CVT-DIN AV1/AV5
CVT-DIN AV2/AV6
CVT-DIN F1/F2/F3

INSTRUCTION FOLDER

INTRODUCTION

CVT-DIN is a compact-size transducer for AC/DC currents, AC/DC voltages and frequencies. By removing the front panel (only CVT-DIN.AV1/AV2/AV5/AV6) it is possible to make a field adjustment of the output signal.

For a correct and long-lived working of this transducer, follow scrupulously the below mentioned instructions.

Important
We suggest you keep the original packing in case it is necessary to return the instrument to our Technical Service Department.

1. INSTALLATION

Fix CVT-DIN on the DIN-rail.

Figure 1 shows the overall dimensions and the panel cut-out.

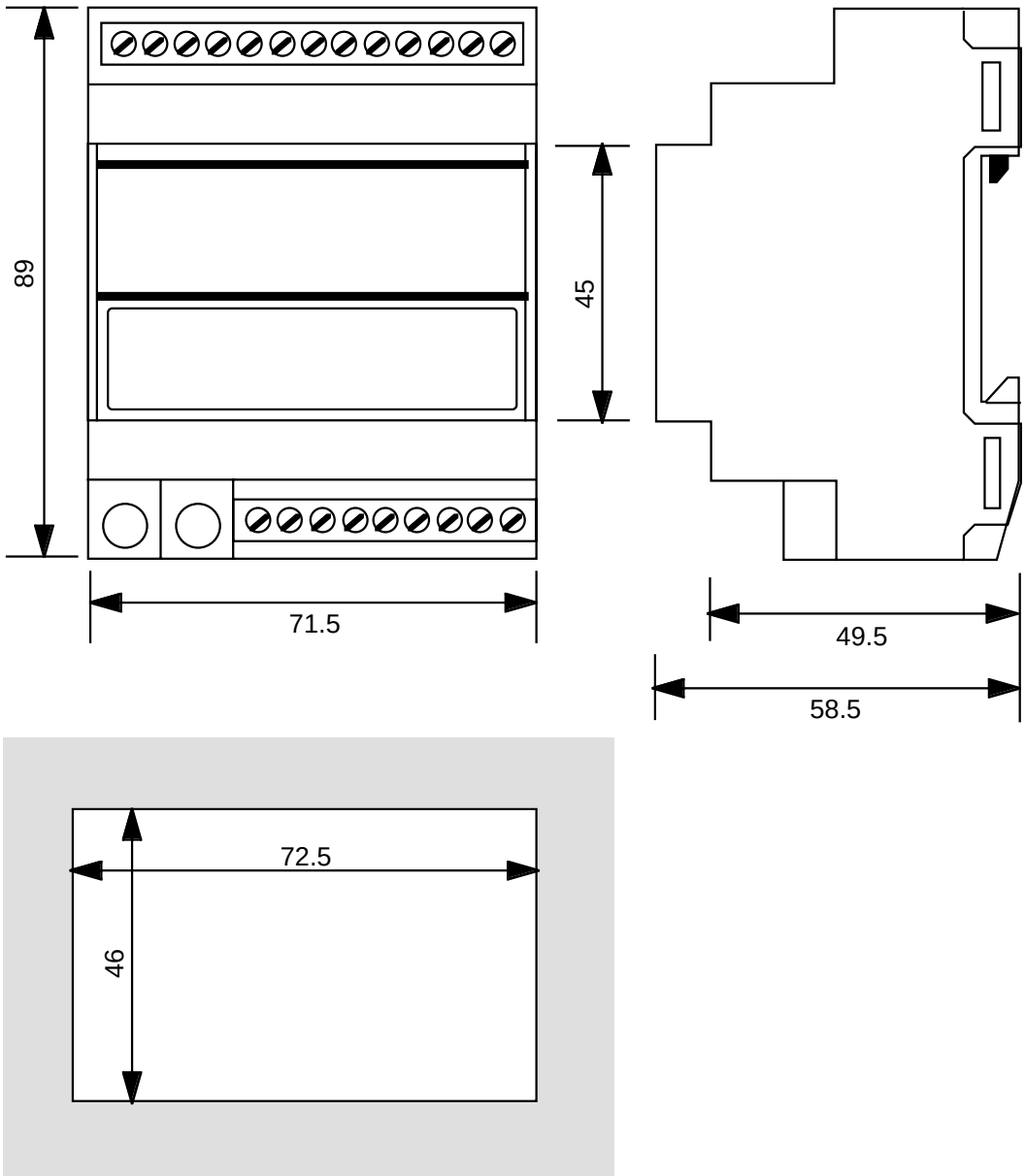
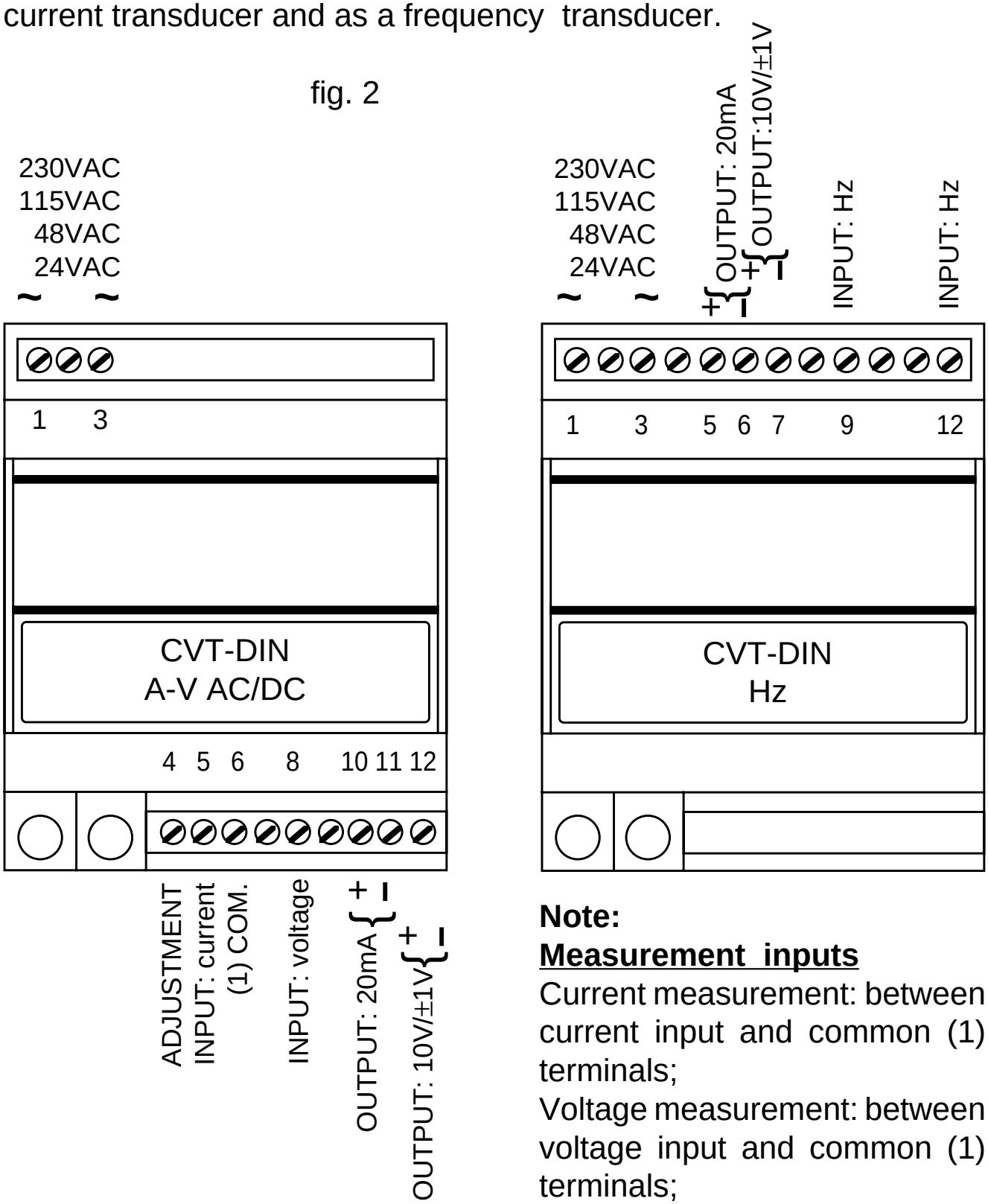


fig. 1

2. ELECTRICAL CONNECTIONS

Figure 2 shows the electrical connections of CVT-DIN as a voltage/ current transducer and as a frequency transducer.

