

Signal Processing

Precision interpolator / splitter, precision sine multiplier

Conversion of sin/cos encoder signals into multiplied
sin/cos output signals and HTL or TTL output signals

HEAG 160



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Technical data - electrical ratings

Voltage supply	5 VDC $\pm 5\%$ 10...30 VDC
Consumption	≤ 500 mA (5 VDC) ≤ 300 mA (10...30 VDC)
Inputs	Sine/cos 2x sine/cosine
Input signals	A+, A-, B+, B-, R+, R-
Input frequency	400 kHz
Outputs	Sine/cos + TTL Sine/cos + HTL Error output
Output signals	A+, B+, R+, A-, B-, R- Option: A+, B+, R+, A-, B-, R-, Error-
Amplitude resolution	12 bit
Output frequency	≤ 2 MHz (HTL) ≤ 5 MHz (TTL) ≤ 600 kHz (Sin/Cos)
Interpolation factor for sin/cos output (multiplying)	1...128
Interpolation factor for HTL output (multiplying)	1...16394
Interpolation factor for HTL output (dividing)	1/2...1/2048
Interpolation factor for TTL output (multiplying)	1...16394
Interpolation factor for TTL output (dividing)	1/2...1/2048

Features

- Conversion of sin/cos signals into multiplied sin/cos signals
- Additional interpolation of HTL or TTL signals (multiplying or dividing)
- Oversampling with 24 MHz
- Digitally pre-filter
- Very high output frequency possible

Optional

- Internal pre-amplifier
- Two sine inputs for compensating radial runout of the connected encoder
- Error output, external voltage supply

Technical data - mechanical design

Dimensions W x H x L	122 x 122 x 80 mm
Protection DIN EN 60529	IP 65
Operating temperature	0...+50 °C
Resistance	DIN EN 60068-2-6 Vibration 1 g, 50-2000 Hz DIN EN 60068-2-27 Shock 30 g, 11 ms
Weight approx.	1 kg
Connection	Connector M23, 12-pin Connector, 3-pin, external voltage supply

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Part number

HEAG 160 -			-		-			-		-	
											External voltage supply
											- Without external supply
											EXT With external supply
											Error output
											- Without error output
											ER With error output
											Interpolation factor for HTL/TTL output - see table
											Logic level
											H HTL
											T TTL
											Interpolation factor for sin/cos output - see table
											Dual sine input
											- One sine input (standard)
											D Two sine inputs for compensating radial runout of the connected encoder
											Internal pre-amplifier
											- Without integrated pre-amplifier
											V With integrated pre-amplifier

Interpolation factor for sin/cos output

1	4	16	64
2	8	32	128

Interpolation factor for HTL/TTL output

1	64	4096	1/16	1/1024
2	128	8192	1/32	1/2048
4	256	16384	1/64	
8	512	1/2	1/128	
16	1024	1/4	1/256	
32	2048	1/8	1/512	

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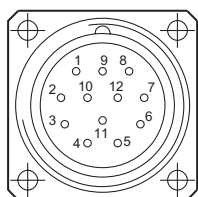
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Terminal assignment

View A - Input encoder signals

Flange socket, female contacts, counter-clockwise

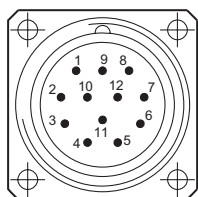
Female	Assignment
Pin 1	B- (inv.)
Pin 2	5 VDC
Pin 3	R+ (zero pulse)
Pin 4	R- (zero pulse inv.)
Pin 5	A+
Pin 6	A- (inv.)
Pin 7	n.c.
Pin 8	B+
Pin 9	n.c.
Pin 10	0 V
Pin 11	0 V
Pin 12	5 VDC



View C - TTL or HTL output

Flange socket, male contacts, counter-clockwise

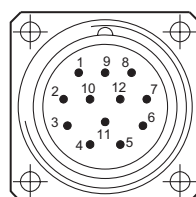
Male	Assignment
Pin 1	B- _{TTL or HTL} (inv.)
Pin 2	n.c.
Pin 3	R+ _{TTL or HTL} (zero pulse)
Pin 4	R- _{TTL or HTL} (zero pulse inv.)
Pin 5	A+ _{TTL or HTL}
Pin 6	A- _{TTL or HTL} (inv.)
Pin 7	n.c.
Pin 8	B+ _{TTL or HTL}
Pin 9	n.c.
Pin 10	0 V
Pin 11	0 V
Pin 12	n.c.



View B - sin/cos output

Flange socket, male contacts, counter-clockwise

Male	Assignment
Pin 1	B- _{MULT} (inv.)
Pin 2	5 VDC (n.c. at option with external voltage supply)
Pin 3	R+ _{MULT} (zero pulse)
Pin 4	R- _{MULT} (zero pulse inv.)
Pin 5	A+ _{MULT}
Pin 6	A- _{MULT} (inv.)
Pin 7	n.c. (Error- at option with error output)
Pin 8	B+ _{MULT}
Pin 9	n.c.
Pin 10	0 V
Pin 11	0 V
Pin 12	5 VDC (n.c. at option with external voltage supply)



