Signal converter

Signal converter	SK 1A-1S1D2RS	Analog - HTL / RS422, SSI, RS232 / RS485

The SK 1A-1S1D2RS is a universal converter for analog input signals from ±10 V or 0/4 ... 20 mA. This module converts analog signals in a digital format (frequency, position or angular position). The output format can be an incremental signal or an absolute value in SSI format.
In addition, the result of the conversion can be read via a serial RS232 or RS485 interface or via a USB port.

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

Characteristics

- Motor potentiometer function.
- Analog input suitable for voltage, current or potentiometer operation.
- Output operating modes: frequency generator, motor potentiometer, position or angle sensor or measurement data acquisition.
- Programmable characteristic U/f curve and possibility of generating repetitive frequency sweeps.
- Frequency output (HTL or TTL, max. 1 MHz) proportional to the input signal.
- Incremental encoder output and SSI interface for displaying a position or an angular position.
- Incremental direction information A, B depending on the input signal and on the programmed conversion range.
- USB programming interface and serial interface (RS232 / RS485).
- Programmable zero pulse (0, /0).

Benefits

- Digitization of analog signals.
- Rescaling of analog signals.

Order no.

Signal converter	**8.SK.1A-1S1D2RS**	*Scope of delivery* - Signal converter - Manual

Cables and connectors		Order no.
Preassembled cables	Sub-D male contacts, 9-pin, with cable outlet 70° single-ended 2 m [6.56'] PVC cable [1]	**8.0000.6V00.0002.0082**
Connectors	Sub-D male contacts, 9-pin, with cable outlet 70°	**8.0000.514A.0000**

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	12 ... 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

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	0 °C ... +45 °C [+32 °F ... +113 °F] non condensing
Storage temperature	-25 °C ... +70 °C [-13 °F ... +158 °F] non condensing

Approvals

CE compliant in accordance with

EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Analog inputs X4

Voltage input internal resistance	-10 ... +10 V / 0 ... 10 V Ri ≈ 120 kOhm
Current input internal resistance	0 ... 20 mA / 4 ... 20 mA Ri ≈ 100 Ohm
Resolution	14 bit (±13 bit)
Accuracy input	0.1 %
Update time	100 µs (corresponding to 10,000 measured values per second)
Max. input frequency	1 kHz (for 10 sampling points)
VREF for external potentiometer internal resistance	approx. 4.8 V (±0.1 %) Ri ≈ 240 Ohm
Type of connection	screw terminal, 1.5 mm²

Control inputs X5

Number	4
Charakteristik	PNP, active high
Signal level HTL	LOW = 0 ... 3 V HIGH = 10 ... 30 V
Internal resistance	Ri ≈ 1.5 kOhm
Input current	approx. 2 mA
Min. pulse duration	1 msec (5 µs at Cont.1, if [HW-Z reference] ≠ 0)
Type of connection	screw terminal, 1.5 mm²

Incremental outputs X3

Signal level HTL	5 ... 30 V (according to external power supply)
TTL / RS422	4 V (no external power supply required)
Tracks	A, /A, B, /B, 0, /0
Frequency range	0.01 Hz ... 1 MHz
Output current	max. 30 mA (per channel)
Output stage	Push-Pull
Reaction time	< 260 µs
Fastest possible position change	1 Increment / µs
Protective circuit	short-circuit proof
Type of connection	screw terminal, 1.5 mm²

SSI interface X4 + X5

Function	simulation of an SSI absolute encoder
Standard	compliant with SSI standard, 10 ... 25 bits, binary or Gray (supports only single transmission – no multiple transmission)
Clock (input)	TTL differential / RS485 [Clk+], [Clk-]
Data (output)	TTL differential / RS485 [Dat+], [Dat-]
Termination	not available in the device
SSI baud rate	max. 1 MHz
Type of connection	screw terminal, 1.5 mm²

Serial interface X2

Format	RS232 or RS485 (2-wire or 4-wire)
Baud rate	600, 1200, 2400, 9600 (default), 19200, 38400, 56000, 57600, 76800 and 115200
Type of connection	Sub-D female contacts, 9-pin

