Преобразователи сигнала SK 1A-1S1D2RS, SK 1SC-1D, SK 1S1D-1A2RS, SK 1S-1P, преобразователи уровня PW 1D-1D, делители частоты FT 1D-1D

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (727)345-47-04
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Саранск (8342)22-96-24
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70 **Казахстан** +7(727)345-47-04 **Беларусь** +(375)257-127-884 **Узбекистан** +998(71)205-18-59 **Киргизия** +996(312)96-26-47

эл.почта: kgu@nt-rt.ru || сайт: https://kubler.nt-rt.ru/

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.

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 : 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**

Signal converter

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. 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

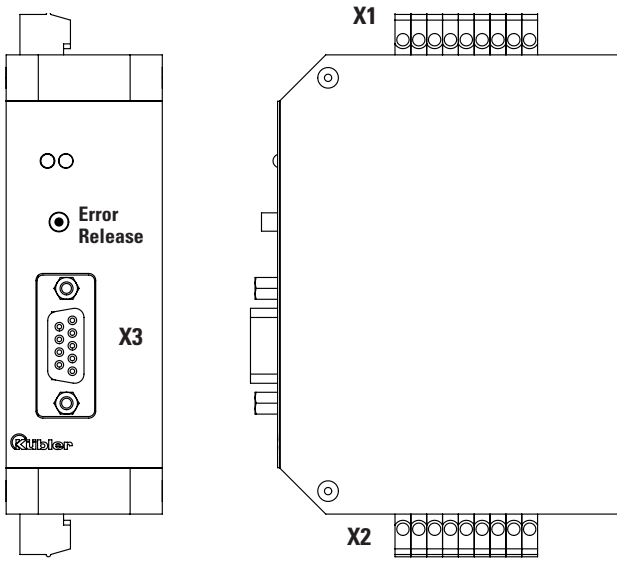
Signal level	power supply (V_{IN}) less 2 VDC, 5 VDC
Tracks	A, /A, B, /B, 0, /0 only one output – HTL / RS422 switchable via DIL switch
Frequency	up to 4 MHz
Type of connection	screw terminals, 1,5 mm² switchable via DIL switch

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

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

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

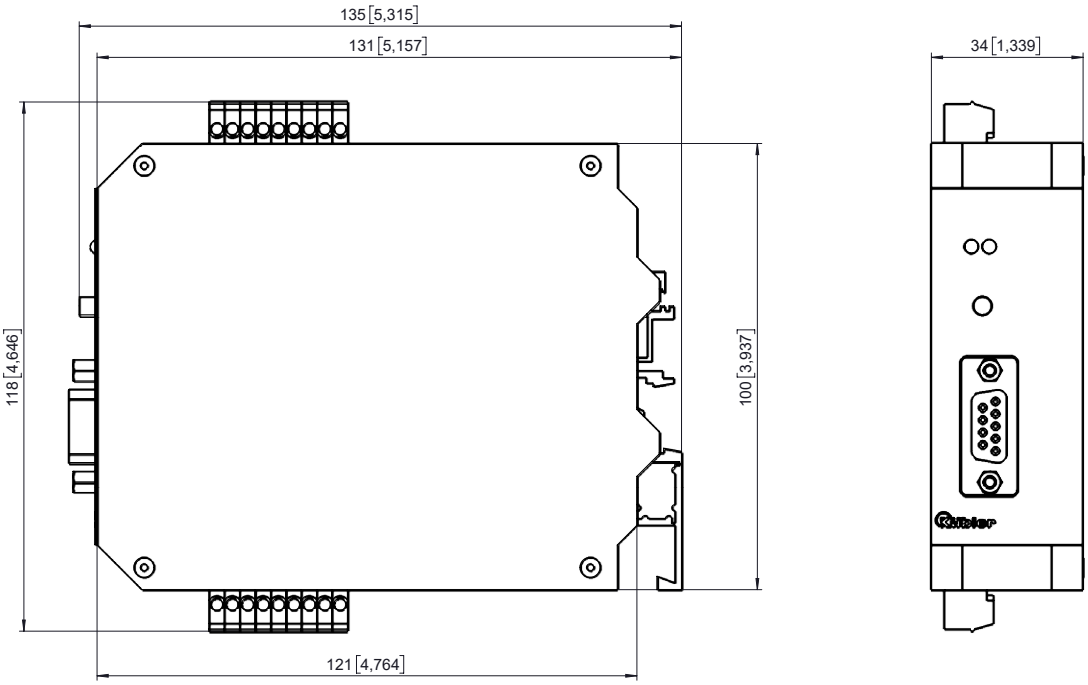
DIL switch S2

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

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

Dimensions

Dimensions in mm [inch]



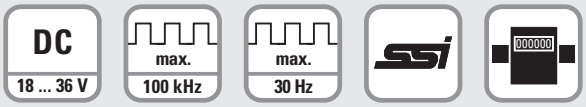
Signal converter

Signal converter	SK 1S-1P	SSI - Parallel

The converter module been designed for industrial applications that require converting a sensor or encoder signal available in SSI format into a parallel signal.

