8BAC0121.000-1

1 General information

HIPERFACE encoder interface plug-in module 8BAC0121.000-1 can be used in an ACOPOSmulti slot. The module contains a HIPERFACE encoder interface.

This module can be used to evaluate encoders installed in motors from other manufacturers as well as encoders for external axes (encoders that sample 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.

HIPERFACE is a standard developed by Max Stegmann GmbH (www.stegmann.de) that, like EnDat, combines the advantages of absolute and incremental position measurement and provides a read/write parameter memory in the encoder. With absolute position measurement (the absolute position is sampled serially), a homing procedure for referencing is usually not required. Where necessary, a multi-turn encoder (4096 revolutions) should be installed. To reduce costs, a single-turn encoder and a reference switch can also be used. In this case, a homing procedure must be carried out.

The incremental process allows the short deceleration periods necessary for position measurement when using drives with highly dynamic characteristics. The sinusoidal incremental signal and extremely high resolution in the HIPERFACE module also make it possible to achieve a very high degree of positioning precision despite the moderate signal frequencies used.

The parameter memory contained in the HIPERFACE encoder is available with firmware version V1.221 and later.

During startup, the plug-in module is automatically identified, configured and its parameters set by the ACOPOSmulti drive system's operating system.

2 Order data

Model number	Short description	Figure
	Plug-in modules	
8BAC0121.000-1	ACOPOSmulti plug-in module, HIPERFACE interface	

Table 1: 8BAC0121.000-1 - Order data

3 Technical data

Model number	8BAC0121.000-1
General information	
Module type	ACOPOSmulti plug-in module
B&R ID code	0x261D
Slot [1)]	Slots 1 and 2
Max. power consumption	P_{Module} [mW] = 25 V * ($I_{Encoder}$ [mA] *0.48 + 50 mA)
Certifications	
CE	Yes
KC	Yes
UL	cULus E225616 Power conversion equipment

Table 2: 8BAC0121.000-1 - Technical data

Model number	8BAC0121.000-1
Encoder connection [2]	
Module-side connection	15-pin male DSUB connector
Status indicators	UP/DN LEDs
Electrical isolation	
Encoder - ACOPOSmulti	No
Encoder monitoring	Yes
Max. encoder cable length	75 m
Encoder inputs	
Quantity	1
Sine/Cosine inputs	
Signal transmission	Differential signal, asymmetrical
Signal frequency	DC up to 200 kHz
Common-mode voltage	Max. ±7 V
Terminating resistor	120 Ω
Resolution	12-bit
Encoder power supply	
Output voltage	Typ. 10 V
Load capacity	130 mA [3]
Sense lines	- [4]
Protective measures	
Overload protection	Yes
Short circuit protection	Yes
Position	
Resolution @ 1 V_{SS} [5]	Number of encoder lines * 5700
Asynchronous serial interface	
Signal transmission	RS485
Data transfer rate	9600 bit/s
Environmental conditions	
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: 8BAC0121.000-1 - Technical data

1) The 8BAC0121.000-1 is an encoder module. Up to two encoder modules can be connected. In this case, the encoder module in the first slot automatically serves as motor feedback for the first axis; the encoder module in the second slot serves as motor feedback for the second axis. In 1-axis mode, the second slot can be used for other purposes.
2) The HIPERFACE encoder must be wired using a cable with a single shielding layer.
3) An additional reserve of 40 mA is available for terminating resistors.
4) No sense lines are present since the supply voltage for the HIPERFACE encoder is permitted to be between 7 and 12 V.
5) This value does not correspond to the encoder resolution that must be configured in Automation Studio (16384 * number of encoder lines).

4 Wiring

4.1 Pinout

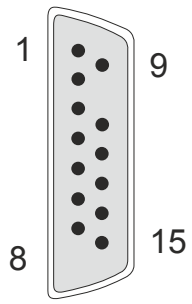
Figure	X11	Pin	Description	Function
		1	SIN	Channel SIN
		2	COM	Encoder power supply 0 V
		3	COS	Channel COS
		4	+10 V	Encoder power supply +10 V
		5	D	Data input
		6	---	---
		7	T+	Temperature sensor +
		8	---	Keying
		9	REF SIN	REF SIN channel
		10	---	Keying
		11	REF COS	REF COS channel
		12	---	---
		13	D\	Data input inverted
		14	T-	Temperature sensor -
		15	---	---

Table 3: HIPERFACE interface 8BAC0121.000-1 - 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 per IEC 60364-4-41 or EN 61800-5-1.

Warning!

Temperature sensors are only permitted to be connected to T+ and T- on an ACOPOSmulti plug-in module under the following conditions:

- **The ACOPOSmulti plug-in module is connected in SLOT1 of an ACOPOSmulti module and no temperature sensor is connected to connectors X4A/T+ and X4A/T- of this ACOPOSmulti module.**
- **Only for 8BVIxxxxHxD0.xxx-x inverter modules:**
  The ACOPOSmulti plug-in module is connected in SLOT2 of an ACOPOSmulti module and no temperature sensor is connected to connectors X4B/T+ and X4B/T- of this ACOPOSmulti module.

