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CONVERTER FTW 1213

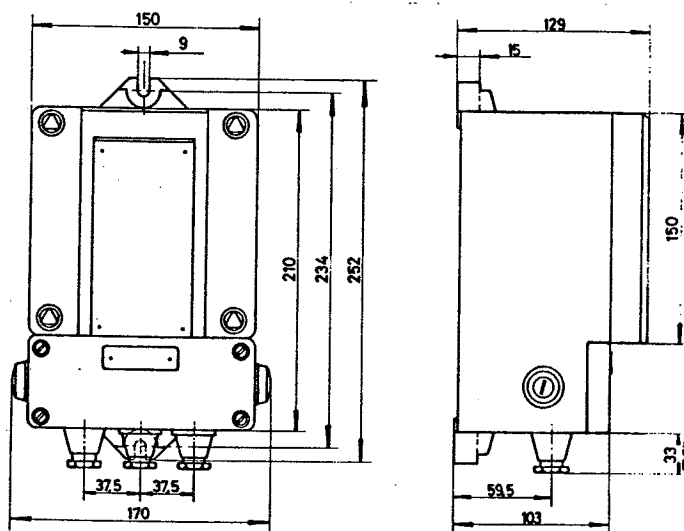
Installation and dimensional sketch

The instruments of the series FT 1200 are designed for installation in areas where danger of explosion exists. The instruments are mounted in compression-proof plastic housings and can therefore be installed within the dangerous area.

Dimensions:

Plastic housing in
protective execution
(Ex) d 3n
suitable for wall mounting

Weight: approx. 4 kg.



3 screw cable glands Pg 16

Connection

The connection must be made in accordance with drawing No. 4-105.923.

- When connecting the input and output circuits, carefully consider the prescriptions of the Test Certificate PTB No. III B/E-28704.
- If an electromagnetic transmitter or a ferrostat transmitter is connected, it is essential to use a two-wire shielded cable for the transmitter wiring. The shielding of this cable must only be connected to terminal "LO". On the transmitter end the shielding must not be connected to the transmitter housing. For ferrostat transmitters the resistor of 820 ohms must be mounted in the terminal box.
- When connecting the mains, care must be taken to ensure that the mains voltage is the same as that selected on the instrument. To change to another voltage on the printed circuit "Power Supply", see schematic diagram 4-105.886. Adapt fuse value as per diagram.

Function of the instrument

The converter FTW 1213 is a measurement transformer which converts an input frequency into a frequency proportional uniform output current. If it is connected to an impulse transmitter, its output current is proportional to the speed of the impulse transmitter.

Adjusting instructions

The converter is calibrated in the factory and can be put into operation immediately without further calibrations or settings.

The relation between frequency and speed of the impulse transmitter is determined with the following formula:

$$f = \frac{n \cdot p}{60}$$

where: f = transmitter frequency in Hz
n = rotational speed of impulse transmitter in rpm
p = number of poles of the pole wheel

Technical data

- Mains connection: Alternating voltage 48...63 Hz, 5 VA, 24 V/115 V/220 V, +10%, -20%, programmable by internal wire links.
- Insulation voltages: between mains and earth: 2000 V/50 Hz.
Input and output current circuits against earth and against each other: 500V/50 Hz.
- Frequency input for the connection of intrinsically safe transmitters.
Range 1 Hz to 20 kHz.
Input voltage 50 mV_{eff}...55V_{eff} (see Test Certificate)
Trigger level setting: 0...3 V.
Input impedance 25 kOhms, shunted with 1 nF. Floating and intrinsically safe (Ex) i G5.
Built-in power supply +12V dc, 50 mA, non-shorting and intrinsically safe (Ex) i G5 for feeding ferrostat transmitters or external attested pre-amplifier.
- Frequency range: firmly calibrated in accordance with nameplate within a range of 0...20 Hz to 0...20 kHz.
The frequency range may be exceeded as far and as long as desired, without fear of damaging the instrument.
The frequency determining elements are mounted on soldering pins.
- Current output for the connection of intrinsically safe or non-attested current circuits:
Uniform dc current 0...2,5 mA, 0...5 mA, 0...10 mA or 0...20 mA.
Raised or suppressed zero point up to max. 50 % of range end value is possible.
Maximum guaranteed load voltage at maximum load resistance: 16 V.
Maximum no-load voltage: 21 V.
Floating and intrinsically safe (Ex) i G5. The safety is lost when connected to non-attested output current circuits.
- Accuracy: 0,5 %.
- Linearity error: 0,1 %.
- Temperature coefficient: $200 \times 10^{-6} / ^\circ\text{C}$.
- Ambient temperature: 0...+40 °C.

