

# 8AC125.60-1

## 1 General information

The AC125 plug-in module contains a serial RS485 interface as well as an interface for evaluating sinusoidal output signals. Encoders with a supply voltage of 5 V can be connected.

The following functions and protocols can be selected by configuring the appropriate parameters (using a higher-level controller).

- BiSS (MODE C), serial
- SSI, serial
- SSI SinCos, serial with evaluation of sinusoidal output signals

This plug-in module can be used to evaluate encoders installed in B&R servo motors as well as encoders for external axes (encoders that scan any machine movement). The input signals are monitored. This makes it possible to detect open circuits, conductor faults and failures in the encoder power supply. <sup>1)</sup>

## 2 Order data


Model number	Short description	Figure
	<b>Plug-in modules</b>	
8AC125.60-1	ACOPOS plug-in module, BiSS/SSI SinCos/SSI interface	

Table 1: 8AC125.60-1 - Order data

## 3 Technical data

Model number	8AC125.60-1
<b>General information</b>	
Module type	ACOPOS plug-in module
B&R ID code	0xACF3
Slot <sup>1)</sup>	Slots 2, 3 and 4
Power consumption	Max. 4.5 W
Certifications	
CE	Yes
UL	cULus E225616
KC	Power conversion equipment
	Yes
<b>Encoder inputs <sup>2)</sup></b>	
Quantity	1
Module-side connection	15-pin female DSUB
Status indicators	UP/DN LEDs
Electrical isolation	
Encoder - ACOPOS	No
Encoder monitoring	Yes
Max. encoder cable length	50 m <sup>3)</sup>

Table 2: 8AC125.60-1 - Technical data

<sup>1)</sup> Not for SSI functionality.

Model number	8AC125.60-1
Encoder power supply	
Output voltage	Typ. 5 V
Load capacity	250 mA <sup>4)</sup>
Sense lines	Yes
Sine/Cosine inputs	
Signal transmission	Differential signals, symmetrical
Signal frequency (-3 dB)	DC up to 300 kHz
Signal frequency (-5 dB)	DC up to 400 kHz
Differential voltage	0.5 to 1.25 V <sub>SS</sub>
Common-mode voltage	Max. ±7 V
Terminating resistor	120 Ω
Resolution <sup>5)</sup>	16384 * Number of encoder lines
Accuracy <sup>6)</sup>	-
Reference input	
Signal transmission	Differential signal, symmetrical
Differential voltage for low	≤-0.2 V
Differential voltage for high	≥+0.2 V
Common-mode voltage	Max. ±7 V
Terminating resistor	120 Ω
Serial interface	
Signal transmission	Synchronous
Protocol	RS485
Baud rate	Depends on the configured functionality
<b>Ambient conditions</b>	
Temperature	
Operation	
Nominal	5 to 40°C
Maximum	55°C
Storage	-25 to 55°C
Transport	-25 to 70°C
Relative humidity	
Operation	5 to 85%
Storage	5 to 95%
Transport	Max. 95% at 40°C

Table 2: 8AC125.60-1 - Technical data

- 1) The AC125 is an encoder module. It is also possible to connect multiple encoder modules. In this case, the encoder module in the smallest slot automatically serves as motor feedback.
- 2) The encoder must be wired with a shielded cable.
- 3) Requirement: Wiring of the encoder takes place with a shielded cable with a wire cross section of min. 0.14 mm<sup>2</sup> for all signal lines and a wire cross section of min. 0.5 mm<sup>2</sup> for all encoder power supply lines.
- 4) The value refers only to the encoder. The actual load capacity of the encoder power supply is approx. 300 mA. The difference of approx. 50 mA covers the consumption of the always-existing terminating resistors. For longer encoder cables, it is important to ensure that the voltage drop on the supply wires (back and forth) is not permitted to exceed 1.45 V. This can reduce the permissible load current.
- 5) Depending on the resolution of the connected encoder, only part of this resolution can be used in practice. In addition, the usable resolution can be reduced by signal noise of the connected encoder.
- 6) In practice, the accuracy is limited by the encoder.

## 4 Status indicators

The UP/DN LEDs are lit depending on the rotational direction and the speed of the connected encoder.

UP LED ... Lit when the encoder position changes in the positive direction.

DN LED ... Lit when the encoder position changes in the negative direction.

The faster the encoder position changes, the brighter the respective LED is lit.

## 5 Firmware

The firmware is part of the operating system for the ACOPOS servo drives. Firmware is updated by updating the ACOPOS operating system.

## 6 Wiring

### 6.1 Pinout


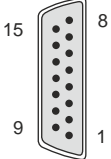
Figure	X11	Pin	Name	Function		
				BiSS	SSI	SSI SinCos
		1	A	---	---	Channel A
		2	COM (1, 3 - 9, 11, 13 - 15)	Encoder supply 0 V		
		3	B	---	---	Channel B
		4	5 V out / 0.25 A	Encoder power supply 5 V		
		5	D	Data input		
		6	---	---		
		7	R\	Reference pulse inverted		
		8	T	Clock output		
		9	A\	---	---	Channel A inverted
		10	Sense -	Sense -		
		11	B\	---	---	Channel B inverted
		12	Sense +	Sense +		
		13	D\	Data inverted		
		14	R	Reference pulse		
		15	T\	Clock output inverted		

Table 3: AC125 pinout

### Danger!

The connections for the encoders are isolated circuits. These connections are therefore only permitted to be connected to devices or components that have sufficient isolation in accordance with IEC 60364-4-41 or EN 61800-5-1.