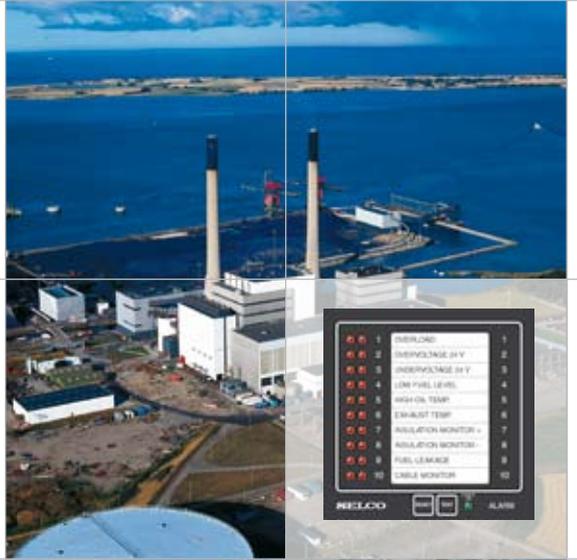
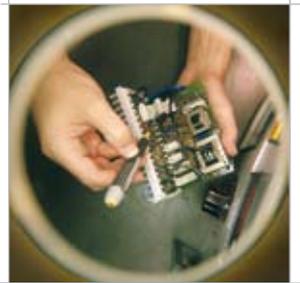


Alarm Systems

Reliable Supervision and Control



Alarm Monitors and Indicators

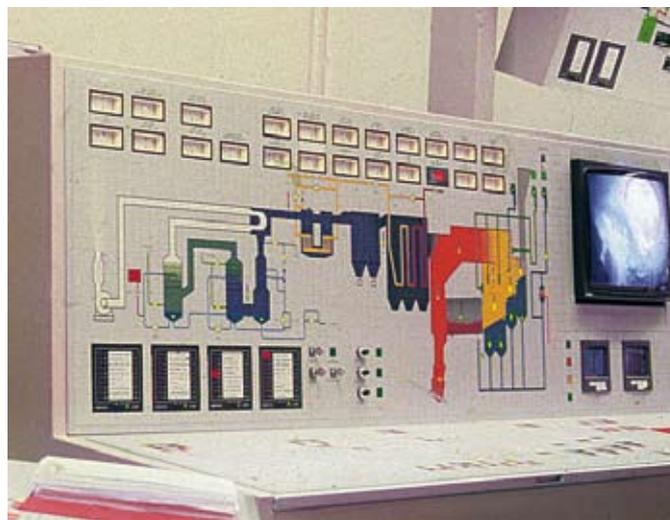
The SELCO product range includes a number of alarm monitors and indicator panels for use in numerous applications.

The M4200 Alarm Monitor is a compact 8 channel digital unit for use with potential free closing or opening contacts.

The M1000 Alarm Monitor is a highly flexible 10 channel microprocessor based unit. Several M1000 units can be interconnected in order to form large alarm systems.

The M3000 Analog Alarm Monitor is a very versatile 24 channel unit, which can be used for monitoring of both potential free contacts and analogue levels such as current, temperature or pressure (through 4-20mA / 0-10V DC transmitters). Both the M1000 and the M3000 alarm monitors can be configured manually or via a PC.

The SELCO indicator panels are for local or remote indication of alarms and contact signals.



Control room featuring M1000 alarm monitors.

M1000 Alarm Monitor



The M1000 is a compact 10 channel programmable unit with many features. An input signal originating from a potential

free closing or opening contact (NO or NC contact) will cause the appropriate alarm LEDs to flash and simultaneously the related output will activate. The internal siren relay will be activated on the detection of every new alarm.

The M1000 has separate indications of first alarm, following alarms and acknowledged alarms. Multiple M1000 units can be interconnected to form a large-scale alarm system.

Alarm related parameters like time delays, reset functions and other features

COOPERATION

! „We selected SELCO products for their compact design, high level features and long-term reliability. We have been delighted with their performance in our demanding applications.”

Paul B. Luen, Director,
Martek Marine Ltd, United Kingdom

can be configured through 16 programming switches. The unit can be configured for cable monitoring, and it can be configured to monitor its own supply and insulation level.

Flush mounted unit with standard measurements of 144 x 144 x 35mm, available in tightness class IP54 at the front.

Configuration via the RS232 Interface

The M1000 can be configured via the RS232 interface. A standard ANSI/VT100 terminal is used as the programming tool (e.g. Windows *HyperTerminal*).