fig. 2



Note:

<u>Measurement inputs</u>

Current measurement: between current input and common (1) terminals;

Voltage measurement: between voltage input and common (1) terminals;

3. TECHNICAL SPECIFICATIONS

- **4 DIN-modules**
- **Measurement of**:
  AC current, AC voltage (CVT-DIN AV1/AV5),
  DC current, DC voltage (CVT-DIN AV2/AV6),
  frequency (CVT-DIN F1/F2/F3)
- **Accuracy**: 0.5%f.s.@ 25°C ±5°C/R.H. ≤60% (0.1 In/Un to 1In/Un) including frequency, power supply and output load influences
- **Additional errors**:
  humidity <0.3%, from 60% to 90% R.H.;
  input frequency: 0.4%, from 62 to 400 Hz (AV1/AV5);
  magnetic field: <1% (F1/F2/F3), 0.5% @ 400A/m (AV1/AV5, AV2/AV6)
- **Maximum ripple**: ≤1%
- **Input ranges**:
  CVT-DIN AV1:
  1A (1V internal shunt/1Ω impedance)/100VAC (200kΩ impedance)
  CVT-DIN AV5:
  5A (250mV internal shunt/0.05Ω imp.) / 500VAC (1MΩ impedance)
  CVT-DIN AV2:
  60mV (10kΩ impedance)/10VDC (1.5MΩ impedance)
  CVT-DIN AV6:
  1A (1V int. shunt/1Ω impedance)/200VDC (1.6MΩ impedance)
  CVT-DIN.F1/F2/F3:
  45 to 55Hz (F1), 55 to 65Hz (F2), 350 to 450Hz (F3) (input voltage range from 90 to 450 VAC)
- **Overload protection**:
  continuous 1.2 In, 1.2 Un, for maximum 1 second 20 In, 2 Un
- **Insulated analogue outputs**: 0 to 20mADC (load ≤500Ω), 4 to 20mADC (load ≤500Ω); 0 to 10VDC (load ≥10kΩ), ±1VDC (load ≥10kΩ)
- **Temperature drift:** 200 ppm/°C
- **Response time**: 300 ms typ. (AV1/AV5, AV2/AV6); 4 sec. (F1/F2/F3)

- **Field analogue output adjustment**:
  from 50 to 130% of the U/I inputs which can be modified without any calibrator being requested (see section: field adjustment)
- **Power supply**:
  24VAC +10 -15%, 50 to 60Hz;
  48VAC +10 -15%, 50 to 60Hz;
  115VAC +10 -15%, 50 to 60Hz;
  230VAC +10 -15%, 50 to 60Hz;
- **Self consumption:** ≤5VA (CVT-DIN AV1/AV5, CVT-DIN AV2/AV6), ≤3VA (CVT-DIN F1/F2/F3)
- **Operating temperature:** from 0 to +50°C (R.H. <90% non-condensing)
- **Storage temperature:** from -10 to +60°C (R.H. <90% non-condensing)
- **Stability of accuracy:** 6 months
- **Reference voltage for the insulation:** 300 V_{RMS} to earth
- **Insulation:** 2000 V_{RMS} between output and measuring input; 4000 V_{RMS} between output and power supply input and between inputs/outputs to earth
- **Dielectric strength:** 4000V_{RMS} for 1 minute
- **Noise rejection (CMRR)**: ≥80 dB
- **Connector:** Screw-type, max. 2.5mm^2 wires
- **Case material:** ABS self-extinguishing, UL 94 V-0
- **Weight:** 300 g approx. (packing included)
- **Degree of protection:** IP 50
- **Conformity to**:
  Safety requirements: IEC 1010-1, EN 61010-1,
  Product requirements: IEC 688-1, EN 60688-1,
  EMC: IEC 801-2, IEC 801-3, IEC 801-4 (level 3).

4. SWITCHING ON

Simply power the transducer.

Warning

Inside the transducer there are some calibration potentiometers that are factory adjusted. To avoid any accuracy loss, please do not touch them.

