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

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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
UKCA compliant in accordance with	
EMC Regulations	S.I. 2016/1091
RoHS Regulations	S.I. 2012/3032

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

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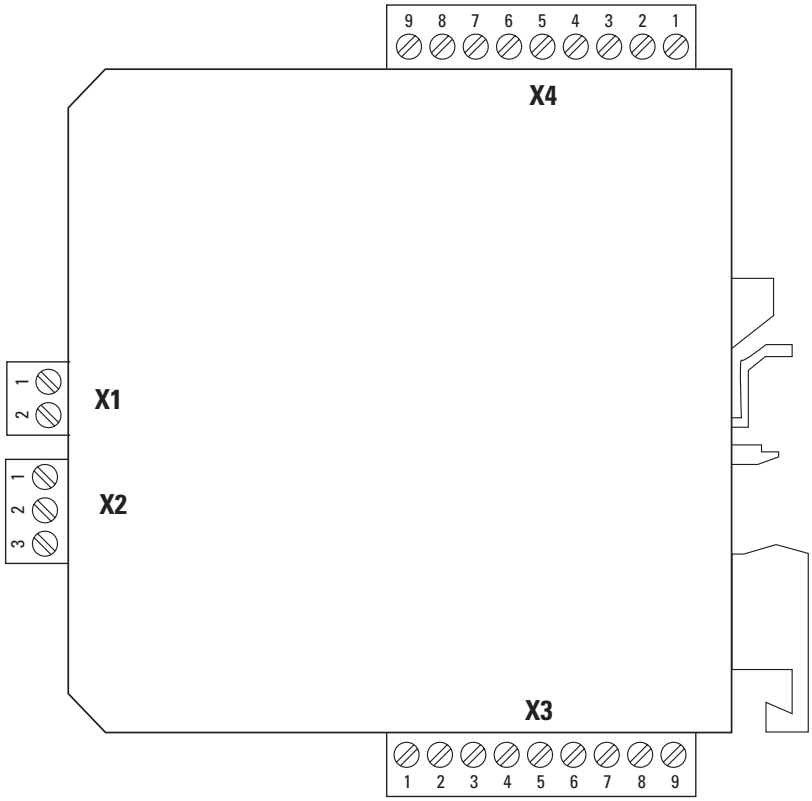
Terminal assignment



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

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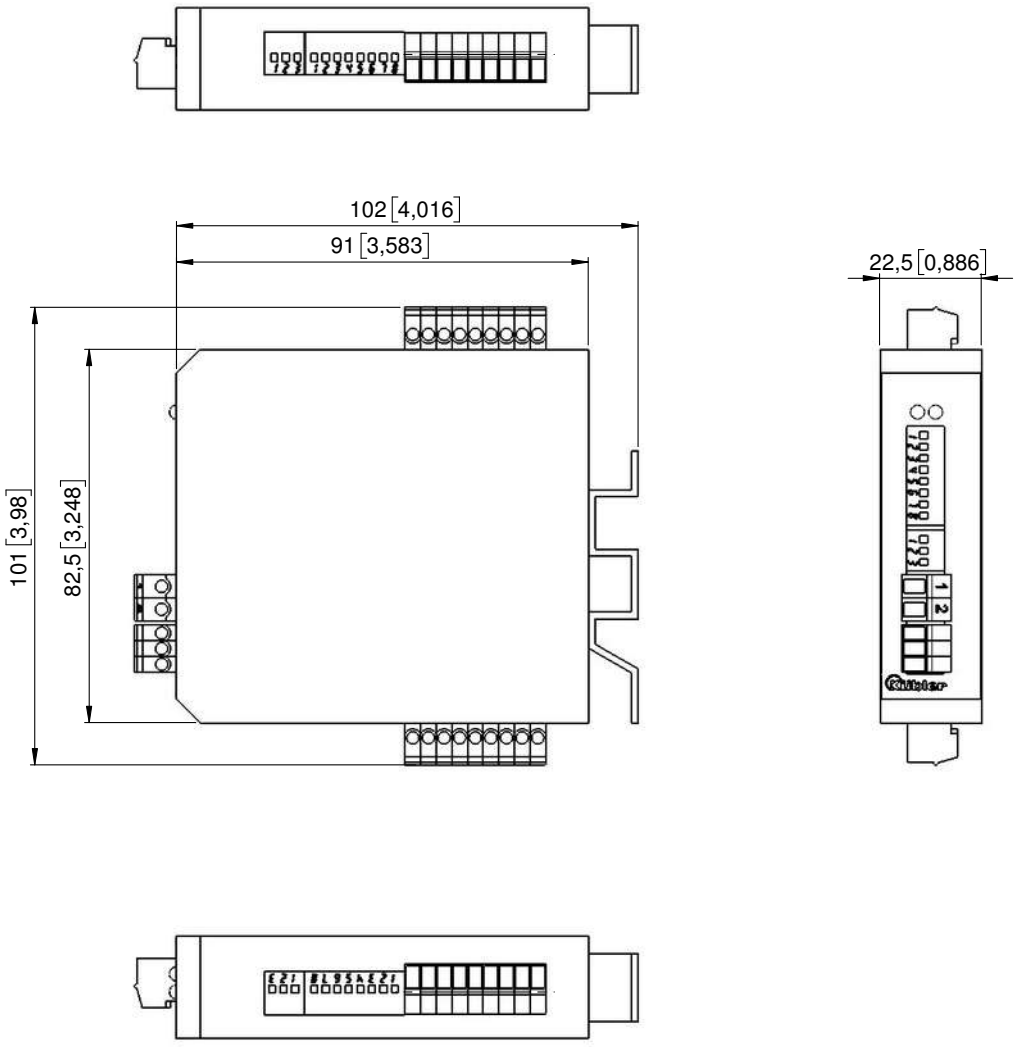
Dimensions

Dimensions in mm [inch]



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