COMPONENT GUIDE for industry & shipping



Operation alarm panels Electronic start/monitoring unit Propulsion control system Sensors



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Netzler & Dahlgren Co AB

Diantek AB

TEMPRESS A/S

We are agents for the	follow companie	es:		
Company	Certification	Products	IMSAB's range	
NDC's	ISO 9001	Alarm control panels	Worldwide	
Diantek		Alarm control panels	Worldwide	
Hegna Electronics AS		Electronic start/monitoring unit	In Sweden	
Mar-El		Control and protection of		
		the propulsion system	In Sweden	
Tempress	ISO 9001	Pt100 sensor	In Sweden	
4tech		High pressure transmitter	In Sweden	

Products from the following companies can also be made; **JEFF Electronics ISO 9001** Analog alarm unit Soft Drive and Surge protectors **Elrond Komponent**

Agents for IMSAB's products can also be found in:			
Sweden, Stockholm	Elrond Komponent AB	+46-(0)8- 746 04 00	
Norway, Dalen	Scana Mar-El AS	+47-(0)350-772 55	
Finland, Espoo	ECS- Electrical Components & Systems OY	+358 (0)9 863 42 40 => or	
ŕ		+358 (0)9 863 42 411	





– IMSAB – Products

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IMSAB **ALARM DISPLAY UNIT LLD 10/15**

For electricians





- Alarm unit for "surface-mounting distribution boards and enclosures"
- 10 selectable error switch inputs (NO/NC)
- Can be complemented with up to 6 slave panels with 15 points to a total of 100 alarm points
- **3** selectable alarm groups (A-B-C alarm)
- Flashing light and memory for each point
- Independent time-delay 50 ms 70 sec
- Zero voltage check
- Option available for transfer of information to a computer

ADVANTAGES AND OPERATION

On the panel, the sensors indicator flashes when the pre-set time delay has elapsed. At the same time the output group(s) attached to the alarm point are activated. Further error messages are not blocked by earlier signals. Error messages are acknowledged by pressing the "RESET" button. The output terminal are then reset, at the same time as the alarm indicator changes to a constant light. When the fault has been fixed and the sensors switch has return to its normal state, then the alarm indicator goes out. If a fault should fix itself and the switch reset itself before acknowledgement has occurred, then the panel recalls the fault. The flashing light and output contact are activated until acknowledgement has occurred. The LLD 10 unit is thus equipped with a memory function and is always ready for a new alarm

Pressing the TEST button makes a standard test of operation. Lamp test can be done with a push at the button TEST. Functions test can be done with a push at the button TEST + PROG button at same time, which simulate fault at the panel. The green operation indication's diode lights up when voltage is following through the panel.

SECURITY

The LLD 10 unit is constructed for surveillance work even under extreme conditions. Like all IMSAB alarm products it is equipped with multiple protection against accidental connection to voltages, interference etc. Alternating voltage can be fed directly into the panel without the requirement for stabilisation. It also has a built in zero voltage control, which means that the output relay for each alarm group is normally junctured. In case of alarm or voltage falloff the output relays break.

CE-tested and approved according to: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

The LLD 10 unit is designed for mounting on a DIN-rail in a normal enclosure and its compact form make it easy to fit in any enclose. There is a master and slave version. If more than 10 alarm points are required in the construction, then it can be complemented with slaves with 15 points. Connection is made to the unit by an easily accessible screw terminal block, which can be fitted with a corresponding terminal strip. This connection method means that no cable need to be loosened after installation. In a few moments it is easy to part the cable from the panel.

PROGRAMMING

The LLD10M unit can be adjusted in a number of ways. Here are a number of the key features of the LLD10M unit:

- Alarm inputs work with normally open (NO) or normally closed (NC) contacts. Individually selectable for each input.
- For each alarm input a separate time delay of 0-75 seconds can be selected.

Each alarm input can be connected to none or several relay outputs. The LLD10M unit is delivered with a standard setting of alarm inputs and relay outputs. Standard setting:

- All alarm inputs are set to work with normally open (NO) alarm contacts.
- All alarm inputs are set at 0 seconds time delay.
- All alarm inputs are connected to the A-alarm relay output.

Programming construction

Construction of the programming method is such that:

- Firstly is selected which unit in the system where alarm inputs existera that is to be programmed or changed. (The number of units depends on how large the system is, namely between one to seven units).
- 2- Once the unit is selected, next is selected which of the five (5) rows of inputs the input(s) are to be found.
- 3- Once the actual row is selected, then the individual alarm input that is to be programmed or changed is selected. (Here there are five (5) to select from). 4- At the individual input level there are three (3) different setting to
- select:
- Firstly is selected if the input should work as a normally closed (NC) or normally open (NO) alarm contact.
- Next is selected, by adding time intervals, which time delay the





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IMSAB **ALARM DISPLAY UNIT LLE 10 UNIVERSAL PANEL IN THE "DIN" SERIES FOR USE BY PROCESS**

INDUSTRIES AND MACHINE MANUFACTURERS



- 10 channel unit for both normally open and closed sensor contacts (No/Nc).
- Alarm grouping in 2 categories (A-B alarms)
- Memory and flashing light
- Time delay for each alarm channel 50ms-75s.
- **Running light indicator**
- Group indication
- Voltage failure indication
- **Prepared for datatransfer**
- Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

On the panel, the sensors indicator flashes when the pre-set time delay has elapsed. At the same time the output group(s) attached to the alarm point are activated. Further error messages are not blocked by earlier signals. Error messages are acknowledged by pressing the "RESET" button. The output terminal are then reset, at the same time as the alarm indicator changes to a constant light. When the fault has been fixed and the sensors switch has return to its normal state, then the alarm indicator goes out. If a fault should fix itself and the switch reset itself before acknowledgement has occurred, then the panel recalls the fault. The flashing light and output contact are activated until acknowledgement has occurred. The LLE 10 unit is thus equipped with a memory function and is always ready for a new alarm.

Pressing the TEST button makes a standard test of operation. Lamp test can be done with a push at the button TEST Functions test can be done with a push at the button TEST + PROG button at same time, which simulate fault at the panel. The green operation indication's diode lights up when voltage is following through the panel.

SECURITY

The LLE 10 unit is constructed for surveillance work even under extreme conditions. Like all IMSAB alarm products it is equipped with multiple protection against accidental connection to voltages, interference etc. Alternating voltage can be fed directly into the panel without the requirement for stabilisation. It also has a built in zero voltage control, which means that the output relay for each alarm group is normally junctured. In case of alarm or voltage falloff the output relays break.

CE-tested and approved according to: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

The LLE 10 unit is designed for panel, wall or cabinet mounting, and is supplied only in the master version. Systems with more than 10 alarm channels require additional panels. Connection is made to the unit by an easily accessible screw terminal block, which can be fitted with a corresponding terminal strip. This connection method means that no cable need to be loosened after installation. In a few moments it is easy to part the cable from the panel.

PROGRAMMING

The LLE 10 unit can be adjusted in a number of ways. Here are a number of the key features of the LLE 10 unit:

- Alarm inputs work with normally open (NO) or normally closed (NC) contacts. Individually selectable for each input. For each alarm input a separate time delay of 0 - 75 seconds can
- be selected.

- Each alarm input can be connected to none or one or both relay outputs

The LLE 10 unit is delivered with a standard setting of alarm inputs and relay outputs. Standard setting: – All alarm inputs are set to work with normally open (NO) alarm

- contacts.
- All alarm inputs are set at 0 seconds time delay.
- All alarm inputs are connected to the A-alarm relay output.

Programming construction

Construction of the programming method is such that: 1 Firstly is selected which individual alarm input that is to be

- programmed or changed is selected.
- 2- At the individual input level there are three (3) different setting to select:
- Firstly is selected if the input should work as a normally closed (NC) or normally open (NO) alarm contact.
- Next is selected, by adding time intervals, which time delay the input should have from the physical alarm until the LLE 10 system informs the alarm categories that the alarm has occurred.
- Finally is selected if or which alarm categories (A-B alarms) that should be activated with an alarm at that alarm input. Between 0-2 can be selected.







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ALARM DISPLAY UNIT LLC 10

UNIVERSAL PANEL IN THE "DIN" SERIES FOR USE BY PROCESS INDUSTRIES AND MACHINE MANUFACTURERS. Manufacture NDC



- 10 channel unit for both normally open and closed sensor contacts (No/Nc).
- Alarm grouping in 2 categories (A-B alarms)
- Memory and flashing light
- Time delay for each alarm channel
- Running light indicator
- Group indication
- Voltage failure indication
- Prepared for datatransfer
- Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

LLC-10 is a compact alarm display unit in the "DIN"-series. It is designed for exacting applications. The unit is programmable for use with either normally open or closed sensor contacts, and with adjustable time delay for each alarm channels. The alarm channels can be connected to either of the two output groups (A and B alarms). At the panel, the sensors indicator flashes when the pre-set time delay has elapsed. At the same time the output group to which it is connected, is activated. The signal is acknowledged by pressing the RESET button. This releases the output contact and the flashing light becomes steady.

Functions test can be done with a push at the button TEST, which simulate fault at the panel.

Lamp test can be done with a push at the button TEST + RESET button at same time.

When the fault has been corrected and the sensor contact has returned to its normal state, the indicator lamp goes out. If the fault self-corrects and the sensor contact returns before acknowledgement, the fault remains in the unit memory, the light flashes and the output contact remains activated, until the accept button is pressed.

LLC-10 is equipped with a channel memory. The unit is always ready to receive new alarm signals, independent of system status. The panel can be provided with legends for each alarm channel or with a common 10 points legend.

SECURITY

LLC-10 is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal and accidental connection of voltage, interruptions etc. The unit is designed to indicate voltage failures, each output group relay is normally activated. In the alarm state, the relay is deactivated and a signal can be given with, for example, a horn. The same thing happens when the supply voltage is interrupted. Its limited size and denth allow it to be easily mounted in panels

Its limited size and depth allow it to be easily mounted in panels, walls and similar spaces.

The unit is in accordance with CE-standards: EN 50 082-2; IEC 801- 2:1991; ENV 50 140; ENV 50 141; IEC 801-4; SNEN 61010.

INSTALLATION

LLC-10 is designed for panel, wall or cabinet mounting, and is supplied only in the master version. Systems with more than 10 alarm channels require additional panels. Connection is made to the unit by an easily accessible screw terminal block, which can be fitted with a corresponding terminal strip. The use of this system means that cable connections need not be disturbed once the installation is complete, and the unit can be disconnected very quickly.

SPECIFICATIONS

Supply voltage:	24V AC/DC ± 20%; 0,1-0,2A
Time delay:	Individually adjustable time 0,5-20 sec. each
•	channel.
Ambient temper	ature: min -10°C max 55°C.
Hygroscopic mo	isture: max 80% not condensed.
Output contacts:	Isolated volt-free contact per alarm group (A and B
•	alarms). Selection device on each alarm point
	contact rated 24V 1A resistive load. Max 30V
	RMS, or 60VDC (Selv or Telv).
Front:	Dull black aluminium with plastic cover IP44 and
	together with gasket IP65
Main dimension	: DIN 144x144x35 mm
Panel recess:	125x125 mm
Legends:	Space for individual channel legends or common 5
0	channel legends
Indicators:	Red LED for unacknowledged alarm

ORDERING INSTRUCTIONS

12040	LLC 10
Extra access	sories:
1084	Relay circuit board for an interface to computer or
	remote alarms.



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MAIN DIMENSION





ALARM UNIT LLB 10 A/B

FOR SIMPLE MONITORING APPLICATIONS. Manufacture NDC



- 10-channel unit for normally open sensor contacts (No)
- Group alarm output, with adjustable time delay (A-B alarm)
- No memory or flashing light
- Voltage failure indication
- DIN dimensions, 144x144x35 mm
- Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

LLB-10 is a very compact unit and forms part of the NDC series of DIN products. In its standard version it is designed for normally open contacts and is especially suitable for simple monitoring applications. In spite of its low price, the LLB-10 is superior to ordinary "diode type" alarms, since it gives a new alarm for each new fault. The output relay has an adjustable time delay to avoid unnecessary alarms, for example, when connected to a level sensor. When a sensor contact closes, the corresponding indicator LED is lit on the panel. After the pre-set time, the output contact is activated and the ALARM indicator is illuminated. The signal is acknowledged by pressing the red "ÅTERSTÄLLN." button, which causes the output contact to reset and extinguishes the ALARM LED. When the fault has been corrected and the sensor has returned to its normal state, the fault indicator LED on the panel goes out. If the sensor contact returns to normal status.

Functions test can be done with a push at the button TEST, which simulate fault at the panel.