Configuration via the RS232 interface greatly expands the number of programmable options. Configuration via the RS232 provides an adjustable delay for each individual alarm, extra reset functions, and many other features not available by the programming switches.

A detailed description of how to configure the M1000 by the RS232 interface can be downloaded from the SELCO website at www.selco.com.

RS485 interface, MODBUS-RTU protocol

The M1000 is equipped with a 2-wire RS485 interface which supports communication by the standardized MODBUS-RTU protocol. A MODBUS master (e.g. PC, PLC or the SELCO H0300 Event Logger) can write and read information to and from any M1000 unit connected to the common RS485 bus.

The RS485 interface makes it possible to reset the siren relay and all LEDs. A LED test can be performed, the LEDs can be dimmed from 0 to 100 %, and LED synchronization has a separate command. The master can also individually block and unblock each channel. Each channel can be individually reset.

It is also possible to set a "virtual input" on the M1000 via the RS485 interface. A "virtual input" has exactly the same function as a physical input and the "virtual input" should be understood as being in parallel with the physical input. This enables the MODBUS master to repeat one or more alarms from one M1000 to a channel on another M1000.

M4200 Alarm Monitor



The M4200 is a compact 8 channel programmable unit with many features. The 8 inputs will accept any combination of normally open or normally closed contacts. The inputs will cause the appropriate alarm LED to flash and simultaneously activate the common siren relay. Additionally, each input can be configured individually to activate one or both of two alarm relays for group alarm outputs.

Reset performed by the RESET button will silence the siren, after which it is possible to reset the alarm using the RESET button. The LED will then change to steady light and is maintained as long as the input signal is present. Alternatively, also the M4200 can be configured via PC through the built-in RS232 interface using Windows *HyperTerminal*.

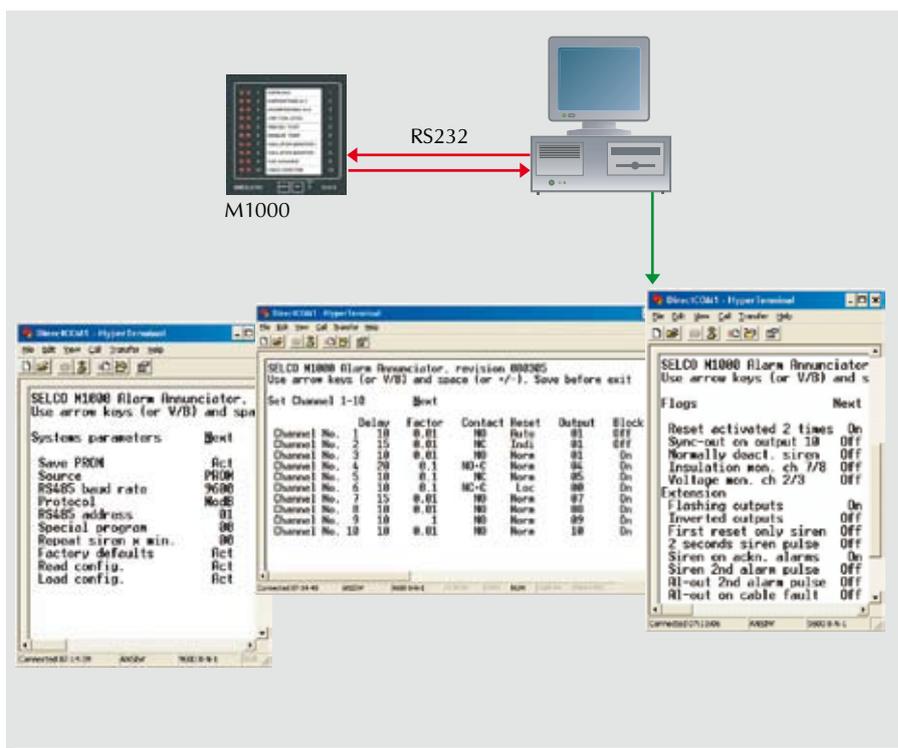
Flush mounted unit with standard measurements of 96 x 96 x 75mm.

M3000 Analog Alarm Monitor



The M3000 Analog Alarm Monitor is a versatile unit with 24 channels, which can be configured individually for potential free contact inputs or analogue inputs.

The analogue inputs can be current or voltage. Typically these inputs will come from temperature sensors TC or PT100, pressure sensors, flow sensors, etc., through 4-20 mA or 0-10 V DC transmitters.



