

ernitec

SYSTEM **X**

LON[®] Box X

I151SX-ALARM

I151SX-REMOTE

Installation

Manual

2853-00009

Validity

This manual covers the following LON® Boxes:

- LON® Box type I151SX-ALARM
- LON® Box type I151SX-REMOTE

Compatibility

This manual describes all possible features of the I151SX LON® Box. However, actual features supported, depends on the connected equipment.

Approvals

All LON® Box types are CE certified and approved with respect to EN 50081-1, EN 50130-4 (EMC) and EN 60950 (LVD).

Operation

I151SX-ALARM RS232-to-LON Alarm Interface.

The I151SX-ALARM interface box is used as an interface for alarm equipment, sending serial alarms to SYSTEM X. Ernitec alarm protocols *IEC*, *Serial Alarm*, and *extended Serial Alarm* are supported.

I151SX-REMOTE SYSTEM X-to-SYSTEM 500M/1000M Interface

The I151SX-REMOTE interface box, is used as an interface, between SYSTEM X and SYSTEM 500M/1000M. It enables SYSTEM X to control SYSTEM 500M/1000M, configured as remote systems.

Setup

There are no setup functions in the LON® Box itself. All functions and settings are programmed using the *NodeManager S111SX* software.

LON® Network

For details on the LON® Network, installation, cabling and termination, please see the *NodeManager S111SX Installation Manual*.

Trademarks

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Installation

Unpacking the LON® Box

After unpacking the LON® Box, carefully check for any signs of damage. Any such damage should be reported to your supplier, before installation.

Check that the packing carton contains the following items:

- 1 pcs. SYSTEM X LON® Box.
- 1 pcs. LON® Box X Installation Manual (this manual)
- 1 pcs. screw kit.

Box Installation

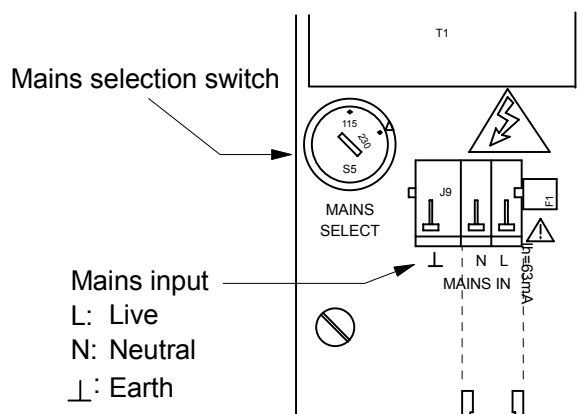
Choose a plane surface to prevent the box from being twisted and thereby becoming leaky. When installed outdoor the box should be oriented with the cable glands pointing downwards.

Drilling pattern is shown on the back of the box.

Box dimensions (excl. glands) are: 242 x 160 x 90mm (W x H x D).

Mains installation

The LON® Box can be supplied with either 115 VAC or 230 VAC mains voltage. The mains voltage is selected by the mains voltage selection switch.



The LON® Box must be used with a 3-wire mains connection (2W+PE @ min. 0,75mm²).

Terminals marked with hazardous live symbol requires installation by an instructed person.

If permanently connected to mains, a readily accessible disconnect device shall be incorporated in the building installation wiring.

If pluggable connection to mains, the socket-outlet shall be installed near the equipment and shall be easily accessible.

Note: The unit is equipped with two PTC-fuses with automatic reset function. In case of malfunction always return the unit for repair. The references below are intended for information only.

F1: (BC Components, type 2322 660 66393)