Lamp test can be done with a push at the button TEST + ÅTERST. button at same time.

LLB-10 can be fitted with a legend for each alarm channel, or with a common legend for all 5 channels.

SECURITY

LLB-10 AB is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal and accidental connection of voltage, interruptions etc. The unit is designed to indicate voltage failures, each output group relay is normally activated. In the alarm state, the relay is deactivated and a signal can be given with, for example, a horn. The same thing happens when the supply voltage is interrupted and the horn have different supply.

Its limited size and depth allow it to be easily mounted in panels, walls and similar spaces.

Normal function testing is carried out by pressing the test button which simulates faults on the alarm channels in the system. The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

LLB-10 AB is designed for panel, cabinet or wall mounting. It is made only in the master version. Systems with more than 10 alarm channels require additional panels. Connection is made to the unit by an easily accessible screw terminal block, which can be fitted with a corresponding terminal strip. The use of this system means that cable connections need not be disturbed once the installation is complete, and the unit can be disconnected very quickly.

SPECIFICATION

Supply voltage:	24V AC/DC ± 20%
Supply current:	Normal condition 0,1A
	Alarm condition 0,4A
Time delay:	0,5-20 sec. adjustable common time for each
<u> </u>	alarm group.
Output contacts:	Isolated Volt-Iree contact rated (A-B alarm) max
F	100 V 100 VA resistive load.
Front:	Dull, black aluminium
Main dimension:	DIN 144x144x35 mm
Panel recess:	125x125 mm
Legends:	Space for individual channel legends or common
-	5 channel legends
Indicators:	Red LED for unacknowledged alarm

12006 **OK**

(ARR)

ORDERING INSTRUCTIONS LLB 10 AB E 64 411 10





DIMENSION



Voltage failure position.



ALARM UNIT LLB 10 D

FOR BASIC MONITORING APPLICATION. Manufacture NDC



- 10-channel unit for normally open sensor contacts (No)
- Group alarm output, with adjustable time delay (A-B alarm)
- No memory or flashing light
- Voltage failure indication
- DIN dimensions. 144x144x35 mm
- Auto reset, when the sensor contacts change to normal.
- Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

LLB-10 is a very compact unit and forms part of the NDC series of DIN products. In standard version it is designed for normally open contacts and is especially suitable for simple monitoring appli-cations. In spite of its low price, the LLB-10 is superior to ordinary "diode type" alarms, since it gives a new alarm for each new fault. The output relay is provided with an adjustable time delay to avoid unnecessary alarms, for example, when connected to a level sensor. When a sensor contact closes, the corresponding indicator LED is lit on the panel. After the pre-set time, the output contact is activated. The signal is acknowledged by resetting the sensor contacts, which causes reset of the output contact.

If the sensor contact returns to normal before acknowledgement, the unit returns to normal condition.

Functions test can be done with a push at the button TEST, which simulate fault at the panel. LLB-10 can be fitted with a legend for each alarm channel, or with a

common legend for all 5 channels.

SECURITY

LLB-10 D is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal and accidental connection of voltage, interruptions etc. The unit is designed to indicate voltage failures, each output group relay is normally activated. In the alarm state, the relay is deactivated and a signal can be given with, for example, a horn. The same thing happens when the supply voltage is interrupted and the horn have different supply.

Its limited size and depth allow it to be easily mounted in panels, walls and similar spaces.

Normal function testing is carried out by pressing the test button which simulates faults on the alarm channels in the system. The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

LLB-10 D is designed for panel, cabinet or wall mounting. It is made only in the master version. Systems with more than 10 alarm channels require additional panels. Connection is made to the unit by an easily accessible screw terminal block, which can be fitted with a corresponding terminal strip. The use of this system means that cable connections need not be disturbed once the installation is complete, and the unit can be disconnected very quickly.

SPECIFICATION

Supply voltage:	24V AC/DC ± 20%
Supply current:	Normal condition 0,1A
	Alarm condition 0,4A
Time delay:	0,5-20 sec. adjustable common time for each
-	alarm group.
Output contacts:	Isolated volt-free contact rated (A-B alarm) max
	100V 100VA resistive load.
Front:	Dull, black aluminium
Main dimension:	DIN 144x144x35 mm
Panel recess:	125x125 mm
Legends:	Space for individual channel legends or common
	5 channel legends
Indicators:	Red LED for unacknowledged alarm

ORDERING INSTRUCTIONS

12007

LLB 10 D E 64 410 10





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DIMENSION



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Voltage failure position.

IMSAB **ALARM DISPLAY SYSTEM LDC 10 LD**

FOR USE IN MOST SURVEILLANCE SITUATIONS. Manufacture NDC



- 10 channel unit for both normally open and closed sensor contacts (No/Nc)
- Up to 9 slav units can be used to give a total of 100 alarm channels
- Three categories of alarm (A-B-C) can be chosen and grouped as required
- Flashing light and memory
- Time delay on each channel
- Unique NDC group alarm test
- **Running light indication**
- Voltage failure indication
- Prepared for data transfer
- Certificated in CE-standards EN 50 082

ADVANTAGES AND OPERATION

LDC-10 is delivered programmed for use with normally open sensor contacts, but can easily be re-programmed, on site, for normally closed sensor contacts. All alarm channels have independent time delays

LDČ-10 can be fed from an AC supply. At the panel, the sensors indicator flashes when the pre-set time delay has elapsed. At the same time the output group to which it is connected, is activated. Alarms can be graded into three groups according to urgency. The alarm signal is **acknowledged with the red reset button**, and the corresponding lamp changes from a flashing to steady light, while at the same time the output contact for the alarm group is reset. Functions test can be done with a push at the BLACK button, which simulate fault at the panel.

Lamp test can be done with a push at the button BLACK + RED button at same time.

The unit is also fitted with a special plug-in connector supplying extra information, such as alarm point status, to external units, for example, through an interface board (731) to a computer.

SECURITY

LDC-10 is designed for severe mechanical and electrical environ-mental conditions. It is provided with special protection against polarity reversal and accidental connection of voltage. The unit is designed to indicate voltage failures;

each group relay is normally activated. In the alarm state the relay is deactivated and a signal can be given, for example with a horn. The same thing happens when the supply voltage is interruption. All alarm channels are checked by the function test, including channels in alarm condition. When the black function test button is pressed, faults are simulated on all channels and all timers are started. Simulation of correction of existing alarms occurs during the time the button is held pressed in. The button is released after 30 seconds, when all timers have run out. The existing alarms are then activated and the corresponding timers start. After a further 30 seconds, all alarm channel have, therefore, been tested. None are left unchecked - a facility which is unique in alarm systems of this size. LDC-10 is fitted with a running light indicator to comfirm that the power is connected. Lamps are checked manually by pressing the black function test button and the red accept button, simultaneously. At the same time as the function test take place, a group alarm test is automatically made. This checks that all alarm channels are

Contributing to their group alarm output. The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

LDC-10 is designed for panel-mounting. The unit is available in master and slave versions and the system can, therefore, be built up with one master and up to 9 slave units, giving a total of 100 alarm channels. The test and accept facilities are provided only on the master unit, which carries out these functions on behalf the slave units. The unit is connected through two easily accessible screw terminal blocks, each fitted with an additional terminal strip (plug and socket).

One of the terminal blocks is for connection of sensor leads and the second, for the other connections.

Connection is simple and the terminal arrangement allows the unit to be separated quickly, without disturbing the cable connections.

SPECIFICATIONS

	Supply voltage:	24V or 48V AC/DC ± 20%
	Supply current:	Normal condition 0,1
		Alarm condition 0,2A
	Time delay:	Individually adjustable time 0,5-20 sec. each
	-	channel.
	Output contacts:	Isolated volt-free contact per alarm group (A - B -
2-2		C alarms). Selection device on each alarm point
	_	contact rated max 100V 4A resistive load.
	Front:	Dull, black aluminium
	Main dimension:	350x96x160 mm
	Panel recess:	330x76 mm (19" 64x445mm)
	Legends:	Space for legends 50x15 mm
	Max permissible	external cable resistance:
		5000 ohm.





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12061 12062

12063

731





Extra accessories:

Relay circuit board for an interface to computer or remote alarms.





Indicators:

12044

12045

12042

12043

12060

Red LED for unacknowledged alarm

Master

Master

Master

Slav

Slav

ORDERING INSTRUCTIONS

LDC 10 M3R LD LDC 10 S3R LD LDC 10 M3R LD 19"

LDC 10 S3R LD 19"

LDC 10 M3R 48V LD

ALARM DISPLAY UNIT LH 10 FOR 110V DC

FOR INDUSTRY AND POWER DISTRIBUTION.

Manufacture NDC



ADVANTAGES AND OPERATION

LH-10 is delivered for use with normally open sensor contacts, but can easily be re-programmed for normally closed sensor contacts, on any chosen alarm channel. The unit is fitted with flashing indicator lights and memory i.e. faults that have returned to their normal state before being accepted /acknowledged are still shown on the panel. The alarms can be graded into two groups according to the degree of urgency. Each group is provided with a group alarm output and adjustable time-delay. The sensor contacts close (or open) and the corresponding lamp flashes. The memory and the output contacts are activated when the pre-set time for the group has expired. The alarm signal is acknowledged by pressing the red accept button; the flashing lamp becomes steady and the group output contacts return to their normal state. When the fault has been corrected and the sensor has returned to its normal state, the indicator lamp goes out. **Functions test** can be done with a push at the BLACK button, which simulate fault at the panel. **Lamp test** can be done with a push at the button BLACK + RED

Lamp test can be done with a push at the button BLACK + RED button at same time.

Legends can be fitted to the indicator lamps or the screens can be engraved. With LH-10 it is possible to connect a remote accept facility and the unit can be specially equipped for use in unmanned power installations.

SECURITY

LH-10 is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal and accidental connection of voltage. The unit is designed to indicate voltage failures, each group relay is normally activated. In the alarm state the relay is deactivated and a signal can be given with, for example, a horn. The same happens when the supply voltage is interrupted. Testing for normal function is carried out by pressing the black test button, which simulates faults on the alarm channels of the system.

The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

The LH-10 is designed for panel mounting into a power cabinet. LH-10 for use in power installations, is made only in the master version only. The unit is connected through an easily accessible screw terminal block, each fitted with an additional terminal strip (plug and socket). Connection is simple and the terminal arrangement allows the unit to be separated quickly, without disturbing the cable connections. A selector switch, which can be easily changed on the circuit board

A selector switch, which can be easily changed on the circuit board of the unit, is used to connect the alarm points to the desired group alarm output (A or B alarms). In the case of normally closed sensor contacts, a wire link in the actual channel circuitry has to be cut off.

SPECIFICATIONS

Supply voltage:	110V DC ± 20%
Supply current:	Normally condition 0,02A
Time delaru	Alarm condition 0,25A.
Time delay:	alarm group
No. of alarma area	and In group.
No. of alarm grou	ips: wax 2 per panel (A and B alaritis). Selection
-	device on each alarm channel.
Output contacts:	Each alarm group has 1 set of closing contacts.
	Contact rating 100V, 100VA, resistive load.
Front:	Natural colour anodised aluminium
Legends:	Film legend 24x32 mm or engraved on lamp
	screen.
Lamps:	Ba9s 130V 20mA
Main dimension:	88x482x140 mm
Panel recess:	64x445 mm
Max permissible	external cable resistance: 5000 ohm.

ORDERING INSTRUCTION

12032 Extra accessories: 1022

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ccessories: Relay circuit boad for an interface to computer or 10 remote alarms.

• 10 -channel unit for both normally open and closed sensor contacts (No/Nc)

- Two categories of alarm groups (A-B alarm) Time delay for each group.
- Memory and flashing light
- Voltage failure check
- Standard 19" rack width. Two modular height in accordance with DIN standards SEN R 430117
- Certificated in CE-standards EN 50 082-2





CONNECTION



ALARM SYSTEM LB 10

FOR SPECIALIZED USES IN INDUSTRY AND ON BOARD. Manufacture NDC



- 10 channel display unit for plug-in channel cards, for both No/Nc contacts.
- Up to 9 slave units can be used, to give a total of 100 alarm channels.
- 2 or 4 alarm groups can be selected and grouped (A-B-C-D alarm)
- Time delay on each channel
- Can be supplied for ues with separate indicator lamps.
- Running light with faulty lamp indication
- NDC:s group alarm test
- Voltage failure indication
- Prepared for datatransfer
- Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

The LB 10 unit comprises a range of plug-in channel cards, which determine the function of the unit. The most frequent types are shown in the ordering instructions. The cards can be programmed for normally open or closed sensor contacts. A fault signal activates the timer on the card. After the individually pre-set time has elapsed the indicator lamp starts to flash, while at the same time the output relay for the group involved, is activated. The signal is acknow-ledged by pressing the common red accept button, which resets the output contacts and changes the lamp to steady light. Finally, when the sensor contacts return to their normal state, the indicator lamp goes out. LB 10 can be supplied in a version without indicator lamp. **Functions test** can be done with a push at the BLACK button, which simulate fault at the panel.

