

Certified according to DIN EN ISO 9001

Technical Datasheet



VTD03-**-*-Ex Dual Pickup Carrier-Frequency Amplifier

VTD03 Dual Pickup Carrier-Frequency Amplifier

General Description

The VTD03 are dual carrier frequency pickups for the ZHM gear flow meter series.

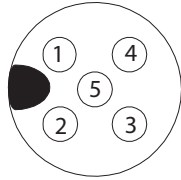
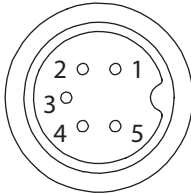
Due to the wide frequency range (0.5 to 5000 Hz) they cover the whole flow range of all ZHM.

The VTD03 provide either 2 frequency signals with 90° phase shift for true forward-backward detection, or the double frequency and a direction signal.

The desired output signals can be easily selected via 2 sliding switches.

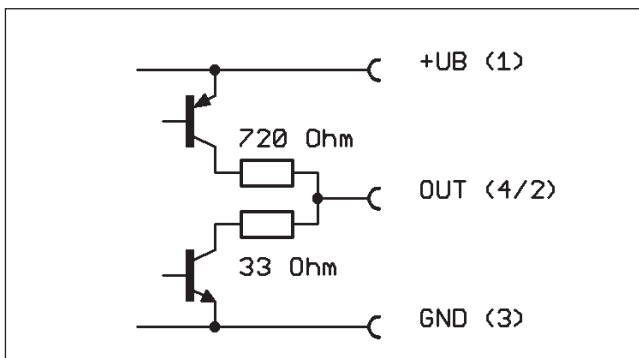
For applications in hazardous areas intrinsically safe versions with ATEX and IECEx certification for zone 1 and cCSAus certification for zone 0 and division 1 are available.

Technical Data

Supply voltage U_B	10 up to 30 V DC, regulated	
Quiescent current	< 2 mA	
Frequency range	0.5 up to 5000 Hz	
Ambient temperature	-40 up to +60 °C	
Medium temperature	-40 °C to +80 °C (standard version) -40 °C to +60 °C (VTD03-xx-x-Ex)	
Housing	Aluminium	
Dimensions (w/o connector)	l = 50 mm; w = 45 mm; h = 30 mm	
Ingress protection	IP 65	
Ex protection	ATEX:	Ⓔ II 2G Ex ia IIC T4 Gb
	IECEx: cCSAus:	Ex ia IIC T4 Gb Class I, Div. 1, Groups A, B, C, D ; T4 Ex ia IIC T4 Ga Class I, Zone 0 AEx ia IIC T4 Ga
	ATEX:	Ⓔ II 3G Ex nA IIC T4 Gc
Electrical connection	5-pin plug M12 SPEEDCON	
	5-pin plug M16 423 (option)	

Ex-Supply Data		
Supply circuit (pin 1 and 3)	Voltage	$U_i = \text{DC } 30 \text{ V}$
	Current	$I_i = 120 \text{ mA}$
	Power	$P_i = 850 \text{ mW}$
	effective internal capacitance	$C_i = 8 \text{ nF}$
Signal output circuit push/pull (pin 2 and 3 / pin 4 and 3)	Voltage	$U_i = 30 \text{ V}$
	Current	$I_i = 24.6 \text{ mA}$
	Power	$P_i = 185 \text{ mW}$
	effective internal capacitance	$C_i = 8 \text{ nF}$

Output (short-circuit proof)



The output drivers are asymmetrical push pull output stages with the protective resistors of 720Ω and 33Ω as shown.

The high and low output voltages can be calculated as:

$$V_{\text{high}} = V_{\text{supply}} - 1 \text{ V} - 720 \Omega \cdot I_{\text{load}}$$

$$V_{\text{low}} = 0,5 \text{ V} + 33 \Omega \cdot I_{\text{load}}$$

The VTD03 can give out the 2 frequency signals f_A and f_B or the double frequency $2 \cdot f$ and a direction signal DIR.

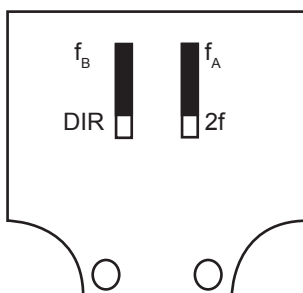
With a forward flow f_A is leading f_B by 90° and DIR is LOW.

