User manual
ALFANET 71 AI

Controller with programmable
Analogue Input
Input: 0-20mA or 4-20mA

VDH doc. 080423	**Version: v1.0**	**Date: 19-03-2008**
Software: ALFANET71CO2	File: Do080423.wpd	Range: -1999/+9999

* Description.

The **ALFANET 71 AI** (Analog Input) is a controller with a 0-20mA or 4-20mA input. The range and the relay functions can be programmed. Because of this, the controller can be used with several types of sensors. Examples of sensors which can be used are pressure sensors, temperature sensors or CO_2 sensors.

Through the internal parameters the range and the decimal point can be adjusted. The measured value can be read out in whole, tenth, hundreds or thousands units.

* Installation.

On the connection diagram from the **ALFANET 71 AI** is shown how the sensor, network, power supply and the relays should be connected.

After power up a self test is started. After the self test the actual value will be shown on the display.

* Control.

The **ALFANET 71-AI** display-unit can be adjusted with two hidden keys:
- **▲ UP (SET)** - upper right corner besides the display for increasing the adjusted value.
- **▼ DOWN (PRG)** - lower right corner besides the display for decreasing the adjusted value.
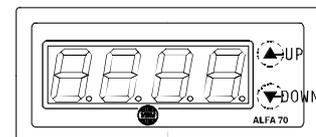
* Viewing the set point.

By pushing the **SET (UP)** key, the adjusted set point will be visible. Also the decimal point from the most right display will be flashing, for indication that the set point is read out. A few seconds after releasing the **SET (UP)** key, the set point disappears and the measured value is shown again.

* Changing the set point.

Push the **SET (UP)** key so the set point appears on the display. Release the **SET (UP)** key. By pushing the **UP** or **DOWN** keys, the set point can be changed. A few seconds after releasing the keys, the set point disappears and the measured value is shown again.

* **Internal parameters.**

Besides the adjustment of the set point, it is also possible to adjust the internal control functions as the offsets, set point range, read out range and alarm values.

By pushing the **PRG (DOWN)** key for more than 10 seconds the internal parameter menu will be active. On the left display the upper and lower segments will flash. Through the **UP** key the required parameter can be selected. (See the table for the parameters).

When the required parameter has been selected, it can been read out by pushing the **PRG (DOWN)** key. By pushing the **UP** and **DOWN** key, the parameter can been changed.

If no key is pressed for 5 seconds the **ALFANET 71 AI** will go back to the selection mode.

If the controller is in the parameter selection mode and no key is pressed for 20 seconds, the **ALFANET 71 AI** will go back to the normal read out mode.

* **Parameters ALFANET 71 AI.**

Par.	Description Parameter	Range	Default
01	Function relay 1	1..3	1
02	Function relay 2	1..3	2
03	Function relay 3 1= Raise value 2= Lower value 3= Alarm	1..3	3
05	Input mode 0 = 0..20 mA 1 = 4..20 mA	0..1	0
06	Digital point 0 = 0000 1 = 000.0 2 = 00.00 3 = 0.000	0..3	1
07 #	Minimum value	-199.9..999.9	-199.9
08 #	Maximum value	-199.9..999.9	999.9
10 #	Switching differential relay 1	0.1..150.0	0.5
11 #	Set point offset relay 1	-150.0..+150.0	0
12 #	Switching differential relay 2	0.1..150.0	0.5
13 #	Set point offset relay 2	-150.0..+150.0	0
14 #	Switching differential relay 3	0.1..150.0	0.5
15 #	Set point offset relay 3	-150.0..+150.0	0
20 #	Minimum adjustable set point	-199.9..999.9	-199.9
21 #	Maximum adjustable set point	-199.9..999.9	999.9
30	Alarm type: 0=Non 1=Absolute 2=Relative	0..2	1
31 #	Minimum alarm set point	-199.9..999.9	-199.9
32 #	Maximum alarm set point	-199.9..999.9	999.9
33	Time delay minimum alarm	0..99 Minutes	0
34	Time delay maximum alarm	0..99 Minutes	0
35	Relay function alarm relay	0=Fail safe alarm 1=Control alarm	0
36	Reset alarm relay when alarm recovers	0=No, 1=Yes	0
37	Reset alarm relay at manual reset	0=No, 1=Yes	0
40	Start up delay after power failure	0..99 Minutes	0
90	Network number	1..250	1
95	Software version	0..255	-
96	Production year	00..99	-
97	Production week	1..52	-
98	Serial number (x1000)	0..255	-
99	Serial number (eenheden)	0..999	-

#) Digital point changes at changes from parameter 6.

