**General Information**

- conversion of standardized sine signals into square signals up to an interpolation factor of 512
- automatic offset and amplitude calibration
- storage of the adjusted values in an EEPROM

Range of application

- in combination with encoders generating sine-wave signals, such as e. g. GEL 295 KN
- interpolation of sine signals from the MiniCoder GEL 244 KN
- interpolation of sine-shaped voltages with an amplitude of $1 V_{pp}$

Input Signals

- two sine-wave signals offset by 90° and their inverse signals
- signal level $500 mV_{pp}$ per track = $1 V_{pp}$ as differential signal
- reference signal and inverse reference signal

Output Signals

- two square-wave signals offset by 90° and their inverse signals
- reference pulse (option)
- output either with TTL or HTL signal level

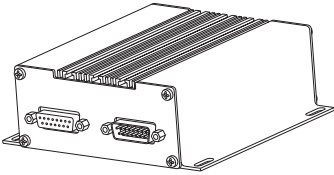
Design

- EMC-proof metal housing, powder-lacquered black
- 15-pole D-subminiature appliance connector for input and output
- 12-pole circular connector (option)

Technical data

supply voltage (V_s)	10 ... 30 V DC (V, X and U), 5 V DC \pm 5%(T)
power consumption without load	\leq 2 W
output level T-, U-signal (option) logic level TTL	high level: \geq 4.0 V if I = 10 mA; \geq 3.8 V bei I = 30 mA low level: \leq 0.9 V if I = 10 mA; \leq 1.0 V bei I = 30 mA
output level V-, X-signal logic level HTL	high level: \geq V_s - 1.9 V if I = 10 mA; \geq V_s - 2.8 V if I = 30 mA low level: \leq 1.2 V if I = 10 mA; \leq 2.6 V if I = 30 mA
output tracks	two square-wave signals offset by 90° and their inverse signals (option)
outputs (U, UN, T, TN)	TTL-, RS 422- and RS 485-compatible
outputs (V, VN, X, XN)	push-pull signal
inputs tracks (GEL 244 KN, GEL 245 KN,)	sine/cosine signals and their inverse signals signal level 500 mV _{pp} per track, differential voltage 1 V _{pp} optional: reference signal (N)
output frequency \leq 200 kHz	input frequency by multiplier available with multiplier: 1, 2, 4, 8, 10, 16, 20, 25, 32, 40, 50, 64, 80, 100, 125, 128, 200, 250, 256, 400, 500 or 512
input frequency	0 ... 50 kHz
short-wave precision (referring to a toothed wheel with 256 teeth, module = 0.3)	0.0085°, pairing of sensor /encoder not necessary
long-wave precision	dependent on the precision of the measuring scale
max. admissible cable length between the sensor and the interpolation electronics	25 m if the cable cross section is 0.5 mm ² or more
operating temperature range	-40°C ... 85°C
protection class	IP 40
electromagnetic compatibility electromagnetic emission EN 61000-6-3 and EN 61000-6-4 electromagnetic immunity EN 61000-6-1 and EN 61000-6-2	The interpolation electronics with EU directive EMC 89/336/EEC and are labeled with the CE sign.
screening	screen coaxial on connector housing
insulation strength (DIN EN 60439-1)	500 V
vibration protection (DIN EN 60068-2-6)	200 m/s ²
shock protection (DIN EN 60028-2-27)	200 m/s ²
housing made of	metal
colour	RAL 9005, black
weight	approx. 0.5 kg
connectors	15-pole D-subminiature socket (input for the sine encoder) 15-pole D-subminiature connector (output for the control) 12-pole circular connector (option) connection to earth set screw M5
signal pattern	<p>The diagram illustrates the signal patterns for different tracks. On the left, tracks 1, 2, and N are shown with square wave signals. Track 1 has two signals (T, X, U) that are 90 degrees out of phase. Track 2 has two signals (V) that are 180 degrees out of phase. Track N has one signal (input signals) which is a sine wave. The edge distance F is defined as the distance between the rising edges of the square waves. The diagram also shows the timing parameters a and b for the square waves.</p> <p>T, X, U V input signals</p> <p>track 1 track 1 track 2 track 2 option track N option track N</p> <p>The edge distance F is with output frequency 200 kHz $>$ 0,6 μs; a = 360°, b = 90°</p>

