User guide

Adash 3900

Vibration converter to current loop 4 - 20 mA

Applications:

- Basic vibration diagnostics measurement
- Predictive maintenance
- Measurement of bearing condition

Characteristics:

- Measurement of RMS and PEAK vibration values in:
  - LF - velocity in mm/s, freq. band 10-1,000 Hz
  - LIN - acceleration in g (9.81 m/s^2), freq. band 0.8 Hz-16 kHz
- Measured quantity is transferred to 4-20 mA current loop
- The quality piezo sensor is used, standard sensitivity of 100 mV/g
- Continuous check of break in cable or sensor
- Simple installation to DIN rail
- Simple connection to control systems (PLC)
- Protection against any electric break - the current drops to 4 mA immediately
- Any electric break causes, the current drops to 4 mA immediately and the control system does not generate an incorrect response

Ref: 23022004 RS

ADASH Ltd., Czech republic, tel.: +420 596 232 670, fax: +420 596 232 671, email: info@adash.cz
For more technical and contact information visit www.adash.net, www.adash.cz

Contents

Before Switching On

**The violation of any mentioned below recommendations will cause failure of the unit.
Unqualified operating with a power higher then 24 V can run a risk of accident.**

1. Never connect a different sensor than an integral electronic type into the ICP® input. If you are not sure, contact us.

2. Never connect the unit to a line voltage 230 V (110 V).

3. For unit feeding use only nominal voltage of 20-28 V DC.

4. For current loop external feeding use only nominal voltage of max. 30 V DC.

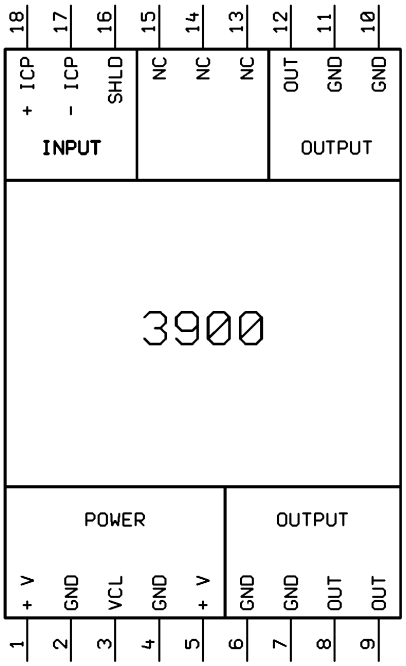
5. Pay attention to the correct polarity of the supply voltage.

6. Output current loop can be set as the active one. Do not use the loop supply from PLC in this case.

Unit Description

The Adash 3900 unit is simple tool for vibration measurement, which is intended for process control and reliability systems, machinery protection systems and generally for all the applications concerning the maintenance and monitoring of machinery condition. Thus, a large variety of applications are possible for motors, fans, pumps, gearboxes, small turbines, bearing diagnostics etc. All measured values are transferred to current loop 4-20 mA. It is simple to use it in control systems. On the front panel are checking LEDs, which inform about power supply ON and a break of cable or sensor. Any break causes, the current drops to 4 mA immediately and the control system does not generate an incorrect response.

Terminal Board of A3900



Description of Terminal Connectors

POWER

+V	+ of supply voltage of 20-28 V	(1, 5)
GND	– of supply voltage	(2, 4)
V_{CL}	+ of external current loop supply of 20-30 V	(3)

