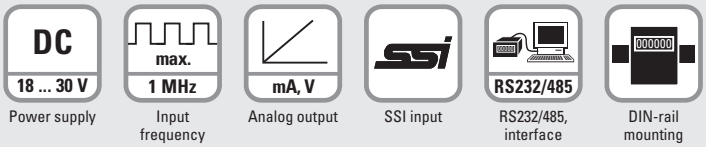
Signal converter

Signal converter	SK 1S1D-1A2RS	Digital, SSI - Analog, RS232 / RS485

The signal converter SK 1S1D-1A2RS has been designed especially for industrial applications that require converting a sensor or encoder information available in digital or SSI format into an analog signal or into a serial RS232/RS485 format. This device has 6 screw terminal connections.

The module can be easily and conveniently mounted in a cabinet on a standard DIN rail.



Characteristics

- Multifunction device with operating modes for incremental encoders or absolute SSI encoders.
- RS232- / RS485 interface for serial read-out of the sensor information.
- Scalable analog output configurable for voltage or current operation.
- Additional functions such as bit blanking, round loop function, etc.
- Specification possibility for any characteristic linearization curves.
- Easy programming by TEACH function or with a PC.
- Auxiliary voltage output 5 and 24 V DC for encoder supply.
- Extremely short conversion times.

Benefits

- Integration of fast SSI inputs in the PLC.
- Absolute SSI monitoring possible also with an analog input.
- Read-out possible also via RS232/RS485.
- For singleturn and multiturn encoders with SSI formats from 10 ... 32 bit.
- Simple parameterization via user interface OSxx (freeware).

Order no.

Signal converter	**8.SK.1S1D-1A2RS**	*Scope of delivery* - Signal converter - Manual

Cables and connectors		Order no.
RS232/RS485 cordset	RS232/RS485 interface cable single-ended 1,5 m [4.92'] PVC cable [1]	**8.0000.6300.0001.0103**

Further Kübler accessories can be found at: kuebler.com/accessories
Further Kübler cables and connectors can be found at: kuebler.com/connection-technology
You will find an overview of our systems and components for Functional Safety and the corresponding software in the safety technology section or under www.kuebler.com/safety.

1) Other lengths available.

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Technical data

Electrical characteristics

Power supply	18 ... 30 V DC (residual ripple ≤ 10 % at 24 V DC)
Power consumption (no load)	max. 50 mA
Reverse polarity protection of the power supply	yes
Type of connection	screw terminal, 1.5 mm² / AWG16
Encoder supply	
output voltage	5 VDC and 24 VDC (approx.1 V lower than input voltage)
output current	max. 250 mA

Mechanical characteristics

Material housing	plastic
Mounting	35 mm DIN rail (acc. to EN 60715)
Dimensions (W x H x D)	22.5 x 102 x 102 mm [0.89 x 4.02 x 4.02"]
Protection	IP20
Weight	approx. 100 g [3.53 oz]
Working temperature	-20 °C ... +60 °C [-4 °F ... +140 °F] non condensing
Storage temperature	-25 °C ... +70 °C [-13 °F ... +158 °F] non condensing
Failure rate (MTBF in years)	65.6 a continuous operation at 60 °C [140 °F]

Approvals

CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

SSI interface X2

Inputs (SSI, TTL)	TTL differential, RS422
Frequency range	100 Hz ... 1 MHz
Format	Binary or Gray code
Resolution	10 ... 32 bit
SSI pause time	min. 4 x clock
Type of connection	screw terminals, 1.5 mm²

Incremental interface X2

Tracks	A, /A, B, /B
Configuration	RS422, TTL, HTL differential, HTL PNP, HTL NPN
RS422	max. 1 MHz
RS422 differential signal	> 0.5 V
HTL differenzial	max. 500 kHz
HTL differential signal	> 2.0 V
TTL / HTL (PNP / NPN)	max. 250 kHz
Load	max. 6 mA / Ri > 5 kΩ / 10 pF

START/STOP interface X2

RS422 input	1 x (Start_Stop, /Start_Stop) 1 x (ext. Init_In, ext. /Init_In)
RS422 output	1 x (Init_Out, /Init_Out)
Pulsbreite Init pulse	1 ... 9 µs (adjustable)
Frequency Init pulse	62,5 ... 5000 Hz (adjustable)
Taktfrequenz	48 MHz
Zeitmessung	abhängig von der Wellenleiter-geschwindigleit des Gebers
Resolution	(e.g. 0,059 mm / step at v= 2850 m/s)

Serial interface X3

Format	RS232 or RS485
Baud rate (switchable)	9600, 19200 or 38400 Baud
Operating modes	PC mode or Printer mode
Type of connection	screw terminal, 1.5 mm²

Analog output X4

Voltage	-10 ... +10 V (max. 2 mA)
Current	0 ... 20 mA / 4 ... 20 mA (load: max. 270 Ohm)
Accuracy	16 bit / 0.1 %
Settling time	1 ms
Type of connection	screw terminals, 1.5 mm²

