

M3095-81 E

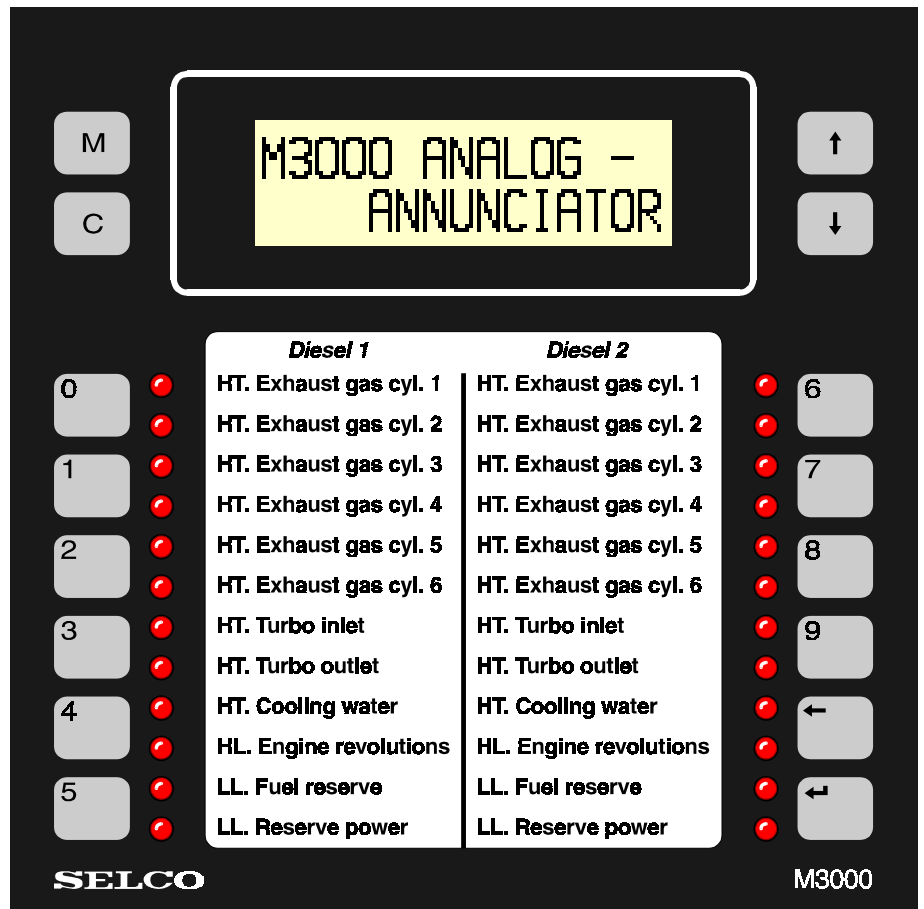
Analog Alarm Annunciator M3000-00

Alarm annunciator for use with all types of analog sensors that provide a current or voltage signal. Features 24 analog/digital inputs and 48 programmable alarms. Ideal for use with thermocouple and PT100 transmitters.

- ★ 24 inputs for use with both analog and digital signals.
- ★ Each input accepts both current and voltage signals.
- ★ 48 alarms with individual reference to any of the 24 inputs.
- ★ Programmable 10 character LCD text for each alarm.
- ★ Alarm delay programmable within the range of 300ms to 10 days.
- ★ 24 LED's with indication of new and acknowledged alarms.
- ★ Each LED can be programmed to annunciate the state of one or more alarms.
- ★ 14 open collector outputs provide on/off control of external devices.
- ★ Each of the 14 outputs can be assigned to one or more alarms.
- ★ LCD provides real time input measurements.
- ★ 16 key keyboard for on site configuration and daily operation.
- ★ PC based programming through RS232 link.
- ★ Flush mounted unit with dimensions H x W x D = 144 x 144 x 70mm.

