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 8-pole DIL switch.

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



Power supply | Input frequency SinCos | Output frequency SinCos | DIN-rail mounting

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 : 128 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).

Order no.

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

Connection technology		Order no.
Cordset, pre-assembled	Sub-D female contacts, 9-pin, with cable outlet 70° single-ended 2 m [6.56'] PVC cable [1]	**8.0000.6V00.0002.0086**
	Sub-D male contacts, 9-pin, with cable outlet 70° single-ended 2 m [6.56'] PVC cable [1]	**8.0000.6V00.0002.0082**
Connector, self-assembly	Sub-D female contacts, 9-pin, with cable outlet 70°	**8.0000.514B.0000**
	Sub-D male contacts, 9-pin, with cable outlet 70°	**8.0000.514A.0000**

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.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.

© Fritz Kübler GmbH, subject to errors and changes. 06/2018

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

Technical data

Electrical characteristics

Power supply	18 ... 30 V DC (residual ripple ≤ 10 % at 24 V DC)
Power consumption (no load)	approx. 150 mA at 18 V approx. 90 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
encoder supply 2	power supply (Vdd) less 4 V DC
output current	max. each 150 mA
Conformity and standards	
EMC guideline 2014/30/EU	EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
RoHS guideline 2011/65/EU	EN 50581

Mechanical characteristics

Material housing	plastic
Mounting	35 mm DIN rail (acc. to EN 60715)
Dimensions (W x H x D)	40 x 79 x 91 mm [1.57 x 3.11 x 3.58"]
Protection	IP20
Weight	approx. 200 g [7.05 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
Failure rate (MTBF in years)	40.2 a continuous operation at 60°C [140°F]

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

„Error Release" input

Signal level	10 ... 30 V, HTL / PNP LOW: 0 ... 4 V / HIGH: 10 ... 30 V
Internal resistance	Ri ≈ 10 kOhm
Type of connection	screw terminals, 1.5 mm²

Incremental output HTL

Signal level	power supply (Vdd) less 4 V DC
Tracks	A, B, 0 (Push-Pull)
Output current	max. 40 mA
Type of connection	Screw terminals, 1.5 mm²

Incremental output TTL / RS422

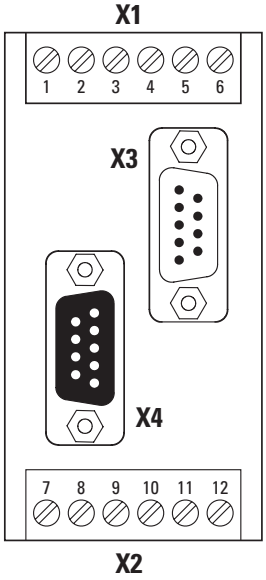
Signal level	5 VDC
Tracks	A, /A, B, /B, 0, /0
Frequency	up to 4 MHz
Type of connection	Sub-D female contacts, 9-pin

„Error" output

Signal level	HTL, power supply (Vdd) less 4 V DC
Output current	max. 40 mA
Type of connection	screw terminals, 1.5 mm²

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

Terminal assignment



Interface	Function	Screw terminals, 2 x 6-pin												
Connection X1, X2		Signal:	0 V	+V	Error	DIL	$V_{encoder}$	5.2 V	VDD	0 V	ERROR	A	B	0
	Power supply	Pin:	6	5	8	7 [1]	1 [2]	–	–	–	–	–	–	
	Output HTL	Pin:	–	–	–	–	–	2	3	4	9	10	11	12

Interface	Function	Sub-D female contacts, 9-pin								
Connection X3	Output TTL / RS422	Signal:	0 V	–	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	–
		Pin:	5	4	3	2	1	9	7	6	8

Interface	Function	Sub-D male contacts, 9-pin								
Connection X4	Input SinCos	Signal:	0 V	$V_{encoder}$	Sin-	Sin+	Cos-	Cos+	Ref-	Ref+	VM
		Pin:	5	4	2	3	9	1	6	7	8

+V : Power supply
0 V : Encoder power supply ground GND (0 V)
Error : Error output
Test : Test input
V_{Geber} : Encoder supply (5.2 V or 20 V)
VDD : Power supply (20 V)
A, $\overline{A}$: Incremental output channel A (Cosine)
B, $\overline{B}$: Incremental output channel B (Sine)
Sin+, Sin- : Differential signal (Sine)
Cos+, Cos- : Differential signal (Cosine)
Ref+, Ref- : Differential signal (Reference)
VM : Median voltage

1) Not usable. Only for manufacturing test.
2) Either from terminal 2 or 3 (on PIN 4 on Sub-D 9).

© Fritz Kübler GmbH, subject to errors and changes. 06/2018

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

Dimensions

Dimensions in mm [inch]

