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Installation and dimensional sketch

Refer to attached drawing No. 4-101.469E

Connection

The connection should be made in accordance with the enclosed connection diagram No. 4-101.574. Before connecting it should be checked that the feed voltage intended for the instrument (see nameplate next to the voltage selector) and the position of the voltage selector correspond to the mains voltage. The permissible tolerance of the mains voltage is $\pm 15\%$.

Reliable earthing of the instrument (terminal 18) is important. 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 be earthed (terminal 3). In the case of long output wiring and high external noise level it may be of advantage to earth the output wiring. This should be done at terminal 9 (positive pole)

Function of the instrument

The converter FTW 913 is a measuring transducer adapted to convert an input frequency into a frequency proportional output direct 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.

Technical data

Mains connection: Standard alternating voltage, commutable 120 and 220 V $\pm 15\%$, 50..60 Hz
Addition D1: Direct current, commutable 6 and 12 V $\pm 15\%$
Addition D2: Direct current, commutable 24 and 48 V $\pm 15\%$

Input: Input connections for the following three types of impulse transmitters are available:

A. For electromagnetic transmitters or other alternating voltage sources.

Response voltage: 50 mV

Maximum permissible alternating input voltage: $100 V_{\text{rms}}$

Maximum permissible input direct voltage: 25 V

Input impedance: 25 kohms

Lower limiting frequency: 1 Hz

The insensitive input pole (terminal 1) is earthed.

B. For ferrostat transmitters.

Built-in power supply for the transmitter element. Supply voltage 12 V with an internal resistance of 1.5 kohms. Dynamic coupling, sensitivity $50 \text{ mV}_{\text{rms}}$, lower limiting frequency 1 Hz.

C. For external transmitter amplifiers.

Built-in d.c. supply for external transmitter amplifier. Supply voltage 12 V, $\pm 15\%$, -10% , maximum load rating 70 mA, negative pole earthed. Static coupling to the output signal of the transmitter amplifier.

Frequency range: firmly calibrated, in accordance with nameplate (Minimum 0-20 Hz, maximum 0-20 kHz). The frequency range may be exceeded as far and as long as desired, without fear of damaging the instrument.

*) Addition D3: Direct current 16 V to 36 V /max. 10 Watt.

Type of output current: Load-independent, floating d.c. current.

Ripple less than 1% (mA_{rms}) of the final value

Output current range: As nameplate (Usually 0-2,5/0-5/0-10 or 0-20 mA)

Maximum permissible load resistance: as on nameplate

Maximum no-load voltage: 60 V

Accuracy: 0.5%

Linearity error: 0.1%

Temperature coefficient: $150 \times 10^{-6} / ^\circ C$

Possible supplementary equipment

N: Suppressed or raised zero to a maximum of 50% of the final range value.

A: Two current outputs. Connected in series and protected by zener diodes against open circuits. Maximum load voltage 10 V at each output.

Circuit diagram and time constant

The enclosed Drawing No. 4-101-835 shows the circuit diagram. The input alternating voltage is first amplified, then transformed into a square wave voltage in an pulse shaper stage and fed to the output part by means of an impulse transformer. Each period of this alternating voltage triggers a monostable multivibrator, which is fed from a constant voltage source and 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 volt-second surface. This integrating amplifier displays a time constant, i.e. at a step change of the input frequency the output current does not appear jerkily but 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 formulae:

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

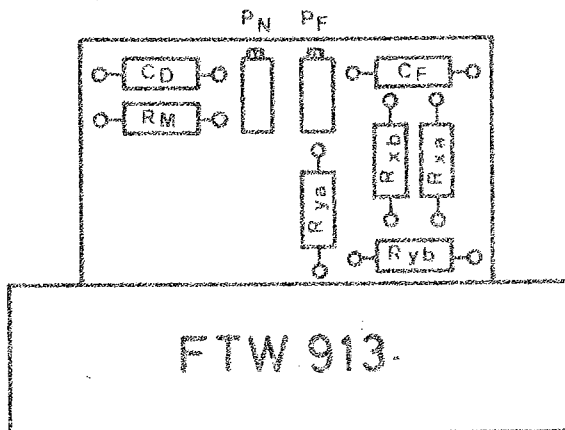
The wiring of the power supply for instruments with d.c. voltage feed is shown on the reverse of the circuit diagram No. 4-101.835.