Lamp test can be done with a push at the button BLACK + RED button at same time.

SECURITY

LB-10 is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal and accidental connection of voltage. The unit is designed to indicate voltage failures; each group relay is normally activated. In the alarm state the relay is deactivated and a signal can be given with, for example a horn. The same happens when the supply voltage is interruption . Normal function testing is carried out by pressing the black button, which simulates a fault on each alarm channel. In addition, the unique group alarm test gives a more sophisticated safety - assurance test. It checks that each individual alarm point contributes to its group output.

LB 10 is fitted with a running light indicator, to confirm that the power is connected. Lamps are checked manually by pressing the black function test button and the red accept button, at the very simultaneously. The cards fit into strong guide rails and can be locked into position.

The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

LB 10 is designed for panel mounting. The unit is available in both master and slave versions, and the system can, therefore, be built up in stages, or from the start, comprise, one master and up to 9 slave units.

The test and accept facilities are provided only on the master unit which carries out these function on behalf of the slave units. The unit is connected through plug-in terminal cards. One of these is for the external leads and the other for internal connections between the master and slave units. This makes connection very simple, whilst allowing for easy separation of the complete unit.

SPECIFICATIONS

Supply voltage:	24 or 48V DC \pm 20% smoothed or unsmoothed.		
	Filtering not required.		
Supply current:	Normal condition 0.2A per unit.		
	Alarm condition (max) 0,7A per unit.		
Time delay:	0,5-20 sec. adjustable for each alarm card.		
No of alarm grou	ps:		
0	2 or 4 per system (A-B-C-D alarm).		
Output contacts:	Isolated volt-free contact per alarm group.		
•	Contacts rating 100V, 100VA, resistive load.		
Front:	Dull black aluminium.		
Legends:	Space for legends 50x15 mm, or engraved on		
-	lamp screens.		
Indicator:	Red lamps = faulty indication (Ba9s 24V 50 mA)		
	or 48V 40mA)		
Main dimension:	350x96x155 mm, panel mounting.		
	330x150x75 mm, terminal mounting.		
Panel recess:	330x76 mm (for service handling, we recommend		
	20 mm between each panels)		
Max permissible external cable resistance:			
	1000 ohm.		





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ORDERING INSTRUCTIONS

13010	LB 10 M:	Master for panel mounting
13011	LB 10 S:	Slave for panel mounting
13020	LB 10 MP:	Master for terminal mounting
13021	LB 10 SP:	Slave for terminal mounting

Alarm cards: LBC: LBCR: Alarm card with memory and flashing light Alarm card with memory, flashing light and signal contact

Extra output cards:

Output card for (C-D alarm)
Output card for sub-central outputs
Alarm card without memory and without flashing
light
Alarm card with LED, memory, flashing light and
signal contact
Alarm card with sub-central function
Alarm card with sub-central function and signal
contact
Alarm card with signal contact, sub-central
function and LED (for use with separate lamp
connector).





LBPI	LBPI	D	LBPI
$\frac{1}{2}$ C B	2	C B	2
4 A B1	4	A Bl	4
6	5 6		5
7 8 FP	7	FP	7
9 10 LO	9 10	LO	9 10



M







IMSAB **INDICATION UNIT LLB 10 I**

INDICATION PANEL CONSTRUCTED FOR MONITORING. Manufacture NDC



- 10-channel unit for normally open sensor contacts (No)
- Globe test

CONNECTION

Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

LLB-10 is a very compact unit and forms part of the NDC series of DIN products. In its standard version it is designed for normally open contacts and is particuarly suitable for simple monitoring

applications. When a sensor contact closes, the corresponding indicator LED is lit on the panel.

Normal function testing is carried out by pressing a test button. LLB-10 can be fitted with a legend for each alarm channel, or with a common legend for all 5 channels.

Lamp test can be done with a push at the button BLACK.

SECURITY

LLB-10 I is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal, accidental connection of voltage, interruptions etc. Its limited size and depth allow it to be easily mounted in panels, walls and similar spaces.

The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

LLB-10 I is designed for panel, cabinet or wall mounting. Systems with more than 10 channels require additional panels. Connection is made to the unit by an easily accessible screw terminal block, which can be fitted with a corresponding terminal strip. The use of this system means that cable connections need not be disturbed once the installation is complete, and the unit can be disconnected very quickly.

SPECIFICATION

Supply voltage:	$24V \text{ AC/DC} \pm 20\%$
Supply current:	Normal condition 0,1A
	Alarm condition 0,4A
Front:	Dull, black aluminium
Main dimension:	DIN 144x144x35 mm
Panel recess:	125x125 mm
Legends:	Space for individual channel legends or common
C	5 channel legends
Indicators:	Yellow LED for indication

ORDERING INSTRUCTIONS

12008

010

LLB 10 I E 64 410 00





IMSAB Ing. firman M. Sjöbris AB Guldringen 1 SE-426 52 Västra Frölunda, SWEDEN



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IMSAB **RELAY CIRCUIT BOARD LLC RF**

Interface between alarm system type LLC 10 and computer or remote alarm. Manufacture NDC



ADVANTAGES AND OPERATION

LLC RF is designed to be used with the alarm panel LLC 10, which is provided with a special output for this interface card. When a fault contact for any alarm channels activates, the relay card activates a change-over relay according to this channel. The relay remains activated until the fault is corrected and the alarm has been accepted / acknowleded. The relay card uses the alarm panels memory for this function.

SECURITY

LLC RF is constructed for monitoring systems in tough environments. As with all NDC-products LLC RF is fitted with various protection devices against wrong electrical connection and electric interference. The panel is powered directly from the AC supply, without requiring stabilization. The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

The relay card is simply fasten with screws onto the back of the LLC 10 panel. All input electric connections are made with an attached flat cable. Output from the relay card is connected on jackable terminals. This means that you can disconnect the card in less than minute.

SPECIFICATION

24V AC/DC ± 20%; 0,15A (by flat cable) Supply voltage: Remote control/ supply voltage: 24V AC/DC ± 20%; 0,01A 10 isolated volt-free relays, with the contacts rated max 110V 33W AC, 30V 10W DC. Output contacts: Main dimension: 124x103x30 mm, (total depth including LLC-10 65mm)

ORDERING INSTRUCTIONS LLC RF

1084









+46-31 29 06 40 Tel. +46-31 29 48 29 Fax © 07.2003 IMSAB Internet: www.imsab.se +46-70-76 00 480 Mobile E-mail: info@imsab.se

- 10 channel change-over relay circuit board with signal contacts
- For linking existing alarm systems to computer or remote alarm
- **Remote control (test/accept)**
- Certificated in CE-standards EN 50 082-2

IMSAB **RELAY CIRCUIT BOARD LH RF 110**

Interface between alarm system type LH 10 and computer or remote alarm. Manufacture NDC



ADVANTAGES AND OPERATION

LH RF is designed to be used with the alarm panel LH 10, which is provided with a special output for this interface card. When a fault contact for any alarm channels activates, the relay card activates a change-over relay according to this channel. This relay is activated as long as the sensor/s is/are in the fault position.

SECURITY

LH RF is constructed for monitoring systems in tough environments. As with all NDC-products LLC RF is fitted with various protection devices against wrong electric connection and supply, without requiring stabilization. Normally the relay card completes existing alarm system, and operates independently of them. This function give a "double security". LH RF can be connected with normally activated output relays and they will be deactivated when the connected chennel is in the alarm position or when the card(s) run(s) out of power. The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

- 10 channel change-over relay circuit board with signal contacts
- Certificated in CE-standards EN 50 082-2
- For linking existing alarm systems to computer or remote alarm

INSTALLATION

The relay card is simply fastened with distance and screws beside the LH 10. The card should be connected parallell to the penel terminal block for the sensorer or in the cabinet. Output from the relay card is connected on jackable terminals. This means that you can disconnect the card in less than minute.

SPECIFICATION

Supply voltage: 110V DC ± 20%; 0,25A Output contacts: 10 isolated volt-free relays, with the contacts rated max 1A, 110V/20W AC, 30VA. Main dimension: 156x126x20 mm

ORDERING INSTRUCTIONS

LH RF

1022



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IMSAB **RELAY CIRCUIT BOARD LDC RF**

Interface between alarm system type LDC 10 and computer or remote alarm. Manufacture NDC



- 10 channel change-over relay circuit board with signal contacts
- For linking existing alarm systems to computer or remote alarm
- **Remote control (test/accept)**
- fjärrkvittens
- Certificated in CE-standards EN 50 082-2

ADVANTAGES AND OPERATION

LDC RF is designed to be used with the alarm panel LDC 10, which is provided with a special output for this interface card. When a fault contact for any alarm channels activates, the relay card activates a change-over relay according to this channel. The relay remains activated until the fault is corrected and the alarm has been accepted / acknowledged. The relay card uses the alarm panel's memory for this function.

SECURITY

LDC RF is constructed for monitoring systems in tough environments. As with all NDC-products LDC RF is fitted with various protection devices against wrong electric connection and electric interference. The panel is powered directly from the AC supply, without requiring stabilization. The unit is in accordance with CE-standards: EN 50, 082.2:

The unit is in accordance with CE-standards: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

INSTALLATION

The relay card is simply fasten with screws onto the back of the LDC 10 penel. All input electric connections are done with an attached flat cable. Output from the relay card is connected on jackable terminals.

This means that you can disconnect the card in less than minute.

SPECIFICATION

Supply voltage: 24V AC/DC ± 20%; 0,15A (by flat cable)

Remote control/ supply voltage: 24V AC/DC ± 20%; 0,01A 10 isolated volt-free relays, with the contacts rated max 110V 33W AC, 30V 10W DC. Output contacts: Main dimension: 300x40x160 mm

ORDERING INSTRUCTIONS

	_	
731-03		LDC RF 24V
731-04		LDC RF 48V (option)







ASSEMBLE TO THE PANEL







FIRE ALARM MONITOR CENTRE SjöV 95

Fire alarm central for smaller vessels



- 2-4 firealarm loops
- Alarms for: fire, over-capacity and interruption
- 1-5 selectable error switch inputs (No/Nc)
- each alarm point has an individual delay
- two 24v DC voltage indicator inputs
- operation indication drift & group alarm indication
- selectable time and function for external relay
- memory and flashing light
- **CE-approved according to EN 50 082-2**

SUMMARY

IMSAB's firealarm central is made up of standard units developed for various markets by the following companies. They meet the requirements set for firealarm systems for smaller vessels. — industry and shipping (NDC's alarm panel), — smaller marine units (Sjöfartsverkets Tekniska avd. brand-

- larmskort) and examined by Sjöfartsinspektionen
- (15V fire detector), smoke detector that meets the requirements of EN 54.

FUNCTION

The firealarm panel contains two fire loops that are continually monitored (rest voltage monitoring). The external alarm signal can An error in one of the loops such as interruption or over-capacity is indicated by a flashing light on the panel, "Failure loop 1" or "Failure loop 2" at the same time as a buzzer sounds with a constant signal. The buzzer is silenced by confirmation on the alarm panel LC 10 and the arror indicator then abances to a constant light LLC 10 and the error indicator then changes to a constant light which goes out when the error is corrected.

In the case of a fire a flashing light is shown for each respective loop, "Fire loop 1" and "Fire loop 2" at the same time as the buzzer sounds in a pulsating tone (0,8/0,8 sec) and the fan stop on the test panel lights up. When confirmation is made on the alarm panel LLC 10, then the buzzer is silenced and the fire indication changes to a constant light and goes out when the error is corrected. The fan stop can only be reset after confirmation is made on the alarm panel. In order to reset the detector a loop test must be made.

The system can be supplied with two different 24V DC power supplies. If the ordinary power supply is interrupted then the panel automatically switches over to the reserve power supply and the power supply indicator alarm is shown on the panel by a flashing light. On confirmation on the alarm panel LLC 10 the buzzer is silenced and the errer indicator changes to a constant light and goes out when the ordinary power supply returns.

SYSTEM

The firealarm system is made up of standard units: LLC 10, SjöV CV104/107 and fire detectors.