Circuit diagram and time constant

The enclosed Drawing No. 4-105.886 shows the circuit diagram. The input alternating voltage is first transformed into a square wave voltage in a pulse shaper stage. Each period of this alternating voltage triggers a monostable multivibrator, which is specially designed for uniform and temperature-independent impulse length. The direct current mean value, which is exactly proportional to the input frequency, is formed by the integrating amplifier from the emitted direct current impulses of constant voltage-time product. This integrating amplifier displays a time constant, i.e. with a step change of the input frequency the output current approaches the final value in an e-function. The time constant and the setting time t_e (approach to up to 1% of the final value) can be calculated in function of the frequency range final value f_e from the following formula:

Time constant: $50 / f_e$ Setting time: $230 / f_e$

Re-calibration

The instrument is calibrated in the factory and its control is so stable that re-calibration is hardly ever necessary.

Under no circumstances must setting potentiometers be turned, except if their function is absolutely clear and the corresponding calibrating means are available.

The converter can be re-calibrated on trimmer potentiometers within a narrow range: zero point on potentiometer P_N and full scale point on potentiometer P_F . These potentiometers are shown on schematic diagram No. 4-105.923.

Modifications of the frequency range are carried out with the capacitors C_F and C_D ; the resistance R_M determines the output current range. The manufacturer can supply exact calibrating instructions for an extra charge.

Setting the trigger level (The installation must be disconnected before opening the housing)

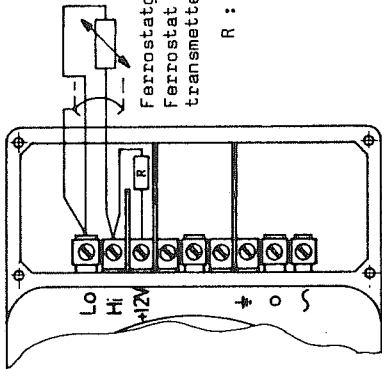
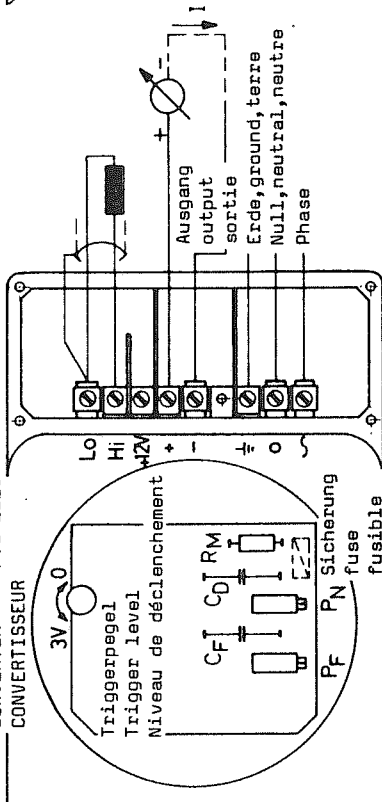
The location of the setting potentiometer is shown in drawing No. 4-105.923. When putting into operation for the first time, the potentiometer for the trigger level setting should be on 0 V. This setting corresponds to the maximum sensitivity of the converter of 50 mV. This setting is correct in most applications.

The response point of the transition through zero is shifted by the increase of the trigger level. At the same time, the amplifier input becomes more insensitive, as the peak of the input voltage must at least reach the value of the set trigger level in order to start operation. An increased trigger level can eliminate:

- Indication at standstill of the machine, caused by noise effects.
- Wrong indication, caused by peaks or irregularities of the transmitter voltage around the transition through zero. In this event, pole-changing of the transmitter connections can also be of assistance.