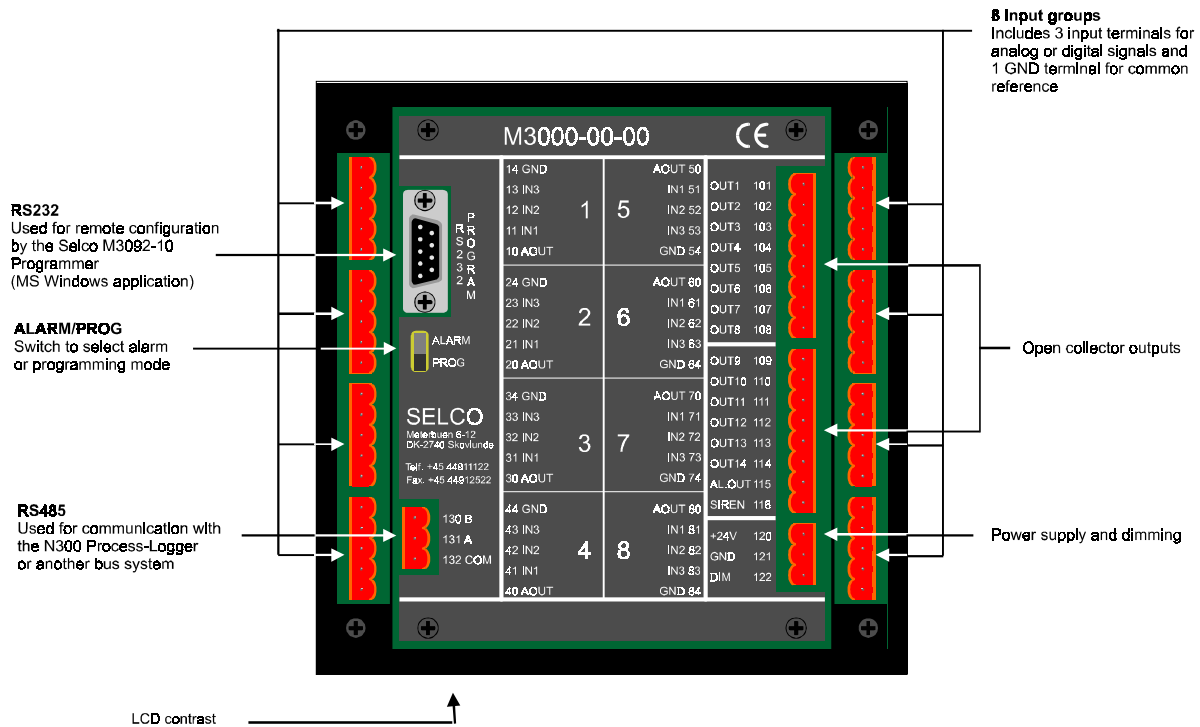
Application

The M3000-00 provides a cost-effective solution where multiple analog sensors are to be surveyed. The 24 inputs of the



M3000-00 will accept both current and voltage sources, and almost any type of sensor can be connected through use of a standard current transmitter. The M3000-00 features a total of 48 programmable alarms. Multiple alarms can be assigned to the same input to provide annunciation at different input levels and selectable delays. An alarm is annunciated when the input passes above or below a critical level indicated by the set point. Annunciation of an alarm can be displayed on any one of the 24 LED's located on the front plate. Each LED will indicate new alarms with flashing light and acknowledged (reset) alarms with steady light. The user is able to acknowledge all new alarms

by pressing the "C" key. Each alarm can be programmed to control one of the 14 open collector (on/off) outputs provided at the rear connectors of the M3000-00. The 14 open collector outputs are ideal for controlling devices that require an alarm dependent on/off signal. Two additional open collector outputs have been provided, one is intended for siren control and the other will activate to indicate that one or more alarms exist. The front plate includes an illuminated liquid crystal display with 2 lines of 16 characters. The LCD provides the user with a 10 character alarm description, the alarm set point and the actual input measurement.



Connection

The rear of the M3000-00 annunciator is illustrated above. The power supply plug-in connector of the M3000 includes 3 terminals, one for +24V DC, one GND reference and one terminal DIM for dimming of the LED's on the front panel of the unit. For dimming purpose a potentiometer of 100 Kohm is connected between the terminal DIM and the terminal GND. The M3000 includes two interface standards for serial data communication. The RS232 interface is intended for point to point data communication between the M3000 and another device, e.g. a PC. RS485 is intended for long distance bus communication between multiple M3000 units. SELCO is able to deliver a PC Windows software package for remote programming (Process Logger N0300). 24 inputs can be connected via 8 plug in connectors. Two plug in connectors located on right side provide terminals for

14 open collector outputs. The 24 inputs can be connected to sensors with either an analog or a digital output in the form of a current or voltage signal. The 8 plug in connectors, each with 3 input terminals, provide the 24 inputs to the M3000-00. A common ground terminal (GND) has been included in each plug in connector to provide a negative reference for the 3 inputs. The remaining terminal of the 8 plug in connectors is a spare intended for future use. The input plug in connectors will later on be referred to as "input groups". Each input can be configured for current or voltage input. Figure 1 to 5 illustrate possible input group configurations which can be arranged as follows: Figure 1: It is possible to connect up to three sensors with voltage output to each input group. The output from each sensor must be connected between an input terminal and the negative reference terminal.

