



User's guide



Current Loops Adash 3600-LOOPS

Application:

- Output current loops 4 - 20 mA unit of the Adash 3600 on-line monitoring system
- Measured static data output or a state indication of up to sixteen measurements

Characteristics:

- 8 or 16 current loops 4 - 20 mA
- Indication of a current loop supply and its activation by LED indicator
- Indication of four different states of each measurement or a measured data output
- User assignment of loops to measurements via the Adash 3600 Setup program
- User configuration of the state indication of each measurement via the Adash 3600 Setup program
- Capability to connect up to 8 of these modules to one Adash 3600 set



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Terminal Board of the Adash 3600-LOOPS Module

54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28				
+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	NC	+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	NC	+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	NC				
LOOP	LOOP	LOOP	LOOP	LOOP	LOOP	LOOP	LOOP		LOOP	LOOP	LOOP	LOOP	LOOP	LOOP	LOOP	LOOP		LOOP	LOOP	LOOP	LOOP	LOOP	LOOP	LOOP	LOOP					
3600-LOOPS																														
POWER		RS-485																	LOOP 16		LOOP 15		LOOP 14		LOOP 13				NC	
1	2	3	4	5	6	7	8	9											19	20	21	22	23	24	25	26	27			27
UCC	GND	UCC	GND	485-A	485-B	485-A	485-B	485-AR											+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP	+LOOP	-LOOP			NC	

Fig. Terminal board of the Adash 3600-LOOPS module

The display of the terminal board corresponds to the front view of the module.

Description of Terminal Connectors

POWER supply voltage (terminal connectors with the same marking are interconnected inside):
 VCC +5 V / 120 mA (simultaneously 16 LEDs are ON),
 GND 0 V.

RS-485 communication connection for the Adash 3600 system (terminal connectors with the same marking are interconnected inside):
 485-A signal A of RS-485,
 485-B signal B of RS-485,
 485-AR termination resistance 120R, for the termination of the interface to connect to terminal connector 485-B.

LOOP-1..LOOP-16 outputs of current loops / current loops supply input:
 +LOOP +8 V to +30 V of current loop power supply unit,
 -LOOP 0 V of current loop power supply unit.

NC terminal connector not connected.

WARNING:

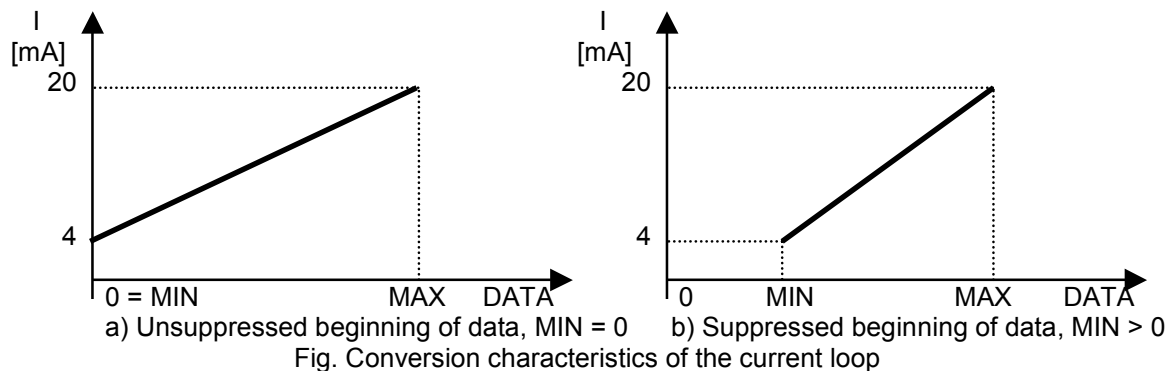
The outputs of the current loops of the Adash 3600-LOOPS module are not internally fed from the Adash 3600-LOOPS module. Each loop must be fed from an isolated voltage unit in the range of 8 - 30 V that is able to supply a minimum current of 24 mA.

Description of Adash 3600-LOOPS

The Adash 3600-LOOPS module serves for the output of results of static data measurement to the fully programmable current loops 4 mA to 20 mA. **The module is mounted with 8 or 16 current loops.** The current loop can be assigned to a selected static data measurement and further processed or measurement results or error condition can be displayed.

The current loop is fully programmable and can indicate:

1) **Static data measurement results** to the extent of MIN to MAX as the loop output current 4 mA to 20 mA. The limits of the MIN and MAX display can be set from 0 to 9999.9. The size of the output current is linearly dependent on the size of the displayed data.