LLC 10: is a summary error table for up to 10 error signals that can be grouped into two classes (A-B alarms). Each alarm input can be set for an individual delay of between 0.5-20 sec as well as be set for normally closed or normally open detector switches (No/Nc). The panel is neutral voltage monitored, ie. the output switches are normally cast and foll on area and nours evenly intermution. normally set and fall on error and power supply interruption. SjöV CV104/107: is a module for monitoring and testing of two/ four fire loops. The fire module is made up of two boards. One for monitoring the loops and one for a test board.

The monitoring board has alarms for: fire, over-capacity and interruption. The board has fire loops designed for connecting various combinations of smoke detectors, closed heat detectors and bi-fire cabinets

The fire loops can be disconnected with a power supply adjuster on the test panel. A disconnected loop indicates an error.

The board can be screwed in place on rear of the alarm panel and is connected with a flat cable to the screw terminal box and the test panel

- A red diode shows which loop is alarmed for fire
- A yellow diode on the fire board shows that there is an error in the loop, interruption of short-circuit.
- A green diode on the fire board is the normal state
- To the screw terminal box is connected:
- ordinary 24V DC and reserve power supply 24V DC that is supplied to the system. The voltage is indicated by individual green diodes on the firealarm board. If the ordinary power supply fails then the system automatically switches to the reserve power supply and the power supply alarm lights up on the alarm panel.
- two or four seperate alarm loops. Other alarm points can be used for selectable ON/OFF alarm. extra voltage output 24V DC 250mA, for controlling eg. assistant





relays of external sirens, buzzers, fans. The firealarm board can control:

— stopping of fans

— remote alarms

- external buzzers or sirens

- disconnection of external sirens or selectable time delay of 1-10 min.

TECHNICAL INFORMATION:

Alarm system	
Supply:	24VDC ± 20% 0,5A
Consumption:	for the whole system 250mA + optional external
1	relay and timers.
Rec. fuse:	5x20 mm, 630mA.
Switch info.:	24V, 1A resistive load
Nos. loops:	2-8 (2/4 loops per board)
Voltage to fire de	tector: 15V
Voltage to ON/OI	FF switch: 24V

CE-tested and approved according to: EN 50 082-2; IEC 801-2:1991; ENV 50 140; ENV 50 141; IEC 801-4

ORDERING INFORMATION

2 loop systems:

12040 Alarm panel LLC 10 CV 104.2 Fire alarm board for two loops. CV 107.2 Test panel for 2 loops.

4 loop system: 12040 Alarm panel LLC 10 CV 104.4 Fire alarm board for 4 loops. CV 107.4 Test panel for 4 loops.



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CONNECTION of FIRE ALARM CENTRAL



The System are for 2 or 4 Fire Loops

With 2 Loops can channel 6-10 be used for dead water alarms e.g.

With 4 Loops only channel 10 can be used for dead water alarms e.g.



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OPERATION AND ALARM PANELS manufacture DIANTEK



- Memory and blink function
- Flat cable connection between the master and slave panel
- Programmable for normally open or normally closed alarm
- Quick and easy installation
- Individually programmable time delay
- SOL2.104 can be programmed for operation or alarm
- Combined alarm A and B



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IMSAB **MASTER /SLAVE PANEL**

manufacture DIANTEK



- Memory and flashing light
- Flat cable connection between the master and slave panel
- 10 channel unit for both normally open and closed sensor contacts (No/Nc).
- Quick and easy installation.
- Individually programmable time delay.
- Alarm grouping in 2 categories (A-B alarms)
- Certificated in CE-standards EN 50 082-2

DESIGN

10 alarm channels, with memory and blink function. Combined alarm A and B Programmable for normally open or normally closed alarm contacts

(No/Nc). Programmable time delay in 10 steps from 3 seconds to 300 seconds

for each alarm channels.

Reset and light diode test on the module s front. Connection between the slave panel SOL2.10 and the master panel SOL2.102 is made by the included flat cable. Max 8 slaves on a master.

INSTALLATION

CHECKING OF SETTINGS - Select the channel by pressing the "CHANNEL SELECTION" button.

The channel diode then blinks quickly for a second.

The channel diode then shows the set time delay with a constant light for a second.

The priority diode "A" or "B" lights for a second, with a constant light, with normally open alarm contact, or with a blinking light, with normally closed alarm contact.

Return to operation setting

- Select channel "10" by pressing repeatedly (in steps) on the channel selection button and then press once more.

CHANGING THE SETTINGS (programming): - Select the channel by pressing the "CHANNEL SELECTION" button. The channel diode then blinks quickly for a second.

- Press the "RESET" button until the channel diode goes out. (ca 3 seconds).

- Select "A" or "B" light priority, as well as normally open or normally closed alarm contact by repeatedly pressing the "RESET" button.

The priority diode "A" or "B" then shows a constant light, with normally open alarm contact, or a blinking light, with normally closed alarm contact.

- Select the time delay by pressing the "CHANNEL SELECTION" button.

The channel diode then shows the set time delay with a constant red light (see the table to the right).







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- Press the "RESET" button repeatedly until the channel diode shows the delay (see the table to the right).

- Complete the changes by pressing the "CHANNEL SELECTION"

button. The selected priority and time delay or operation indication setting is then shown.

Select a new channel to program or return.

Return to operation setting: - Select channel "10" by pressing repeatedly (in steps) on the channel selection button and then press once more.

NB.

After 2 minutes inactivity programming is stopped. The panel then returns automatically to the operation setting.

SPECIFICATION

Supply voltage:	24V AC/DC -10%/+20%, (12V DC is also		
	available on request)		
Power usage:	2.4 VA (max 8 slaves on a master)		
Time delay:	individually programmable for each alarm channel		
•	- 1, 5, 10, 20, 30, 60, 120, 180, 240, 300 seconds.		
Output contacts:	Isolated volt-free contact per alarm group (A - B		
•	alarms). Selection device on each alarm point		
	contact rated max 50V 5A resistive load.		
Cable to alarm:	2 wires max 500m.		
Current through t	he connected alarm contact 20mA.		
Main dimension:	129x70x27 mm		
Enclosure class:	IP32.		
Temperature rang	e: $-20^{\circ\circ}/+50$ C.		
Front:	Gray plastic cover.		
Also fits a 19" rad	ck		
Enclosure for wal	ll installation is available (OT).		
SOL panels are CE marked			
-			

ORDERING INSTRUCTIONS

SOL2.102	Master Panel
SOL2.10	Slave Panel
Extra accesso	ries:
SOL2.10R	Relay Box (only for the Master Panel)
OT-751	Sealing

Dimensions











IMSAB **COMBINED PANEL SOL2.104**

manufacture DIANTEK



- Memory and flashing light
- 10 channel unit for both normally open and closed sensor contacts (No/Nc).
- Quick and easy installation.
- Individually programmable time delay
- **Combined Panel can be programmed for** operation or alarm.
- Alarm grouping in 2 categories (A-B alarms)

DESIGN

Combined alarm SOL2.102.4 is a development and simplification of alarm panels. You can set al input for operation or alarm.

10 alarm channels, individually programmable, either as operation indication or as alarm channel

With memory and blink function. Combined alarm in 2 categories, A and B alarms

Programmable for normally open or normally closed alarm contacts (No/Nc).

Programmable time delay in 10 steps from 3 seconds to 300 seconds for each alarm input. Reset and light diode test on the module s front.

INSTALLATION

CHECKING OF SETTINGS - Select the channel by pressing the "CHANNEL SELECTION" button.

The channel diode then blinks quickly for a second.

The channel diode then shows the set time delay with a constant light for a second.

The priority diode "A" or "B" lights for a second, with a constant light, with normally open alarm contact, or with a blinking light, with normally closed alarm contact, or not at all, with operation indication.

With operation indication the channel diode blinks with a yellow light for a second and then with a constant yellow light for a second, (for normally open contacts (No).

Return to operation setting

- Select channel "10" by pressing repeatedly (in steps) on the channel selection button and then press once more.

CHANGING THE SETTINGS (programming): - Select the channel by pressing the "CHANNEL SELECTION" button.

The channel diode then blinks quickly for a second.

- Press the "RESET" button until the channel diode goes out or, with operation indication, until the channel diode s blinking stops. (ca 3 seconds).

- Select "A" or "B" light priority, as well as normally open or normally closed alarm contact by repeatedly pressing the "RESET" button.







The priority diode "A" or "B" then shows a constant light, with normally open alarm contact, or a blinking light, with normally closed alarm contact, or no light, with a selection of operation indication.

With operation indication setting the channel diode shows a constant yellow light, (for normally open contacts (No) only.

- Select the time delay by pressing the "CHANNEL SELECTION" button.

The channel diode then shows the set time delay with a constant red light (see the table to the right).

- Press the "RESET" button repeatedly until the channel diode shows the delay (see the table to the right).

- Complete the changes by pressing the "CHANNEL SELECTION" button

The selected priority and time delay or operation indication setting is then shown.

Select a new channel to program or return.

Return to operation setting: - Select channel "10" by pressing repeatedly (in steps) on the channel selection button and then press once more. NB.

After 2 minutes inactivity programming is stopped. The panel then returns automatically to the operation setting.

SPECIFICATIONS

Supply voltage:	24V AC/DC -10%/+20%, (12V DC is also
	available on request)
Power usage:	2.4 VA
Time delay:	individually programmable for each alarm channel - 1, 5, 10, 20, 30, 60, 120, 180, 240, 300 seconds.
Output contacts:	Isolated volt-free contact per alarm group (A - B alarms). Selection device on each alarm point contact rated max 50V 5A resistive load.
Cable to alarm:	2 wires max 500m.
Current through the	e connected alarm contact 3mA.
Main dimension:	129x70x27 mm
Enclosure class:	IP32.
Temperature range:	-20/+50 C.
Front:	Gray plastic cover.
Also fits a 19" rack	
Enclosure for wall	installation is available (OT).
SOL panels are CE	marked

A development and simplification of alarm panels.

ORDERING INSTRUCTIONS

SOL2.102.4 **Combination Panel** Extra accessories: OT-751 Sealing



Electrical Connection

o -0

Reset







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Dimensions

IMSAB **OPERATION INDICATOR PANEL**

manufacture **DIANTEK**



DESIGN

Operation Indicator Panel SOL1.10D collects all operation indications in a module designed to replace all conventional signal lamps in equipment lockers and panels. 10 individual groups. Yellow light diodes. On the front there is a button for testing the light diodes.

SPECIFICATIONS

24V AC/DC -10%/+20%, (12V DC is also available on request) Supply voltage: Power usage: 2.4 VA 2 wires max 500m. Cable to alarm: Current through the connected contact 3mA. 129x70x27 mm Main dimension: IP32. Enclosure class: Temperature range: -20/+50 C. Front: Gray plastic cover. Also fits a 19" rack Enclosure for wall installation is available (OT). SOL panels are CE marked

ORDERING INSTRUCTIONS

SOL1.10D **Operation Indicator Panel** Extra accessories: OT-751 Sealing

Dimensions

- 10 channel unit for normally open sensor contacts (No).
- Yellow light diodes.
- Quick and easy installation.





Electrical Connection







RELAY BOX WITH PARALLEL OUTPUT

manufacture **DIANTEK**



- 10 potential free contacts for parallel transmission
- 10 channel change-over relay circuit board with signal contacts
- Parallel Relay Box for the Master Panel

DESIGN

Relay Box SOL2.10R,together with Master Panel SOL2.102 provides 10 potential free contacts for parallel transmission of alarm signals. Relay contacts are set to alarm after programmed delay. Transmission of alarm signals to the Master module takes place using a data bus. All functions are programmed in the Master Panel SOL2.102

SPECIFICATIONS

Supply voltage:	24V AC/DC -10%/+20%, (12V DC is also
	available on request)
Power usage:	10 VA
Time delay:	Individually adjustable time 1, 5, 10, 20, 30, 60,
-	120, 180, 240, 300 seconds.
Output contacts:	Gold-plated normally closed contact, isolated
-	volt-free, 5A 50V.
Main dimension:	139x90x58 mm
Temperature range:	-20/+50 C.
Enclosure class:	IP20.
To be mounted on a	DIN-rail.
SOL panels are CE	marked

ORDERING INSTRUCTIONS

Relay Box (only for the Master Panel)

SOL2.10R





between the Relay Box and Master Panel

ALARM PANEL DE9600

Computer alarm panel for up to 64 channels

Hegna Electronics AS



- **First alarm indicator**
- 16-64 alarm channels
- Descriptive text to identify a channels can be used
- **Printer output**
- **RS 232 Interface**
- 12-48V DC
- Individual selectable alarm, normally open or closed (No/Nc)
- 4 switching outputs using group alarms (A-B-C-D alarm)
- Individual selectable time delay
- **IP55**
- **Certificated in CE-standards EN 50 081-1** and EN 50130-4

DESIGN

The DE9600 alarm panel is a versatile unit designed to monitor various input conditions and report on the state of the inputs in various ways.

