8EAC0150.001-1

1 General information

Plug-in module 8EAC0150.001-1 can be used in the slot on an ACOPOS P3 8EI servo drive. The module is equipped with 1 multi-encoder interface for evaluating digital encoders.

The plug-in module evaluates digital encoders that are built into B&R servo motors or used to evaluate external axes.

The encoder input signals are monitored. This makes it possible to detect open circuits, short circuits and failures in the encoder power supply.

When switched on, the plug-in module is automatically identified by the operating system on the ACOPOS P3 8EI servo drive.

Information:

The encoder interfaces of 8EAC plug-in modules are each permanently assigned to an axis (motor connection X5xx) of the 8EI servo amplifier in which the respective 8EAC plug-in module is being operated.

8EAC encoder interface plug-in module	Assignment		
	8EIxxxxxS... 1-axis modules	8EIxxxxxD... 2-axis modules	8EIxxxxxT... 3-axis modules
X41x	X51 / X51A	X51 / X51A	X51 / X51A
X42x	---	X52	X52
X43x	---	---	X53

Digital multi-encoder interfaces

Information:

The encoder type for the multi-encoder interface is not predefined from the factory.
Before commissioning, configure the encoder type and – depending on the encoder type – the encoder supply voltage in Automation Studio for each multi-encoder interface!

The following encoder types are supported:

Technical data		Encoder type			
	EnDat 2.2	SSI	BiSS (mode C)	T format	HIPERFACE DSL
Output voltage [1]	11.45 V ±0.1 V	11.45 V ±0.1 V 5.2 V ±0.1 V		5.2 V ±0.1 V	11.45 V ±0.1 V
Data transfer rate	6.25 Mbit/s	100 to 400 kbit/s	1 to 8.33 Mbit/s	2.5 Mbit/s	9.375 Mbit/s
Terminating resistor	120 Ω				110 Ω ±10%
Support [2]	ACOPOS operating system 5.1.0 and higher			ACOPOS operating system 5.08.0 and higher	ACOPOS operating system 5.5.0 and higher
Selection in Automation Studio	EnDat	SSI	BiSS	T format	HIPERFACE DSL

Table 1: Supported encoder types

1) The output voltage is not predefined from the factory (exception: encoder types EnDat 2.2 and HIPERFACE DSL). It must be configured in Automation Studio based on the encoder type.
If no output voltage is configured, then the encoder will not be supplied by digital multi-encoder interface X41H. Power to the encoder can then be supplied externally.

2) Operating system version from which a certain encoder type is supported.

Caution!

An incorrect configuration can result in irreparable damage to the connected encoder!

2 Order data

Order number	Short description	Figure
	Plug-in modules	
8EAC0150.001-1	ACOPOS P3 plug-in module, digital multi-encoder interface	
	Optional accessories	
	Adapter cables	
8ECF00X4.1241C-0	ACOPOS P3 adapter cable for digital encoder interface, length 0.4 m, 1x 4x 0.14 mm² + 4x 0.35 mm², 9-pin female DSUB, 8-pin male Mini I/O connector	

Table 2: 8EAC0150.001-1 - Order data

3 Technical data

Order number	8EAC0150.001-1
General information	
Module type	ACOPOS P3 plug-in module
B&R ID code	0xE827
Slot	Slot 1
Max. power consumption	P[W] = (15 V * $I_{Encoder}$[A]) + 2 W Max. 6.5 W
Certifications	
CE	Yes
UL	cULus E225616 Power conversion equipment
KC	In preparation
Encoder interfaces	
Quantity	1
Type	Digital multi-encoder interface, configurable [1]
Connections	8-pin female mini I/O connector
Status indicators	None [2]
Electrical isolation	
Encoder - ACOPOS P3	No
Max. encoder cable length	75 m Depends on the cross section of the power supply wires of the encoder cable [3]
Encoder power supply	
Output voltage	Configurable Typ. 11.45 V ± 0.1 V / 5.2 V ± 0.1 V [4]
Load capacity	Max. 300 mA (HIPERFACE DSL: Max. 200 mA)
Sense lines	2, compensation of max. 2x 0.7 V
Protective measures	
Short-circuit proof	Yes
Overload-proof	Yes
Synchronous serial interface	
Signal transmission	RS485 [5]
Data transfer rate	Depends on the configured encoder type
Differential voltage	
Minimum	2.0 V
Maximum	6.0 V
Support	
Motion system	
mapp Motion	5.1.0 and higher
ACP10/ARNC0	5.01.0 and higher
Ambient conditions	
Temperature	
Operation	
Nominal	-25 to 55°C
Maximum	55°C
Storage	-25 to 55°C
Transport	-25 to 70°C

Table 3: 8EAC0150.001-1 - Technical data

Order number	8EAC0150.001-1
Relative humidity	
Operation	5 to 85%
Storage	5 to 95%
Transport	Max. 95% at 40°C

Table 3: 8EAC0150.001-1 - Technical data

1) The encoder type is not predefined from the factory. The encoder type necessary in each case must be configured in Automation Studio.
2) The direction of rotation of the encoder can be displayed on the 8EAD0000.000-1 display module.
3) The maximum encoder cable length l_{max} can be calculated as follows (the maximum permissible encoder cable length of 75 m is not permitted to exceeded):

   $l_{max} = f / I_G * A * 1/(2*\rho)$

   f ... (Output voltage of encoder interface [V] - Min. permissible supply voltage of connected encoder [V]) * 1.1
   I_G ... Max. current consumption of connected encoder [A]
   A ... Cross section of the power supply wires [mm²]
   ρ ... Specific resistance [Ω mm²/m] (e.g. for copper: ρ = 0.0178)
4) The output voltage is not predefined from the factory (exception: encoder types EnDat 2.2 and HIPERFACE DSL). It must be configured in Automation Studio based on the encoder type. If no output voltage is configured, then the encoder will not be supplied by digital multi-encoder interface X41H. Power to the encoder can then be supplied externally.
5) Except encoder type HIPERFACE DSL.

4 Wiring

4.1 Pinout

> **Information:**
>
> **Plug-in module 8EAC is not capable of hot plugging. An 8EAC plug-in module is only permitted to be connected to or disconnected from an ACOPOS P3 8EI servo drive when power to the servo drive is switched off.**

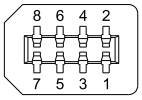
Figure	Mini I/O X41H	Pin	Name	Function depending on configured encoder type				
				EnDat 2.2	SSI	BiSS	T format	HIPERFACE DSL
		1	U+	Encoder power supply +				---
		2	T	Clock output			---	---
		3	---	---	Sense input +5 V 1)		---	HIPERFACE DSL
		4	T\	Clock output inverted			---	---
		5	---	---	Sense input 0 V 1)		---	HIPERFACE DSL inverted
		6	D	Data				---
		7	COM	Encoder power supply 0 V				---
		8	D\	Data inverted				---

Table 4: Digital multi-encoder interface 8EAC0150.001-1 - Pinout

1) Only if the encoder supply voltage is configured accordingly (5 V).

5 Input/Output circuit diagram