5. FIELD ADJUSTMENT

Using simply a digital multimeter (accuracy class better than or equal to 0.15) instead of a calibrator, it is possible to adjust the transducer's output within the range 50% to 130% of the rated output. This useful field adjustment allows you to have still a good accuracy class (1% F.S.).

To modify the new calibration, proceed as follows:

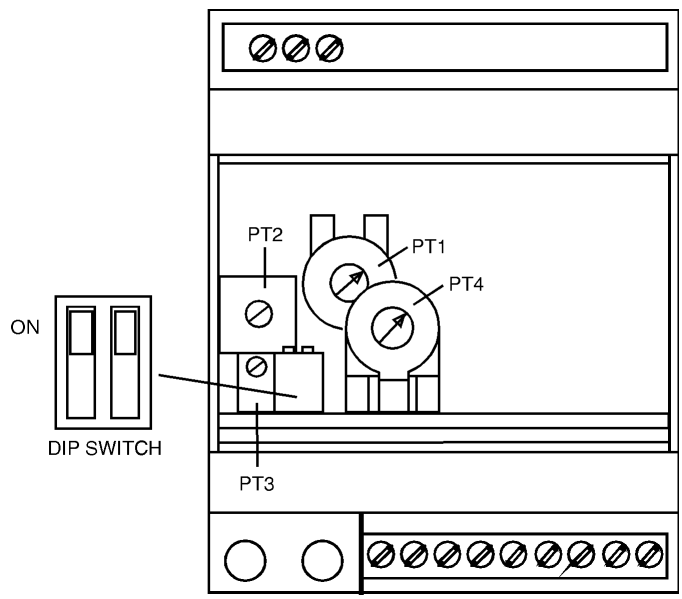
- Turn off the transducer and remove the front cover to reach the adjustment potentiometer;
- Set to the OFF position the dip-switches 1 and 2; subsequently connect the digital multimeter (resistance measurement) across the adjustment screw terminals (SET);
- Calculate the adjustment (R_{adj}) value with reference to the kind of input and its formula (see "Adjustment Formula Table");
  Adjust the PT3 potentiometer in accordance with the result of the used formula;
- Set the dip switches 1 and 2 to the ON position.

Adjustment Formula Table

INPUT	FORMULA	EXAMPLE 1	EXAMPLE 2
5 AAC	$R_{adj} = \frac{15000}{I_{in}\,(A)}$	$I_{in} = 3A$ $R_{adj} = 5000\Omega$	$I_{in} = 6A$ $R_{adj} = 2500\Omega$
500 VAC	$R_{adj} = \frac{1500000}{V_{in}\,(V)}$	$V_{in} = 250V$ $R_{adj} = 6000\Omega$	$V_{in} = 650V$ $R_{adj} = 2307\Omega$
1 AAC	$R_{adj} = \frac{3000}{I_{in}\,(A)}$	$I_{in} = 0.9A$ $R_{adj} = 3333\Omega$	$I_{in} = 1.2A$ $R_{adj} = 2500\Omega$
100 VAC	$R_{adj} = \frac{300000}{V_{in}\,(V)}$	$V_{in} = 80V$ $R_{adj} = 3750\Omega$	$V_{in} = 110V$ $R_{adj} = 2727\Omega$
1 ADC	$R_{adj} = \frac{3000}{}$	$I_{in} = 0.9A$	$I_{in} = 1.2A$

	I_{in} (A)	R_{adj} = 3333Ω	R_{adj}= 2500Ω
200 VDC	R_{adj}= 600000	V_{in} = 190V	V_{in}= 240V
	V_{in} (V)	R_{adj} = 3157Ω	R_{adj}= 2500Ω
60 mVDC	R_{adj}= 180000	V_{in} = 35V	V_{in}= 65mV
	V_{in} (V)	R_{adj} = 5142Ω	R_{adj}= 2769Ω
10 VDC	R_{adj}= 30000	V_{in} = 6V	V_{in}= 12V
	V_{in} (V)	R_{adj} = 5000Ω	R_{adj}= 2500Ω

Note: I_{in} and V_{in} are the new input values to have the rated output.



Position of the involved potentiometers and dip-switches.

WARNING: the PT1, PT2 and PT4 potentiometers must not be adjusted to avoid any performance loss.

WARNING

Do not touch the inside parts of the transducer when power supply and measuring inputs have already been connected to an electrical installation and the latter has been powered.