Dimensioned drawings Pin layouts



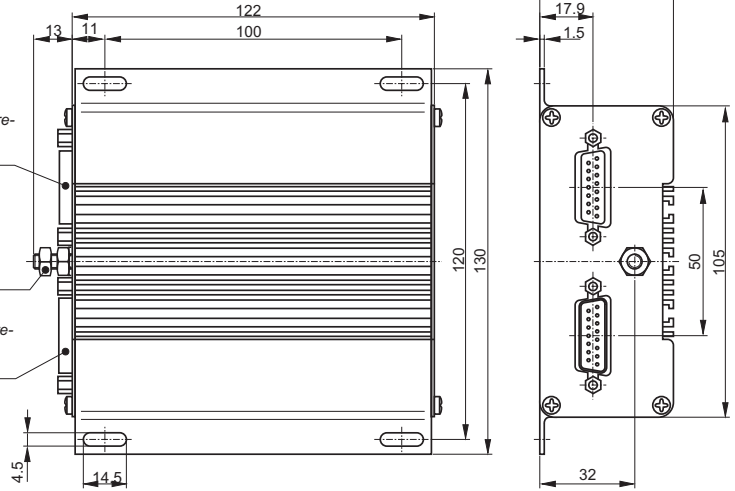
Standard: pin layout, dimensioned drawing

	socket (input for the sine encoder)	connector (output for the control)
1	0 V GND *)	0 V GND
2	+5 V DC *)	+10 ... 30 V DC (option +5 V DC)
3		
4		STORE
5		
6	track N	track 1
7	track 2	track 2
8	track 1	track N
9		
10		
11		
12		GND-STORE
13	/ track N	/ track 1
14	/ track 2	/ track 2
15	/ track 1	/ track N

15-pole D-subminiature-socket (input for the sine encoder)

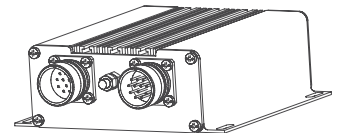
hexagon nut
DIN 934 - M5

15-pole D-subminiature-connector (output for the control)



Make sure that the cable screening has large-surface contact with the connector housing.

- *) Supply voltage for sine-wave encoder.
If the cable length is >10 m, please use a cable with larger cross section, e. g. 60 m > 1,0 mm².

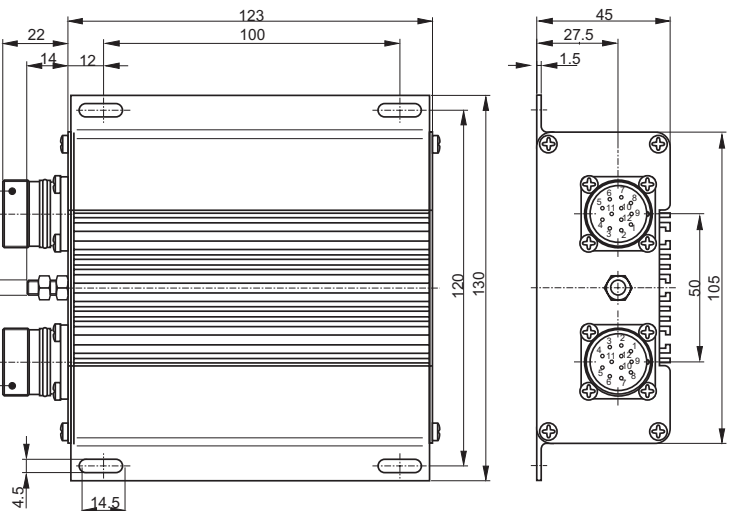


Option: pin layout fo circular connector, dimensioned drawing

	male	female
1	/ track 2	/ track 2
2		
3	track N	track N
4	/ track N	/ track N
5	track 1	track 1
6	/ track 1	/ track 1
7		
8	track 2	track 2
9	screening	screening
10	GND 0 V	GND 0 V
11		
12	5 V DC	+ 10 ... 30 V DC (option 5 V DC)

12-pole connector,
male

12-pole connector,
female



Make sure that the cable screening has large-surface contact with the connector housing.

- *) Supply voltage for sine-wave encoder.

Type code

GEL

	T- TN V- VN U- UN X- XN	signal pattern	
		signal pattern and supply voltage (see page 2)	
		multiplier	
		01 interpolation factor 1 02 interpolation factor 2 04 interpolation factor 4 08 interpolation factor 8 10 interpolation factor 10 16 interpolation factor 16 20 interpolation factor 20 25 interpolation factor 25 32 interpolation factor 32 40 interpolation factor 40 50 interpolation factor 50 64 interpolation factor 64 80 interpolation factor 80 AA interpolation factor 100 BB interpolation factor 125 CC interpolation factor 128 DD interpolation factor 200 EE interpolation factor 250 FF interpolation factor 256 GG interpolation factor 400 HH interpolation factor 500 KK interpolation factor 512	
		connectors	
		A standard , 15-pole D-subminiature connector	
		B option, 12-pol. circular connector	
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