This device has 12 screw terminal connections and a 37-pin (parallel) Sub-D socket.

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



Characteristics

- Input: synchronous serial interface SSI.
- Output: parallel, max. 26 bits, 8 .. 30 V, max. 100 mA, short-circuit proof and bus-capable.
- Master/Slave operation switchable.
- Switchable Gray/Binary input code.
- Switchable Gray/Binary/BCD output code.
- Hold and OE inputs.
- Strobe output.
- Housing for DIN rail mounting EN 50022.
- Connection with plug-in screw terminals and 37-pin Sub-D socket.

Benefits

- SSI encoders for retrofitting old controls with parallel input.

Order no.

Signal converter	**8.SK.1S-1P**	*Scope of delivery* - Signal converter - Manual

Signal converter

Signal converter	SK 1S-1P	SSI - Parallel

Technical data

Electrical characteristics

Power supply	18 ... 36 V DC 5 V DC ±10% optional 12 V DC ±10% optional
Power consumption (no load)	70 mA (18 .. 36 V DC) 250 mA (5 V DC) 110 mA (12 V DC)
Isolation voltage	500 V / 1 min
Type of connection	plug-in screw terminals and Sub-D female contacts, 37-pin

Mechanical characteristics

Material	housing	Polycarbonate
Mounting		35 mm DIN rail (acc. to EN 50022)
Dimensions (W x H x D)		45 x 118 x 137.5 mm [1.77 x 4.65 x 5.41“]
Protection		IP20
Weight		approx. 300 g [10.58 oz]
Working temperature		0 °C ... +50 °C [+32 °F ... +122 °F] non condensing
Storage temperature		-20 °C ... +70 °C [-4 °F ... +158 °F] non condensing
Relative humidity		< 80 % (non condensing)
Protection class		protection class II
Application area		pollution level 2 overvoltage category II

Approvals

CE compliant in accordance with

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

SSI signal input

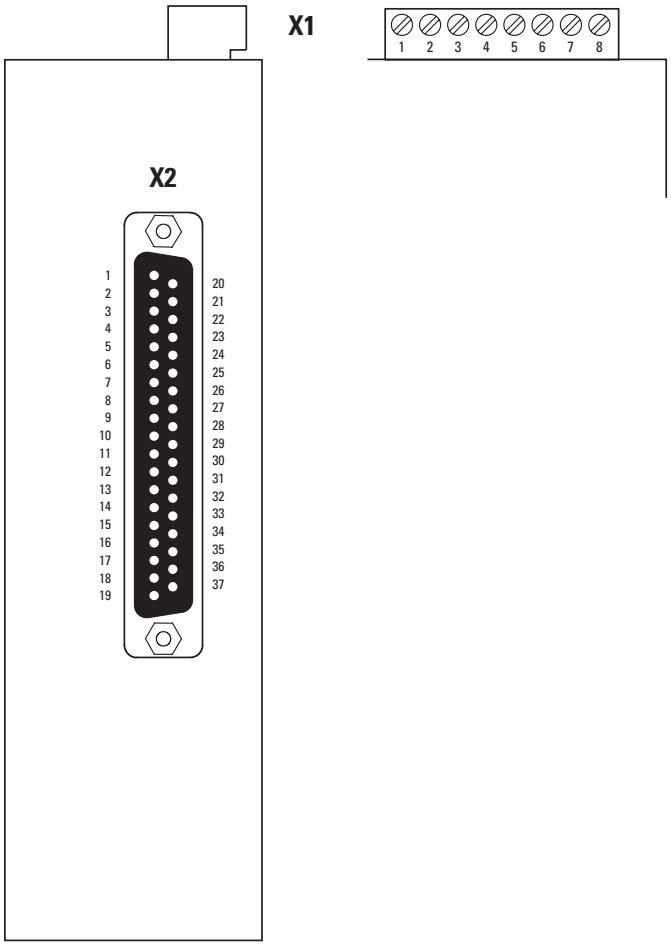
Resolution		10 ... 26 bits
Code type		Binary or Gray
Data input		RS422/RS485 receiver
Clock input		RS422/RS485 receiver
Clock output		RS422/RS485 driver
Master operation	clock frequency	internal, 100 kHz
	data entry	app. 30 values/sec
Slave operation	clock frequency	internal, max. 125 kHz
	delay between pulse trains	min 500 µs
	data entry	app. 30 values/sec

Parallel outputs

Logic	PNP, 8 ... 30 V 100 mA, short-circuit proof
Isolation voltage	3 kV / 1 min

Signal converter	SK 1S-1P	SSI - Parallel

Terminal assignment



Interface	Function	Screw terminals, 8-pin								
Connection X1		Signal:	0 V	+V	⏚	GND	Data-	Data+	Clk+	Clk-
	Power supply	Pin:	7	8	6	–	–	–	–	–
	SSI input	Pin:	–	–	–	5	4	3	2	1