Configuration via RS232 Interface using the *HyperTerminal*.

Up to 48 alarms can be configured with individual reference to any of the 24 inputs. The alarms can be configured to control one of the 24 LEDs on the front panel and one of the 14 open collector outputs. Several alarms can control the same LED and/or output. Furthermore, there is one common open collector output for general alarm and one output for siren control.

An alarm is monitored when the input passes above or below a preset critical level. The actual levels and alarm levels are indicated on the display.

The configuration of the unit can be done via the front panel or via a PC through the built-in RS232 interface. The M3000 is also equipped with an RS485 serial communication interface with support for the MODBUS RTU protocol.

Flush mounted unit with standard measurements of 144 x 144 x 70mm, tightness class IP54 at the front.

M3092 M-Programmer

SELCO has developed a user friendly programming tool for the M3000. This tool is delivered with the M3000 and allows a very easy and flexible configuration of all the parameters in the unit. The programming tool features a "spreadsheet-like" user interface. The software checks and validates all the parameters and gives printouts with a good overview. It is also possible to



import / export all parameters into an Excel spreadsheet.

Average Calculations

The M3000 can perform average calculations, which is useful for monitoring of the exhaust gas temperatures of diesel or gas engines. The average temperature for a number of cylinders is calculated. If the temperature of one of the cylinders deviates from the average of the remaining cylinders more than a preset \pm offset, a deviation alarm will be reported.

The H3000 can be used with all types of analogue sensors that provide a 4 - 20mA current or a 0 - 10V DC voltage signal. The H3000 features 16 analogue inputs and 32 programmable alarms. Ideal for use with TC and PT100 transmitters.

Monitoring of an alarm can be displayed on any one of the 5 LEDs located on the front plate, as well as on any of the 64 LEDs on separate remote panels. Up to four H3100 Indicator Panels can be connected to the H3000.

H3000 Analog Alarm Monitor



The H3100 Indicator Panels and H3000 are connected with 4 wires, including power supply to the units. Each alarm can be programmed to control one of the 8 open collector outputs.

In addition to the 16 analogue inputs of the H3000, the unit has 8 control inputs, one for LED test, one for external RESET, three for blocking of alarms and three for future use.

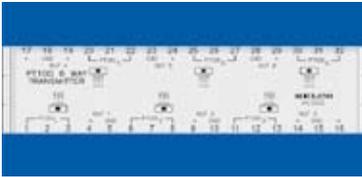
Alarms	Input	DynRef	Dir	SetPoint	LED Test	Delay (s)	LED	Output	Flags	InputType	LCDU	ImpLo	LCDDo	ImpUp	LCDDup	Misc
1 (A11)	IN 11	OFF	>	500	EXH.CYL1	2	1	1	---	20 mA	C	4	0	20	600	0
2 (A12)	IN 11	LOG1	>	70	EXH.CYL1	2	1	1	---	20 mA	C	4	0	20	600	0
3 (A13)	IN 12	OFF	>	500	EXH.CYL2	2	2	1	---	20 mA	C	4	0	20	600	0
4 (A14)	IN 12	LOG1	>	70	EXH.CYL2	2	2	1	---	20 mA	C	4	0	20	600	0
5 (A15)	IN 13	OFF	>	500	EXH.CYL3	2	3	1	---	20 mA	C	4	0	20	600	0
6 (A16)	IN 13	LOG1	>	70	EXH.CYL3	2	3	1	---	20 mA	C	4	0	20	600	0
7 (A21)	IN 21	OFF	>	500	EXH.CYL4	2	4	1	---	20 mA	C	4	0	20	600	0
8 (A22)	IN 21	LOG1	>	70	EXH.CYL4	2	4	1	---	20 mA	C	4	0	20	600	0
9 (A23)	IN 22	OFF	>	500	EXH.CYL5	2	5	1	---	20 mA	C	4	0	20	600	0
10 (A24)	IN 22	LOG1	>	70	EXH.CYL5	2	5	1	---	20 mA	C	4	0	20	600	0
11 (A25)	IN 23	OFF	>	500	EXH.CYL6	2	6	1	---	20 mA	C	4	0	20	600	0
12 (A26)	IN 23	LOG1	>	70	EXH.CYL6	2	6	1	---	20 mA	C	4	0	20	600	0
13 (A31)	IN 31	OFF	>	500	EXH.ATC	2	7	1	---	20 mA	C	4	0	20	600	0
14 (A32)	IN 32	OFF	>	0.5	TACH.POV	2	8	1	---	24 V		0	0	24	1	0
15 (A33)	IN 33	OFF	>	0.5	CONF.AIRP	2	9	1	---	24 V		0	0	24	1	0
20 (A40)	IN 52	OFF	<	2.0	HT.PRESS	2	14	1	0	20 mA	bar	4	0.0	20	6.0	0
21 (A43)	IN 53	OFF	<	4.0	FD.PRESS	2	15	1	0	20 mA	bar	4	0.0	20	16.0	0
22 (A44)	IN 61	OFF	<	8.0	STA.PRESS	30	16	1	---	20 mA	bar	4	0.0	20	16.0	0
23 (A45)	IN 62	OFF	<	3.0	LO.PRESS	2	17	1	0	20 mA	bar	4	0.0	20	10.0	0