Control input X5

Input logic	HTL, PNP
Signal level	LOW: 0 ... 3 V HIGH: 9 ... 30 V
Function	Set/Preset
Frequency	max. 10 kHz
Load	max. 2 mA / Ri > 15 kOhm / 470 pF
Type of connection	screw terminals, 1.5 mm²

Control outputs X6

Input logic	HTL, PNP
Signal level	LOW: 0 ... 3 V HIGH: 9 ... 30 V
Function	Set/Preset
Frequency	Max. 10 kHz
Load	max. 2 mA / Ri > 15 kOhm / 470 pF
Type of connection	screw terminals, 1.5 mm²

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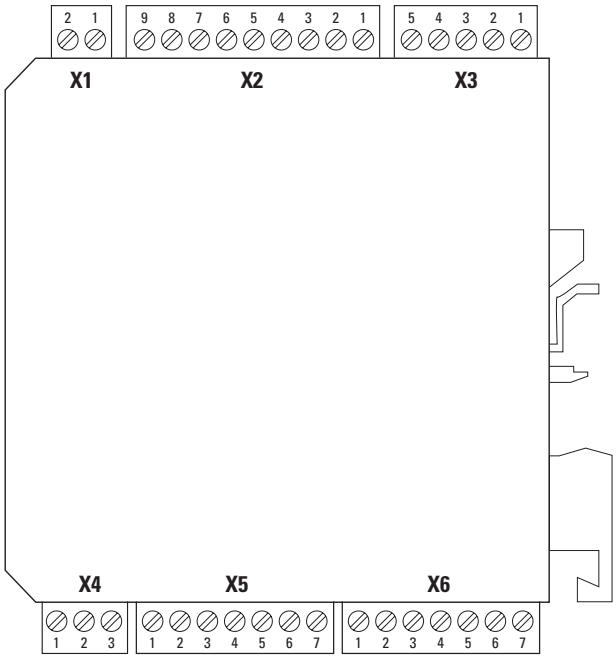
Terminal assignment



Interface	Function	Screw terminal, 2-pin		
Connection X1	Power supply	Signal:	0 V	+ V
		Pin:	1	2

Interface	Function	Screw terminal, 9-pin								
Connection X2	SSI interface	Signal:	0 V	+5 V	+24 V	Clk IN+	Clk IN-	D+	D-	Clk OUT+	Clk OUT-
	Incremental interface	Signal:	0 V	+5 V	+24 V	A_{incr}	$\overline{A}_{incr}$	B_{incr}	$\overline{B}_{incr}$	n.c.	n.c.
	Start/Stop interface	Signal:	0 V	+5 V	+24 V	INIT IN	$\overline{\text{INIT IN}}$	START-STOP	$\overline{\text{START-STOP}}$	INIT OUT	$\overline{\text{INIT OUT}}$
		Pin:	9	8	7	6	5	4	3	2	1

Interface	Function	Screw terminal, 5-pin				
Connection X3	Serial interface	Signal:	0 V	RxD	TxD	A_{RS485}	B_{RS485}
		Pin:	5	4	3	2	1

Interface	Function	Screw terminal, 3-pin			
Connection X4	Analog output	Signal:	AGND	Iout	Vout
		Pin:	1	2	3

Interface	Function	Screw terminal, 7-pin						
Connection X5	Control input	Signal:	0 V	Ctrl. 1	Ctrl. 2	Ctrl. 3	Ctrl. 4	Ctrl. 5	Ctrl. 6
		Pin:	1	2	3	4	5	6	7

Interface	Function	Screw terminal, 7-pin						
Connection X6	Control output	Signal:	COM+	Ctrl. 1	Ctrl. 2	Ctrl. 3	Ctrl. 4	Ctrl. 5	Ctrl. 6
		Pin:	1	2	3	4	5	6	7

+V :	Power supply
0 V :	Encoder power supply ground GND (0 V)
D+, D- :	Data +/- (SSI)
Clk IN+, Clk IN- :	Clock +/- (SSI) Slave Mode
Clk OUT+, Clk OUT- :	Clock +/- (SSI) Slave Master
A_{incr} , $\overline{A}_{incr}$:	Incremental output channel (Cosine)
B_{incr} , $\overline{B}_{incr}$:	Incremental output channel B (Sine)
INIT IN:	Initial pulse IN
START-STOP:	START-STOP Impuls
INIT OUT:	Initial pulse OUT

TxD :	Transmit (RS232)
RxD :	Receive (RS232)
A_{RS485} :	inverted line (RS485)
B_{RS485} :	non-inverted line (RS485)
Vout :	Voltage output (+/- 10 V)
Iout :	Current output (0 ... 20 mA / 4 ... 20 mA)
AGND:	Analog Ground (connected internally with the 0V of the device)
Ctrl. :	Control inputs and outputs
COM+ :	Supplied voltage for control outputs

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Dimensions

Dimensions in mm [inch]