Interface	Function	Sub-D female contacts, 37-pin									
Connection X2	Parallel outputs	Signal:	Vs	Vs	Vs	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6
		Pin:	1	20	2	21	3	22	4	23	5	24
		Signal:	Bit 7	Bit 8	Bit 9	Bit 10	Bit 11	Bit 12	Bit 13	Bit 14	Bit 15	Bit 16
		Pin:	6	25	7	26	8	27	9	28	10	29
		Signal:	Bit 17	Bit 18	Bit 19	Bit 20	Bit 21	Bit 23	Bit 22	Bit 24	Bit 25	Reserve
		Pin:	11	30	12	31	13	32	14	33	15	34
		Signal:	Error 2	Strobe	Error 1	Output Enable		Hold	GND	GND		
		Pin:	16	35	17	36		18	37	19		

+V : Power supply
0 V : Encoder power supply ground GND (0 V)
GND : Power supply ground GND (0 V)
SSI-GND
Data+, Data- : Data +/- (SSI)
Clk+, Clk- : Clock +/- (SSI)

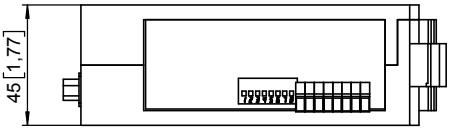
Vs : Supply voltage output driver
Bit 0 ... 25 : Signal outputs
Reserve : Bus-capable signal lines (for extensions)
Error 1, 2 : Error signal output (1 = SSI, 2 = output driver)
Strobe : Output take-over pulses
Output Enable : Input bus control
Hold : Input holding value (up to max. 30 ms)

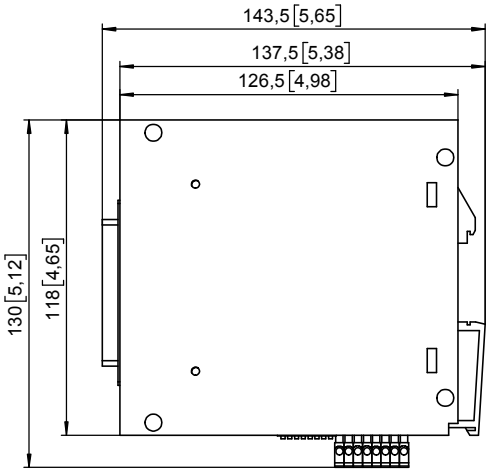
Signal converter

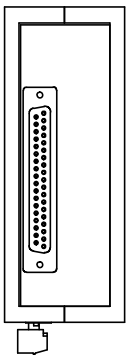
Signal converter	SK 1S-1P	SSI - Parallel

Dimensions

Dimensions in mm [inch]





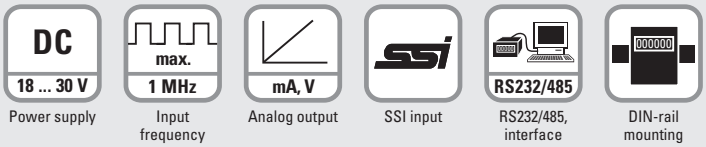


Signal converter

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**

Signal converter

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

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

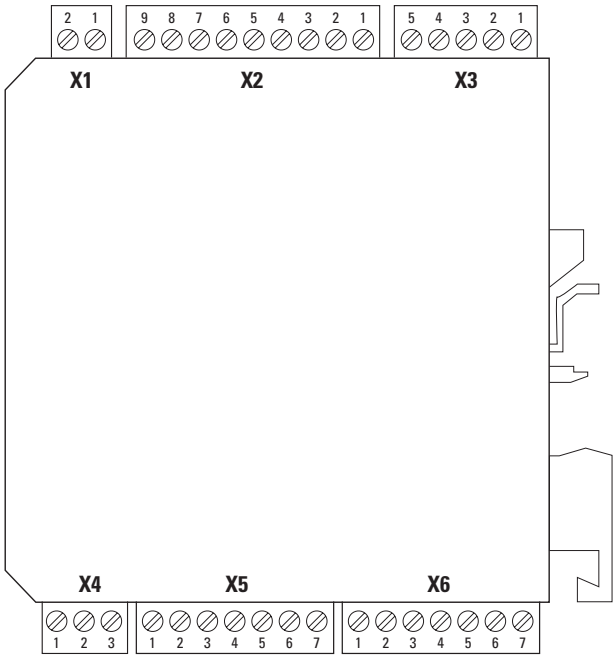
Input logic	HTL, PNP
Signal level	LOW: 0 ... 3 V HIGH: 9 ... 30 V
Function	Set/Preset
Frequency	max. 10 kHz
Load	max. 2 mA / Ri > 15 kOhm / 470 pF
Type of connection	screw terminals, 1.5 mm²