The H3000 can perform average calculation, which is useful for monitoring of the exhaust gas temperatures of diesel or gas engines.

The H3000 can be configured through the RS232 connection using an ANSI terminal (e.g. Windows HyperTerminal). The inputs, the alarms and alarm related parameters are defined in the configuration, and the configuration can be saved to disk for later downloading.

Flush mounted unit with standard measurements of 96 x 144 x 110mm, tightness class IP52 at the front.

M1500 PT100 6 Way Transmitter



The M1500 contains 6 current transmitters in one box to be connected to PT100 temperature resistors. The outputs from the unit are 4-20mA current outputs according to DIN EN 60751. The current outputs can be fed into e.g. analogue alarm monitors as the SELCO M3000.

On the front, each of the 6 inputs can individually be set to 3 different temperature ranges: 0-160 °C, 0-300 °C or 0-600 °C.

M4500, M4600, M4700 Indicator Panels



The M4500, M4600 and M4700 Indicator Panels are intended for status indication of any process providing on / off outputs. An input through a potential free contact will cause the appropriate alarm LED to light.

The indicator panels are an ideal solution for local or remote indication of the output signals from e.g. a PLC or from alarm monitors.

The panels contain 6, 8 or 20 channels. The 20 channel M4700 is available in a version with built-in alarm and siren relays. Also, there is a new version with an additional RS485 interface (MODBUS RTU). See further description on the following pages.

Flush mounted units with standard measurements of 72 x 72 x 65mm, 96 x 96 x 65 mm and 144 x 144 x 65mm, respectively.

Modbus Indicators and Event Logging

The SELCO indicator panels H1500 and M4780 can be used for local or remote indications of signal states, transmitted from e.g. a PLC through a common 2-wire RS485 communication bus. The H1500 and M4780 supports the MODBUS RTU protocol.

The M4780 can also be used as a traditional indicator panel for simultaneous status indications from potential free contact inputs.

The H0300 Event Logger monitors and logs all alarms and events from the SELCO alarm monitors M1000 and M3000, as well as the M4780 MODBUS Indicator.

The H0300 can also act as an event repeater by transferring LED indications from one unit to another via the RS485 interface, as defined by the user.

H1500 Indicator Panel



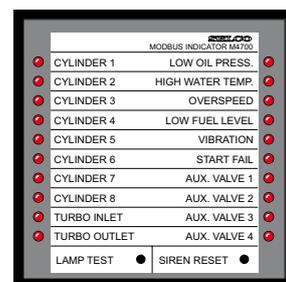
The H1500 is a compact micro processor based indicator panel for use in PLC systems or in systems with the SELCO H0300 Event Logger and SELCO alarm monitors. The unit provides an easy and cost effective solution for clear indications at local or remote locations of PLC registers or alarms.

Communication with the units takes place on a common 2-wire RS485 bus. The communication protocol is the MODBUS RTU. Multiple H1500 units can be connected to a common RS485 bus. Maximum length of the RS485 bus cable is approximately 1000 metres. The LEDs can be programmed, via the bus, to perform various types of flashing, steady light or off state. The unit has commands for reset of all LEDs, lamp test and the LEDs can be dimmed from 0 to 100%.

A text description for the LEDs can be printed on a paper label, which slides in from the bottom.

Flush mounted unit with standard measurements of 96 x 144 x 70mm, tightness class IP52 at the front.

M4780 MODBUS Indicator



The M4780 is a versatile 20 channel indicator panel, which can be used for simultaneous monitoring of potential free contacts and signal states transmitted through a common 2-wire RS485 communication bus using the MODBUS RTU protocol.