USB interface

Version	USB 2.0
Type of connection	via USB port, connector type A

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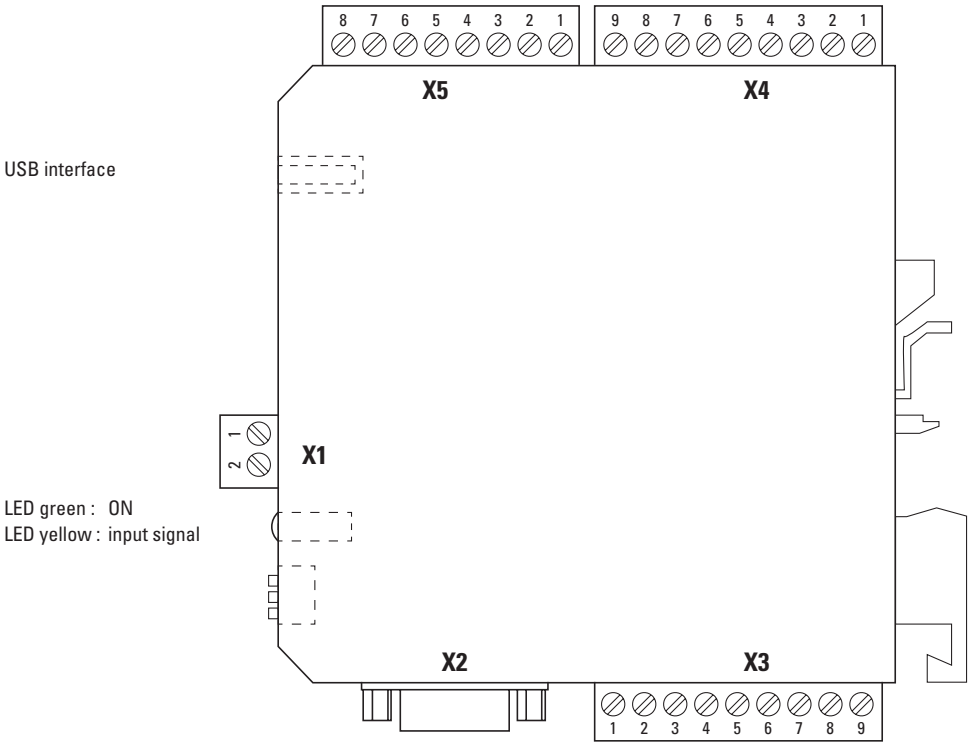
Terminal assignment



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

Interface	Function	Screw terminal, 9-pin								
Connection X4	Analog input	Signal:	0 V	I in-	I in+	V in-	V in+	AGND	Ref	–	–
		Pin:	1	2	3	4	5	6	7	8	9

Interface	Function	Screw terminal, 9 / 8-pin					
Connection X4, X5	SSI output	Signal:	0 V	Data-	Data+	Clk-	Clk+
		Pin X5:	1	2	3	–	–
		Pin X4:	–	–	–	9	8

Interface	Function	Screw terminal, 8-pin							
Connection X5	Control input	Signal:	0 V	Contr1	Contr2	Contr3	Contr4	–	–	–
		Pin:	4	5	6	7	8	1	2	3

Interface	Function	Screw terminal, 9-pin								
Connection X3	Incremental output HTL / TTL	Signal:	0 V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	Com+	0 V
		Pin:	1	7	6	5	4	3	2	8	9

Interface	Function	Sub-D female contacts, 9-pin								
Connection X2	Serial interface RS232 / RS485	Signal:	0V	R-	R+	RxD	T-	TxD	T+	–	–
		Pin:	5	1	6	2	7	3	8	4	9

+V :	Power supply	Data+, Data- :	Data +/- (SSI)	Com+ :	Common voltage input
0 V :	Encoder power supply ground GND (0 V)	Clk+, Clk- :	Clock +/- (SSI)	R-, R+	Receive +/- (RS485)
I_{in} :	Analog input current	Contr 1 ... 4 :	Control inputs	RxD	Receive (RS232)
V_{in} :	Analog input voltage	A, $\overline{A}$:	Incremental output channel A (Cosine)	T-, T+	Transmit +/- (RS485)
AGND:	Analog GND (0 V)	B, $\overline{B}$:	Incremental output channel B (Sine)	TxD	Transmit (RS232)
Ref :	Reference voltage (4.8 V)	0, $\overline{0}$:	Reference signal		

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Dimensions

Dimensions in mm [inch]