* Error codes.

On the display from the **ALFANET 71 AI** the following error codes can appear:

    LO   - Minimum alarm.
    HI   - Maximum alarm.
    EE   - Settings are lost.
         Solution EE: - Reprogram the settings.

* Working Alarm.

If an alarm occurs, the buzzer will go on (if present) and an error code will appear on the display. The **ALFANET 71 AI** remembers the error code (parameter P36 default on 0), even if the alarm has recovered. The error code can be resettet with the **UP** key (if parameter P37 is 1). If the alarm is still there after pushing the **UP** key, the **ALFANET 71 AI** will show the error code and the measured value alternated. As soon as the alarm is recovered the error code disappears and the measured value will been shown again. The function from the alarm relay can been changed with parameter P35 (default fail safe alarm) to control alarm. This means that, if an alarm occurs, the alarm relay will be energized. At fail safe alarm, the relay is always energized and if an alarm occurs, the relay will be de-energized. With parameter P30 it is possible to choose the kind of alarm. It is possible to get no alarm, an absolute alarm or a relative alarm. Relative alarm means that the alarm is connected to the set point.

* Technical data.

Type	: ALFA(NET) 71 AI (Analog Input)
Range	: -1999/+9999 (adjustable through parameters)
Supply	: 12 Vac/dc (-5/+10%)
Read out	: 4-digit 7-segments display
Input	: 0 - 20ma or 4-20mA (dc) with Ri=50Ohm
Communication	: RS 485 Network (2xtwisted pair shielded)
Relays	: The relays have one common;
	Ry-1 Out.1 SPST (NO) 250V/8A (cos φ=1)
	Ry-2 Out.2 SPST (NO) 250V/8A (cos φ=1)
	Ry-3 Out.3 (Alarm) SPDT (NO,NC) 250V/8A (cos φ=1)
Control	: through push buttons on the front.
Front	: Polycarbonate IP65
Dimensions	: 35 x 77 x 71,5mm (hwd)
Panel cut out	: 29 x 70mm (hw)
Accuracy	: ± 0,5 % from the range.

- Provided with memory protection during power failure.
- Connections with screw terminals on the back side.
- Special versions on request available.
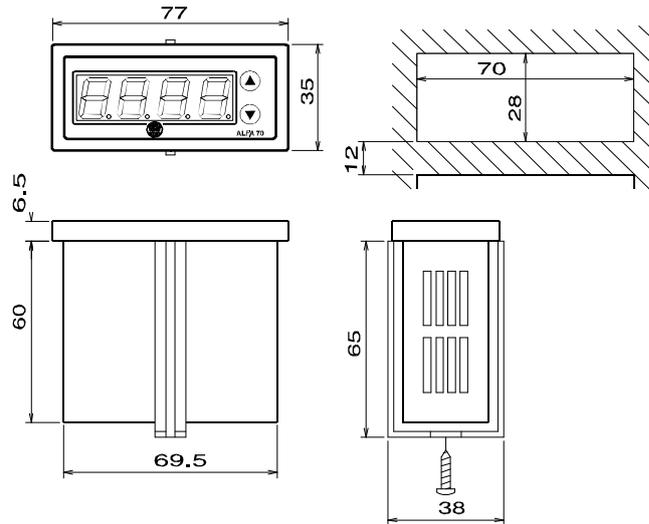
*   Address.

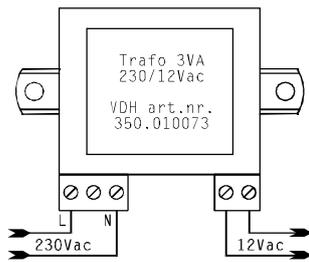|		
VDH Products BV	Tel:	+31 (0)50 30 28 900
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* Dimensions.