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

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

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

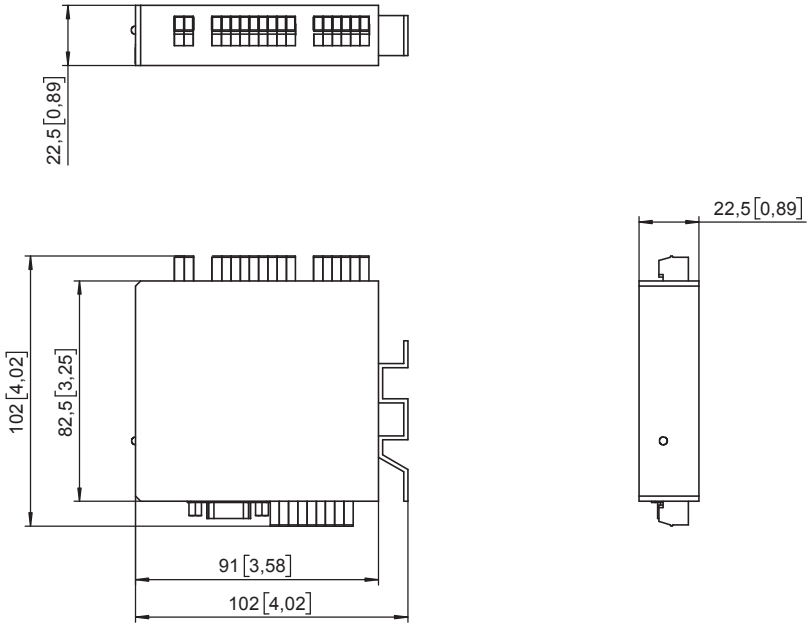
TxD :	Transmit (RS232)
RxD :	Receive (RS232)
A_{RS485} :	inverted line (RS485)
B_{RS485} :	non-inverted line (RS485)
Vout :	Voltage output (+/- 10 V)
Iout :	Current output (0 ... 20 mA / 4 ... 20 mA)
AGND:	Analog Ground (connected internally with the 0V of the device)
Ctrl. :	Control inputs and outputs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

Signal converter

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

Dimensions

Dimensions in mm [inch]



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**

Signal converter

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

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

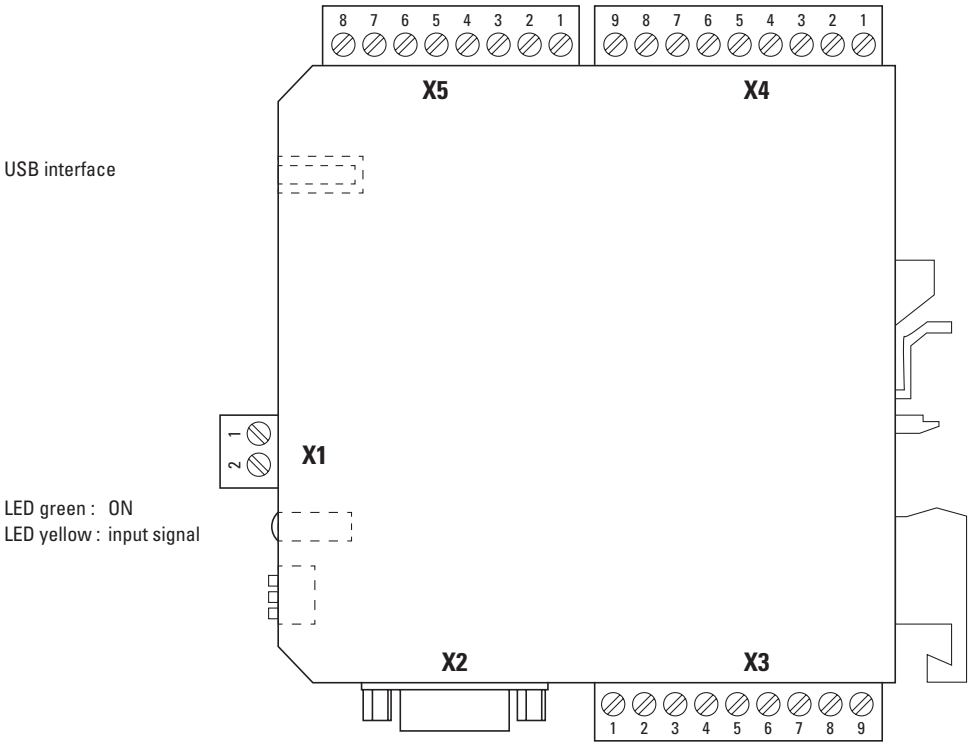
Format	RS232 or RS485 (2-wire or 4-wire)
Baud rate	600, 1200, 2400, 9600 (default), 19200, 38400, 56000, 57600, 76800 and 115200
Type of connection	Sub-D female contacts, 9-pin