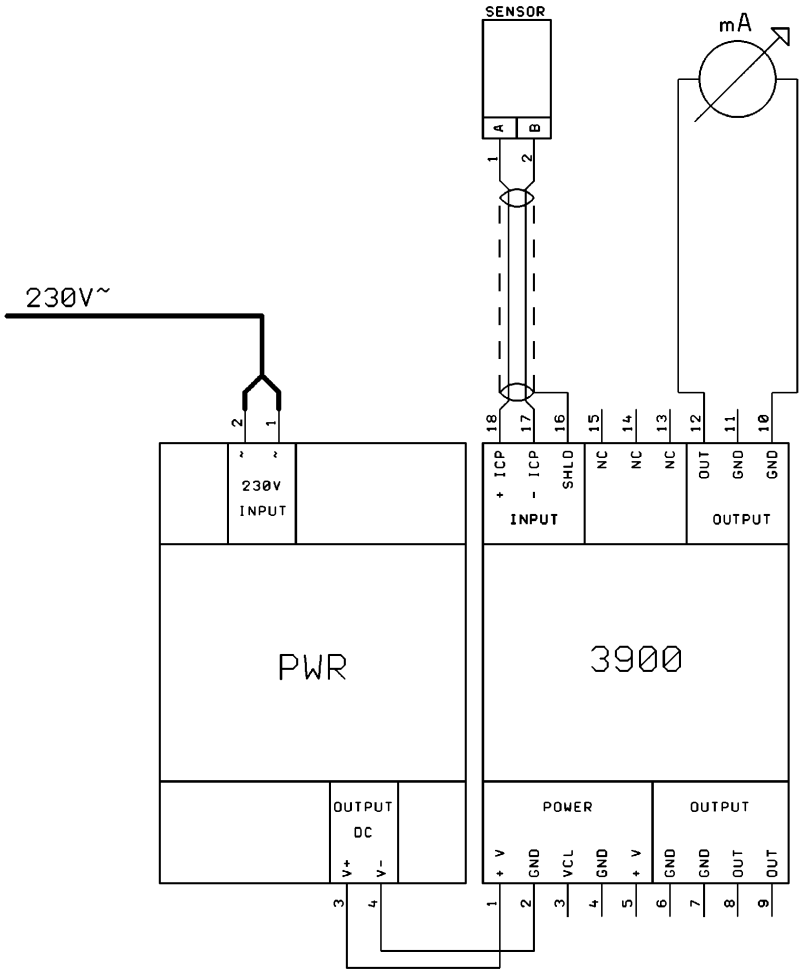
INPUT

+ICP	vibration sensor ICP input, positive pole	(18)
-ICP	vibration sensor ICP input, negative pole	(17)
SHLD	vibration sensor cable shield	(16)

OUTPUT

OUT	+ of current loop output 4-20 mA	(8, 9, 12)
GND	– of current loop output	(6, 7, 10, 11)

Interconnection of the A3900



Vibration Sensor Connection to A3900

For sensor connection is recommended to use ***shielded twist cable*** type. The original Adash cable (type 1110) has these wires:

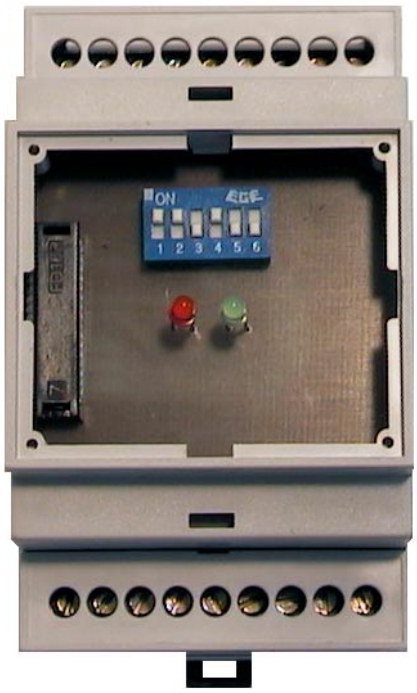
+ICP white
–ICP blue or blue/white
SHLD shielding - non isolated wire

Current Loop Output

It is an active loop. It means the loop does not require any external powering. The switches 1 and 2 for the external powering are switched off in PLC systems. It is possible to use an external supply voltage of max. 30 V DC for long distances. Connect it to V_{CL} (3) a GND (4) connectors.
The current loop output is the same for internal and external power supply.

Unit Set-up

Unit set-up is made by switch under unit front panel.



Switch Setting Description

Switch	Description	ON	OFF
1	Loop power supply	**internal**	external
2	Loop power supply	**internal**	external
3	Meas. range	16 g / 64 mm/s	**3.2 g / 16 mm/s**
4	Evaluation	**RMS**	PEAK
5	Unit	g	**mm/s**
6	Filter	0.8 Hz - 16 kHz	**10 Hz - 1 kHz**

Bolded choices represent the default Adash set-up of the new unit.

Switches **1** a **2** have to be in the same position.

Recommended Set-up

1) Only very long distance needs to use external power supply of current loop. At first time always test the internal source - **set switches 1 and 2 to ON**.