The unit is modular and accepts a number of different input modules to be installed thus catering for digital (On/Off) inputs, and Dupline bus inputs.

Reporting can be done to the units front-panel display (including alarm indicators and audible alarms) while at the same time detailed information is reported via a RS232 interface which can be directly connected to a printer or a computer e.g. a PC.

An internal real-time clock keeps track of the time of state changes.

Any channel in the system can be assigned to any of 1 of 3 Group Alarm Output Relays. A Primary Alarm on a channel will activate the group alarm relay of the group to which the channel is assigned. If any Group Alarm Relay is activated, the Common output will also be activated. Pressing ACKN will deactivate all group and Common relays.

An easy to use PC program allows the DE9600 to be configured. The configuration file is downloaded from the DE9600 via the RS232 connection. In the DE9600 the configuration data is stored in a non-volatile memory, allowing the unit to retain its configuration data under power off conditions.

The configuration data may also be updated from the keypad on the DE9600 front panel.

Indicators:

If no faults or alarms are present POWER ON and SYSTEM ACTIVE led indicators are on.

Power ON LED:

Whenever power is applied the green power ON LED will be on to indicate that the system is powered. System Active LED:

During operation the green System Active LED will be on to indicate that the system is active. When doing operations on the DE9600 that impairs normal operation the System Active LED will turn off.

Fault LED:

During operation the red Fault LED will be on whenever any of the inputs are in fault state. It will only turn off whenever all inputs are normal.

Act. Alarm LED:

During operation the red Act. Alarm LED will turn on either on the after ACKN has been pressed (to acknowledge an active alarm). It will flash with approximately 2-second intervals.

The alarm-sounder will be activated in parallel with the Act. Alarm LED.

The Act. Alarm LED and sounder are turned off by pressing ACKN (acknowledge active alarm).

SECURITY

DE9600 is designed for severe mechanical and electrical environmental conditions. It is provided with protection against polarity reversal and accidental connection of voltage.

In general all inputs and outputs are individually provided with an optical barrier so that input and output connections can be freely made without having to worry about ground loops or voltage differences

The unit is in accordance with CE-standards: NEMKO. EN 50081-1 Electromagnetic compability, EN 50130-4

INSTALLATION

DE9600 is a compact unit for installation in a cabinet or wall. The configuration program and this manual are distributed on CD rom. Optionally the program and manual may be ordered on floppy disks.

The software puts the following requirements on the PC on which it is run: PC with 486/166MHZ or better. Operating system, Win 95 or 98. Memory, 64Mbyte or more. Peripherals, CD-driver and serial port 2 available. Screen Resolution, 1024 x 768 or better.







SPECIFICATION

Supply voltage:	12-48V DC; 0,6A (at 12V)
Output contacts:	4 pcs of isolated volt-free contacts, max 230
•	VÂC, 5A
Time delay:	Individually adjustable time 0,1-25 sec. each
•	channel.
Printer port:	RS232/RJ45 (option 25 pin D-Sub)
Data com.:	RS 232/RJ45
Front:	Blue plastic
LCD display:	Consist 4 lines by 20 characters.
Main dimension:	96x192x142 mm (hxbxd)
Panel recess:	92x188 mm
Weight:	1000g
Ambient tempera	ture.: $+5^{\circ}C \text{ till } +40^{\circ}C$
Hygroscopic moi	sture: 10-90% RH, not condensed.
Protection:	Front IP55, RearIP20

ORDERING INSTRUCTIONS

9600-16	16 channels alarm system
9600-32	32 channels alarm system
9600-48	48 channels alarm system
9600-64	64 channels alarm system

Instructions to add:

* First alarm indicator

- * Follow alarm indicator
- * Easy connection on the backside.

* 2-conductor bus for 16 and 32 channels.







ALARMPANEL Haukka 3000

A wireless alarm and remote control unit

Haukka AS





Haukka 3000 - a wireless alarm and remote control unit.

- Have you thought of how you can get alarms from you cabin directly to you mobile phone?

- Have you thought of how bad it is if the water freezes?

- Could you imagine how nice it would be to start your holidays in a warm cabin?

This are some of the areas your Haukka 3000 can be used for.

The Haukka 3000 system is a multi-functional remote alert and control unit based on GSM communication. Haukka 3000 can send you alarms as SMS (text) messages, and you can call the unit from a mobile or regular phone to control several units remotely.

Haukka 3000:

HAUKKA UNIT

Haukka 3000 has five inputs for alarm/warning, and four outputs for

The basic package contains the Haukka 3000 main unit, two motion

has its own GSM unit.uses 12V or 220V main current.

- can send 5 different alarms / warnings.
- can remote control up to 4 different current circuits.

detectors (IR), and is ready for 12Volt main current.

- can send the alarms as SMS (text) messages. - can send an acknowledgement when settings are changed.
- has its own backup battery.

remote control.

- **Backup battery**

A GSM unit

- Central unit
- **Connectors for detectors and remote** control
- Ability to send alarms as SMS (text) messages.
- Ability to send a receipt when settings are changed.
- **IP55**



MOTION DETECTOR

(2 PCS)

With the motion detectors connected, Haukka 3000 operates as a intruder alarm.

The detectors are of a very high quality, and will not give any fase alarms.

We also have other detectors/sensors for Haukka3000. Have a look at the optional equipment.



The power adapter has the corrector connector for Haukka 3000. It plugs into a regular AC power outlet in the wall. Haukka 3000 will charge its battery whenever needed.

Antenna

The Haukka 3000 system is based on the GSM900 network, you will need a 900Mhz antenna designed for the GSM network. Your dealer can tell you what the best antenna is for you.







GENERAL DATA:

Hardware:	Hcom3000 / Hcoml0.
GSM Module:	Ericsson GM12 - 900 mhz integrated.
Sim card:	Small
Backup battery:	12 volt / 1,2 Ah.
Alarm inputs:	5 opto, isolated inputs, max 24/min.
Control outputs:	4 relay outputs, max 12 volt 1A.
Power supply output:	12 volt / 0.8A - RJ11.
Antenna:	GSM 900 mhz FME-female connector.
Connectors for alarms	
and control:	RJ45 (ISDN) 8 pols connector.

Voltage:

External voltage	12 volt DC / 0.8A.		
Internal battery	12 volt DC / 1.2A.		
Power consumption -	- normal GSM coverage:	90 - 110 mA.	
Power consumption -	- poor GSM coverage	Opptil 140 mA	
"worst case".			
Power consumption	/ transmit - normal GSM of	coverage:	350 -
200 1		0	

390 mA. Power consumption / transmit - poor GSM coverage: Opptil 1700 mA - "worst case"

Battery standby* / normal GSM coverage Ca. 10 hours. *assumes a fully charged battery

ORDERING INSTRUCTIONS

1.	Haukka 3000 Central unit, 2 pcs detectors sensors
	klar for 12V power.

- 2. Haukka 3000 Central unit, 2 pcs detectors sensors, Haukka 3000 Central unit, 2 pcs detectors sensors, Haukka 3000 Central unit, 2 pcs detectors sensors,
- 3. antenna, for 220V power.

Accessories

The Haukka 3000 system has 5 inputs for alarms, and four outputs for remote control. The inputs is pre programmed with a fixed message text for each input. You are free to choose the input you want to use when installing. For the outputs, you are free to choose what you want to control.

Here you will find some of the equipment specially made for Haukka 3000.





The Haukka 3000 system is based on the GSM900 network, you will need a 900Mhz antenna designed for the GSM network. Your dealer can tell you what the best antenna is for you.

Power adapter, 220V til 12VDC

The power adapter has the corrector connector for Haukka 3000. It plugs into a regular AC power outlet in the wall. Haukka 3000 will charge its battery whenever needed.

Water/Moisture detector (input 3)

The water sensor on this detector must be installed in a dry place where it is not supposed to get wet. The sensor package contains a central unit that shall be connected to Haukka 3000, and a sensor unit that is connected to the central unit. If the surface where you have mounted the sensor gets wet, the Haukka 3000 will send you an alarm.

Temperature detector (input 4)

This detector tells you if the tempera-ture goes above or below a predefined temperature. The standard version of this detector detects teperatures from 0 to 60 degrees celcius. With an extra sensor unit, it will detect temperatures from -40 to +60 degrees Celcius.

Fire/smoke detector (input 5)

The smoke detector detects smoke with an optical interface. It will alert the Haukka 3000, and send a message for this alarm. It will also make an audibility signal like regular smoke detectors.

Haukka Power Switch (output 1-4)

This product enables remote control of a 220V current. The swich is an adapter for a regular 220V outlet in the wall. Just plug the switch into the wall, and plug the oven, light, etc. into the switch. A cable connects the switch to Haukka 3000.







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DS 12 -24 Electronic start/monitoring unit for diesel engine



- Pre connected cables
- **Reduced purchasing cost**
- **Compact unit for installation in diesel** engine control cabinet.
- **Remote operation with DSR 12-24**
- Indication: Running, Power, Local, Remote, Oil press, Over speed, Cooling water temperature and one free trip input.
- **Operation: Start, Stop/Reset, Local,** Remote.
- **IP55** front
- Certificated in CE-standards EN 50 081-1 and EN 50 082-2

DESIGN

DS 12-24 is a compact unit for installation in diesel engine starter cabinet.

- To the DS 12-24 a remote unit DSR 12-24 can be connected. The remote DSR 12-24 can not operating the engine if the local DS 12-24 is at Local mode. In the other hand are all indicators status shown at the remote unit.

Press the start button at the panel, and the engine will start. The internal relays will then make the starting motor /start solenoid. The oil pressure switch is blocked during the start for 10 seconds. Button - Stop signal are on at max 15 seconds after that the engines running.

signal was de activate. - When an engine is stand still, a heater can been connect. The heater will be automatically switched on 15 minutes after that the engine has been stopped.

DS12-24 controls diesel engine oil pressure switch, cooling water temperature and over speeding relay.

Indication trips:

Running, Local/Remote and Control Power ON. Indication, alarm:

Low oil pressure. High temperature cooling water, Over speed relay and Fault (Free input for stopping of diesel engine) Control unit:

DS12-24 (Local unit): Start, Stop, Local/Remote DSR12-24 (Remote unit): Start, Stop. **Input signal** from diesel engine:

Low oil pressure, High temperature cooling water, Over speed relay and Fault (Free input for stopping of diesel engine) Running, Emergency shutdown, One free input for tripping the diesel engine. **Output signal** from DS12-24

Start solenoid, Stop solenoid, Engine stand still heater, Fault alarm. These output are from internal relays in DS12-24. Output contacts are potential free change-over relay contacts. Connection of DS 12-24 and DSR 12-24:

Cable 5 x 1,0mm2 with overall screen. Maximum cable length 600m.

SECURITY

As all IMSAB-products DS12-24/DSR12-24 are fitted with various protection devices against wrong electrical connection and electric interference. The panel is powered directly from the LC supply, without requiring stabilization.

The unit is in accordance with CE-standards: EN 50 082-2; EN 50 081-1; Test lab: NEMKO -Oslo

INSTALLATION

Wiring - only 10 to 15 wires are to be connected in one end. Prewired wires are 1,5m and gives reduced purchasing and documen-tation cost. Same unit can bee used regardless of motor size. Less commisning and start up costs.

SPECIFICATION

Supply voltage:	12 & 24VDC; max 30mA
Output contacts (K1-K	4): Isolated volt-free
	30VAC/DC max 10A.
Weight:	550g incl. wires.
Protection:	Front IP55, RearIP20
Wires:	length 1,5m
Ambient temperature:	min -5°C max 60°C.
Hygroscopic moisture:	max 80% not condensed.
Main dimension:	48x96x85 mm (hxbxd)
Panel recess:	44x92 mm
Text:	English text, other text on request
Indicator:	Twin LED
Red LED for unacknow	vledged alarm, Green LED for Running,
Yellow LED for status	mode.





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ORDERING INSTRUCTIONS

DS 12	Diesel start 12V- power supply
DS 24	Diesel start 24V- power supply
DSR 12	Diesel start 12V- power supply, remote unit
DSR 24	Diesel start 24V- power supply, remote unit



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MS 230 Electronic start/monitoring unit for 230V el-motor



DESIGN

MS 230 is a compact unit for installation in el-motor starter cabinet. - To the MS 230 a remote unit can be connected. The remote unit can not operating if the local MS 230 is at Local mode. In the other hand are all indicators status shown at the remote unit.

Press the start button at the panel, and the el-motor will start.

Contactor K1 or the soft drive will activate the el-motor. - Motor protection (JR) can be connected for avoid overloading. When a el-motor stand still, a heater can been connect.