USB interface

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

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

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

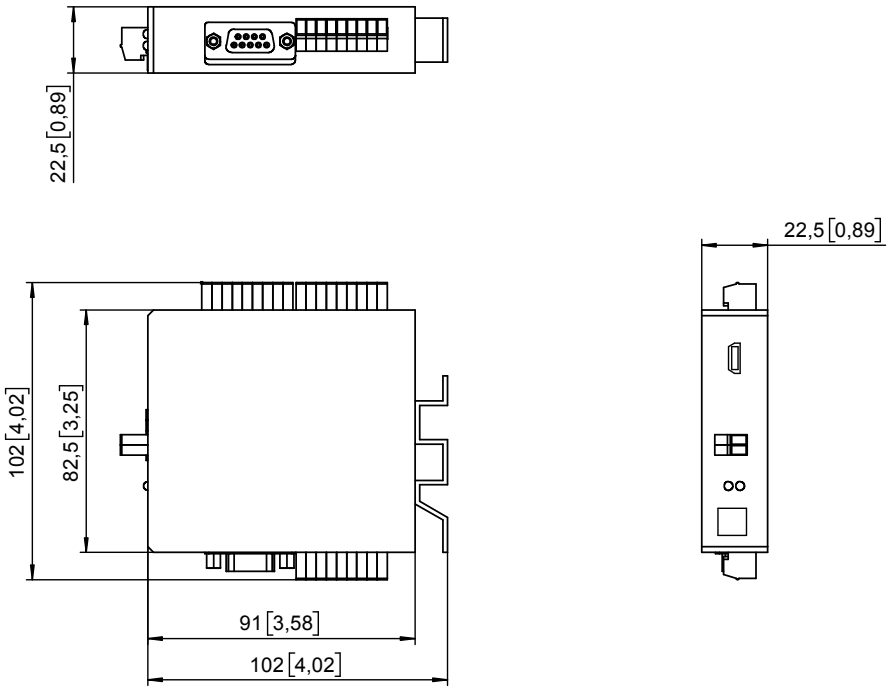
+V :	Power supply	Data+, Data- :	Data +/- (SSI)	Com+ :	Common voltage input
0 V :	Encoder power supply ground GND (0 V)	Clk+, Clk- :	Clock +/- (SSI)	R-, R+	Receive +/- (RS485)
I_{in} :	Analog input current	Contr 1 ... 4 :	Control inputs	RxD	Receive (RS232)
V_{in} :	Analog input voltage	A, $\overline{A}$:	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		

Signal converter

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

Dimensions

Dimensions in mm [inch]

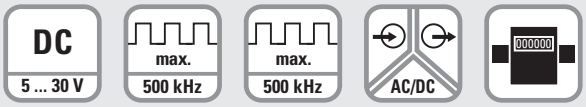


Signal converter

Level converter	PW 1D-1D	HTL, TTL, RS422

The input of this universal level converter, direction decoder and potential isolation amplifier PW 1D-1D accepts as well single-track as double-track incremental encoder signals, which can be implemented as RS422 / TTL or as HTL level (10 ... 30 V). If the signal includes the direction of rotation, this direction can be defined either by a 90° phase shift of channels A and B or by a static direction signal.

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



Characteristics

- High frequency range up to 500 kHz.
- Potential isolation amplifier.
- Level converter and direction decoder for incremental encoder signals.
- Signal inputs (A, /A, B, /B, 0, /0) can be set to HTL, TTL or RS422 levels.
- Processes signals with direction, synchronous, asynchronous, as well as single-track signals.
- Signal outputs (A, /A, B, /B, 0, /0), can be set to HTL, TTL or RS422 levels.
- Conversion of an A/B direction information (90°) into a static direction signal and vice-versa.
- Encoder connection either with Sub-D connector or plug-in screw terminals.

Benefits

- Potential separation between sensor and control.
- Level adaptation for old controls with direction signal input.
- Conversion from TTL into HTL and vice versa.
- Voltage level adaptation to the application.

Order no.

Level converter	**8.PW.1D-1D**	*Scope of delivery* - Level 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**
	Sub-D male contacts, 9-pin, with cable outlet 70°	**8.0000.514A.0000**

Signal converter

Level converter	PW 1D-1D	HTL, TTL, RS422

Technical data

Electrical characteristics

Power supply	5 ... 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
Encoder supply (can only be supplied externally)	voltage can be supplied at the plug strip and picked off on the Sub-D 9-pin input connector

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
Failure rate (MTBF in years)		71,8 a continuous operation at 60 °C [140 °F]