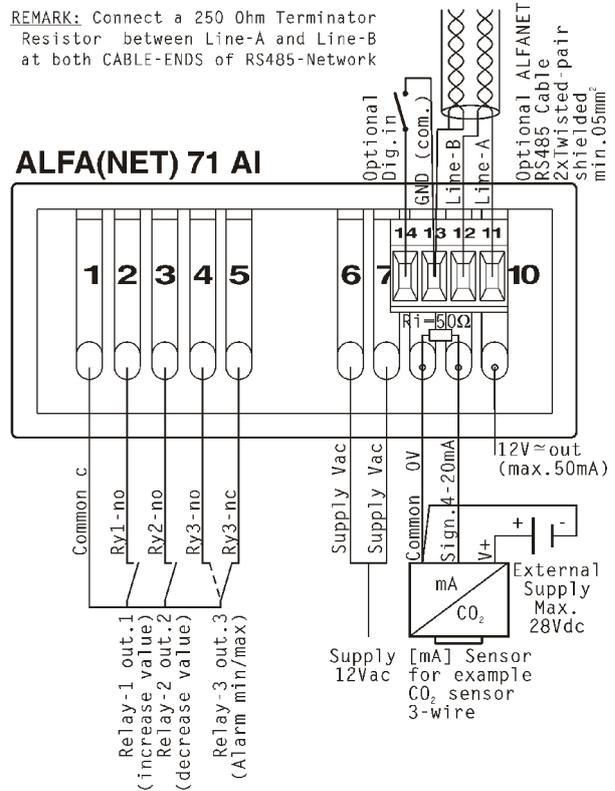*** Connections.**

REMARK: Connect a 250 Ohm Terminator Resistor between Line-A and Line-B at both CABLE-ENDS of RS485-Network

ALFA(NET) 71 AI

Trafo 3VA
230/12Vac

VDH art.nr.
350.010073

L   N
230Vac   12Vac

Optional Dig.in
GND (com.)
Line-B
Line-A
Optional ALFANET RS485 Cable 2xTwisted-pair shielded min.05mm²

14 13 12 11
1 2 3 4 5   6 7   10
Ri=50Ω

Common c
Ry1-no
Ry2-no
Ry3-no
Ry3-nc
Supply Vac
Supply Vac
Common 0V
Sign.4-20mA
V+
12V≈out (max.50mA)

Relay-1 out.1 (increase value)
Relay-2 out.2 (decrease value)
Relay-3 out.3 (Alarm min/max)

Supply 12Vac
Supply [mA] Sensor for example CO₂ sensor 3-wire

mA
CO₂

External Supply Max. 28Vdc

RS 485 NETWORK CONNECTIONS 2-twisted pair shielded cable:

Controller-1   One of the Controllers can be the PC-Interface (Repeater is also a contr.)

Controller-2

*) Place Terminator resistor of 250 Ohm only at both ends of the RS485-cable, between line-A and line-B. May be provided in the controller with a jumper.
#) For signal conditioning Place Pullup/-down resistors only at one point in the Network! May be provided in the controller with jumpers. Or use ALFA 1 TERMINATOR

Controller-x

A B GND
RS485

Line-A (Hi)
R=250E
Line-B (Lo)
GND (0V)

Shield only at one side of the cable to Earth

Line-A(Hi)
Line-B(Lo)
GND (0V)

Shield only at one side of the cable to Earth

Line-A(Hi)
R=250E
Line-B(Lo)
GND (0V)

Network connections:
Pair-1:
    Connect A (HI) to A (HI)
    Connect B (LO) to B (LO)
Pair-2:
    Connect GND (0V) to GND (0V)
Shield:
    Connect Shield to (clean) Earth only on one side of cable

Endpoint Network *
Network-cable 2 twised pair shielded min. 0,5mm²
Pair-1: (A/B), Pair-2: (Gnd)

Connection-point Network

Network-cable 2 twised pair shielded min. 0,5mm²
Pair-1: (A/B), Pair-2: (Gnd)

Endpoint Network *

Max Cable length 1KM

Note: 1) AVOID LONG STUB CABLES (No longer than 0,5M), otherwise use a Repeater.

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