WANDLER
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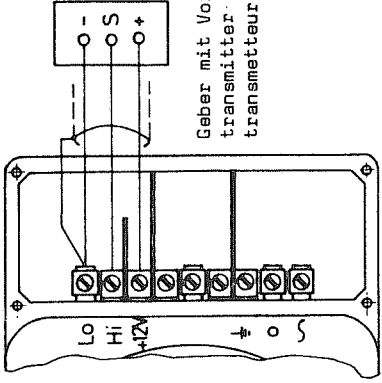
FTW 1213



Ferrostatgeber, HF-Geber
Ferrostat transmitter, HF-transmitter
transmetteur Ferrostat, transmetteur HF

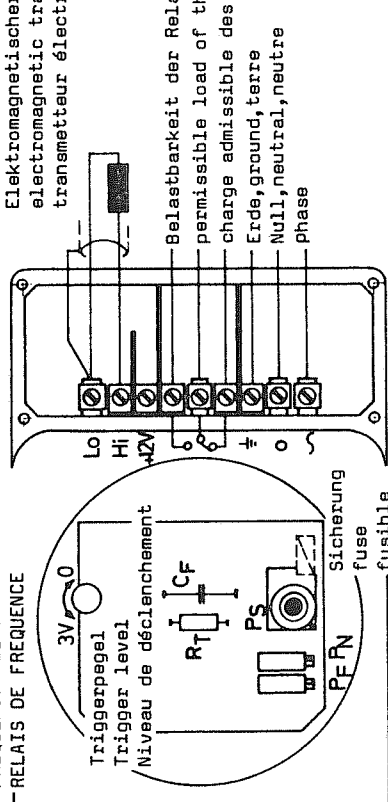
R : 820 Ohm

Geber mit Vorverstärker
transmitter with preamplifier
transmetteur avec préamplificateur



FREQUENZRELAIS
FREQUENCY RELAY
-RELAIS DE FREQUENCE

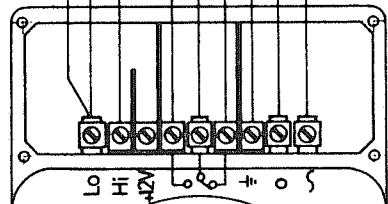
FTF 1223



Elektromagnetischer Geber
electromagnetic transmitter
transmetteur électromagnétique

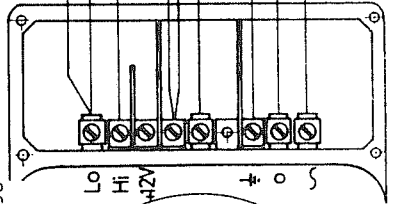
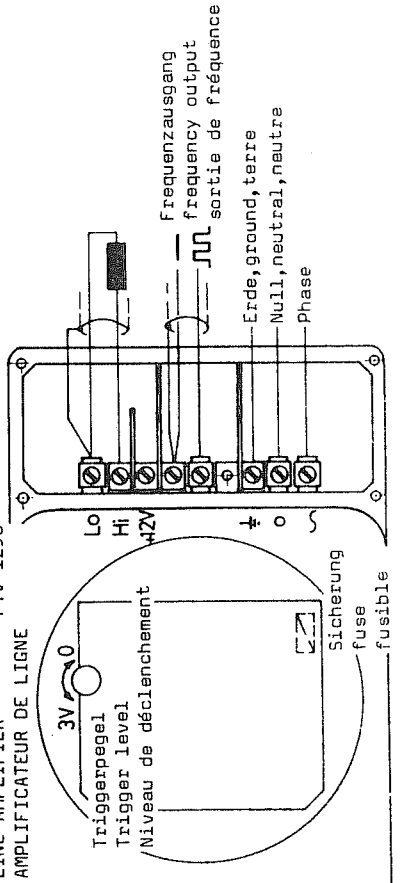
Belastbarkeit der Relaiskontakte:
permissible load of the relay contacts:
charge admissible des contacts du relais:

U- ≤ 60 Volt, ≤ 0,25 Amp.
U- ≤ 250 Volt, ≤ 4 Amp. cos. φ ≥ 0,7 max 500 VA



LEITUNGSVERSTÄRKER
LINE AMPLIFIER
AMPLIFICATEUR DE LIGNE

FTV 1293



FT 1200 (Ex) Elektronische Tachometer - Electronic Tachometers - Tachymètres Electroniques

Anschluss - Ansicht bei abgenommenem Gehäuse - und Anschlusskasten - Deckel
Connections - view with covers for case and connection box removed
Raccordement - vue avec couvercles pour boîtier et boîte de jonction démontés