Approvals

CE compliant in accordance with

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

Incremental input X1, X2

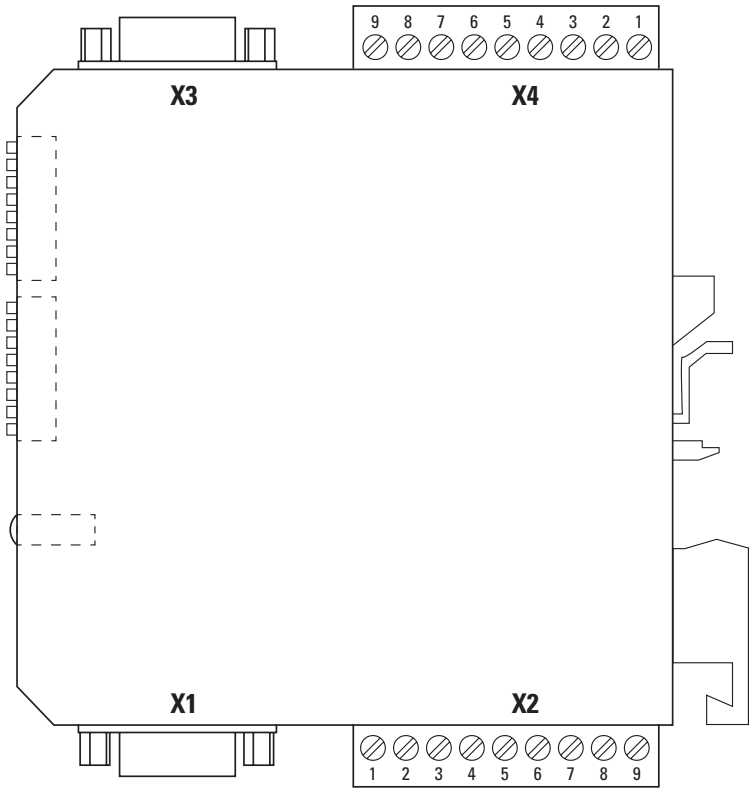
Level (adjustable)		TTL / RS422 (differential voltage > 1 V) or HTL (10 ... 30 V)
Tracks	TTL symmetrical HTL asymmetrical	A, /A, B, /B, 0, /0 A, B, 0
Frequency	TTL symmetrical HTL asymmetrical	max. 500 kHz max. 300 kHz (HTL)
Internal resistance		Ri ≈ 10 kOhm
Type of connection		screw terminals, 1.5 mm² Sub-D male contacts, 9-pin

Incremental output X3, X4

Level	approx. 2 V lower than input voltage
Tracks	A, /A, B, /B, 0, /0
Output current	max. 30 mA (per channel)
Output stage	Push-Pull
Signal propagation time	approx. 600 ns
Type of connection	screw terminals, 1.5 mm² Sub-D female contacts, 9-pin

Level converter	PW 1D-1D	HTL, TTL, RS422

Terminal assignment



Interface	Function	Screw terminal, 9-pin									
		Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
Connection X2	Input TTL / RS422	Pin :	9	8	7	6	5	4	3	2	1
	Input HTL	Pin :	9	8	7	–	5	–	3	–	1

Interface	Function	Sub-D male contacts, 9-pin									
		Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	–
Connection X1	Input TTL / RS422	Pin :	5	4	3	2	1	9	7	6	8
	Input HTL	Pin :	5	4	3	–	1	–	7	–	8

Interface	Function	Screw terminal, 9-pin									
		Signal:	GND	V_{in}	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
Connection X4	Output TTL / RS422	Pin :	1	2	3	4	5	6	7	8	9
	Output HTL	Pin :	1	2	3	–	5	–	7	–	9

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

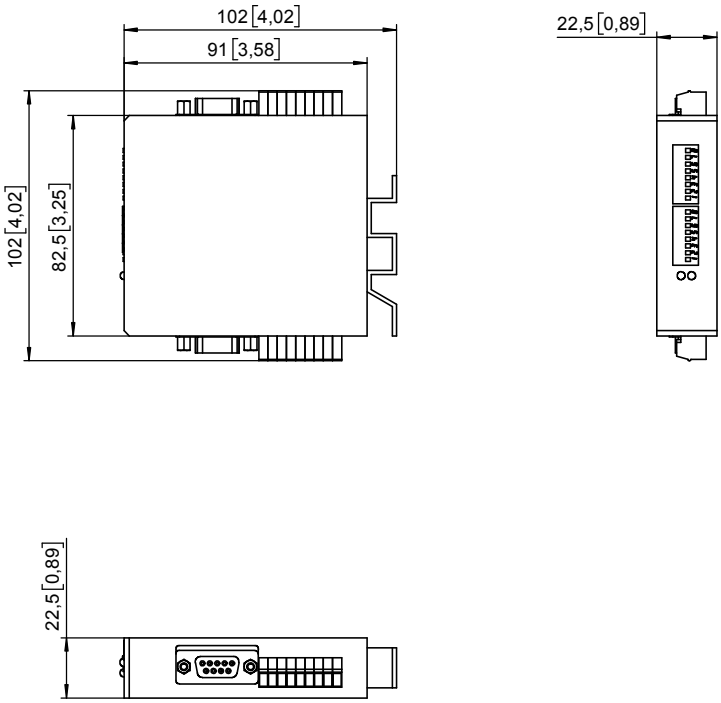
+V : Power supply encoder
0 V : Encoder power supply ground GND1 (0 V)
V_{in} : Power supply level converter
GND : Level converter power supply ground (0V)
A, $\overline{A}$: Incremental output channel A (Cosine)
B, $\overline{B}$: Incremental output channel B (Sine)
0, $\overline{0}$: Reference signal

Signal converter

Level converter	PW 1D-1D	HTL, TTL, RS422

Dimensions

Dimensions in mm [inch]



Signal converter

Frequency divider	FT 1D-1D	HTL, TTL / RS422

The frequency divider FT 1D-1D is intended for the error-free division of frequencies or pulses from conventional encoders, sensors or other incremental measuring systems.
Four readily accessible DIL switches allow programming division ratios from 1:1 up to 1:4096 and the desired representation of the direction of rotation. A separately adjustable divider is available for the zero pulse.