This unit can best be described as a combination of a traditional indicator panel with potential free contacts and the bus based H1500 Indicator Panel.

The M4780 can also act as an alarm monitor, as two internal relays can be used for group alarms and control of a high-powered external siren.

Additionally, it includes an internal siren for local use.

Via the bus a PLC can read the state of the LEDs and the inputs on the M4780. This feature makes the M4780 a cost effective remote 20 channel digital input device with indications in PLC systems.

A text description for the LEDs can be printed on the front plate legend card. Flush mounted unit with standard measurements of 144 x 144 x 65mm.

H0300 Event Logger



The H0300 can log alarms and events from SELCO alarm monitors and indicator panels, connected to a common 2-wire RS485 interface bus. Up to 63 units can be connected to the bus, where the maximum cable length is approx. 1000 metres.

All events from the units are logged with related date and time. The latest 32 events are stored in the internal memory of the H0300. A standard Centronics printer can be used for printout of all events.

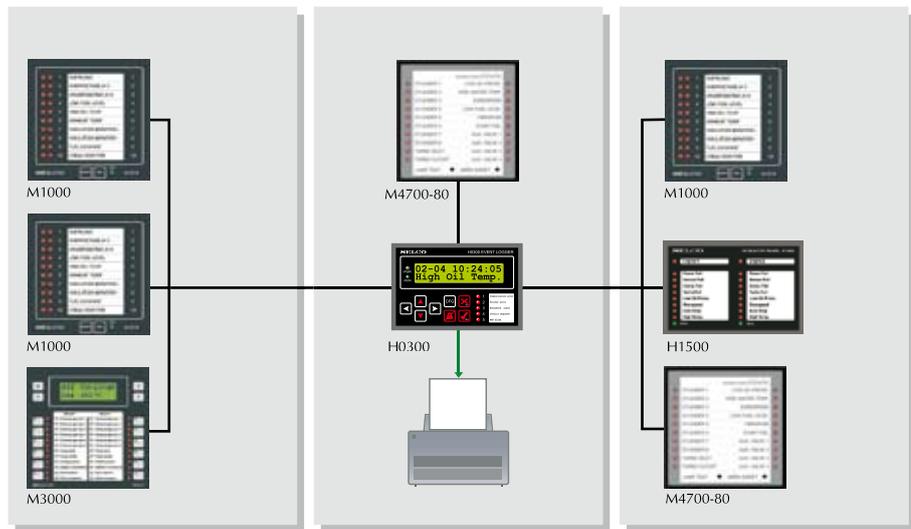


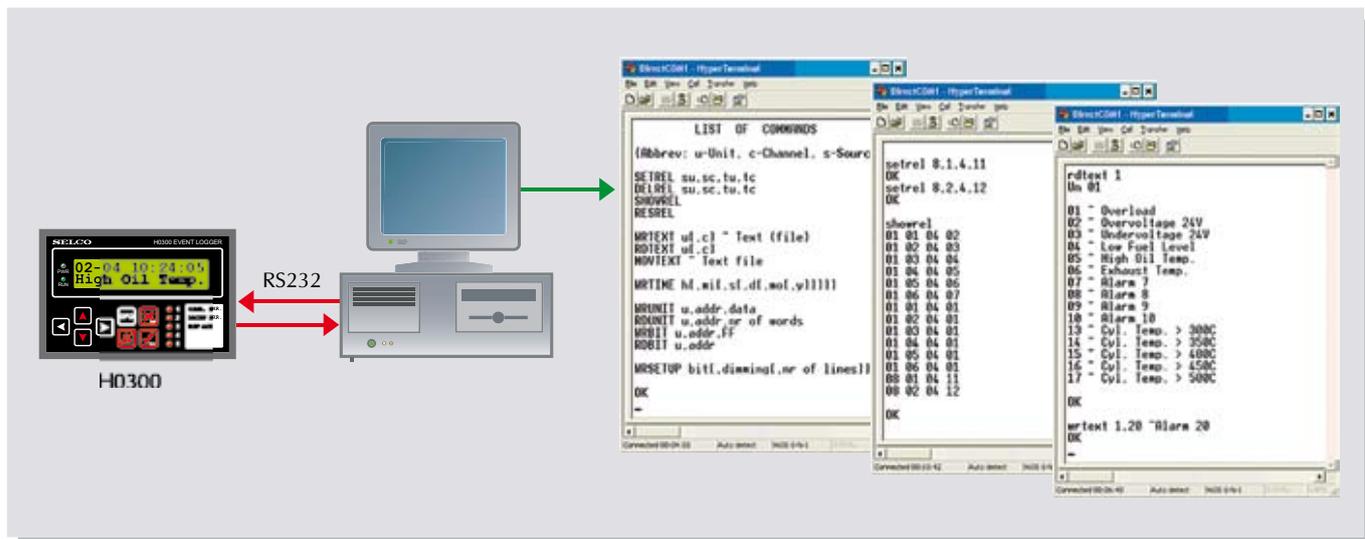
Fig. 4. Event Logging.