$I_{hold} = 63mA$, $I_{trip} = 95mA$, Initial resistance = 120R

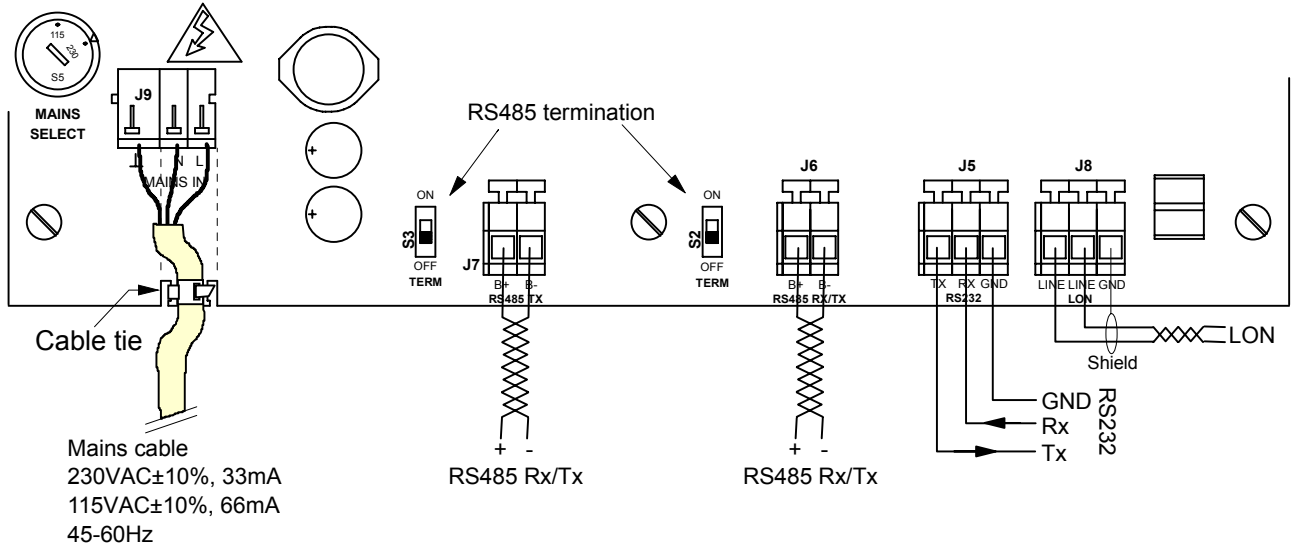
F2: (BOURNS, type MF-R075)

$I_{hold} = 750mA$, $I_{trip} = 1.5A$, Initial resistance = 0R18

Cable connections

It is of utmost importance that all cable connections are carried out exactly as described, in order to avoid malfunction or damage to the LON[®] Box and/or the connected equipment.

All cables to and from the LON[®] Box are fed through the cable glands. Choose an appropriate size gland for the actual cable and tighten the glands when all cables are connected.



In order to fulfil safety standard EN 60950, all cables carrying mains voltage, must be secured to the PCB by means of e.g. a cable tie, as shown in the above drawing.

LON[®]

For details on the LON[®] Network, installation, cabling and termination, please see the *NodeManager S111SX Installation Manual*.

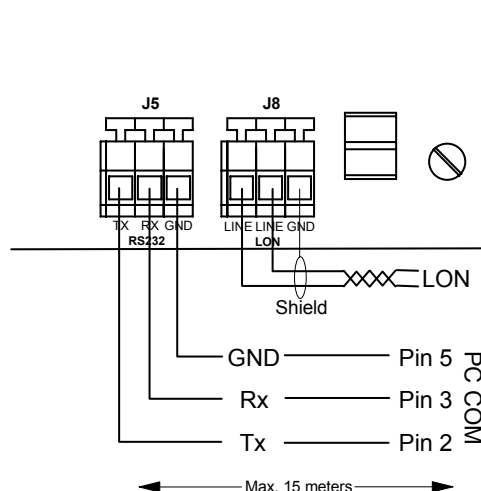
To comply with EMC/EMI standard EN 50130-4, shielded LON[®] cable must be used.

Connection is polarity insensitive.

RS232 (I151SX-ALARM)

Connects to a PC COM port, or similar.