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

Power supply | Limit frequency | DIN-rail mounting

Features

- Level conversion from HTL single ended, RS422 to HTL differential and vice-versa.
- Limit frequency 1 MHz
- Division of double-track (A, B, 90°) pulses with adjustable ratio from 1 : 1 to 1 : 4096.
- Division of the Z pulse with adjustable ratio from 1 : 1 to 1 : 256.
- Push-pull outputs for direct PLC control.
- External input for zeroing the A/B/Z divider (defined start / stop).
- Independent second Z divider adjustable.
- Z pulse division ratio adjustable.

Benefit

- Frequency reduction for slow controls.
- External scaling for controls.
- Active signal adaptation for High/Low level.
- Adjustable zero pulse for specific applications

Order no.

Frequency divider	**8.FT.1D-1D**	*Scope of delivery* - Frequency divider - Manual

Signal converter

Frequency divider	FT 1D-1D	HTL, TTL / RS422

Technical data

Electrical characteristics

Power supply		9 ... 30 V DC (residual ripple ≤ 10 % at 24 V DC)
Power consumption (encoder supply without load)	at 9 V at 30 V	approx. 40 mA approx. 30 mA
Type of connection		screw terminal, 1.5 mm²
Encoder supply	output voltage output current type of connection	+5.5 V DC / ±5 % max. 130 mA 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 ... +60 °C [+32 °F ... +140 °F] non condensing
Storage temperature		-25 °C ... +70 °C [-13 °F ... +158 °F] non condensing
Failure rate (MTBF in years)		109,3 a continuous operation at 60 °C [140 °F]

Approvals

CE compliant in accordance with

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

Incremental input X4

Signal level	TTL / RS422 HTL	differential voltage > 1 V LOW: 0 ... 4 V / HIGH: 10 ... 30 V
HTL internal resistance		Ri ≈ 4.7 kOhm
Tracks	TTL / RS422, symmetrical HTL, asymmetrical	A, /A, B, /B, 0, /0 (RS422, HTL differential) A, B, 0
Frequency	HTL differential HTL single ended TTL	max. 1 MHz (HTL differential signal > 2 V) max. 350 kHz, Level 1: Low 0 ... 10 V, High 14 ... 30 V Level 2: Low 0 ... 5 V, High 9 ... 30 V max. 350 kHz, Low 0 ... 0.7 V, High 2.2 ... 5 V
Type of connection	HTL, TTL / RS422	screw terminals, 1.5 mm²

Incremental output X3

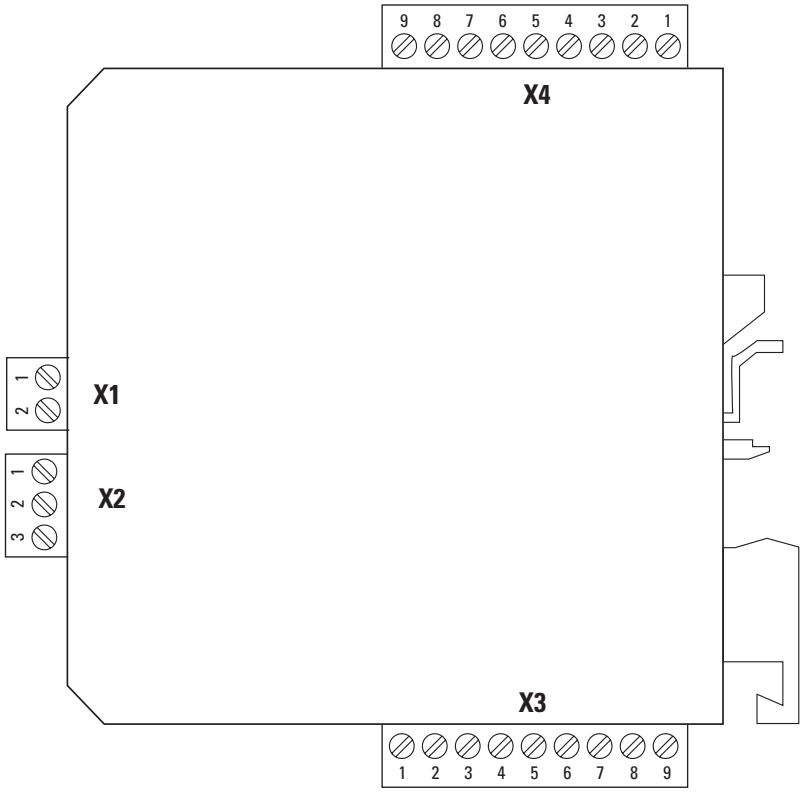
Level		8 ... 29 V at HTL (depending on the supply voltage)
Tracks	TTL / RS422, symmetrical HTL, asymmetrical	A, /A, B, /B, 0, /0 (5 V DC) A, B, 0
Output current		max. 20 mA / Push-Pull
Type of connection		screw terminals, 1.5 mm²

Control input X2

Level		HTL, PNP Low 0 ... 5 V, High 9 ... 30 V
Tracks	frequency response time	max. 20 kHz 50 us
Input current		max. 3 mA
Type of connection		screw terminals, 1.5 mm²