Figure 2: This configuration shows the connection of three current sources. This configuration is valid for any kind of transmitter that provides a current output in the range 0-20mA. Figure 3: The M3000-00 also accepts the on/off signals provided by potential free contacts. Any input voltage between 0 and 30V DC is accepted. Figure 4: It is also possible to mix the sensor types within an input plug in connector. This example shows 3 different sensors connected to the same input plug in connector. Figure 5: The SELCO PT100 6 Way Transmitter M1500 provides a cost-effective solution and includes 6 current transmitters in one box to be connected to PT 100 resistors. The unit is intended for mounting near the sensors. This example shows connections to one input group of M3000-00. For further details see separate data sheet M1595.

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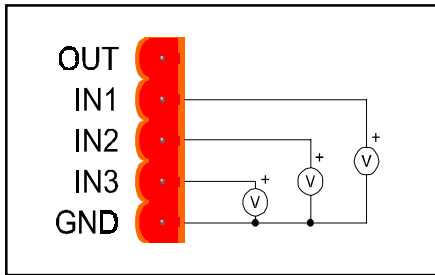


Fig.1: 3 x Voltage inputs

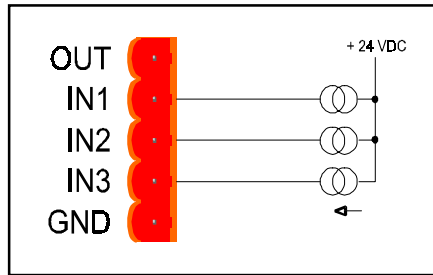


Fig.2: 3 x Current inputs

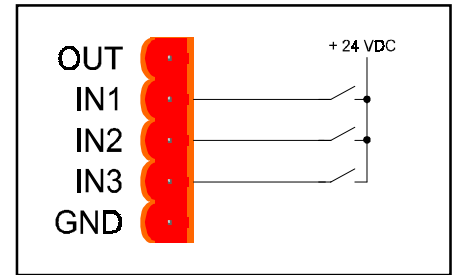


Fig.3: 3 x Contact inputs

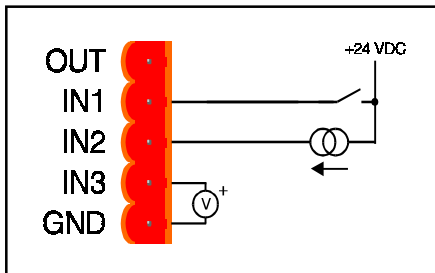


Fig.4: 3 x Mixed sensor types

Programming

The M3000-00 Analog Alarm Annunciator can be programmed both from the front plate keyboard and from an IBM compatible PC running Microsoft Windows 3.1 or later. The procedure of keyboard based programming is similar to the procedures found on other microprocessor based products. Configuration parameters are selected and modified through multiple choice selections and parameter input from the numeric keyboard.

Programming from the PC using the SELCO M3092-10

Programmer gives the advantage of a full screen display showing multiple parameters. The M3000-00 group configurations are down- and uploaded through an RS232 cable connected between the M3000-00 and the PC. The M3092-10 Programmer includes functions to save and load a group configuration to and from the PC harddisk. Group configurations can also be printed out on the PC printer to

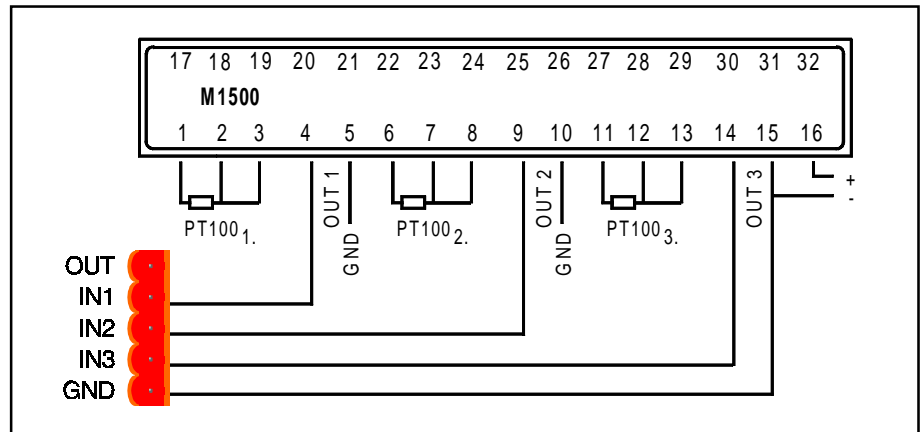


Fig.5: 3 x PT100 Transmitter

Input:	InpTp:	LCDU:	InpLo:	LCDL:	InpUp:	LCDUp:
Inp:1	± 10V	Volt	0.00	0.00	10.00	10.00
Inp:2	20mA	C	4.0	0	20.0	100
Inp:3	± 24V	Digi	0.0	0	24.0	24