Re-calibration

The instrument is calibrated in the factory and its control is designed so stably 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 . The drawing below shows where these are fitted.

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 and the resistances R_x and R_y have the effect of raising or lowering the zero point. The manufacturers can supply exact calibrating instructions for an extra charge.



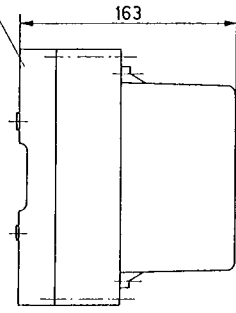
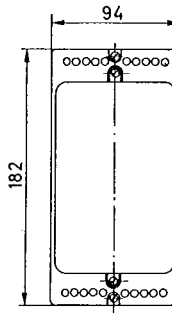
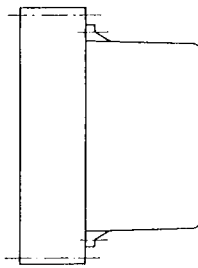
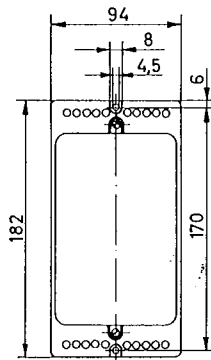
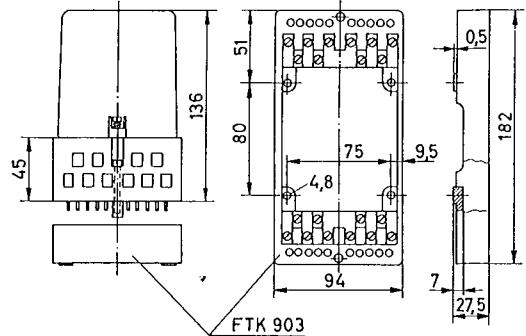
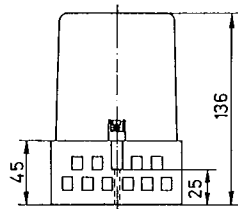
Enclosures: Drawing No. 4-101.469E Installation and dimensional sketch
 No. 4-101.574 Connection diagram
 No. 4-101.835 Circuit diagram

The plastic housing of the instrument correspond to protection IP 20 and is intended to be built into an additionally protected room (instrument cabinet etc.). If no such room is available, an extra protective housing should be provided. Suitable steel plate housings of protection IP 54 can be supplied. Dimensional sketches of the two available executions (standard type and plug-in type) are given below. The dimensional sketches of the protective housings are also given.

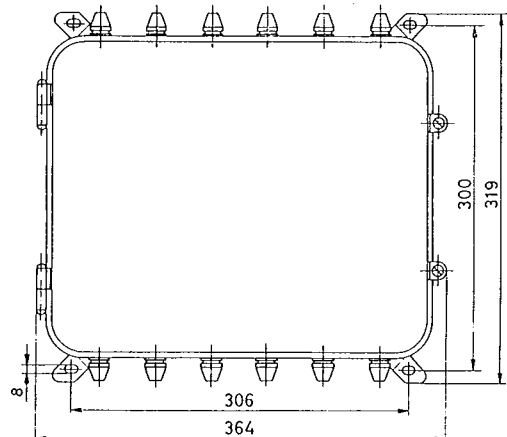
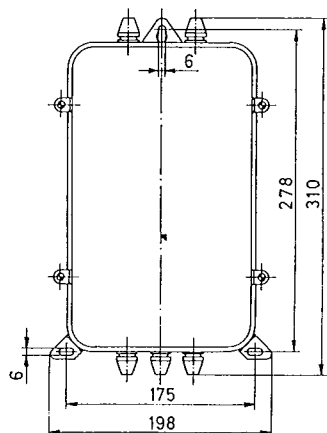
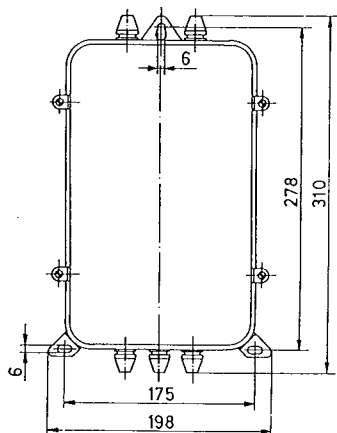
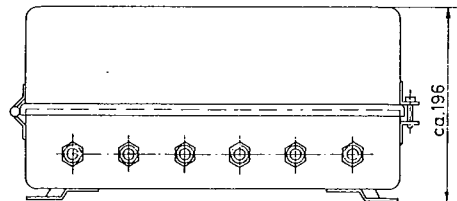
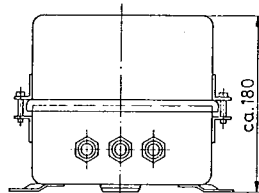
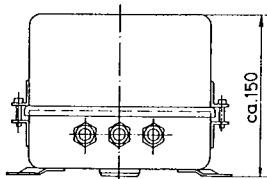
The instrument position is free. The transparent plastic hood should be capable of being removed when mounted (mains fuse, or accessibility of setting knobs). The sturdy construction protects the instrument against shocks and vibrations. The permissible ambient temperature is -20 to $+60^{\circ}$ C.

