GEL 214
Precision Interpolation Electronics

SENSORLINE

LENORD+BAUER

Technical information

version 02.06

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 2442 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
- powder coated metal housing
- 15-pole D-subminiature appliance connector for input and output
- 12-pole circular connector (option)

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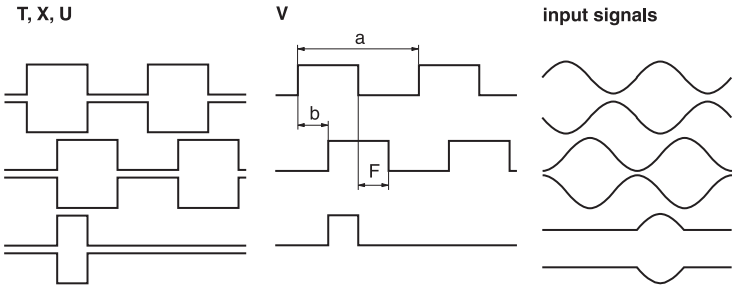
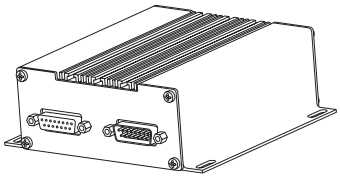
Technical data

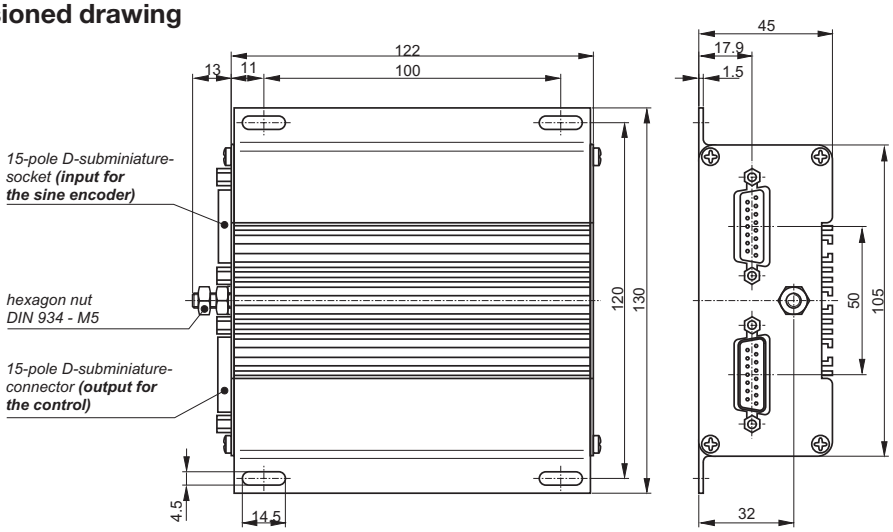
supply voltage (V_s)	10 ... 30 V DC (V, X and U), 5 V DC $\pm$ 5%(T)
power consumption without load	$\leq$ 2 W
output level T-, U-signal (option) logic level TTL	high level: $\geq$ 4.0 V if I = 10 mA; $\geq$ 3.8 V bei I = 30 mA low level: $\leq$ 0.9 V if I = 10 mA; $\leq$ 1.0 V bei I = 30 mA
output level 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 frequence $\leq$ 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 frequence	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	EN 61000-6-1 to 4
screnning	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 material	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 track 1 $\overline{\text{track 1}}$ track 2 $\overline{\text{track 2}}$ option track N option $\overline{\text{track N}}$ The edge distance F is with output frequency 200 kHz > 0,6 µs; a = 360°, b = 90°	



Dimensioned drawings
Pin layouts

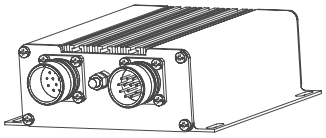
Standard: pin layout, dimensioned drawing

	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



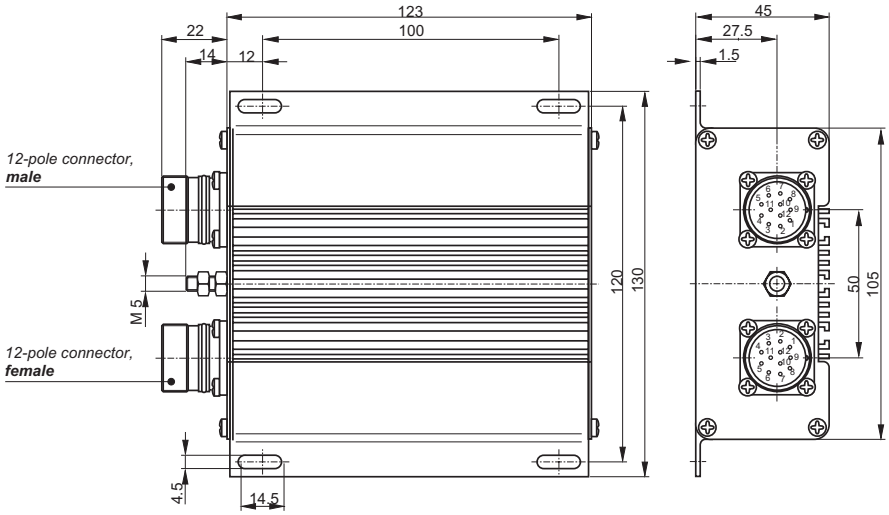
Make sure that the cable screening has large-surface contact with the connector housing.

*) 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)



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
214	_ _	_ _	_	

Subject to technical modifications and typographical errors.
For the latest version please visit our web site : **www.lenord.de.**