Changing the setting

Switch off the power supply or disconnect the VTD03 from the power supply.

Unscrew the 2 screws in the top cover and remove the top cover.

Set the 2 sliding switches in the desired position.

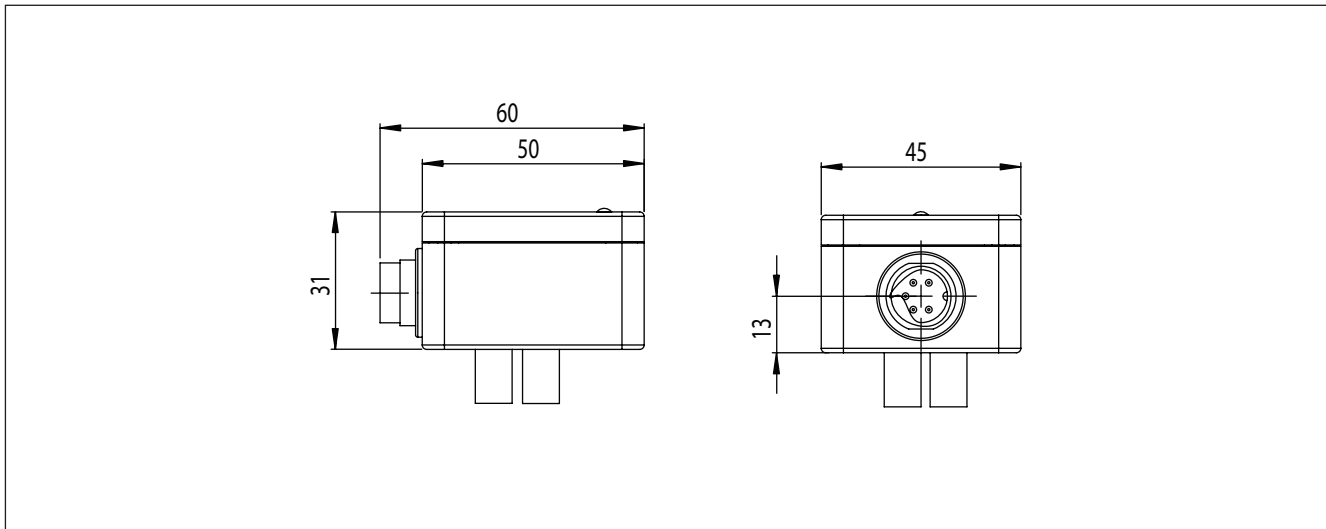


Default setting: f_A, f_B

Reclose the top cover and reconnect the power supply.

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Dimensional Drawing (mm)



Ordering Information

	VTD03	-	XX	-	X	-	Ex
Flow meter type¹⁾							
ZHM01			10				
ZHM01/1, 01/2			11				
ZHM 01/3			13				
ZHM02, ZHM 02/1 and ZHM 03			20				
ZHM04			40				
ZHM05			50				
Output mode + connector¹⁾							
Connector M16, Push Pull (IEC60946)					A		
Connector M12, 5pin A-coded Push Pull (IEC60946)					P		
Ex-protection							
No protection							
ATEX zone 2	II 3G Ex nA IIC T4 Gc						Exn
Ex-approved	ATEX: II 2G Ex ia IIC T4 Gb						Ex
	IECEX: Ex ia IIC T4 Gb						
	CSA: Class I, Div. 1, Groups A, B, C, D						
	AEx ia IIC Ta						
	Class I, zone 0, AEx ia IIC T4						

1) other versions on request

Notes

The following has to be adhered to:

- a. Installation instructions for electrical devices.
Installation instructions for associated intrinsically-safe devices.
The »Special conditions for safe use« as per EC-Type Examination Certificate
- b. The amplifier has to be installed in a way that the max. ambient temperature does under no circumstances exceed +60°C.
- c. With cables care should be taken, that the max inductivity and capacity of the respective voltage or gas group are not exceeded.
- d. Input frequencies outside the specified range (see technical data) will cause invalid frequency output signals.
- e. Shielded cables are to be used as connecting lines.
- f. Generally, supplied units have to be connected by an expert according to EMC stipulations..
- g. Disconnect power supply before soldering the electrical connector.

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