Standard type

Plug-in type (additional letter K)



Protective housings



FTB 901

FTB 901 K

FTB 902
FTB 902 K

ANSCHLUSSSCHEMA FUER WANDLER FTW 913 - CONNECTION DIAGRAM FOR CONVERTER FTW 913 - SCHEMA DE RACCORDEMENT POUR CONVERTISSEUR FTW 913

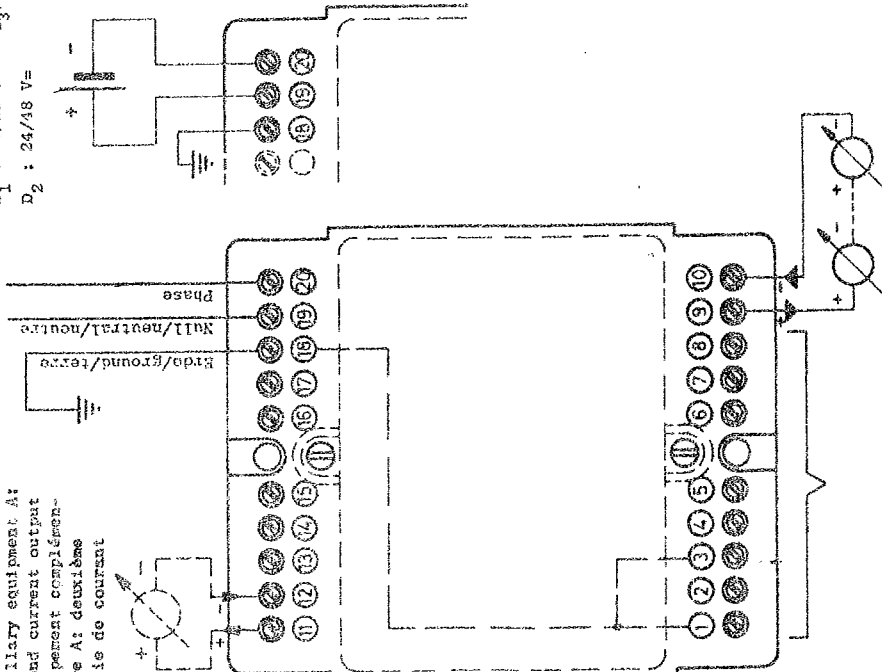
SPESUNG / POWER SUPPLY / ALIMENTATION

Spannungsschild und Spannungswähler beachten!
Check the mains plate and the mains selector!
Observez la plaquette et le commutateur de tension!

Wechselspannungspeisung Gleichspannungspeisung
A.C. supply execution D.C. supply execution
exécution pour courant alternatif exécution pour courant continu

$D_1 : 6/12 \text{ V} =$ $D_3 : 15.5 \dots 56 \text{ V} =$
 $D_2 : 24/48 \text{ V} =$

Zweiter Stromzweig
bei Zusatzrüstung A:
ancillary equipment A:
second current output
équipement complémen-
taire A: deuxième
sortie de courant