By selecting the MIN parameter > 0, low measured values can be suppressed and the extent of the current loop display 4 mA to 20 mA can be used with a higher resolution for higher measured values. The module connected to the current loop output will reach the size of measured value DATA from the loop output current I = 4 mA to 20 mA by calculating

$$\text{DATA} = \text{MIN} + (I - 4) * (\text{MAX} - \text{MIN}) / 16.$$

2) **Error conditions** as loop output current 3.5 mA, 3.75 mA, 4 mA, 20 mA, 22 mA, 24 mA.

The user can select and assign one of the above indicated values of loop output current to handle the error condition:

DATA < MIN - measurement result is lower than the MIN value corresponding to 4 mA selected by the user

DATA > MAX - measurement result is higher than the MAX value corresponding to 20 mA selected by the user

ICP_ERR - sensor supply error, no measurement was performed

OVF_ERR - high signal level, unprocessable by the 3600-MAIN unit, no measurement was performed.

Each current loop may indicate the following measurement results or error conditions:

Condition	Output current	Default setting
MEASURED DATA	4 mA to 20 mA	MIN = 0mm/s, MAX = 10mm/s
DATA < MIN	3.75 mA or 4 mA	4 mA
DATA > MAX	20 mA or 22 mA	20 mA
ERR_ICP	3.5 mA, 3.75 mA, 22 mA, 24 mA	3.5 mA
ERR_OVF	3.5 mA, 3.75 mA, 22 mA, 24 mA	24 mA

The assignment of the loop to a measurement, the setting of the MIN and MAX limits and the definition of loop behaviour under error conditions are carried out by a configuration program (see **Adash 3600**

Setup, User's manual). Each newly supplied module 3600-LOOPS has default setting imposed by the manufacturer.

The current loop state is indicated by LED, located on the front module panel.

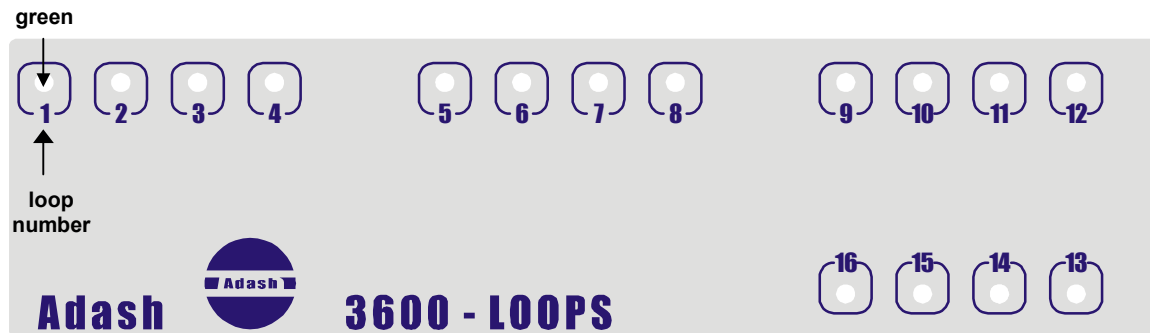


Fig. View of the front panel of the Adash 3600-LOOPS module

LED indicates the following states of the current loop:

<i>Loop assigned</i>	<i>Loop fed</i>	<i>Signalling LED</i>	<i>State</i>
YES	YES	on	The loop is fully functional.
YES	NO	flashes	The loop will be fully functional after supply unit connection.
NO	YES	flashes	The loop is not assigned to any measurement.
NO	NO	off	The loop is not assigned to any measurement.

The evaluation of the measurement error condition (ERR_ICP, ERR_OVF), the transmission of measured data and the control of the Adash 3600-LOOPS module are performed by the main Adash 3600-MAIN unit. **Description of the module setting - see Adash 3600 Setup, User's manual.**

Extending the Set with the Adash 3600-LOOPS Module

The connection of the Adash 3600-LOOPS module to the Adash 3600 set is done according to the following schematic:

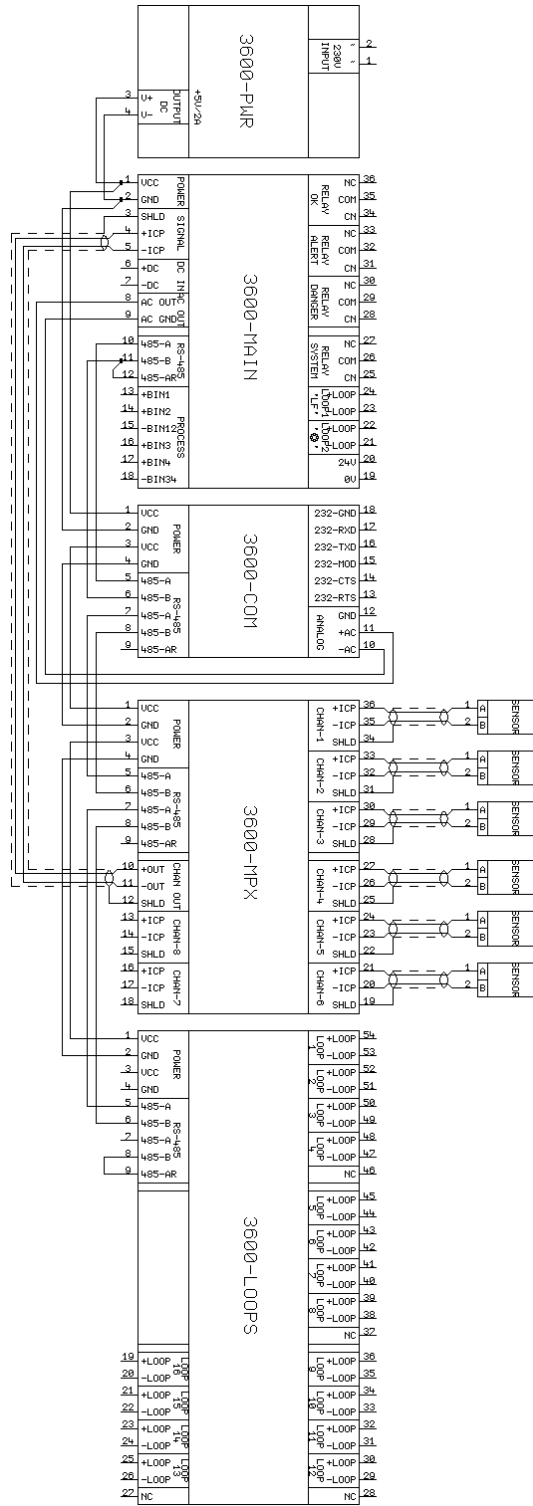


Fig. Schematic of connection of the 3600-MPX and 3600-LOOPS modules to the Adash 3600 system

Recommended Procedure of Module Connection

1. Disassembly of the terminal connector covers.

Remove the terminal connector covers of the modules by means of a suitable tool.



Fig. Removal of the terminal connector covers

2. Break the interconnection of terminal connectors 485-B and 485-AR at the set end module (3600-MPX).

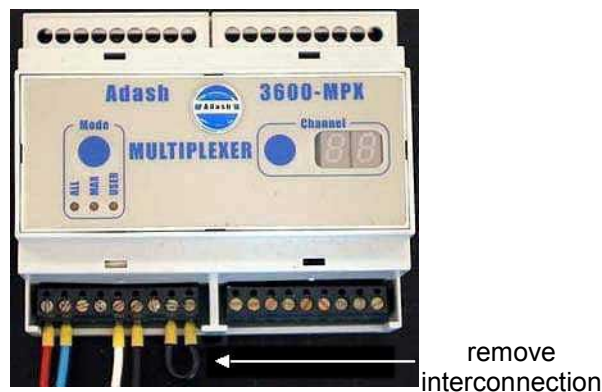


Fig. Interconnection at the end module 3600-MPX

At the set end module (in this case 3600-MPX) there is a resistance termination of RS-485 via an interconnection of terminal connectors 485-B and 485-AR. This interconnection must be removed and installed at the end module of the extended set (in this case 3600-LOOPS).

3. Interconnection of supply terminal connectors (VCC and GND).

The supply conductors are identified by the following colours in the supplied set:

- red conductor, positive pole of the supply (+5 V, VCC)
- blue conductor, negative pole of the supply (GND).

Pay attention to the correct polarity of the supply voltage! The positive voltage is always at the first terminal connector on the left.

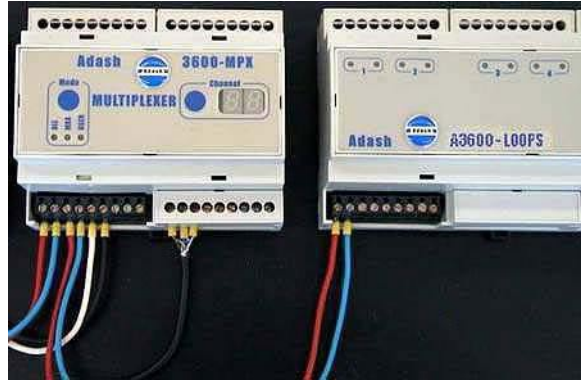


Fig. Interconnection of supply conductors

4. Connection of communication terminal connectors (485-A a 485-B) and interconnection (485-B, 485-AR) of the 3600-LOOPS module.