Emergency shutdown can be connected via contactor K2.

Indication:

Running, Fault, Available, Power, Local/Remote, Earth fault, Motor stand still heater control.

Digital input signals:

Main contactor status, Motor protection, Earth fault, and Emergency stop.

Digital output signals:

230VAC max 10Å output signal for main contactor operation. Motor stand still heater.

Remote operation signals:

Start/Stop, Running, Available, Local/Remote mode.

SECURITY

As all IMSAB-products MS 230 are fitted with various protection devices against wrong electrical connection and electric interference. The panel is powered directly from the LC supply, without requiring stabilization.

The unit is in accordance with CE-standards: EN 50 082-2; EN 50 081-1; Test lab: NEMKO -Oslo

INSTALLATION

Wiring - only 7 to 10 wires are to be connected in one end. Pre-wired wires are 1,5m and gives reduced purchasing and documen-tation cost. Same unit can be used regardless of motor size. Less commis-ning and start up costs. MS 230 can be used without no matter how big the motor is.

SPECIFICATION

230VAC 50/60Hz; max 20mA
Isolated volt-free 230VAC max 10A.
550g incl. wires.
Front IP55, RearIP20
length 2m
min -5°C max 60°C.
max 80% not condensed.
48x96x85 mm (hxbxd)
44x92 mm
English text, other text on request
Twin LED
dged alarm, Green LED for Running.

ORDERING INSTRUCTIONS

MS 230 El-motor starter Extra accessories: Soft diver

- Pre connected cables
- **Reduced purchasing cost**
- Compact unit for installation in el-motor control cabinet.
- **Indication trips**
- **Indication of alarm**
- **IP55**
- Certificated in CE-standards EN 50 081-1 and EN 50 082-2









NEPTUNE-CPP PROPULSION CONTROL SY.

Optimal control and protection of the propulsion system from Mar-El AS



- **Control of Propeller pitch, Main engine RPM**, Clutch.
- Up to eight manoeuvre stands
- Graphic display with pitch indication, operation information and messages on all control stations.
- Extensive guiding and warning system via the graphic display.
- Speed setting output to all common governor makes and types.
- Back-up system for propeller pitch from push-buttons on the main panel.
- System set-up, diagnostics and service via user-friendly Windows program.
- Most common options: Automatic load control system. Pitch reductions (analogue and/or fixed). Mode for shaft generator. Interface to Marco-IV joystick-system.

Interface to DP-system.

Electronic propulsion control system for CP-propellers. Available in simplex and duplex version. Main features:

- * Control of (pr. side): Propeller pitch, Main engine RPM, Clutch.
- * Up to eight manoeuvre stands: Main panel bridge, with combinatory lever (separate order levers for pitch and RPM optional).
- Two slave panels bridge, with combinatory lever (separate order levers for pitch and RPM optional).
- Engine control room (ECR) panel, with separate order-
- potention for pitch and RPM. Responsibility shift system with shifting by identical lever
- responsibility sint system with sinting by identical to be positions between main and slave panels.Responsibility shift system with shifting by acknowledging push buttons between main and ECR panel.
- Very easy adoption of additional manoeuvre stands.
- Portable slave panels available.
- Serial communications between main computer and manoeuvre stands, i.e. very few cables.
- * Graphic display with pitch indication, operation information and messages on all control stations.
- * Extensive guiding and warning system via the graphic display.
- * Speed setting output to all common governor makes and types. * Back-up system for propeller pitch from push-buttons on the main
- panel.
- * System set-up, diagnostics and service via user-friendly Windows program.

Duplex systems have the system for starboard and port identical and galvanic ally isolated from each other. If not mentioned specifically, the following description is valid for one side (one system).

GENERAL

The system is designed to "fail safe" concept, and is as far as possible built up with a level of redundancy. It has built-in possibilities that makes the system very flexible and highly accurate.

The system consists of one to eight control stations. The cabinet normally mounted easily accessible on the bridge or in the engine control room. All peripheral units and external equipment are connected to the terminal blocks.

The control stations are of Neptune standard type with combinatory lever/order potentiometers, indicators for pitch and necessary lights and push-buttons. See panel layouts for details.

All control stations include a graphic display. During normal operation are important operating information like propeller pitch, running mode etc. shown. Operation guiding like reason for not being able to engage the clutch is given, e.g. 'Propeller pitch not in neutral'. In case of malfunctions or unwanted situations are warnings and error messages shown.

The system is powered from two separate independent 24V DC supplies pr. side. The system operating voltage is galvanic ally shielded from the power supplies.

The system has the following alarm outputs: * Voltage and System failure, potential-free NC contact.

The following units are included: <u>Unit</u> MEPU

Mounted where Easily accessible on the bridge or in the engine control room Bridge console / ECR Manoeuvre panel Pitch actuator Gear I/P-converter (option) Near main engine, not directly on Fuel sensor (option) Main engine Initiator (option) Propeller shaft

All cable connections to be done by installation company.







3 sets of documentation are included. Consisting of system drawings and descriptions.

ORDERING INSTRUCTIONS

Neptune

At request, please specify your data as: Control of (pr. side): Propeller pitch/Interface Main engine RPM/Interface Clutch.

Automatic load control system. Pitch reductions (analogue and/or fixed).

Mode for shaft generator. Interface to joystick-system. Interface to DP-system.



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IMSAB Fluid Leak Detector Dr.Hiss

manufacture E2L



Applications:

Use to detect any type of leaks from tanks, pipes and containers under pressure or vacuum. Leaks also occur on valve seats, injector nozzles, seals and gaskets. Application of DrHiss to pipe support systems can detect steam leaks from many metres, even if the pipes are under lagging.

Since the units detect very high frequency emissions then they are also used as detectors of electric arcs in sealed housings such as contact breakers, etc. Applicable industries are wide ranging covering most process plant. Sites dependant on steam to any degree will benefit immediately from reducing their losses. Similarly Dr Hiss can be applied to any user of compressed air or vacuum systems.

SPECIFICATIONS

Visual Indicator:	Green/Red LED
Power Supply:	10-32V DC @ 20mA typical
Operating Range:	-25°C to +85°C
Size:	18mm x 53mm x 97mm
Fixing:	2 off M4 set screws or studs
Body Material:	Injection moulded Nylon 66
Environmental Rati	ing: IP65
Output:	Isolated volt-free N/O contact rated at 48V max
-	AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-2 DrHiss

- Leak detection in pipes, tanks and containers.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:

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IMSAB **Mechanical Noise Detector Dr.Knock**

manufacture E2L



Applications:

Use to detect impulse noise from mechanical sources such as: loosening of nuts and bolts, excessive 'chatter', water hammer, cavitation in pumps, mechanical tapping, loss of lubrication, nucleate boiling, irregular fluid flow, resonance of rotating machinery, worn brake shoes and discs, solenoid valve actuation, etc. Applies to all industries with mechanical components as part of their process. Also applies to pipework systems where water hammer is a problem.

SPECIFICATIONS

Green/Red LED Visual Indicator: Power Supply: Operating Range: 10-32V DC @ 20mA typical -25° C to $+85^{\circ}$ C 18mm x 53mm x 97mm 2 off M4 set screws or studs Size: Fixing: Body Material: Injection moulded Nylon 66 Environmental Rating: IP65 Isolated volt-free N/O contact rated at 48V max Output: AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-1 DrKnock

- Mechanical noise from machines and plant, cavitations in pumps and pipes.
- Instant indication of changes in operations.
- Impulse noise is caused by a wide range or situations such as mechanical tapping, nucleate boiling, loosening of bolts or mountings, poor fluid flow.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:



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Internet: www.imsab.se +46-70-76 00 480 Mobile E-mail: info@imsab.se

IMSAB **Dr Flow - Fluid Flow Verifier**

manufacture E2L



Applications:

Detection of liquid flow in pipes is an important independent measurement to verify control gear such as valves and pumps are operating correctly upstream.

These modules are designed to operate in the audio spectrum and therefore detect audible 'trickles' caused by irregularities in the pipe system. The noisier areas of tubing are generally downstream from unions, joints, valves or even bends. Any flow that is turbulent or partially filled also has good monitoring characteristics for this sensing method.

Flows from as little as those found in 12mm piping in domestic hot water supplies can be monitored. Installation of 'Dr Flow' is particularly simple on pipes by using hose clips or ty-wraps.

SPECIFICATIONS

Visual Indicator: Power Supply: Operating Range: Green/Red LED 10-32V DC @ 20mA typical -25°C to +85°C 18mm x 53mm x 97mm Size: Fixing: 2 off M4 set screws or studs Body Material: Injection moulded Nylon 66 Environmental Rating: IP65 Isolated volt-free N/O contact rated at 48V max Output: AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-011-2 DrFlow

- Detection of liquid flow in pipes or not.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.
- Dr Flow detect 'trickles' caused by irregularities in the pipe system.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:







IMSAB Dr Tilt - tilt and acute angle detector

manufacture E2L



Applications: Tilt detection is important for structures such as bridges, radio masts, temporary buildings on volatile sites (such as open cast mining and land fill). Similarly the inclination of moving objects such as ships, cranes, land moving vehicles, quarrying equipment, etc., all have a critical over-tilt angle. Indication, monitoring and detecting excessive angle is useful to both the site operator and the machine operative. This information is useful for health and safety audits, structural soundness (effect of high winds), and a positive independant warning of catastrophic failure.

SPECIFICATIONS

Visual Indicator:	Green/Red LED
Power Supply:	10-32V DC @ 20mA typical
Operating Range:	-25°C to +85°C
Size:	18mm x 53mm x 97mm
Fixing:	2 off M4 set screws or studs
Body Material:	Injection moulded Nylon 66
Environmental Rati	ing: IP65
Output:	Isolated volt-free N/O contact rated at 48V max
-	AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-9 DrTilt

- Similarly the inclination of moving objects.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.
- Tilt detection is important for structures.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:

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IMSAB **Connection Integrity Indicator Dr.Click**

manufacture E2L



- Can be appliet to any 'snap-fit' location mechanism.
- Instant indication of changes in operations.
- Can be used on jigs, fixtures and testing rigs which require an audible 'click' to confirm connection integrity.

Applications:

Originally designed for the automotive electrical cable assembly industry, Dr Click can be appliet to any 'snap-fit' location mechanism which may not be heard due to surrounding production or environmental noise. A positive connection issues an audio pulse which is then picked up and filtered, causing the bright indicator lamp to energise for approximately 0.3 seconds.

The units can be used on jigs, fixtures and testing rigs which require an audible 'click' to confirm connection integrity, such as shell to shell interconnection prior to electrical testing. Similarly it can be used for o-ring, circlip and other 'click into place' mechanical systems

Typical industries applying this technology are automotive electrical, aerospace, white goods manufacture, manual intensive assembly industries, light engineering such as plastic pump and tubing manufacturers, pneumatic system suppliers, etc.

Note: DrClick does not provide volt-free contacts; only visual indication

SPECIFICATIONS

Ultrabright Red LED 0.3s pulse 9-18V DC @ 20mA typical -25°C to +85°C 18mm x 53mm x 94mm Visual Indicator: Power Supply: Operating Range: Size: Fixing: 2 off M4 set screws or studs Body Material: Injection moulded Nylon 66 Environmental Rating: IP44

ORDERING INSTRUCTIONS

P263-010-0 DrClick

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:









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Dr.Rumble - Cyclic Wear Detection

manufacture E2L



Applications:

Use for early detection of wear in bearings or other rotating machinery. Using the high frequency noise characteristics which bearings exhibit, and examining their low frequency components, wear can be detected well in advance of failure or 'running rough'.

The characteristics of classic ovoid wear are found throughout industries such as: automotive, marine, power engineering, conveyor systems, rolling mills, paper and pulp production, aerospace, mining and quarrying, etc.

SPECIFICATIONS

Visual Indicator:Green/Red LEDPower Supply:10-32V DC @ 20mA typicalOperating Range:-25°C to +85°CSize:18mm x 53mm x 97mmFixing:2 off M4 set screws or studsBody Material:Injection moulded Nylon 66Environmental Rating:IP65Output:Isolated volt-free N/O contact rated at 48V max
AC or DC @ 100mA

- For early detection of wear in bearings or other rotating machinery.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

ORDERING INSTRUCTIONS

P270-010-3 DrRumble

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.





Dr.Snap - Mechanical insertion assembly checker

manufacture E2L



Applications:

Many systems rely on the sound of an audible 'click' when two parts are assembled. 'Dr Snap', originally developed for automotive cable harness test rigs, listens for an ultrasonic component of the 'snap' which is a significantly cleaner indication of the reliability of the joint. 'Dr Snap' can be applied to any 'snap-fit' location mechanism which may not be heard due to surrounding production noise. This can be electrical connectors, plastic hoses, plastic fittings, circlips, push-to-fit fixtures, etc.