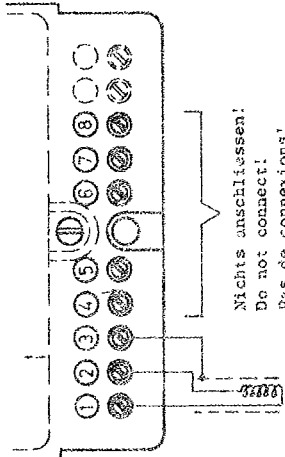
ANSCHLUSSE DER IMPULS-
GEBER (siehe rechts)
CONNECTIONS FOR THE
IMPULS-TRANSMITTERS
(look at the right)
RACCORDEMENT DES TRANS-
METTEURS D'IMPULSIONS
(voir à droite)

Ausgangsstrom gemäß Typenschild
output current according to types plate
Courant de sortie selon la plaquette de types
Lastwiderstand gemäß Typenschild
load resistance according to types plate
résistance de charge selon la plaquette de types

ANSCHLUSSE DER IMPULSGEBER

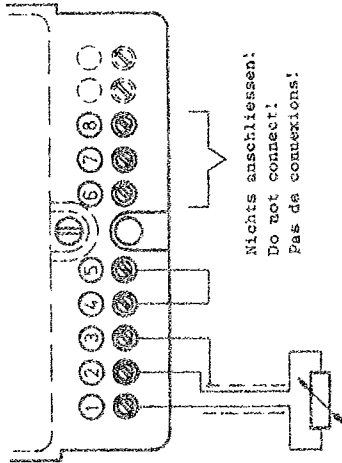
CONNECTIONS FOR THE IMPULS-TRANSMITTERS
RACCORDEMENT DES TRANSMETTEURS D'IMPULSIONS

Elektromagnetische Geber
electromagnetic transmitters
transmetteurs électromagnétiques



Nichts anschliessen!
Do not connect!
Pas de connexions!

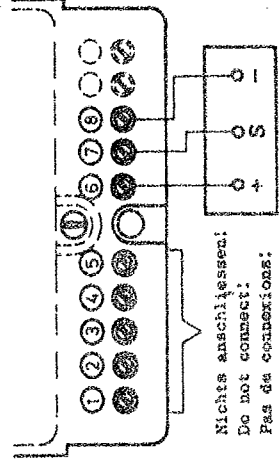
Ferrostatgeber, HF-Geber
Ferrostat transmitter, HF-transmitter
Transmetteur Ferrostat/transmetteur-HF



Nichts anschliessen!
Do not connect!
Pas de connexions!

Geber mit Vorverstärker (z.B. Photo-
elektrischer Geber FIG 1076/1077)
transmitter with preamplifier (e.g. the
photoelectrical transmitter FIG 1076/1077)

transmetteur avec préamplificateur (par
exemple transmetteur photoélectrique FIG 1076/1077)

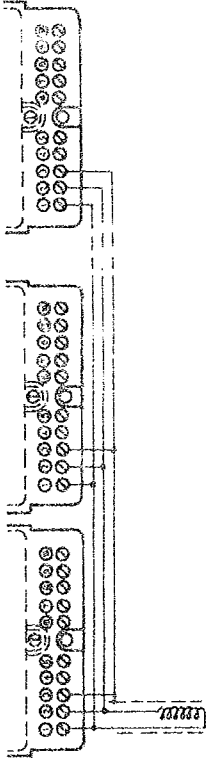


Nichts anschliessen!
Do not connect!
Pas de connexions!

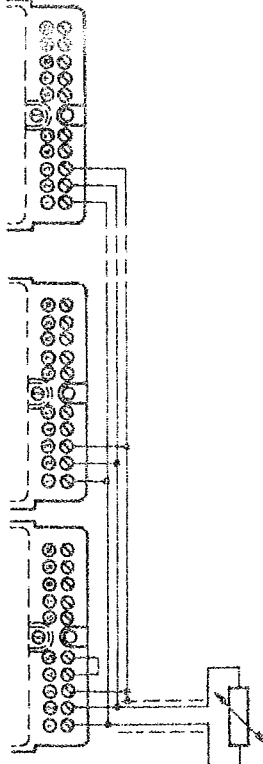
ZUSAMMENSCHALTUNG MEHRERER GERÄTE

CONNECTION OF SEVERAL UNITS
RACCORDEMENT DE PLUSIEURS APPAREILS

Elektromagnetische Geber
electromagnetic transmitters
transmetteurs électromagnétiques



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



Geber mit Vorverstärker (z.B. Photo-
elektrischer Geber FIG 1076/1077)
transmitter with preamplifier (e.g. the
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