- Data format: 8N1
- Baud rate: 110 ~ 38400 bps



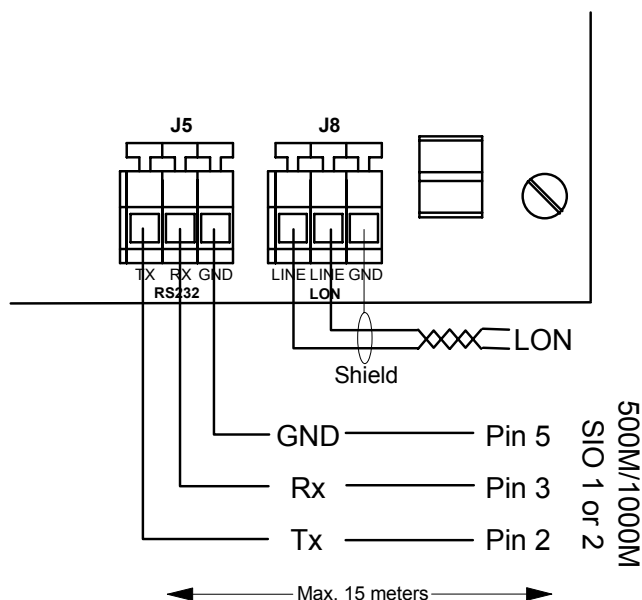
RS232 (I151SX-REMOTE)

Connects to an RS232 port on SYSTEM 500M/1000M.

Serial port (SIO 1 or 2) setup, on SYSTEM 500M/1000M:

- Type: RS232
- Device: IEC
- Baud rate: 19200

For further details, please see the *Programming Manual* for SYSTEM 500M/1000M.



RS485

The RS485 connections are not used in I151SX-ALARM and I151SX-REMOTE.

Protocols (I151SX-ALARM)

The I151SX-ALARM supports 3 different protocols: SAP, xSAP and IEC.

Serial Alarm Protocol (SAP)

The SAP protocol is a simple alarm protocol, using Xon/Xoff flow control.

Data Format

- Baud Rate: 1200 ~ 38400
- Data Bits: 8
- Parity: None
- Stop Bits: 1
- Flow control: Xon/Xoff

Frame format

Header	Alarm Command	Alarm number			Checksum
"S"	"A" or "C"	ASCII format			XOR sum
53 Hex	41 or 43 Hex	"000" - "512"			
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

Header

Always ASCII "S" (53 Hex).

Alarm Command

One ASCII character.

Alarm ON is "A" (41 Hex). Alarm OFF is "C" (43 Hex).

Alarm Number

A 3-digit alarm number in ASCII format ("001" ~ "512").

Checksum

The XOR result of the previous 5 bytes.

Xon/Xoff Flowcontrol

The SAP protocol uses Xon/Xoff flowcontrol. The Xon character is DC1 (11 hex), and Xoff is DC3 (13 hex).

The Xon/Xoff principle is as follows:

When the receiver buffer is 80% full, the receiver transmits an Xoff character to stop the transmitter. When the buffer is only 20% full the receiver transmits an Xon to start the transmitter again.

To be able to send both DC1 and DC3 as data, the protocol uses "the character stuffing principle". Character stuffing means that the transmitter is transmitting an extra DC1 character if it wants to transmit DC1 as data. Then the receiver knows that two DC1 characters means "DC1-data" and one DC1 means "Xon".

Example

In order to set alarm number 45 ON, the following string must be transmitted:

```
53 41 30 34 35 23
53:      "S" - Header
41:      "A" - Alarm ON
30,34,35: "045" Alarm number
23:      XOR checksum (53 xor 41 xor 30 xor 34 xor 35)
```

Extended Serial Alarm Protocol (xSAP)

The xSAP protocol is similar to the SAP protocol, but without the limitation of max. 512 alarms.

Data Format

- Baud Rate: 1200 ~ 38400
- Data Bits/Parity/Stop bits: 8/N/1
- Flow control: Xon/Xoff

Frame format

Header	Number of bytes	Alarm Command	Alarm number	Checksum
"S"	ASCII format	"A" or "C"	ASCII format	XOR sum
53 Hex		41 or 43 Hex	"N ₁ " - "N _n "	
1 byte	1 byte	1 byte	'n' byte(s)	1 byte

Header

Always ASCII "S" (53 Hex).

Number of Bytes

Total number of bytes including checksum, but excluding Header.

Alarm Command

One ASCII character.

Alarm ON is "A" (41 Hex). Alarm OFF is "C" (43 Hex).

Alarm Number

Alarm number in ASCII format ("Number₁" ~ "Number_n").

Checksum

The XOR result of all previous bytes, including Header

Xon/Xoff Flowcontrol

The SAP protocol uses Xon/Xoff flowcontrol. The Xon character is DC1 (11 hex), and Xoff is DC3 (13 hex).

