MN LCD

WIRING AND COMMISSIONING INFORMATION FOR

I/A SERIES® MICRONET LCD

APPLICATION

Order Types:

MN-LCD-100	-	MicroNet LCD - Controller or Wall Mount
MNN-LCDP-100	-	MicroNet LCD - Panel Mount

The I/A Series MicroNet LCD contains a liquid-crystal display that gives a text menu-driven interface for viewing or changing the behaviour of the controller to which it is connected.

The LCD can connect to an MN 500 or MN 620 controller on an NCP, ARCNET® or LONWORKS® network, or to a standalone NCP MN 300 or 440 controller. If the LCD is attached to a networked MN 500 or MN 620 controller, an Auxiliary Communications Card (MNN-C) must be fitted to the controller.

The LCD is available as a panel-mount device, or can be wall or DIN-rail mounted using the MN-DK kit. The LCD can also be mounted in a standalone NCP MN 500 or 620 controller.

The MN LCD model has a built-in real-time clock (RTC) to provide time setting and synchronisation for a standalone controller. It can also be used for network time synchronisation across a LonWorks network.

The display parameters are configured using the VisiSat™ Configuration Tool. The display configuration is downloaded to the controller, from where it can be uploaded to the MN LCD.

The LCD configuration is saved on EEPROM, providing protection from power failure.

An LCD cannot be connected to an MN 500 or MN 620 controller that is fitted with a Touch Screen.

SPECIFICATION

Order Type	Description	Voltage
MN-LCD-100	MicroNet NCP LCD - Wall/Controller Mount	24Vac, 50/60Hz
MN-LCDP-100	MicroNet NCP LCD - Panel Mount	24Vac, 50/60Hz

Data Sheets
DS 10.060 - MN LCD Display
DS 10.201 - MicroNet View Software
DS 10.202 - VisiSat Configuration Tool

Multi-Lingual Instructions
MLI 10.060 - Installation Instructions
MLI 10.300 - MNN-C and MNA-C Installation
MLI 10.310 - MN-DK Installation

INSTALLATION

Inspection

Inspect carton for damage. If damaged, notify carrier immediately. Inspect LCD for damage. Return damaged products.

Requirements

(These items are not provided)

- Installer must be an experienced technician
- Job wiring diagrams
- Tools:
  - Saw for panel mounting
  - Drill and bits
  - Digital Volt-Ω meter (DVM)
  - Static protection wrist strap.
- If the LCD is not connected directly to an MN 500 or MN 620 via a ribbon cable, an EN 60742 power transformer is required, as described opposite.
- Three No. 10 self-starting screws for wall mounting or 35mm DIN rail for mounting.

Precautions

General

- Follow Static precautions when installing this equipment.
- Use copper conductors that are suitable for 75°C (167°F).
- Make all connections according to electrical wiring diagram, national and local electrical codes.

Static Precautions

Static charges damage electronic components. The microprocessor and associated circuitry are extremely sensitive to static discharge. Use the following precautions when installing, servicing or operating the system:

- Work in a static-free area.
- Discharge static electricity by touching a known, securely grounded object.
- Use a wrist strap connected to earth ground when handling the LCD's printed circuit board.
- Direct static discharge on the LCD may cause it to lock out. If this occurs, reset the unit by switching the LCD power on and off.

European Community Directives

This equipment meets all requirements of European Community Directives for Low Voltage (72/23/EEC), General Safety (92/59/EEC), and Electromagnetic Compatibility (89/336/EEC).

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Canadian Department of Communications (DOC)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Power Supply Wiring Precautions

- This product contains a non-isolated half-wave rectifier power supply and must not be powered by transformers used to power other devices containing non-isolated full-wave rectifier power supplies. Refer to DS 10.250, *EN-206, Guidelines for Powering Multiple Full-Wave and Half-Wave Rectifier Devices from a Common Transformer* for detailed information.
- The 24Vac 50/60Hz supply must comply with EN 60742 and be capable of supplying at least 5VA. Class 2 circuits must not intermix with Class 1 circuits. The supply to the transformer must have a breaker or disconnect. If the LCD is mounted on a standalone NCP MN 500 or MN 620 controller, the controller transformer must be upgraded to supply an extra 5VA for the LCD.
- The transformer frame and LCD 0V terminal must be connected to earth; see page 5.