2) Acceleration RMS measurement 0.8-16,000 Hz with 3.2 g range:
   - switch **3** – **OFF = 3.2 g**
   - switch **4** – **ON = RMS**
   - switch **5** – **ON = g**
   - switch **6** – **ON = 0.8-16,000 Hz filter**

3) Velocity RMS measurement 10-1,000 Hz with 16 mm/s range:
   - switch **3** – **OFF = 16 mm/s**
   - switch **4** – **ON = RMS**
   - switch **5** – **OFF = mm/s**
   - switch **6** – **OFF = 10-1,000 Hz filter**

Switching Characteristics

Power Switch ON Test

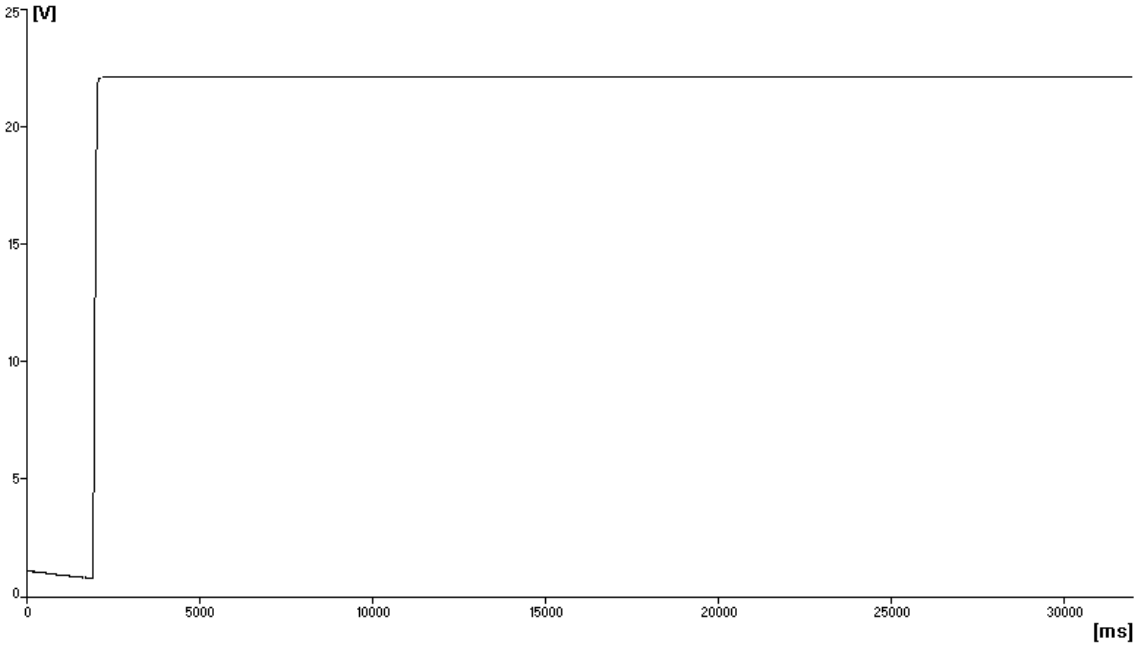


Fig. 1 The course of power supply voltage

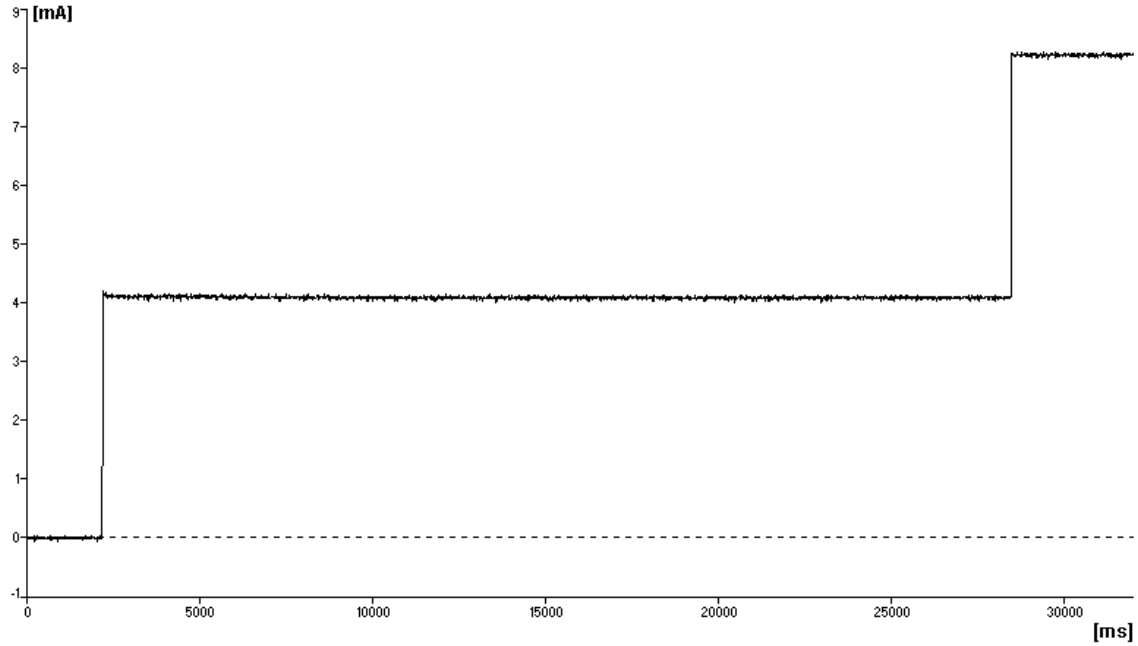


Fig. 2 The course of current loop output [mA] after power ON

Immediately after switching on the current output is at 4 mA level. System waits for conditioning of its sensor. ***After approx. 30 sec*** the real level of vibration appears on the current output.