SPECIFICATIONS

Visual Indicator:	Green/Red LED
Power Supply:	10-32V DC @ 20mA typical
Operating Range:	-25°C to +85°C
Size:	18mm x 53mm x 97mm
Fixing:	2 off M4 set screws or studs
Body Material:	Injection moulded Nylon 66
Environmental Rati	ng: IP65
Output:	Isolated volt-free N/O contact rated at 48V max
	AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-10 DrSnap

- Can be appliet to any 'snap-fit' location mechanism.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.







IMSAB **Dr.Sonic – Audible noise detection**

manufacture E2L



Applications:

Audible noise is a reliable indicator in various systems where other parameters are not available. For example, the downstream detection of flow in an air conditioning system can often be heard before any temperature or humidity change, and where actual flow measurement of low density fluid is difficult. Similarly the 'buzz' of a transformer is one of the few indications outside of its electrical operation that can be detected. As 'Dr Sonic' deals specifically with acoustic ranges then any signal

we can hear is a reasonable candidate to be detected with this unit. Applications and industries are widespread - from the detection of footsteps on a fixed steel gantry ladder to logging the mating calls of death-watch beetle from a set of wooden beams!

SPECIFICATIONS

Visual Indicator: Power Supply: Operating Range: Size: Fixing: Body Material: Environmental Rating: IP65 Output:

Green/Red LED 10-32V DC @ 20mA typical -25°C to +85°C 18mm x 53mm x 97mm 2 off M4 set screws or studs Injection moulded Nylon 66 Isolated volt-free N/O contact rated at 48V max AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-07 DrSonic

- Audible noise is a reliable indicator in various systems where other parameters are not available.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.









IMSAB **Dr.Heat – Temperature Rise detection**

manufacture E2L



Applications:

Temperature rise often indicates loss of system control or impending failure. In the range -25° C to $+85^{\circ}$ C an increase could indicate loss of refrigerant, poor lubrication in gearboxes and bearings, temperature control systems failure, heat exchanger or heat pump faults, electrical switchgear breakdown, etc. There are a wide range of uses in all aspects of process industries; any small process plant could benefit from the simple application of these devices. Food industry and cold storage in particular, are provided with a completely independent means of monitoring potential catastrophy.

SPECIFICATIONS

Visual Indicator:	Green/Red LED
Power Supply:	10-32V DC @ 20mA typical
Operating Range:	-25°C to +85°C
Size:	18mm x 53mm x 97mm
Fixing:	2 off M4 set screws or studs
Body Material:	Injection moulded Nylon 66
Environmental Rati	ng: IP65
Output:	Isolated volt-free N/O contact rated at 48V max
-	AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-05 DrHeat

- Indicate temperature rise in the range of - 25° to +85°C.e.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:









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IMSAB **Dr.Cool - Temperature Loss Detector**

manufacture E2L



Applications: Temperature loss indicates loss of heating, system blockage or breakdown. In the range -25°C to +85°C a decrease can indicate faults in hot water supplies, oil coolers, air conditioning outlets, exhaust venting systems, chimneys, process control system failure, lubricant pump breakdown, etc. Any industry dependent on steady state heating as part of its process can benefit from using independent monitoring equipment.

SPECIFICATIONS

Visual Indicator: Green/Red LED 10-32V DC @ 20mA typical -25°C to +85°C Power Supply: Operating Range: 18mm x 53mm x 97mm Size: Fixing 2 off M4 set screws or studs Body Material: Injection moulded Nylon 66 Environmental Rating: IP65 Isolated volt-free N/O contact rated at 48V max Output: AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-06 DrCool

- Indicate temperature loss in the range of 25° to +85°C.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.



Performance and Response:

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Dr.Vibe - Vibration Detector

manufacture E2L



Applications:

Low frequency vibration increase indicates system imbalance. The area of detection (0.6 - 2.7g up to 300Hz) can indicate instability in process systems such as water hammer, loss or wear of damper mechanisms or shock absorbers, change from laminar to turbulent flow, loss of load, overdriving engines, compressors, generators, etc. Any industry employing transport devices such as cranes or conveyors, screen or shaker equipment, as well as all aspects of power generation, motors, pumps, turbines, compressors, or other moving equipment has potential for applications of Dr Vibe.

SPECIFICATIONS

Visual Indicator:Green/Red LEDPower Supply:10-32V DC @ 20mA typicalOperating Range:-25°C to +85°CSize:18mm x 53mm x 97mmFixing:2 off M4 set screws or studsBody Material:Injection moulded Nylon 66Environmental Rating:IP65Output:Isolated volt-free N/O contact rated at 48V max
AC or DC @ 100mA

ORDERING INSTRUCTIONS

P270-010-04 DrVibe

- Low frequency vibration increase indicates system imbalance.
- Instant indication of changes in operations.
- Standalone, plc or local annunciator interface.

Pin Definitions

The pins are numbered on the inside of the free plug; the diagram shows the view from the back of the plug, as you would see it prior to inserting your wired contacts.







Which DrX do I need?

There is obviously a wide variety of applications which can be addressed with these devices.

There are also considerable areas of overlap, so there is no absolute solution to the task of detection of one specific physical characteristic.

The table below summarises the primary recommendation (red) but also includes possible secondary recommendations (blue) where applicable:

Applicat ion	DrClick	DrCool	DrFlow	DrHeat	DrHiss	DrKnock	DrRumbl	DrSnap	DrSonic	DrTilt	DrVibe
Accumulator integrity Actuator movement Assembly checking Bearing wear Cable failure Cavitations Compressed air											
Compressor failure											
Connection integrity Detent detection											
Dynamic overload		•									
Electric arcing											
Fluid Leaks (HP)											
Heater failure											
Mechanical failure											
Mechanical instability											
Nechanical wear											
Oil now											
Pullip failure Pofrigorant failure											
Safe working angle											
Solenoid movement											
Stat ic overload											
Steam flow											
Structural continuity			•								
Structural failure											
Valve operation											
Valve wear				-			-			-	
Water flow											
Water hammer											



IMSAB **SENSOR MINI WOAZER**

Water-In-Oil Analyzer manufacture Elcotec



FLEXIBLE AND COST EFFECTIVE WATER IN OIL **ANALYZER**

Water in oil can cause quick and costly breakdowns in a machinery. The effects occur so fast that water in oil can be treated as a more serious contamination than mecanical particles.

Water contamination in oil can occur without being observed in time. Possibly not before it's to late and serious damage has been caused on bearings or other lubricated components. With a water analyzer a warning will be given early, and breakdowns can be avoided.

The water content can be followed continuously by the operator and suitable actions can be taken in time.

The Elcotec Mini-Woazer capacitance probe provides a direct output proportional to the amount of water in oil (or other hydrocarbons) to be measured.

The measuring system consists of a probe assembly and, as an option, a remote mounting display unit. The probe, located in the process stream, measures the dielectic constant of the process fluid flowing in the line.

The Mini-Woazer provides a flexible, accurate and cost effective measurement solution.

GENERAL

The MiniWoazer can operate as a stand alone device with a standard 4-20 mA output. The 4-20mA analogue output is able to handle a subset of the HART protocol enabling remote computer access to the unit using the two-wire analogue signal pair. In plain 4-20mA mode, the unit will be able to run of the 4-20mA Supply, i.e. there is no need to for external power supply. Additionally the unit offer full digital I/O data link through standard RS-485 using a simple ASCII protocol. This offers easy integration with virtually any

remote data system. Data linking (RS-485) provide full remote access to the unit. Measurement data can be retrieved in real time. It offers remote possibility to select any of the stored calibration data sets to be used, as well as a possibility to download new calibration data into the unit (in case of a change of system oil).

TYPICAL APPLICATION.

Compressors and machinery, Diesel engines, Shaft Seals for ships, Large transformers, Paper mills, Turbines, Fuel Monitoring, Separators, Water Cooled Oils.

Marine shaft seal monitoring, Lubricating oil monitoring, Pulp and paper, Fuel quality, Storage systems.

FEATURES

Highly durable stainless steel, Minimal pressure drop, Simple to calibrate, High accuracy, Can be mounted in line or bypass, Can operate as a stand alone device, RS-485 and 4-20mA output options

The Elcotec Mini-Woazer can operate optionally, up to 32 Mini-Woazers may be multidropped through standard RS-485 using a simple ASCII protocol.

FUNCTION.

The Elcotec Stainless Steel water / oil analyzer determines the water content through the capacitance principle. The sensor is dimensioned for the best result within the 0-10% range for a wide range of oils. When the water content of any hydrocarbone increases, the di-electic constant changes. The dielectric properties also changes with temperature, so the analyzer has a built in temperature compensation. It is also possible to switch directly on the pcb between measuring range 0-1%, 0-3%, 0-25%.

INSTALLATION.

The Woazer sensor (probe) is to be mounted in a vertical position, with the oil fed in through the lower end, this to avoid water/gas to be trapped within the sensor.





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PCB Mini Woazer specification

Power supply Version 1A Version 1B Version 2	14-24 VDC 2 wire analog current loop 10-24 VDC +5 VDC 4 wire, max 32 units.
Output Version 1A Version 1B Version 2	4 – 20 mA 2 wire and RS 232 RS 485 RS 485
Water in oil range: or ppm Version 1A Version 1B	<u>selectable.</u> 0 - 1%, 0 - 3%, 0 -10%, 0 -25%. 0 - 10%
<u>Probe:</u> Pressure Flow Range Pipe connection	Up to 21Bar. 15 to 150 LPM. NPT thread 1"
<u>Accuracy</u> Resolution: Repeatability: Temperature stability	0,1 pF corresponding to known % water. 0,15 pF corresponding to known % water ±2pF over temperature range
Environmental Operating Temperature Storage Temperature Humidity Vibration	-20 to +70 Deg C. -40 to + 85 Deg C. 0 - 95% R.H. with IEC 770 (EN 60068-2-3) IEC770 (EN 60068-2-6)
Certification EU Certification	CE Intrinsic Safety Prepared for: ATEX Group 2, Category1, Gas, T4 FM and CSA equivalents.
Option MiniWoazer:	EMC to Cenelec Intrincically safe criterias. Explosion proof certification to ATEX. At present it should be certified to the requirements of FM and CSA.





Temperature sensor type P2208

manufacture Tempress



- Pt100 acc. to DIN IEC 751 (DIN43760)
- Replaceable insert
- Temperature range -50 to + 180°C
- Unique resistance to corrosion damp, vibrations and wear
- Immersion tube diameter Ø8 mm
- Immersion length min. 40 mm
- Connection G1/4B or G1/2B
- Plug with PG 9 cable gland (IP 67)
- Competitive price

DESIGN

TEMPRESS temperature sensor type P2208 is a standard sensor, with stainless steel immersion tube and a G1/4B or G1/2B connection. The electrical connection is a water proof plug (IP67) which is screwed on to the sensor, with a PG 9 cable gland.

The sensor is delivered with a replaceable insert, which makes replacement of the sensor very easy.

The PtlOO sensor has an accuracy acc. to DIN IEC 751 class B (1/1 DIN).

The series is employed in all types of industrial and processing plants requiring electronic temperature measurment.

SPECIFICATIONS

Temperature sensor with replaceable insert P2208 Sensor element 4-wire Pt100 DIN IEC 751 Class B al W.Nr. 1.4571 (AISI 316) Accuracy Immersion material Tube diameter Ø8 mm L.... min. 40 mm ial W.Nr. 1.4571 (AISI 316) Tube length Connection material Gl/4B or G 1/2B thread hread length 15 mm width of jaw A/F 19, or A/F 27 Neck material Nickel-plated brass diameter Ø12mm 35 mm length Insert material Silicone cable / brass IEC 947-5-2, 4-wire IEC 947-5-2, 4-wire plug-socket Plug type cable gland PG9 -50 to +180°C(-58 to + 356°F) Media temperature Ambient temperature -25 to $+90^{\circ}$ C (-13 to $+194^{\circ}$ F) Enclosure class IP 67

ORDERING INSTRUCTIONS

EMPERATURE SENSOR, TYPE P2208. THREAD = GI/4B OR GI/2B, L= xxx mm EG. P2208 G1/2B, L100

INSERT FOR TEMERATURE SENSOR, TYPE P2208, L2=L+40,5 mm EG. P2208 INSERT, L2=140,5





(IIII)







Electrical connection







Temperature sensor with clamp connection. Type P2209



- Pt 1 00 acc. to DIN IEC 751 (DIN 43760)
- Replaceable insert
- Temperature range -50 to +250°C (-58-482°F)
- Unique resistance to corrosion damp, vibrations and wear
- Connection: 3/4", 1 1/2" or 2" clamp (Tri-clamp®) or welding connection
- Sensor tube diameterØ5
- Immersion length min. 20 mm (0. 79")
- Plug with PG 9 cable gland (IP 67)
 PTFE cable (IP 68)
 DIN form B-head with transmitter (IP 64)

• Transmitter output 4-20 mA

DESIGN

TEMPRESS temperature sensor type P2209 is a standard sensor with stainless steel immersion tube and a welding or clamp connection. 3,/4", 1 1/2" and 2" clamp are available.