Location

The LCD is suitable for indoor use only. When selecting a mounting location, make certain the following conditions are met:

- Do not install where excessive moisture, corrosive fumes, vibration, or explosive vapours are present.
- Do not install near large contactors, electrical machinery, or welding equipment.
- Allow 150mm (6") clearance from contactors, switches, and associated cabling.

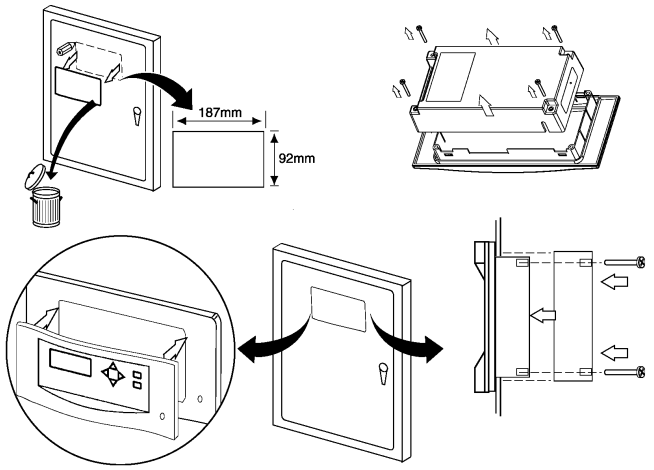
Locate where ambient temperatures do not exceed 50°C (120°F) or fall below 0°C (32°F) and relative humidity does not exceed 95% or fall below 5%, non-condensing.

Mounting

Panel Mounting (TSP Models)

1. Select mounting location.
2. Draw cut out dimensions onto panel.
3. Carefully cut around outline on panel. Remove any burrs and smooth rough edges.
4. Remove four screws on LCD back cover.
5. Remove back cover.
6. Go to Battery Setup section and enable battery.
7. Place LCD in panel opening.
8. While holding LCD in place, re-install back cover.
9. Re-install four screws on back cover and tighten.
10. Check for a secure fit between back cover, panel and front of LCD.

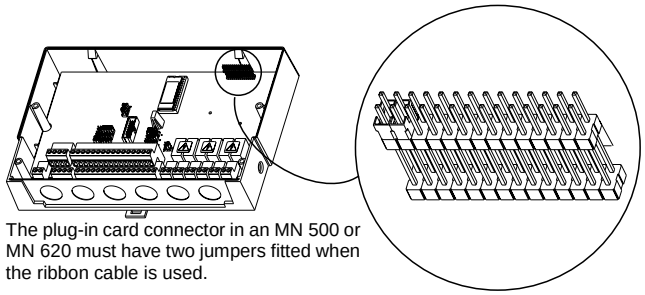
Panel Mounting



Mounting the LCD in an NCP MN 500/620 Controller

WARNING - ELECTRICAL SHOCK HAZARD.
THE MN 500 CAN CONTAIN MAINS VOLTAGES. DISCONNECT THE DIGITAL OUTPUTS BEFORE REMOVING THE COVER OF THE CONTROLLER.

1. Remove the two screws holding the large front panel of the controller in place.
2. Remove the controller front panel.
3. Remove four screws on LCD back cover.
4. Remove the LCD back cover.
5. Disconnect power to the controller, then fit the two jumpers to the controller links, as shown below.



The plug-in card connector in an MN 500 or MN 620 must have two jumpers fitted when the ribbon cable is used.