The Xon/Xoff principle is as follows:

When the receiver buffer is 80% full, the receiver transmits an Xoff character to stop the transmitter. When the buffer is only 20% full the receiver transmits an Xon to start the transmitter again.

To be able to send both DC1 and DC3 as data, the protocol uses "the character stuffing principle". Character stuffing means that the transmitter is transmitting an extra DC1 character if it wants to transmit DC1 as data. Then the receiver knows that two DC1 characters means "DC1-data" and one DC1 means "Xon".

Example

In order to set alarm number 45 ON, the following string must be transmitted:

53 05 41 34 35 16

53: "S" - Header

05: Number of bytes

41: "A" - Alarm ON

34,35: "45" Alarm number

16: XOR checksum (53 xor 05 xor 41 xor 34 xor 35)

IEC Alarm Protocol

Information about the IEC protocol can be found in the Ernitec Protocol Manual, available on request.

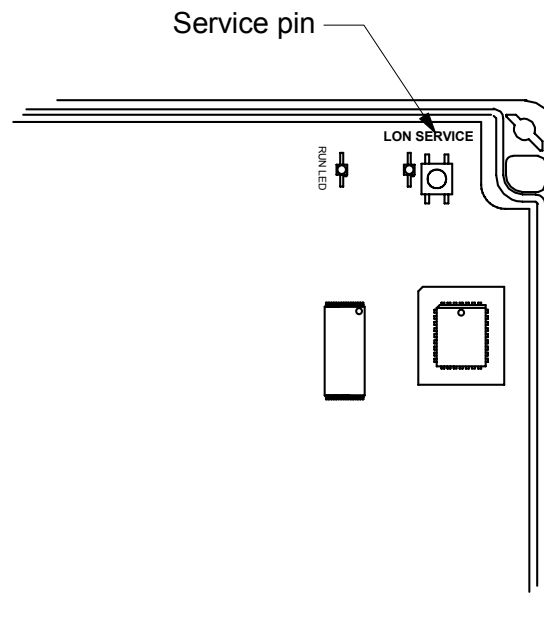
Service pin

When the LON[®] Box is connected to the LON[®] Network, the service pin must be pressed for the *NodeManger* software to identify the LON[®] Box. Use a small screwdriver, or similar, to press the service pin. The yellow LED next to the service pin will light up shortly, when the service pin is pressed.

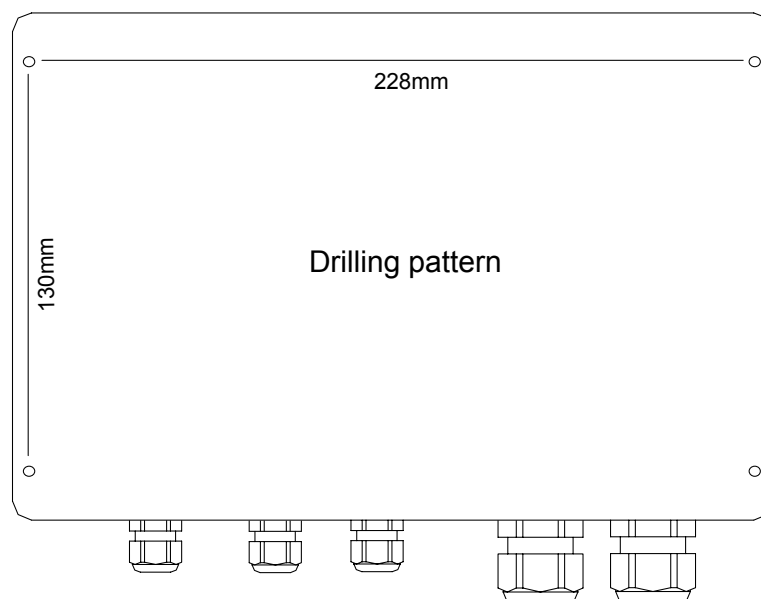
Make sure that the *NodeManger* software is running, and online, prior to pressing the service pin.

It is of out most importance to keep track of the order in which service pins are pressed on the various SYSTEM X units.

Please see the *NodeManger Manual* for full details on the function, and importance, of the service pin.



Drilling Pattern



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