HYDAC INTERNATIONAL

Intelligent Display Unit with Control Function HDA 6000

Description:

The measuring unit HDA 6000 is a microprocessor controlled display and control unit in a standard control panel module housing. A single–chip microprocessor controls all functions. A maximum of 3 analogue inputs and 1 analogue output is possible. The analogue input signals are converted by a 10 bit A/D converter and displayed according to the measuring scale selected by the user.

Each of the 4 maximum possible relays can be allocated to each of the 3 analogue sensor inputs or the differential between sensor signals 1 and 2.

All operating parameters such as switching points and switch–back (i.e. hysteresis) points can be programmed by means of the MODE and SET keys. The relays switch as soon as a pre–set switching point is reached, or after a programmed delay. This function suppresses the reaction of the relays to short–term and irrelevant variations.

Special Features:

- Control panel – Module housing 96 x 48 mm Depth 200 mm
- Programming by means of “MODE” and “SET” keys on the front panel
- 4–digit LED display Digit height 13 mm
- The front panel has a LED for each sensor and each relay (7 LEDs)
- 3 sensor inputs: 2 x 4 .. 20 mA and 0 .. 10 V or 3 x 0 .. 10 V each with 10 bit resolution
- Analogue output 0 .. 10 V directly from sensor 1.
- Differential measurement for input 1 and 2 possible
- Output for error recognition 2 Hz signal (12 V_{PP}), pulse ends in case of system error or cable break
- ± 12 auxiliary voltage for sensors
- Customized programming of relay switching points and relay delays (suppression of pressure peaks)
- Customized scale selection for all measuring ranges
- Display of upper and lower peak values
- Display of errors with error number
- Basic model includes RS 232C (V24) interface

Applications:

- Display of any physical units, i.e. pressure, temperature, weight, speed, force, length etc., provided that the sensor signal is between 4 .. 20 mA or 0 .. 10 V.
- Customized selection of measuring ranges
- Critical value switching via 4 relays with programmable delays
- Evaluation of differential between two sensors
- Storage and display of minimum and maximum peak values.

Serial Interface:

The HDA 6000 is equipped with a serial interface. This interface can be used to send logs to a printer. All values can be set or called up via a terminal, and connection to a computer for further processing of data is also possible.

Option:

2nd and 3rd sensor – input with two additional relays, customized allocation of sensors to the relays.

Error Messages:

Error 0: Switching point < switch–back point or switching differential <1%

Error 1: Switching or switch–back point outside the measuring range

Error 2: All measuring range limits were set to 0

Error 3: Upper measuring range limit < lower measuring range limit

Error 4: Check supply voltage

Error 5: Sensor 1 cable break

Error 6: Sensor 2 cable break

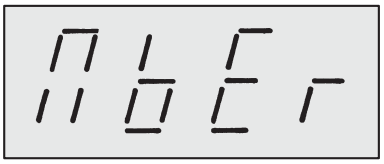
Error 7: Invalid switching point and measuring range setting

Error 8: The unit works at reduced accuracy – return to factory for checking

Error 9: RAM error, press SET

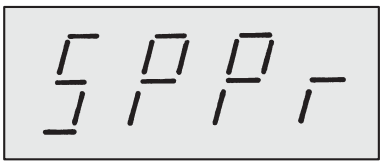
Programming:

The HDA 6000 has 3 menus for programming as well as a display mode. Each menu comes up with its name.



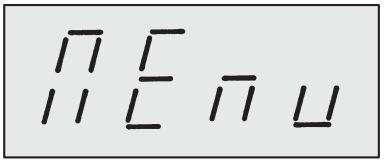
(MbEr = Measuring range menu)

This is for setting the upper and lower measuring range limit for each sensor. The relay mask and the allocation of the sensors to the relays are programmed and the baud rate for the RS 232 interface is set. This menu appears when the keys MODE and SET are pressed when the unit is switched on.



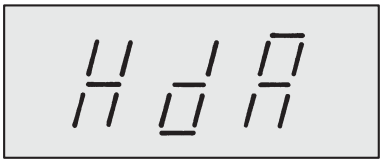
(SPPr = Switching point programming)

This is used for programming a switching point, a switch–back point, or delays for each relay. This menu is called up when the keys MODE and SET are pressed simultaneously during normal operation.