Sensor Circuit Break

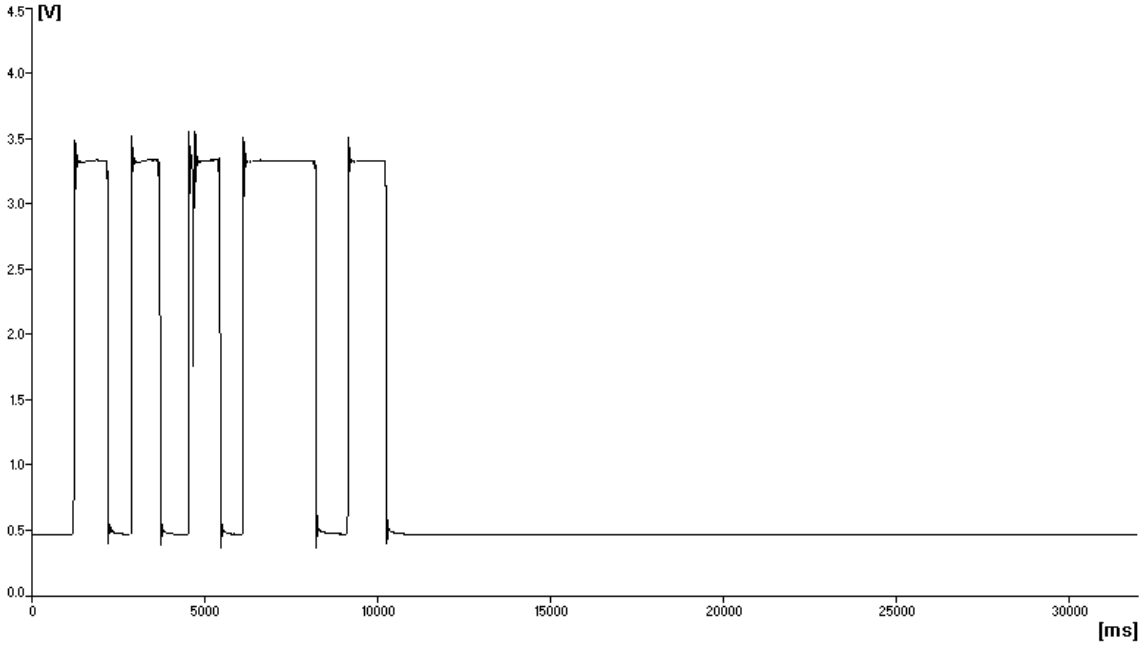


Fig. 1 ICP break (sensor or cable break)