The 4 wire Ptl00 sensor has an accuracy acc. to DIN IEC 751 class B (1/1 DIN).

The electrical connection for the sensor with Pt100 output is a waterproof plug (IP 67) which is screwed onto the sensor or a watertight teflon (PTFE) cable.

The sensor is also available with a head mounted temperature transmitter in a DIN type B head, featuring a 4-20 mA output signal. The measuring range can be factory set or field programmed with a standard DOS PC interface.

The unit is equipped with a replaceable insert, which is unique for sensors with a \emptyset 5 mm immersion tube. This feature makes it possible to weld the sensor to eg. a tube and makes a replacement of the sensor very easy.

The series is employed in all types of industrial and processing plants requiring a hygienic connection.

SPECIFICATIONS

Temperature sensor: Type P2209				
Sensor element:	4-wire Pt100			
Accuracy:	DIN IEC 751 Class B			
Sensor tube Materia	al: W.Nr. 1.4571 (AISI 316Ti)			
Diameter:	Ø5 mm (.2")			
Length:	L min. 20 mm (.79")			
Connection Materia	al: W.Nr. 1.4571 (AISI 316Ti)			
Clamp:	3/4", 1 1/2" or 2"			
Welding:	Ø12mm			
Surface finish:	Standard: Ra <0,8 μm (<32μ")			
Optional: Ra <	$0.5 \mu m (< 20 \mu'')$			
Neck Material:	AISI 316			
Dimensions:	Ø12 mm (.47") x 35 mm (1,38")			
P2209 Plug type:	IEC 947-5-2, 4-wire			
(Pt 100 output)	PG 9, IP 67			
Cable type:	2 m 4-wire PTFE insulated			
••	IP 68			
Measuring range:	-50 to +250°C(-58 to +482°F)			
Ambient temperature: -25 to $+90$ °C (-13 to $+194$ °F)				
P2209 Head type: DIN form B				
(4-20mA output) C	able gland: PG 16			
Material:	Grey enamelled aluminiu			
Enclosure:	IP 65			
Program. meas. range: -50 to $+250$ °C(-58 to 482 °F)				
Ambient temperature: -40 to $+85^{\circ}C(-13$ to $+185^{\circ}F)$				
Output signal /Supply: 4-20 mA – 8-35 VDC				
Load:	$\leq 700 \Omega$ @ 24VDC supply			
Linearity:	≤0,1%/FS.			
Temperature drift:	≤0,01%/°C			

ORDERING INSTRUCTIONS

)	P2209	Connection Electrical connec Temp. range (for Options	Immersion Length, L ction P2209 with transmitter only)
	eg.	P2209, 2" Tri-cla Ra 0.5 μm	amp, L50 mm, B-head, 0-100°C







Dimensions

P2209 with built-in transmitter





Electrical connection





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PANEL INDUCATOR

Type P8320 and P8330 manufacture Tempress





- Type P8320 is a panel indicator Series TDI 50
- Type P8330 is a panel indicator with 1 or 2 alarm limit relay
- All common process input signals are available.
- **Enclosed 20 VDC power supply for** transmitter (option)
- Selectabl main power supply (230 VAC or 115 VAC)
- Good linearity, ±0,2% FS.
- 3,5-digit 13 mm LED display
- **Certificated CE-standard**

DESIGN

TEMPRESS panel indicators in series type P8320 and P8330 can display all types of industrial process value, i.e. pressure, temperature and level indication.

All instruments are of high quality, with a linearity ±0,2% FS. The instrument are made of the most modern analogue components, including SMD technology.

Type P8320 panel indicator are delivered with preselected input and measuring range, to measure temperatures using Pt100- or a thermal element. The indicators are enclosed with straight-line detectors and cold lead-tin solder balancing, together with flow measurement. When a chosen analogue input signal is selected, e.g. 4-20 mA, the measuring range and the decimal point is adjustable.

Types P8330 having all the features of type P8320, but in addition have 1 or 2 relay outputs. These can be selected with either deviation or minimum/ maximum function. All of these output relays are change over type, max 5A. These type of outputs can be used as an alarm relay or a simple regulation function.

Indicators with enclosed alarm relay, should not be used in safety applications, not without first mounting a separate limiting switch in the system. One system is for the alarm function and one is for the "shut-down" function.

TEMPRESS can also supply a customised version according to customer specification (OEM).

SPECIFICATIONS Type P8320

Panel indicator with relay output Main power supply Power supply (Option 4-20 mA)

Type P8330 230VAC/115VAC 20 VDC (to transmitter) Input signal Loading resistor External resistance Output signal, P8330

Resolution Environmental temperature Temperature stabilized

Dimension IP rating

Short-circuit proof Pt100, thermoelement or analog signal $100 \ \Omega$ T/C <100 Ω Relay, 5A/250VAC, IE6 No potential difference NO potential differenceRetransmission, option 0-10 V / (0)4-20 mALinearity $\pm 0,2\%$ FS. ± 1 digit(T/C type S $\pm 0,5\%$)Display3 1/2 digit 13 mm LED10001000 -1999 – 1999 1 / 0,1 / 0,01 -10-55°C ±0,02%/°C $(T/C \pm 0.05\%)^{\circ}C)$

96x48x119 mm, 1/8 DIN P8320 IP54 front P8330 IP50 front **IP20** Housing

ORDERING INSTRUCTIONS

Panel indicator type P8320 and P8330, ordering guide

Schedule number (selection)		1	2	3	Α	В
Order example	Р	83	31	10	01	1
Order number	Р	83				

1: INSTRUMENT Instrument Order no. Panel indicator P83

2: TYPE Туре Indicator

Order no. 20





Indicator 1 minim Indicator 2 minim Indicator 1 deviat Indicator 2 deviat	31 32 33 34	
3: INPUT SIGNA Input signal Analogue signal Analogue signal Analogue signal Analogue signal Measuring rang	AL 0-5 V 1-5 V 0-10V 0-20mA 4-20mA e in °C	Order no. 01 02 03 05 06
Pt100 Thermoelement Thermoelement Thermoelement Measuring rang	3-conductor 10 Typ. T J K S e in °F	21 22 23 24
Pt100 Thermoelement Thermoelement Thermoelement	3-conductor 30 Typ. T J K S	41 42 43 44
A: MEASURINC Measuring range Analogue Input Adjustable Pt100	G RANGE signal ±1999	Order no. 01
±199,9°C 0-99,9°C 0-199,9°C 0-300°C 0-600°C	±199,9°F 32- 99,9°F 32- 199,9°F 32- 600°F 32- 1100°F	11 12 13 14 15
T/C type T 0-300°C -50-400°C T/C type J 0-199.9°C	32- 600°F -60- 750°F 32- 199.9°F	21 22 31
0-300°C 0-600°C T/C type K 0-300°C	32- 600°F 32- 1100°F 32- 600°F	32 33 41
0-1000°C T/C type S 200-1600°C	32- 1999°F 32- 1999°F	42 43 46
Option No option Power supply 20 (to transmitter)	VDC	Order no. 0 1
Retransmission	0-10V 0-20mA 4-20mA	3 4 5
wAREHOUSE U Order number. P832006/011 P832010/110	Description Indicator, 4-20mA Indicator, Pt100	Trademark H211 H212
P833206/011 P833210/110	2x relay, 4-20mA 2x relay, Pt100	H213 H214

Main Dimension







Connection









Indox			IM	SAB ——			
index		LLB 10 D	12,	Fluid Flow Verifier	48,	Propulsion control	44,
		LLC 10	8,	Fluid Leak Detector	46,	Normal Enclosure Alarm display unit	4,
Specialtecken		Audible noise detection	53,	T			
1022 LH RF 110V	23,	С		- Indication unit		Oneration Indicator Panel	
1084	22	Combined Panel	32	LLB 10 I	21,	SOL1.10D	34,
LLC RF	22,	Connection Integrity Indi	32,	L		чо, Р	
12006 LLB 10 AB	10,	50,		LB 10	10	P2208	
12007		Cyclic Wear Detection	51,		10,	Temperature sensor	60,
LLB 10 D	12,	D			19,	P8320 Instrument	64.
12008 LLB 10 I	21,	Diesel start DS 12	41.		19,	P8330	- ,
12032	,	DS 24	41	12060	15,	Instrument	64,
LH 10	16,	DSR 12	41	LDC 10 M3R 48V LD 19"		Panel indicator	
12040 LLC-10	8	DSR 24	41, 41	12062	15,	P8330 64,	
12042	0,	Dr Click	4 1, 50	LDC 10 M3R LD 12044	15,	Pt100	64,
LDC 10 M3R LD 19"	15,	Dr.Cool	50,	LDC 10 M3R LD 19"		Propulsion Control	44,
12043	15	Dr.Coor	33, 19	12042	15,	Propulsion control Neptune	44,
12044	15,	Dr.Flow	40, 54	LDC 10 S3R 48V LD 12061	15,	D	
LDC 10 M3R LD	15,	Dr.Heat	54,	LDC 10 S3R 48V LD 19"		K Relav Rov	
12045	15	Dr.Hiss	46,	12063	15,	SOL2.10R	35,
LDC 10 SSK LD	15,	Dr.Knock	47,	LDC 10 S3R LD 12045	15.	Relay Circuit Board	24
LDC 10 M3R 48V LD	15,	Dr.Rumble	51,	LDC 10 S3R LD 19"	,	LDC KF	24,
12061	1.5	Dr.Snap	52,	12043	15,		25,
LDC 10 S3R 48V LD	15,	Dr.Sonic	53,	LDC RF Reley Circuit Board	24	LLC KF	22,
12062 LDC 10 M3R 48V LD 1	9"	Dr.Tilt	49,	LH 10 110V	24,	S	
12063 ^{15,}		Dr.Vibe	56,	Alarm Panel	16,	Sensor MINI WOAZER	58,
LDC 10 S3R 48V LD 19	9" 15,	DrX	57,	LH RF 110 Palay Circuit Board	23	SjöV 95 Firealarm Central	26.
13010 LB 10 M	19,	DS 12 Diesel start 12V	41,		23,	Slave Panel	,
13011		DS 24		Alarm Unit	10,	SOL2.10 30.	8, 32.
LB 10 S	19,	Diesel start 24V	41,	LLB 10 D	10	35, SOL 2,104	,
13020 LB 10 MP	19,	DSR 12 Diesel start 12V remote	41,		12,	Combined Panel	32,
13021		DSR 24	,	Indication unit	21,	Т	
LB 10 SP	19,	Diesel start 24V remote	41,	LLC 10	0	Temperature Loss Detecto	r 55,
731-03 LDC RF 24V	24,	Ε			8,	Temperature Rise detectio	n 54,
731-04		E 64 410 00	21	Relay Circuit Board	22,	Temperature sensor	
LDC RF 48V	24,	LLD 101	21,	LLD 10/15		P2208	60,
Α		LLB 10 D	12,	Alarm display unit	4,	P2209	62,
Alarm display unit	4	E 64 411 10	10	Μ		tilt and acute angle detecto	or 49,
LLD 10/13	4,		10,	Master Panel SOL2.102	30.	Type P2209 Temperature sensor	62,
	4,	E 64 422 00 LDC RF	24,	Mechanicalinsertionassemblycl	hecker	X 7	
DE9600	36,	El-motor starter	10	52, Mechanical Noise Detector	· 47.	v Vibration Detector	56.
LB 10	18,	MS 230	42,	MS 230	,		,
LDC 10 LD	14,	F		El-motor starter	42,		
LH 10	16,	Firealarm central SjöV 95	26.	Ν			
LLB 10 A/B	10,	<u>.</u> -	- ,	Neptune	44,		
IMSAB Ing. firr Guldringen 1 SE-426 52 Västr	nan M. ra Frölu	Sjöbris AB ında, SWEDEN	- (66 – +46-31 29 +46-31 29 +46-70-76	06 40 48 29 5 00 48	Tel. © 07.2003 IM Fax Internet: www.ims 0 Mobile E-mail: info@ims	SAB ab.se ab.se