(MEnu = User menu)

This is used to display and individually re–set peak values, to actuate logging, and set the built–in clock. All settings of the measuring range menu can be displayed but cannot be changed. To get this menu, press MODE during normal operation.



(HdA = Display mode)

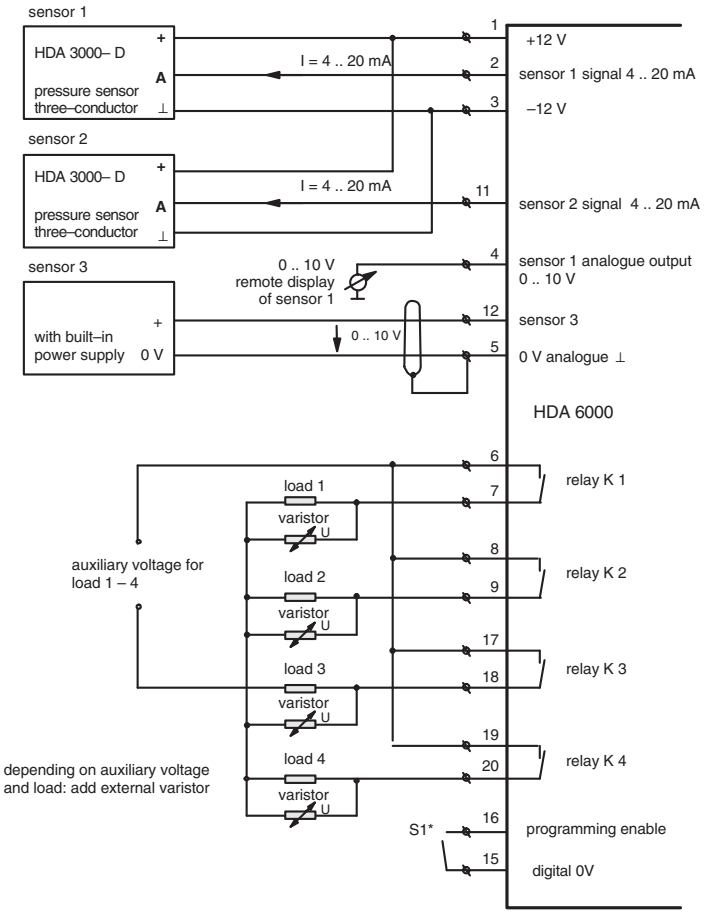
This is the normal operating condition of the unit. The current values of the sensors are displayed.

Every menu name remains on display as long as a key is pressed. Afterwards the heading of the first menu point is displayed for 2 seconds. If the MODE key is pressed during this time, the next menu point is displayed.
By simultaneously pressing the keys MODE and SET one can exit from the menu at any point.

The programming of the various values within the menu is done by a combination of the keys MODE and SET. SET changes the flashing number, MODE goes on the next menu point display.

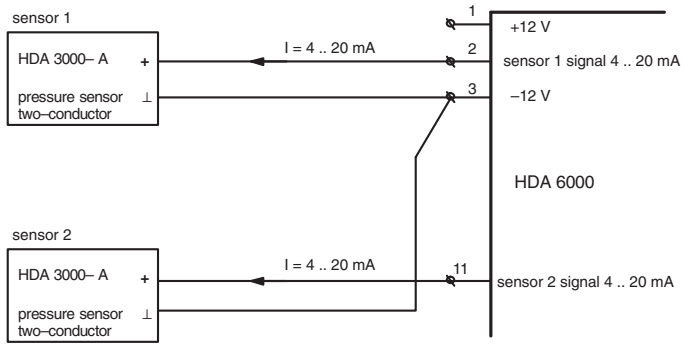
Pin Connections, Examples:

Example 1:
Connection HDA 3000–D three–conductor technique

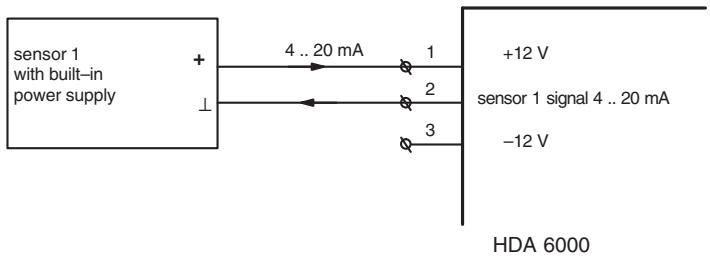


* S1 closed or bridge connected = programming enable
S1 open = programming disable

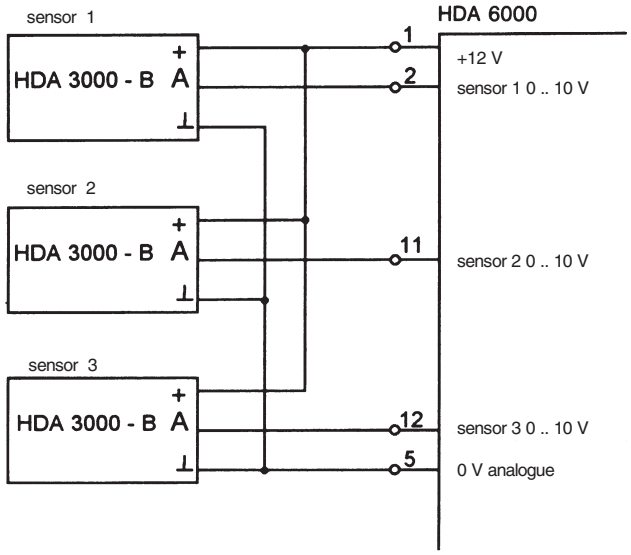
Example 2:
Connection HDA 3000–A two–conductor technique



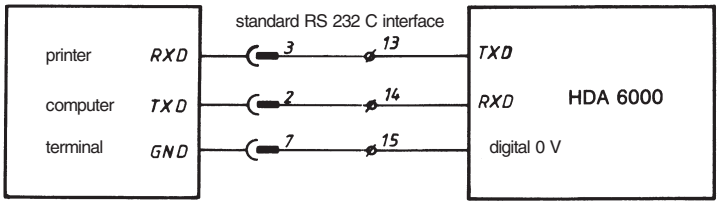
Example 2:
Auxiliary sensor connection



Example 4:
Connection HDA 3000–B three–conductor technique

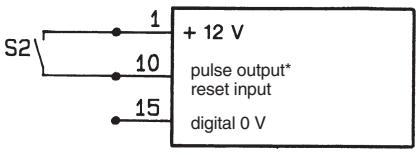


Example 5:
Connection RS 232 C



Example 5:
Connection of a reset switch for peak value storage

S 2 open = peak value reading
S 2 closed = reset peak value

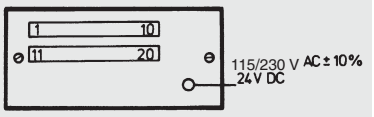


* pulse output malfunction
2 Hz pulse = system is operating
0 V = system faulty

Terminal	Signal
1	+12V output sensor supply
2	Sensor 1 input
3	–12V output sensor supply
4	Analogue output sensor 1
5	0V analogue output
6	Relay K1 contact
7	Relay K1 contact
8	Relay K2 contact
9	Relay K2 contact
10	Output for error recognition, input to reset peak and minimum values
11	Sensor 2 input
12	Sensor 3 input
13	RS 232 C TxD
14	RS 232 C RxD
15	0V digital output
16	Programming enable
17	Relay K3 contact
18	Relay K3 contact
19	Relay K4 contact
20	Relay K4 contact

Pin connection HDA 6000:

View of terminals from the back



Technical Details:

Housing	Control panel module housing 48 x 96 mm Control panel cut out 45 x 91 mm Max. front panel thickness 23 mm Depth max. 200 mm
Supply voltage	115/230V AC ±10% 50 – 60 Hz 24 V DC option (20.4 .. 31.4)* Residual ripple max. 2 V_{pp}
Power consumption	15 VA at 115/230V Fuse rating 0.32 AM at 115 V Fuse rating 0.16 AM at 230 V Fuse rating 0.8 AT at 24 V DC
Supply for sensors 1 and 2	±12 V max. ±20 mA per sensor
Input sensor 1 and 2	4 .. 20 mA input resistance approx. 160 Ω. Overload protection via PTC (positive temperature coefficient) connected in series 0 .. 10 V input resistance approx. 30 kΩ
Input sensor 3	0 .. 10 V input resistance approx. 45 kΩ
Interrogation rate of sensors	16 ms, 4 ms for peak values
Error recognition	Error report if sensor current < 3.5 mA Error output against 0 V (during standard operation 2 Hz pulse, 12 V_{pp})
Reset peak value	Level for "Reset" = 7.5 to 15 V, 12 V nominal
Output sensor 1	0 .. 10 V load resistance ≥ 2KΩ
RS 232 C interface	Signal according to RS 232 C adjustable Baud rate 300–9600 1 start bit, 1 stop bit, no parity 8 data bits
Relay output	Mechanical service life of contact 10^7 cycles Switching capacity: 30 W/50 VA Switching voltage: 24 V DC / 50 V AC Switching current: 0.01 mA .. 3 A
Connections	Power supply via cable (length 1.5 metres) at the back, with main plug to Euro standard Signals via double pin terminal plug at the back, max. cable diameter 1.5 mm
Temperature effect	Permissible ambient temperature 273 K .. 323 K (0 .. 50 °C) Temp. variation of zero point 0.12 % /10 K typ. Temp. variation of sensitivity 0.2 % /10 K typ.
CE mark	
Weight	800 g

*Please note: During switching of inductive loads, a protection diode (DC voltage) or a varistor (AC voltage) must be connected parallel to the load.

Order example for HDA 6000:

HDA 6000 – X – XXX – XXX

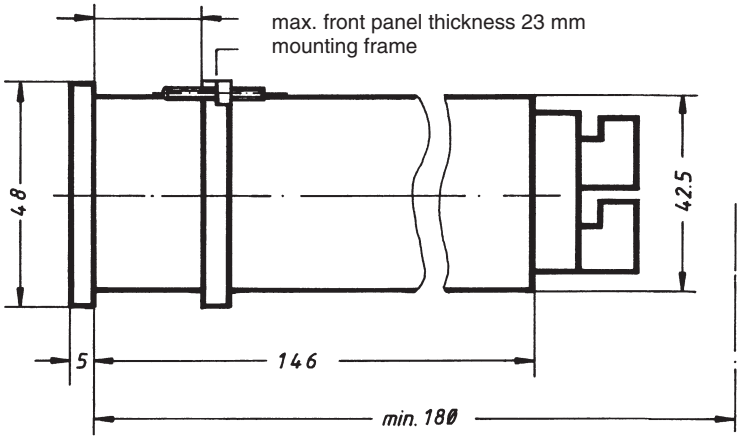
Sensor inputs

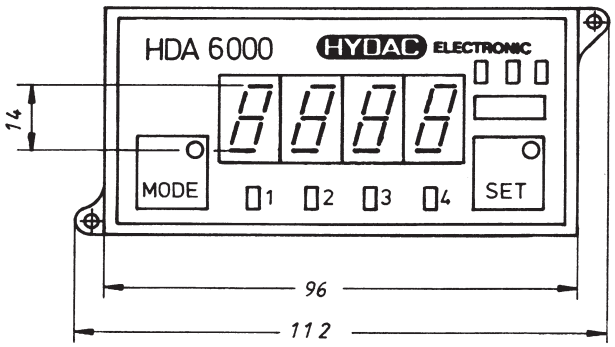
0 1 sensor (4 .. 20 mA), 2 relay outputs
1 3 sensors (2 x 4 .. 20 mA, 1 x 0 .. 10 V)
4 relay outputs
2 3 sensors (3 x 0 .. 10 V)
4 relay outputs

Supply voltage

115 = 115 V / 50 – 60 Hz
230 = 230 V / 50 – 60 Hz
024 = 24 V DC

Modification No.
(determined by manufacturer)
000 = standard





Please note:

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.