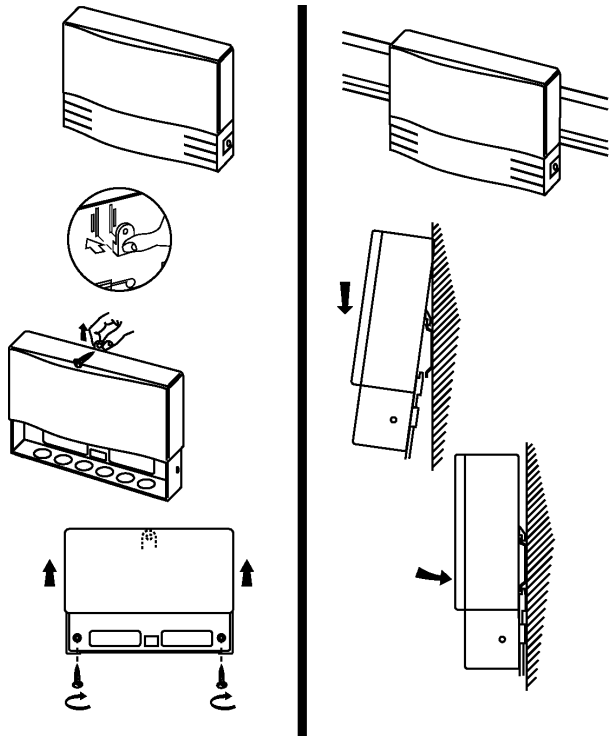
6. Switch on power to the controller, then use VisiSat to set up and download the LCD configuration via an MN MI to the controller.
7. Disconnect the MN MI from the controller. This is important.
8. Make sure that the controller is still switched on. Keep the Down button pressed on the LCD front panel while you connect the ribbon cable from the LCD to the connector on the controller PCB.
9. Wait for the LCD to load its configuration. If the LCD configuration fails to load, check that the controller's Configuration Locked property is not set to Yes in VisiSat.
10. Go to Battery Setup section and enable the LCD battery.
11. Secure the LCD to the top of the controller using the screws from the controller front panel (you will need to punch through the screw positions on the LCD front panel).

Wall or DIN Rail Mounting

For Wall or DIN rail mounting, a separate Wall Mounting Kit (MN-DK) is needed.

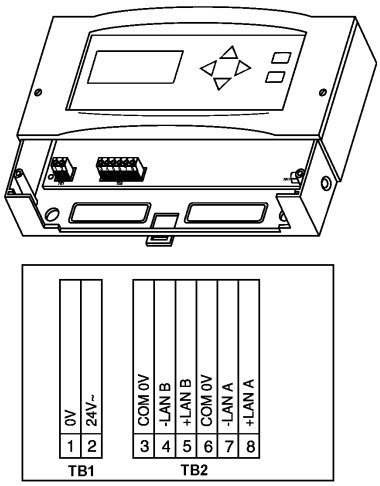
1. Select mounting location. Allow minimum 150mm (6") clearance around LCD.
2. Do the following to mount LCD on a wall:
   a. Loosen two screws securing terminal cover to MN -DK and remove cover.
   b. If not already fitted, press the wall mounting clip into the back of the MN-DK.
   c. Lift wall mounting bracket clip. (Located on top back of MN-DK.)
   d. Using a No. 10 self-starting screw, install top screw.
   e. Lift and level MN-DK.
   f. Using two No. 10 self-starting screws, install bottom screws.
   g. Install and fix LCD to MN-DK.
   h. Re-install terminal cover. (May be left off until wiring is completed.)
3. Do the following to mount LCD on a DIN rail:
   a. Loosen two screws securing terminal cover to MN-DK and remove cover.
   b. While pulling down on DIN rail locking bracket, snap MN-DK on a 35mm DIN mounting rail.
   c. Release DIN rail locking bracket.
   d. Install and fix LCD to MN -DK.
   e. Re-install terminal cover. (May be left off until wiring is completed).

Wall Mounting **DIN Rail Mounting**

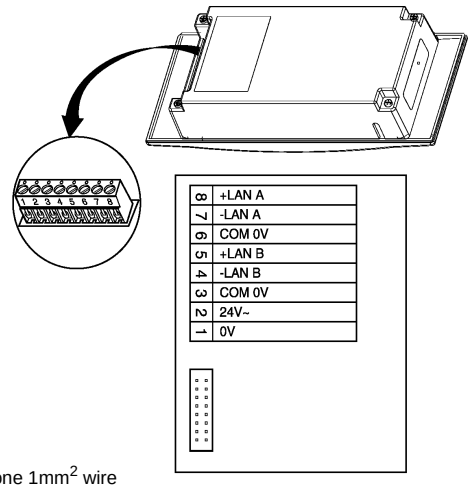


Terminal Connections

LCD - Wall Mount



LCD - Panel Mount



Terminals accept one $1mm^2$ wire

Connecting the LCD to a Controller

A connection is required between the LCD and its controller. There are two methods of making this connection:

- You can use a ribbon cable if the LCD is mounted in a standalone NCP MN 500 or MN 620 controller. For details of how to make this connection and upload the LCD configuration, refer to Page 3.
- You can use a separate cable between the LCD and the network connections on the controller. This method is described next.

