibration error“ – execute the RESET command (S-0-0099)
- F87A „AX572x power supply error“ – execute the RESET command (S-0-0099)
- F87C „AX572x protocol not supported“ – execute the RESET command (S-0-0099)
- F87D „AX572x wrong parameter“ – execute the RESET command (S-0-0099)

Copyright

© Beckhoff Automation GmbH & Co. KG

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited.

Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.

### Scope of supply

The scope of supply includes the following components:

High Resolution Digital encoder card AX572x, technical documentation and packaging

If one of the components is damaged please notify the logistics company and Beckhoff Automation GmbH & Co. KG immediately.