Frequency divider	FT 1D-1D	HTL, TTL / RS422

Terminal assignment



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

Interface	Function	Screw terminals, 3-pin			
Connection X2	Control input	Signal:	GND	Contr. 1	Contr. 2
		Pin:	1	2	3

Interface	Function	Screw terminals, 9-pin								
Connection X3	Incremental output	Signal:	ERR	GND	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	GND
		Pin:	1	2	3	4	5	6	7	8	9

Interface	Function	Screw terminals, 9-pin								
Connection X4	Incremental input	Signal:	GND	$\overline{0}$	0	$\overline{B}$	B	$\overline{A}$	A	GND	+5 V out
		Pin:	1	2	3	4	5	6	7	8	9

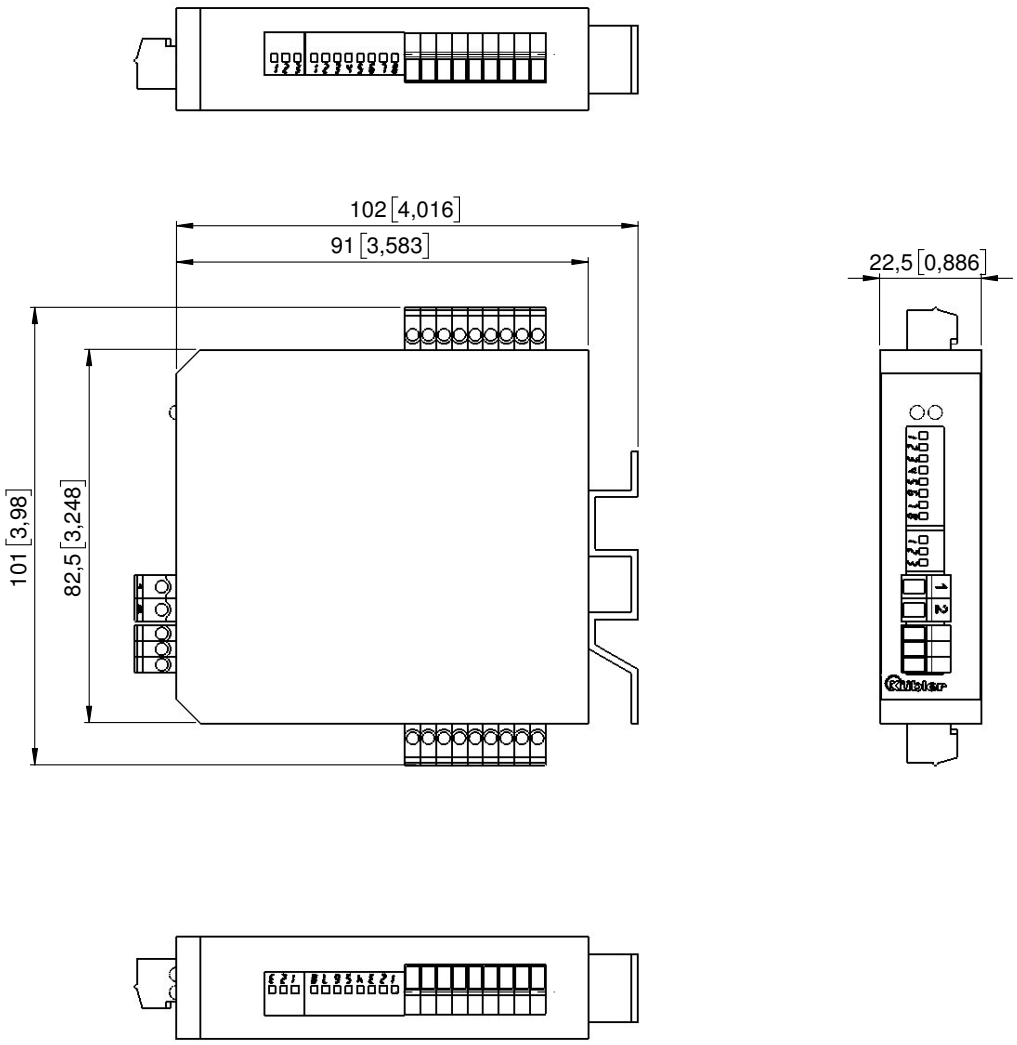
+V : Power supply
0 V : Encoder power supply ground GND (0 V)
Contr. 1 /2 : Control inputs
GND : Frequency divider power supply ground (0V)
Error : Error output
A, $\overline{A}$: Incremental output channel A (Cosine)
B, $\overline{B}$: Incremental output channel B (Sine)
0, $\overline{0}$: Reference signal

Signal converter

Frequency divider	FT 1D-1D	HTL, TTL / RS422

Dimensions

Dimensions in mm [inch]



По вопросам продаж и поддержки обращайтесь:

Алматы (727)345-47-04
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Саранск (8342)22-96-24
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70
Казахстан +7(727)345-47-04
Беларусь +(375)257-127-884
Узбекистан +998(71)205-18-59
Киргизия +996(312)96-26-47

эл.почта: kgu@nt-rt.ru || сайт: https://kubler.nt-rt.ru/