Fig. Interconnection of communication conductors

The communication conductors are identified by the following colours in the supplied set:

- white conductor, signal A of RS-485
- black conductor, signal B of RS-485.

5. Replace the terminal connector covers.

The extension of the Adash 3600 set with the 3600-LOOPS module is completed and the system is ready for measurement.

NOTICE.

Each module of Adash 3600 system has individual unique internal address on RS-485 - see User's guide Vibration Monitoring System Adash 3600 (3600main-com-pwr_man_en.pdf - List of Module Numbers on Interface RS-485 chapter). Each supplied system is pre-configured by producer.

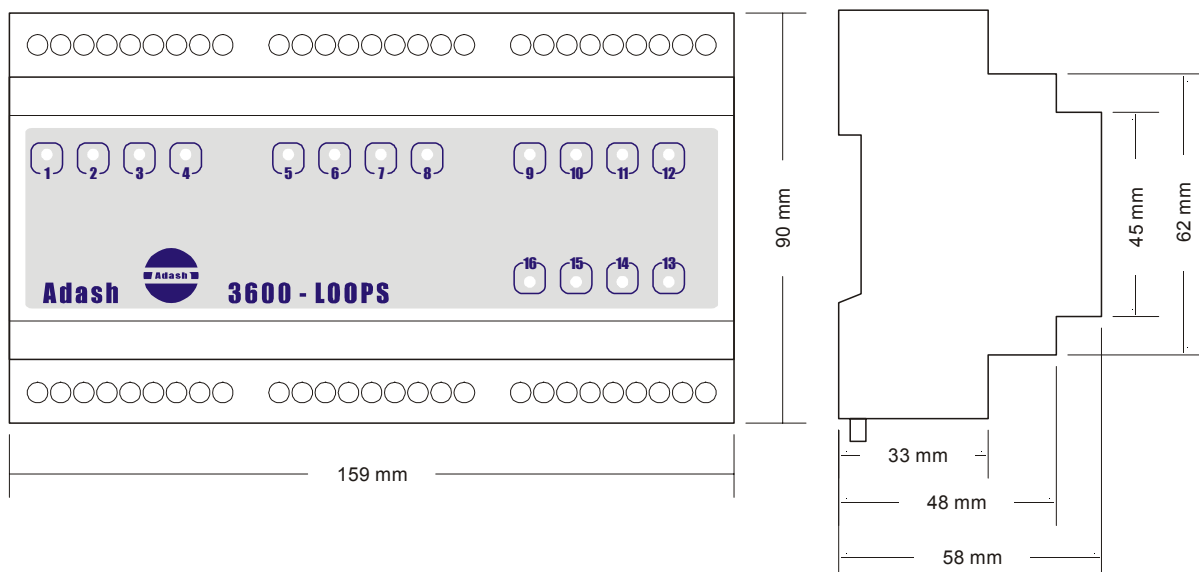
- If you work with several systems, do not change individual modules between systems without check of each address (via Adash 3600 Setup software).
- Regarding repairs and upgrades contact your supplier for correct order information. Then you will receive each module configured correctly.

If you do not respect this rules, then communication conflicts appears and the system will not work.

Technical Specification of Adash 3600-LOOPS

Mounting:	- 8 or 16 programmable current loops with the indication of loop state
Loop supply:	- +8 V to 30 V / min. 24 mA
Output current:	- 4 mA to 20 mA for the output of measured data - 3.5 mA, 3.75 mA, 4 mA, 20 mA, 22 mA, 24 mA for the signalling of error conditions
Loop resolution:	- 16 bits (+/- 0.25 uA)
Total non-linearity:	- +/- 0.01%
Offset:	- +/- 0.1% at 4 mA
Amplification error:	- +/- 0.2% at 20 mA
Interface:	- RS-485 for the communication between the Adash 3600 set modules
Control:	- by the main Adash 3600-MAIN unit
Unit setting:	- using the 3600 Setup program via communication unit Adash 3600-COM or Adash 3600-NET
Protection:	- IP20
Temperature range:	- -10 °C to +50 °C
Supply:	- +5 V / 120 mA (simultaneously 16 LEDs are ON)
Dimensions:	- 159 x 90 x 58 mm
Weight:	- 400 g
Installation:	- DIN rail

Dimensioned Sketch of Adash 3600-LOOPS



User Notes