Otherwise, the temperature monitoring functions on the ACOPOSmulti module may become ineffective, which in extreme cases can cause the hardware (e.g. motors) connected to the ACOPOSmulti module to be destroyed!

4.2 Input/Output circuit diagram

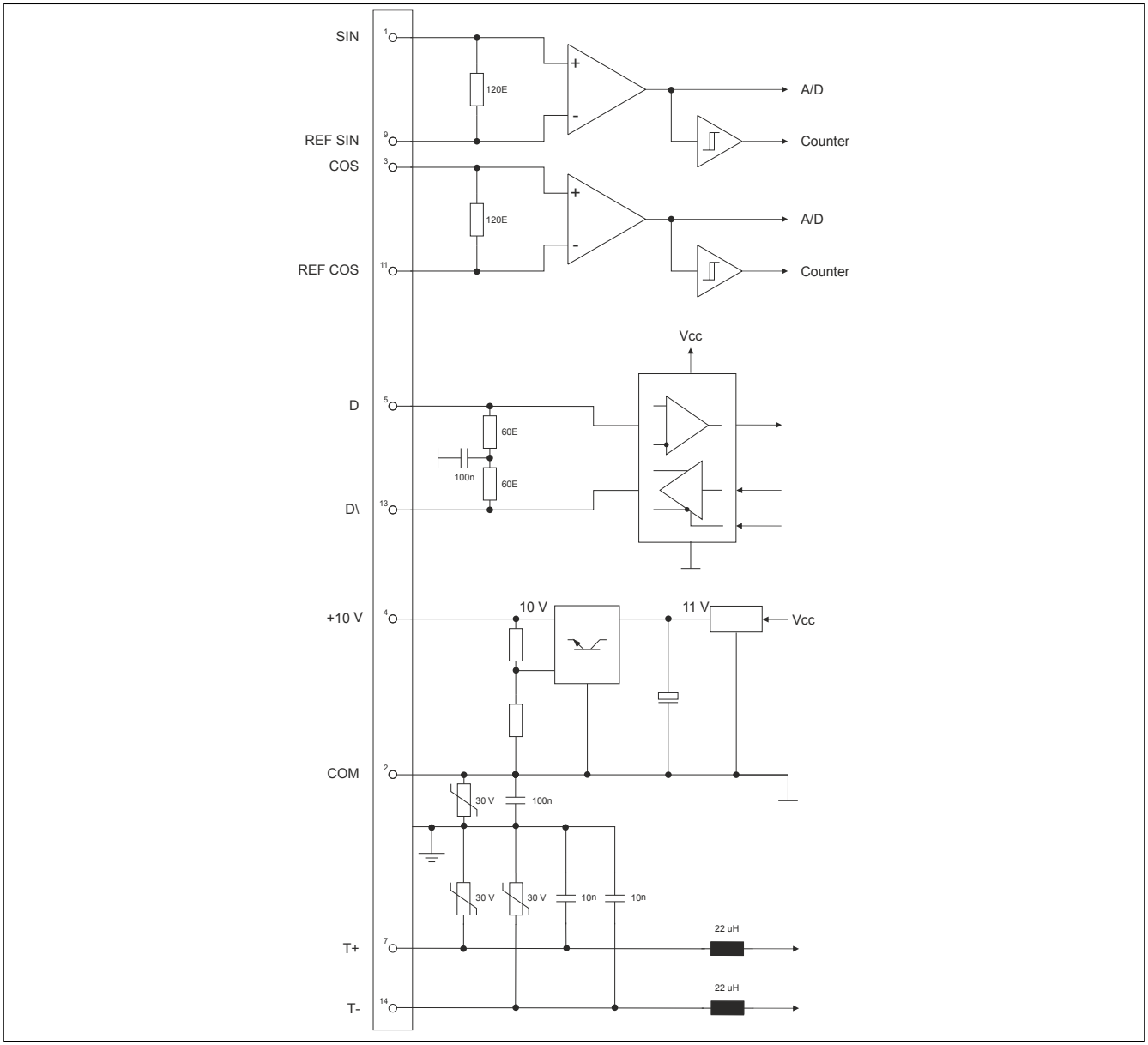


Figure 1: HIPERFACE interface 8BAC0121.000-1 - Input/Output circuit diagram

5 Status indicators

The indicators (LEDs UP/DN) are located on the front of the ACOPOSmulti drive or power supply module where the plug-in module is installed.

The UP/DN LEDs are lit depending on the rotational direction and the speed of the connected encoder. [1)]

UP LED ... indicates when the encoder position changes in the positive direction.
DN LED ... indicates when the encoder position changes in the negative direction.

6 Firmware

The firmware is part of the operating system for the ACOPOSmulti drive system. Firmware is updated by updating the ACOPOSmulti operating system.

1) The count direction of the encoder can be configured in Automation Studio. Changing the counting direction in Automation Studio does not change the actual counting direction of the encoder, however, and therefore has no effect on the UP/DN LEDs!