The unit has a built-in siren relay, which will be activated on every new alarm. The alarms can be acknowledged at the front panel.

The H0300 can also be configured to act as an event repeater. It can transfer LED indications from one unit to another through the common bus. Multiple relations between source units LEDs and LEDs of repeater units can be defined. Configuration can be done through the built-in RS232 interface using a standard PC. The H0300 can also be used for testing various MODBUS RTU commands on the RS485 interface via the PC. The

commands are written in clear text on the PC, and the H0300 will send the corresponding commands out on the RS485 interface according to the MODBUS RTU protocol.

Flush mounted unit with standard measurements of 96 x 144 x 70mm, tightness class IP52 at the front.



Configuration via RS232 Interface using the Hyper Terminal.

We are SELCO

Since the origin in 1960, SELCO technology has provided the electrical power generation market with high class equipment, living up to major international standards.

SELCO manufactures and supplies electronic relays and microprocessor based equipment for control, monitoring and protection of medium sized generators in parallel operation.

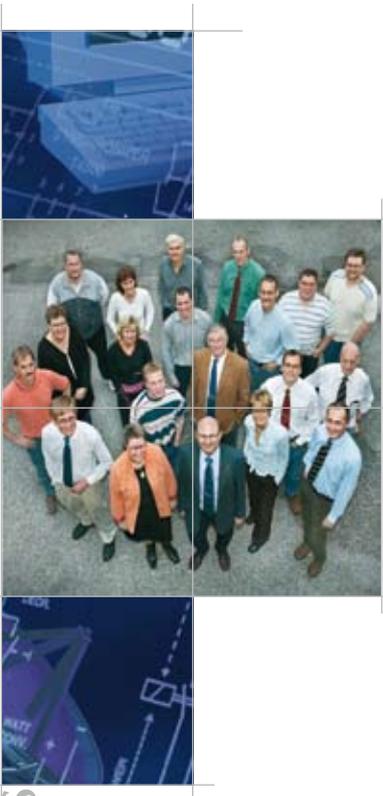
Primarily the products are used for generators on board ships and in compact land-based power stations where operation in parallel with the grid (utility) may also be a requirement.

SELCO also manufactures a wide range of alarm monitors, indicator panels and software for use in a broad variety of marine and industrial applications, e.g. pharmaceutical industry, food processing, petrochemical industry, machinery, off shore and energy distribution. All products undergo thorough test and inspection procedures to ensure high reliability and continuous operation in the field.

Since its establishment as an independent company in 1984, SELCO has continuously expanded its activities within the generator control and alarm monitor markets. SELCO products are marketed and sold in more than 60 countries worldwide. SELCO offers a comprehensive range of services including technical support, applications support and spare part services.

SELCO staff and its partners worldwide take pride in exceeding the customers' expectations in quality and excellent service.

CUSTOMER FOCUS



The SELCO equipment has been thoroughly tested by certified laboratories with regard to high vibration levels, heat, cold, humidity, salt mist, EMC emission and immunity as well as other parameters.

SELCO products are in accordance with all significant international standards and have been approved and certified by the major marine classification societies.



Specifications

	Number of Inputs	Number of OC outputs	Alarm Relay	Siren Relay	LCD Display	Alarm Annunciation (Analog)	Alarm Annunciation (Digital)	Alarm Indication	Alarm Logging	Alarm Repeat Control	RS 232 Programming Protocol	RS 485 Modbus Protocol
H0300				x	x		x	x	x	x	x	x
H3000	16	8		x	x	x	x	x		x	x	x
M1000	10	10		x			x	x		x		x
M3000	24	14			x	x	x	x		x		x
M4100	8		2	x			x	x				
M4500	6							x				
M4600	8							x				
M4700	20							x				
M4700.0120	20		x	x				x				
M4780.0010	20		x	x				x				x

SELCO Worldwide



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