Separate Connection to Controller

WARNING - ELECTRICAL SHOCK HAZARD.

THE MN 300 AND MN 500 CAN CONTAIN MAINS VOLTAGES. DISCONNECT ALL MAINS VOLTAGES WHILE THE COVER OF THE CONTROLLER IS REMOVED.

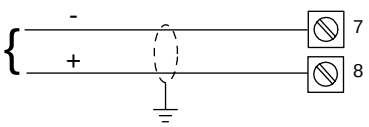
You can make the communications connection between the LCD and its controller using a separate Belden 8762 twisted-pair screened cable.

The cable must not be routed with power wiring, and if installed in areas of high RFI/EMI, the cable must be in conduit.

Note: Before making the following connections to a standalone NCP controller, connect an MN MI to the controller, then use VisiSat to download the LCD configuration to the controller. Once the download is complete, disconnect the MN MI from the controller and connect the LCD. Applying power to the LCD while pressing its "Down" key causes the LCD to upload its configuration from the controller, provided the controller's Configuration Locked property is not set to Yes in VisiSat.

1. Review Precautions section.
2. Connect the LCD to the controller as shown in the following diagram. **Observe correct polarity.**
3. Ground the wiring screen **at one end of the cable only**.

Controller terminals. Use the terminals as shown in the following table.



The following table specifies the terminals to use at the controller:

Controller Terminals	Controller
5(-) and 6(+)	LONWORKS MN 500 or MN 620 controller
5(-) and 6(+)	ARCNET MN 500 or MN 620 controller.
3(-) and 4(+)	Networked NCP MN 500 or MN 620 controller (i.e. controller is fitted with an Auxiliary Communications Card)
5(-) and 6(+) [a]	Standalone NCP MN 500 or MN 620 controller
12(-) and 13(+)	Standalone NCP MN 440 controller
13(-) and 14(+)	Standalone NCP MN 300 controller

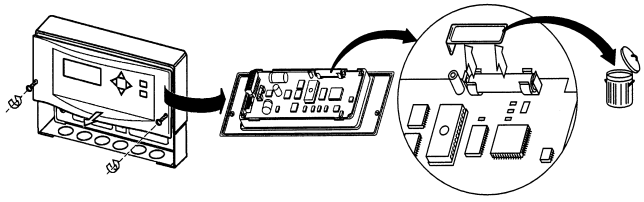
a You can use the supplied ribbon cable instead of connecting to terminals 5 and 6; see Page 3.

Battery Setup

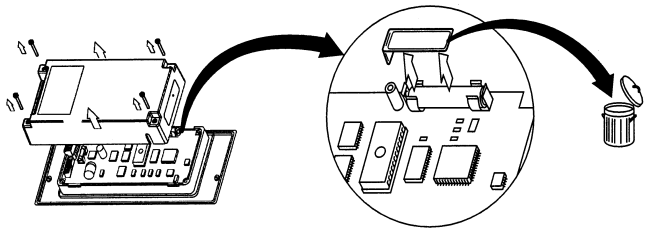
The unit is shipped with the battery disabled to preserve battery life. To enable battery, do the following:

1. Remove battery.
2. Remove protective strip from battery.

REMOVING PROTECTIVE STRIP FROM BATTERY ON WALL UNIT



REMOVING PROTECTIVE STRIP FROM BATTERY ON PANEL MOUNT UNIT



3. Re-install battery. (Make certain polarity is correct.)
4. Make certain battery is fully seated in battery holder.

Power Supply Wiring

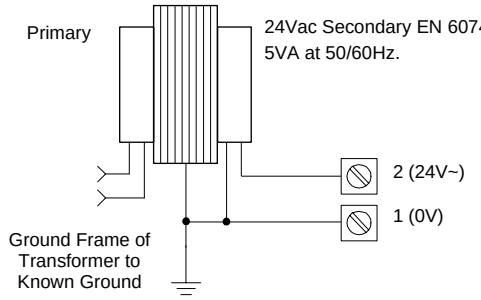
Note: If the LCD is connected directly to an MN 500 or MN 620 via a ribbon cable, a connection to a 24Vac power supply is not required. However, the controller transformer must be upgraded to supply an extra 5VA for the LCD.

Notes:

1. This product contains a non-isolated half-wave rectifier power supply and must not be powered by transformers used to power other devices containing non-isolated full-wave rectifier power supplies. If multiple devices are powered from the same transformer, verify that the transformer is properly sized to power all equipment simultaneously and all devices contain the same type of rectifier power supplies or internal isolation. Also verify that correct polarity has been maintained between all connected devices. Refer to DS 10.250, *EN-206, Guidelines for Powering Multiple Full-Wave and Half-Wave Rectifier Devices from a Common Transformer* for detailed information.
2. Install wiring according to job wiring diagrams and local electrical codes.
3. The wire gauge used must be consistent with load current rating.

24Vac Power Wiring

1. Review Precautions section.
2. Ensure that the LCD 0V terminal is connected to Earth **before** connecting the power wiring to the LCD.
3. Connect power ground wiring to terminal 1.
4. Connect power 24Vac wiring to terminal 2.



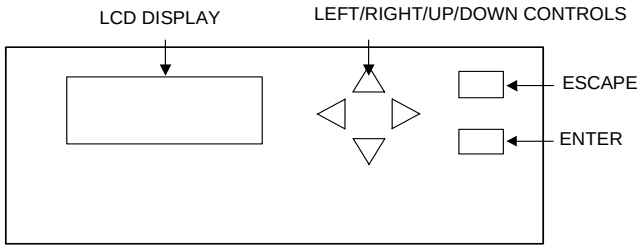
CHECKOUT

Mechanical Hardware Checkout

1. Verify wiring between LCD and controller is installed according to job wiring diagram and national and local electrical codes.
2. Verify 24Vac power is provided from a power transformer conforming to EN 60742 and wiring is installed according to job wiring diagrams and with national and local electrical codes.

LCD Controls

The LCD controls are as follows.



LCD Test Screen

If you keep the Down key of the LCD pressed while applying power, the LCD preforms a reset, and if the controller does not have an LCD configuration (perhaps because it has already been uploaded), the following screen is displayed:

```
MN_LCD
Version xx
Test Now?
```

From this, you can determine the LCD firmware version number, test the unit, and try a manual upload (this should have no effect).

If you want to perform a test:

1. Use the Up/Down key to select Test Now, then press Enter.
2. Enter a passnumber of 1234. Use the Up/Down keys to select each digit of the passnumber, followed by the Right key to move to the next digit. Press Enter when all four digits have been selected.
3. Press each key. You should see the name of the key pressed on the display.
4. Press Enter to test the display. Each pixel should be lit.
5. Press Enter to see the results of the controller communications, EEPROM and RTC test. The controller type should be displayed next to "Unit". "! SAVED" should be displayed next to "RTC CAL".
6. Press Esc to return to the menu.

SERVICING

Caution

Direct static discharge onto the LCD unit may cause it to lock out. If this should occur, reset the unit by switching the LCD power off and on.

Components within a LCD can not be field repaired. If there is a problem, carry out the following procedure before contacting Invensys Customer Care Centre.

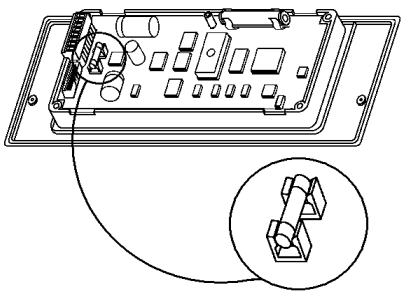
1. Make sure LCD is connected and communicating to desired devices.
2. Record precise hardware setup indicating the following:
   - LCD firmware version number.
   - Information regarding the Version number and build number of the VisiSat Configuration Tool (see 'About VisiSat' option in the VisiSat Tool Help menu).
   - A complete description of difficulties encountered.