Alarm:	InpRf:	Set:	Text:	Delay:	LED:	Outp:
Alr:1	11	< 2.0	1 is low	25 x 100ms	L01	O01
Alr:2	11	> 8.0	1 is high	25 x 100ms	L02	O02
Alr:3	12	< 10	2 is cold	10 x 1s	L03	O01
Alr:4	12	> 90	2 is warm	10 x 1s	L04	O02
Alr:5	13	< 12.0	3 is off	20 x 100ms	L05	O01
Alr:6	13	> 12.0	3 is on	20 x 100ms	L06	O02

Fig.6: Group programming parameters.

provide documentation. Each of the eight input plugs (groups) described previously relates to a configuration similar to the one shown in figure 6. The first three lines of the group configuration shown, include the parameters used to define the configuration of the three input terminals located in the group plug in connector. Input parameter details are:

InpTp: The type of signal provided by the connected sensor: 20mA, ±10V, ±20V and Off - must be "Off" if no sensor is connected to the input.

LCDU: Four characters used to indicate the unit of measurement in the LCD. Examples: C, F, kW, Bar, Gal, Kg, Volt, Amp. etc.

InpLo: The low reference of the input signal.

LCDL: The low reference of the

displayed measurement. Used together with the "InpLo" parameter to define the relationship between the signal on the input terminal and the measured value displayed in the LCD.

InpUp: The upper reference of the input signal.

LCDUp: The upper reference of the displayed measurement.

Used together with the "InpUp" parameter to define the relationship between the signal at the input terminal and the measured value shown in the LCD.

Also included in each of the eight group configurations are six

alarms. Although placed in the group configuration, the six alarms can be used to survey an input of another group.

The description of the alarm configurations is stated below.

InpRf: The input reference of the alarm. This parameter holds a reference to the surveyed input.

Alarm will be disabled if this parameter has been set to "Off".

Set: Defines the input level that will trigger the alarm. The operator (" $<$ " or " $>$ ") defines the area of alarm condition.

Text: A 10 character text is shown in the LCD together with the measurement and the set point.

Delay: In order to trigger the alarm the input signal must stay above or below the set point for the time period defined by the delay. The delay is defined by the multiplication of a time value and a multiplication factor.

LED: The LED parameter defines which one of the 24 LED's will annunciate the alarm. Setting this parameter to "Off" will disable LED annunciation.

Outp: Defines which output to activate upon alarm annunciation. Setting this parameter to "Off" will prevent the activation of any output.

Specifications

Dimensions	: 144 x 144 x 70mm (138 x 138mm cut out).
Weight	: 0.8 Kg.
Degree of protection	: IP54.
Operating temp.	: -20 to +70 °C.
Humidity	: 95% RH at 20 °C.
Vibration tested	: ± 1 g according to IEC 68-2-6.
Power supply	: + 24V DC \pm 30%. Max. 400mA.
Inputs	: 24 organized in 8 plug-in connectors.
Input types	: 20mA, ± 10 V and ± 24 V.
ADC resolution	: 12 bits (depending on selected input type).
Alarms	: 48 with programmable input reference.
Alarm delay	: 300ms - 10 days.
Outputs	: 14 on/off open collector outputs, each one controlled by one or more alarms. Max. 150mA.
LED's	: 24, each one controlled by one or more alarms.
PT100 resistors	: Max. 24 connected through remote transmitters.
Thermocouples	: Max. 24 connected through remote transmitters.
Alarm annunciation	: Flashing LED for new alarm, steady light for acknowledged alarm.
Siren control	: On/off open collector output, external relay required.
LCD	: 2 x 16 character with background light.
Text label	: Removable paper sheet for typewriter texturing.
Programming	: From front plate keyboard or through PC MS-Window 3.1 software.
Communication	: 1 Galvanic isolated RS485 3 wire bus interface (Half duplex). 1 Standard RS232 for remote programming.



Denmark:
Meterbuen 6-12
DK-2740 Skovlunde
Telephone: +45 -44 91 11 22
Telefax: +45 -44 91 25 22
<http://www.selco.com>

Great Britain:
20 Orton Enterprise Centre
Bakewell Road, Orton Southgate
Peterborough PE 2 6XU
Telephone: 44 (0) 1733 371828
Telefax: 44 (0) 1733 361434