Signal converter

Signal converter	SK 1SC-1D	SinCos - HTL / RS422

The signal converter SK 1SC-1D converts, multiplies and divides output signals from sine-cosine encoders and comparable measuring systems into incremental pulse signals.
A corresponding number of output pulses is interpolated from every period of the entering sine-cosine voltage signal taking into account an adjustable multiplier. If necessary, they can in addition be divided before outputting them. All settings are carried out with an 12-pole DIL switch.

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

Characteristics

- Converts sinusoidal signals with standard level 1 Vpp into incremental square signals.
- Outputs A, /A, B, /B, 0, /0 (RS422/TTL) and A, B, 0 (18 ... 30 V HTL).
- Multiplier for interpolations adjustable in the range 1 : 5 to 1 : 50.
- Divider adjustable in the range 1 : 1 to 1 : 255 for reducing the output frequency.
- Sine input frequency 0 to 400 kHz.
- Square output frequency up to 4 MHz.
- Switchable glitch filter.
- Comprehensive features such as control input for error triggering, „Error“ control output.

Benefits

- Integration of SinCos signals as square signals in the PLC.
- Interpolation of SinCos signals possible.
- Usable in combination with encoders and sensors.
- Wide range of converter control possibilities (HTL, TTL / RS422).
- Automatic generation of a selectable 0 pulse per input period
  - separate 0 divider
  - extension of the A/B divider
  - Stop input for output signals

Order no.

Signal converter	**8.SK.1SC-1D**	*Scope of delivery* - Signal converter - Manual

Cables and connectors		Order no.
Preassembled cables	Sub-D female contacts, 9-pin, with cable outlet 70° single-ended 2 m [6.56'] PVC cable [1]	**8.0000.6V00.0002.0086**
Connectors	Sub-D female contacts, 9-pin, with cable outlet 70°	**8.0000.514B.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	18 ... 30 V DC residual ripple ≤ 10 % at 24 V DC
Power consumption (no load)	approx. 70 mA at 18 V approx. 60 mA at 30 V
Reverse polarity protection of the power supply	yes
Type of connection	screw terminal, 1.5 mm²

Encoder supply

Number of auxiliary voltages	2
Encoder supply 1	+ 5,2 VDC switchable via DIL switch
Encoder supply 2	power supply (V_{IN}) less 2 V DC
Output current	max. each 150 mA
Type of connection	Sub-D female contacts, 9-pin, switchable via DIL switch

Mechanical characteristics

Material	housing	plastic
Mounting		35 mm DIN rail (acc. to EN 60715)
Dimensions (W x H x D)		34 x 100 x 131 mm (without connectors) [1.34 x 3.94 x 5.16“] 34 x 118 x 135 mm (incl. connectors) [1.34 x 4.65 x 5.32“]
Protection		IP20
Weight		ca. 160 g [5.64 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)
Altitude		max. 2000 m above NN
Humidity		max. 80% relative humidity up to
Pollution level		2
Failure rate (MTBF in years)		63,3 a (continuous operation at 60 °C)

Approvals

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

SinCos input

Amplitude	min. 0.8 Vpp ... max.1.2 Vpp
DC component	min. 1.8 V ... max. 3.1 V
Tracks	SIN+, SIN-, COS+, COS-, REF+, REF-
Frequency	max. 400 kHz
Differential signal REF input	HIGH: 130 mV / LOW: 40 mV
Type of connection	Sub-D male contacts, 9-pin

Control input

Signal level	10 ... 30 V, HTL / PNP LOW: 0 ... 4 V / HIGH: 10 ... 30 V
Internal resistance	Ri ≈ 7 kOhm
Type of connection	screw terminals, 1,5 mm²

Incremental output HTL / RS422

Signal level	power supply (V_{IN}) less 2 VDC, 5 VDC
Tracks	A, /A, B, /B, 0, /0 only one output – HTL / RS422 switchable via DIL switch
Frequency	up to 4 MHz
Type of connection	screw terminals, 1,5 mm² switchable via DIL switch

Control output

Signal level	HTL, power supply (V_{IN}) less 2 VDC
Output current	max. 40 mA
Type of connection	screw terminals, 1,5 mm²

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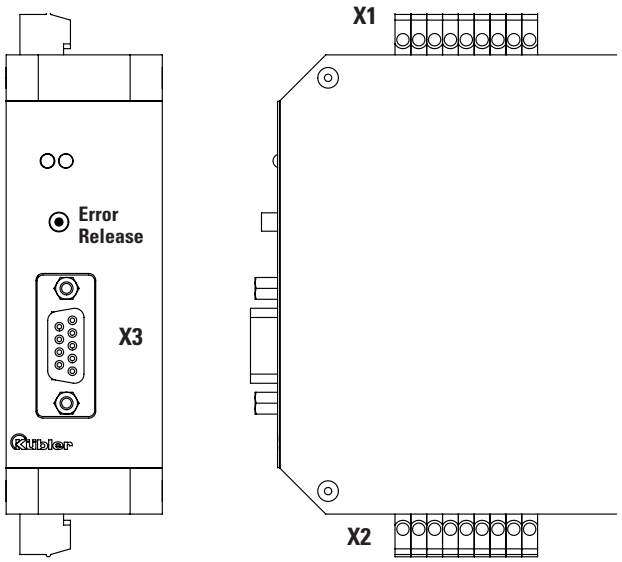
Terminal assignment



Interface	Function	Screw terminals, 9-pin								
Connection X1	Supply Control Input and output	Signal:	0 V	+V	0 V	Err out	Input 1	Input 2	Err Release	0 V	shield
		Pin:	1	2	3	4	5	6	7	8	9

Interface	Function	Screw terminals, 9-pin								
Connection X2	HTL/RS422 Pulse outputs	Signal:	Schirm	0 V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	0 V
		Pin:	1	2	3	4	5	6	7	8	9

Interface	Function	Sub-D male contacts, 9-pin								
Connection X3	Input SinCos	Signal:	Cos+	Sin-	Sin+	V_{Geber}	0 V	Ref-	Ref+	–	Cos-
		Pin:	1	2	3	4	5	6	7	8	9

+V : Power supply
0 V : Encoder power supply ground GND (0 V)
Err : Error output
V_{Geber} : Encoder supply (5.2 V or 20 V)

A, $\overline{A}$: Incremental output channel A (Cosine)
B, $\overline{B}$: Incremental output channel B (Sine)
0, $\overline{0}$: Incremental output channel 0
Sin+, Sin- : Differential signal (Sine)
Cos+, Cos- : Differential signal (Cosine)
Ref+, Ref- : Differential signal (Reference)

DIL switches

DIL switch S1

S1.1	S1.2	S1.3	S1.4	S1.5	S1.6	S1.7	S1.8	S1.9	S1.10	S1.11	S1.12
Interpolation Time 1	Interpolation Time 0	Interpolation Rate 2	Interpolation Rate 1	Interpolation Rate 0	Glitch Filter		Index Divider 0	Index Divider 1	Index Divider 2	Index Divider 3	Select HTL/TTL

DIL switch S2

S2.1	S2.2	S2.3	S2.4	S2.5	S2.6	S2.7	S2.8	S2.9	S2.10	S2.11	S2.12
Frequency Divider 0	Frequency Divider 1	Frequency Divider 2	Frequency Divider 3	Frequency Divider 4	Frequency Divider 5	Frequency Divider 6	Frequency Divider 7	Error Stat./Dyn.	Index Pulse Source	Operation Test	Encoder Supply

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Dimensions

Dimensions in mm [inch]