Fuse Replacement

A fuse provides overcurrent protection for the LCD. Following static precautions, do the following to check and replace fuse:

1. Turn OFF power to LCD.
2. Remove LCD cover.
3. Remove fuse.
4. Check continuity across fuse.
5. If fuse is faulty, replace fuse with same type and rating (2A anti-surge).
6. Re-install cover.
7. Turn ON power to LCD.

FUSE LOCATION



Battery Replacement

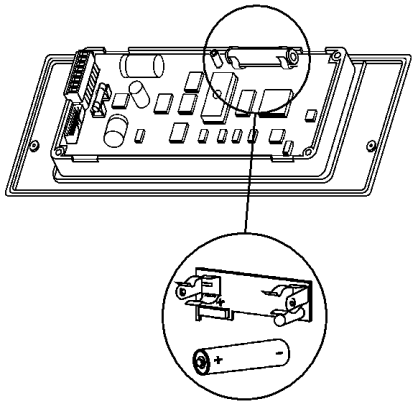
WARNING -

THE PCB CONTAINS A LITHIUM CHLORIDE BATTERY WHICH IS COMPLETELY SAFE WHILST IN NORMAL USE. THE BATTERY MUST BE DISPOSED OF IN AN AUTHORISED LANDFILL SITE.

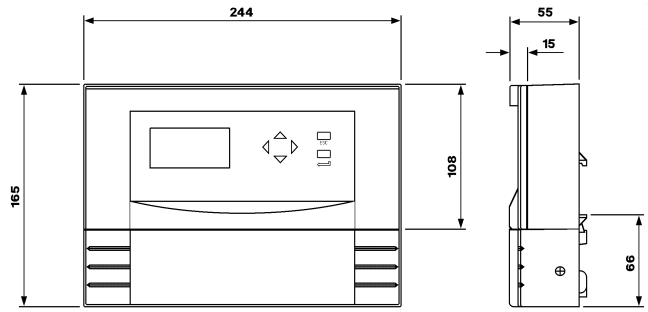
Should there be a power failure, the clock and RAM are protected with a battery-backup. Do the following to check and replace battery (removing the battery does not affect the LCD's configuration):

1. Turn OFF power.
2. Remove cover.
3. Remove battery.
4. Check battery.
5. If battery is faulty, replace battery with same type and rating. (IBS part number E17-129, 3.6V AA Non-rechargeable Lithium)
6. Re-install cover.
7. Turn ON power to LCD.
8. Dispose of battery properly.

BATTERY LOCATION



DIMENSION DRAWING



Dimensions in mm

Weights:

MN LCD (panel mount) 440g approx.

WARNING -

THE RTC BOARD CONTAINS A LITHIUM CHLORIDE BATTERY WHICH IS COMPLETELY SAFE WHILST IN NORMAL USE. THE BATTERY MUST BE DISPOSED OF IN AN AUTHORISED LANDFILL SITE.

Cautions

- **Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.**
- **This is a 24Vac device. Do not exceed rated voltage. Local wiring regulations and usual safety precautions apply.**
- **24Vac must be supplied by a transformer conforming to EN 60742.**
- **If any equipment covers have to be removed during the installation of this equipment, ensure that they are refitted after installation to comply with UL and CE safety requirements.**
- **Do not exceed the maximum ambient temperature.**
- **Interference with parts under sealed covers invalidates guarantee.**
- **The design and performance of Invensys equipment is subject to improvement and therefore liable to alteration without notice.**
- **Information is given for guidance only and Invensys does not accept responsibility for the selection or installation of its products unless information is given by the Company in writing relating to a specific application.**
- **A periodic system and tuning check of the control system is recommended.**

Building Systems - UK
Invensys Energy Solutions
Farnham Road
Slough
Berkshire SL1 4UH
United Kingdom

Telephone +44 (0)1753 611000
Facsimile +44 (0)1753 611001
Web site www.ies.invensys.com