View D - External power supply

Male contacts

Male	Assignment
Pin 1	10 ... 30 VDC
Pin 3	0 V
Pin 4	Shield



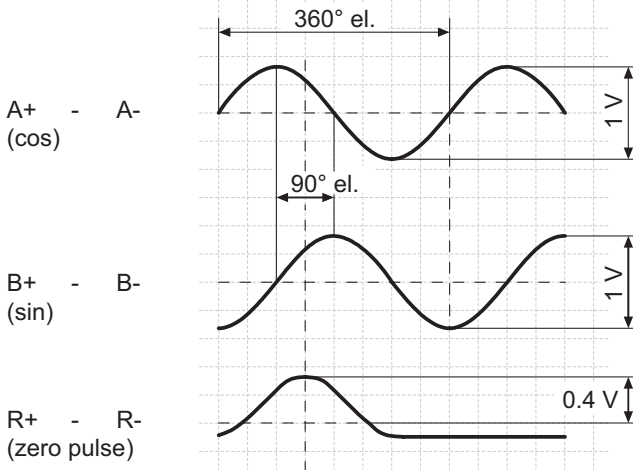
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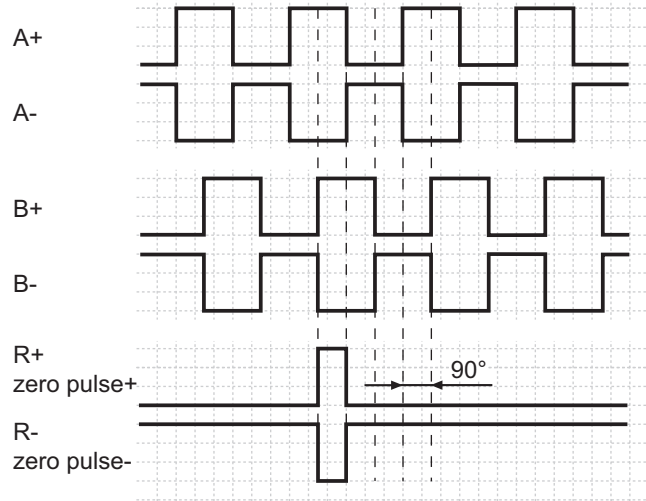
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Output signals

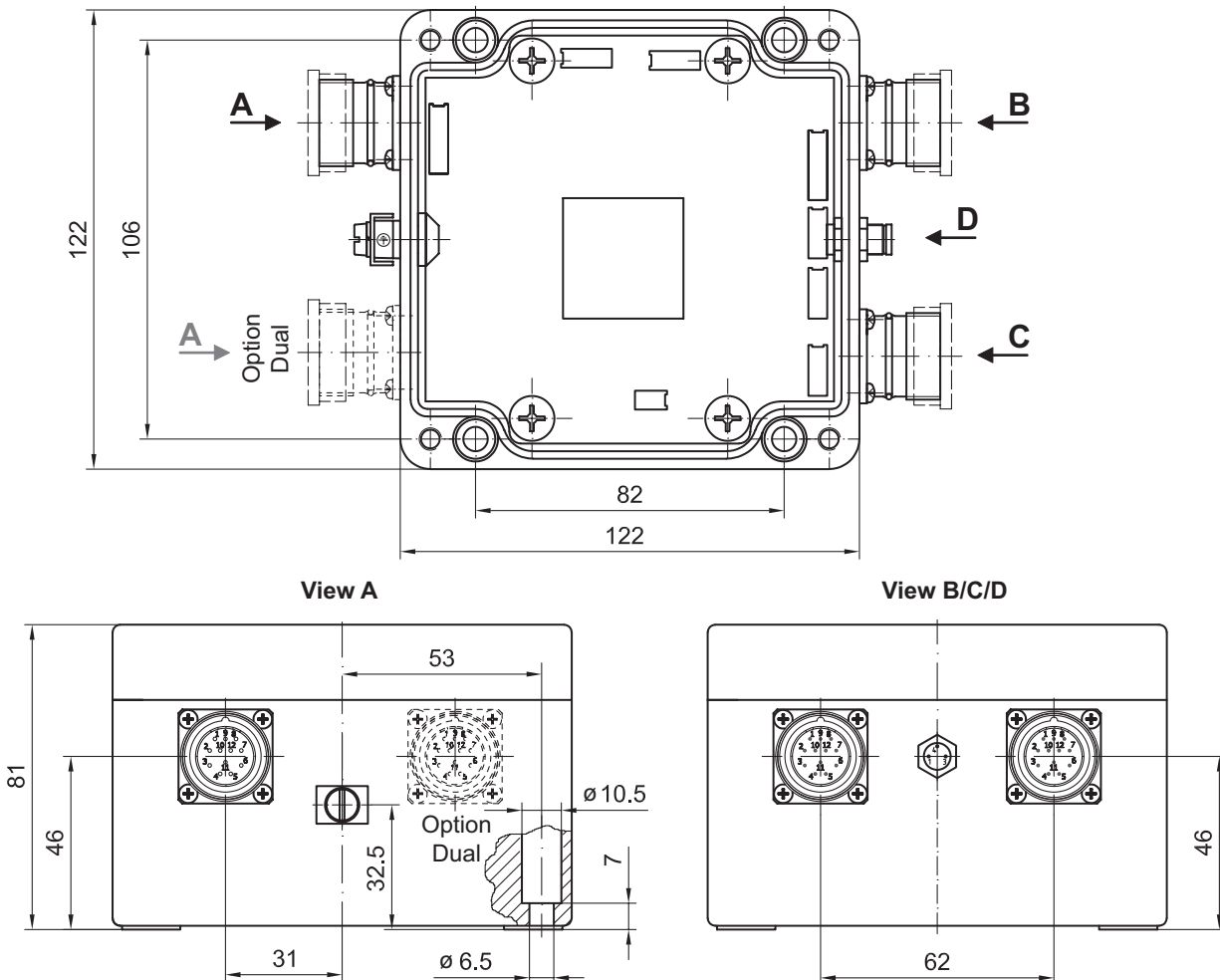
Multiplied sine signals



HTL or TTL



Dimensions



HM04M26712