

# Signal converter

<b>Signal converter</b>	<b>SK 1SC-1D</b>	<b>SinCos - HTL / RS422</b>
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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.

<b>DC</b> 18 ... 30 V Power supply	<b>max.</b> 400 kHz Input frequency SinCos	<b>max.</b> 4 MHz Output frequency SinCos	 DIN-rail mounting
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## 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	<b>8.SK.1SC-1D</b> <i>Scope of delivery</i> - Signal converter - Manual

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

Further accessories can be found in the accessories section or in the accessories area of our website at: [www.kuebler.com/accessories](http://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](http://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](http://www.kuebler.com/safety).

1) Other lengths available.

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## Technical data

Electrical characteristics	
<b>Power supply</b>	18 ... 30 V DC (residual ripple $\leq 10\%$ at 24 V DC)
<b>Power consumption (no load)</b>	approx. 150 mA at 18 V approx. 90 mA at 30 V
<b>Reverse polarity protection of the power supply</b>	yes
<b>Type of connection</b>	screw terminal, 1.5 mm <sup>2</sup>
<b>Encoder supply</b>	
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
<b>Conformity and standards</b>	
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		
<b>Material</b>	housing	plastic
<b>Mounting</b>	35 mm DIN rail (acc. to EN 60715)	
<b>Dimensions (W x H x D)</b>	40 x 79 x 91 mm [1.57 x 3.11 x 3.58"]	
<b>Protection</b>	IP20	
<b>Weight</b>	approx. 200 g [7.05 oz]	
<b>Working temperature</b>	0°C ... +45°C [+32°F ... +113°F] non condensing	
<b>Storage temperature</b>	-25°C ... +70°C [-13°F ... +158°F] non condensing	
<b>Failure rate (MTBF in years)</b>	40.2 a continuous operation at 60°C [140°F]	

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

„Error Release“ input	
<b>Signal level</b>	10 ... 30 V, HTL / PNP LOW: 0 ... 4 V / HIGH: 10 ... 30 V
<b>Internal resistance</b>	Ri $\approx$ 10 kOhm
<b>Type of connection</b>	screw terminals, 1.5 mm <sup>2</sup>

Incremental output HTL	
<b>Signal level</b>	power supply (Vdd) less 4 V DC
<b>Tracks</b>	A, B, 0 (Push-Pull)
<b>Output current</b>	max. 40 mA
<b>Type of connection</b>	Screw terminals, 1.5 mm <sup>2</sup>

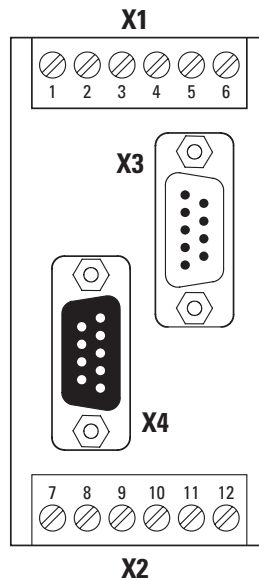
Incremental output TTL / RS422	
<b>Signal level</b>	5 VDC
<b>Tracks</b>	A, /A, B, /B, 0, /0
<b>Frequency</b>	up to 4 MHz
<b>Type of connection</b>	Sub-D female contacts, 9-pin

„Error“ output	
<b>Signal level</b>	HTL, power supply (Vdd) less 4 V DC
<b>Output current</b>	max. 40 mA
<b>Type of connection</b>	screw terminals, 1.5 mm <sup>2</sup>

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## Terminal assignment



Interface	Function	Screw terminals, 2 x 6-pin													
<b>Connection X1, X2</b>		Signal:	0 V	+V	Error	DIL	V <sub>encoder</sub>	5.2 V	VDD	0 V	ERROR	A	B	0	
	Power supply	Pin:	6	5	8	7 <sup>1)</sup>	1 <sup>2)</sup>	–	–	–	–	–	–	–	
	Output HTL	Pin:	–	–	–	–	–	2	3	4	9	10	11	12	

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

Interface	Function	Sub-D male contacts, 9-pin									
<b>Connection X4</b>	Input SinCos	Signal:	0 V	V <sub>encoder</sub>	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<sub>Geber</sub> : Encoder supply (5.2 V or 20 V)
- VDD : Power supply (20 V)
- A,  $\bar{A}$  : Incremental output channel A (Cosine)
- B,  $\bar{B}$  : 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).

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## Dimensions

Dimensions in mm [inch]