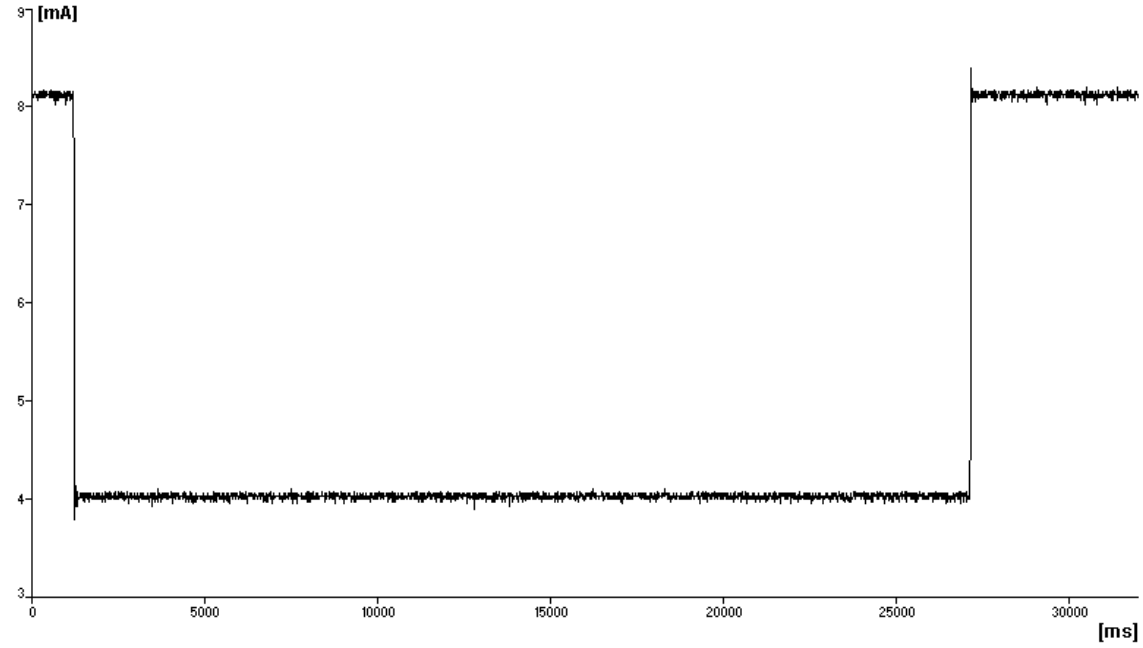


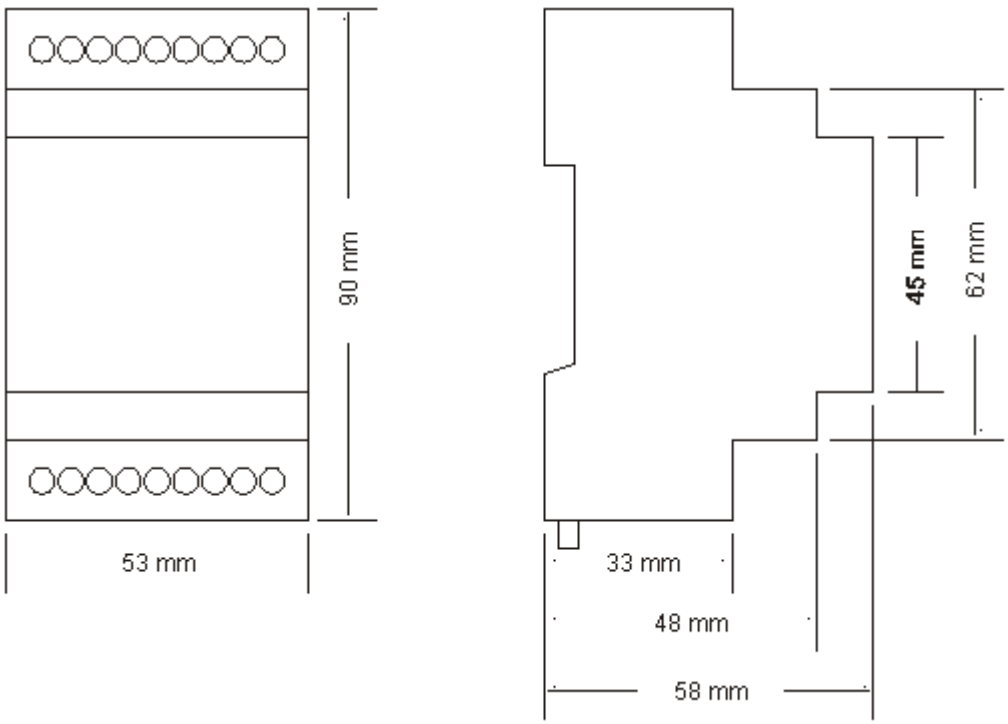
Fig. 2 The course of current loop output [mA]

After the break occurs, the current drops to 4 mA. If the break is removed, the unit waits for conditioning of its sensor and ***after aprox. 15 sec*** the real value appears on the current output. Standard simple low cost sensors with current output transmit full current 20 mA or more in case of break cable or sensor.

Technical Specification of Adash 3900 Module

Input:	ICP® for vibration sensor 100 mV/g (ICP® powering)
Output:	**C**urrent loop 4 – 20 mA
Meas. Ranges:	0 – 3.2 g 0 – 16 g 0 – 16 mm/s 0 – 64 mm/s
Freq. Bands:	0.8 Hz – 16 kHz 10 Hz – 1 kHz *Freq. ranges are possible to manufacture according to any user option.*
Sensor:	100 mV/g, ICP® powered
LEDs:	PWR check of power supply ICP® Err wrong sensor or cable
Supply:	20 - 28 V DC, possible external current loop supply up to 30 V DC (for long cables) max. 60 mA + loop current of 20 mA
Dimension:	90 x 53 x 58 mm
Weight:	130 g
Protection:	IP 20

Dimensioned Sketch



User Notes