

# Signal converter

<b>Frequency divider</b>	<b>FT 1D-1D</b>	<b>HTL, TTL / RS422</b>
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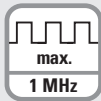


The frequency divider FT 1D-1D is intended for the error-free division of frequencies or pulses from conventional encoders, sensors or other incremental measuring systems. Four readily accessible DIL switches allow programming division ratios from 1:1 up to 1:4096 and the desired representation of the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

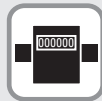
The module can be easily and conveniently mounted in a cabinet on a standard DIN rail.



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

<b>Order no.</b>		
Frequency divider	<b>8.FT.1D-1D</b>	<i>Scope of delivery</i> - Frequency divider - Manual

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## Technical data

Electrical characteristics	
<b>Power supply</b>	9 ... 30 V DC (residual ripple ≤ 10 % at 24 V DC)
<b>Power consumption</b> (encoder supply without load)	at 9 V approx. 40 mA at 30 V approx. 30 mA
<b>Type of connection</b>	screw terminal, 1.5 mm <sup>2</sup>
<b>Encoder supply</b>	output voltage +5.5 V DC / ±5 % output current max. 130 mA type of connection screw terminal, 1.5 mm <sup>2</sup>

Mechanical characteristics	
<b>Material</b>	housing plastic
<b>Mounting</b>	35 mm DIN rail (acc. to EN 60715)
<b>Dimensions (W x H x D)</b>	22.5 x 102 x 102 mm [0.89 x 4.02 x 4.02"]
<b>Protection</b>	IP20
<b>Weight</b>	approx. 100 g [3.53 oz]
<b>Working temperature</b>	0 °C ... +60 °C [+32 °F ... +140 °F] non condensing
<b>Storage temperature</b>	-25 °C ... +70 °C [-13 °F ... +158 °F] non condensing
<b>Failure rate (MTBF in years)</b>	109,3 a continuous operation at 60 °C [140 °F]

Approvals	
<b>CE compliant</b> in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
<b>UKCA compliant</b> in accordance with	
EMC Regulations	S.I. 2016/1091
RoHS Regulations	S.I. 2012/3032

Incremental input X4	
<b>Signal level</b>	TTL / RS422 differential voltage > 1 V HTL LOW: 0 ... 4 V / HIGH: 10 ... 30 V
<b>HTL internal resistance</b>	Ri ≈ 4.7 kOhm
<b>Tracks</b>	TTL / RS422, symmetrical A, /A, B, /B, 0, /0 (RS422, HTL differential) HTL, asymmetrical A, B, 0
<b>Frequency</b>	HTL differential max. 1 MHz (HTL differential signal > 2 V) HTL single ended max. 350 kHz, Level 1: Low 0 ... 10 V, High 14 ... 30 V Level 2: Low 0 ... 5 V, High 9 ... 30 V TTL max. 350 kHz, Low 0 ... 0.7 V, High 2.2 ... 5 V
<b>Type of connection</b>	HTL, TTL / RS422 screw terminals, 1.5 mm <sup>2</sup>

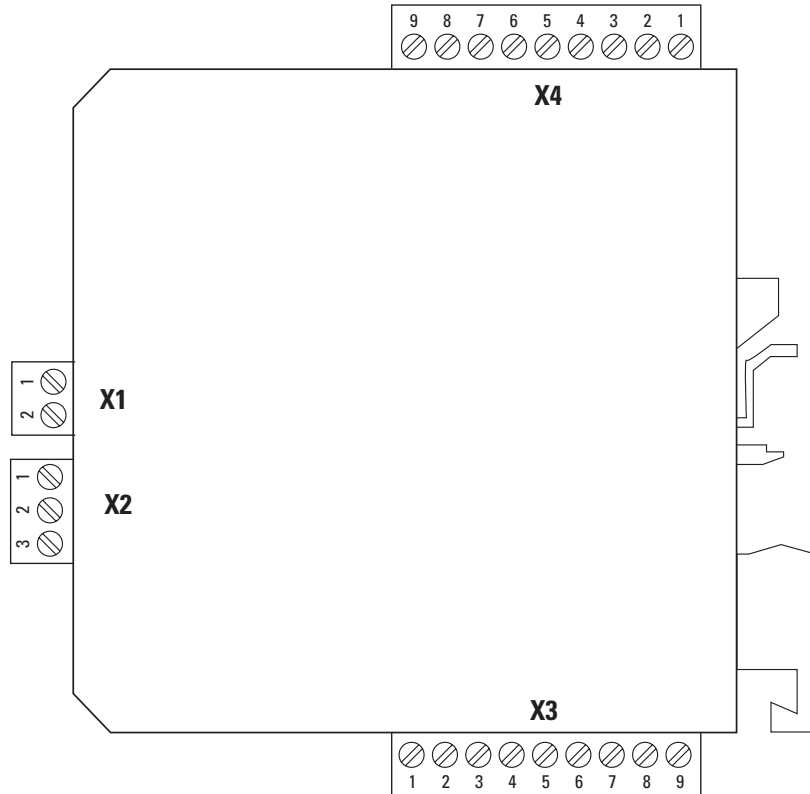
Incremental output X3	
<b>Level</b>	8 ... 29 V at HTL (depending on the supply voltage)
<b>Tracks</b>	TTL / RS422, symmetrical A, /A, B, /B, 0, /0 (5 V DC) HTL, asymmetrical A, B, 0
<b>Output current</b>	max. 20 mA / Push-Pull
<b>Type of connection</b>	screw terminals, 1.5 mm <sup>2</sup>

Control input X2	
<b>Level</b>	HTL, PNP Low 0 ... 5 V, High 9 ... 30 V
<b>Tracks</b>	frequency max. 20 kHz response time 50 us
<b>Input current</b>	max. 3 mA
<b>Type of connection</b>	screw terminals, 1.5 mm <sup>2</sup>

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## Terminal assignment



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

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

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

Interface	Function	Screw terminals, 9-pin									
<b>Connection X4</b>	Incremental input	Signal:	GND	$\bar{0}$	0	$\bar{B}$	B	$\bar{A}$	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,  $\bar{A}$  : Incremental output channel A (Cosine)
- B,  $\bar{B}$  : Incremental output channel B (Sine)
- 0,  $\bar{0}$  : Reference signal

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## Dimensions

Dimensions in mm [inch]

