



MN450

Programmable Controllers

The Satchwell MicroNet MN450 Controllers are fully programmable controllers designed for roof top, unit vent, air handling unit (AHU) and central heating and cooling applications. These controllers feature plug-in field wiring terminal blocks, universal inputs, digital (Triac) outputs, analogue outputs and support for one MicroNet MN-Sx sensor.

MN450 controllers use fully-programmable control sequences based on a set of control objects residing in controller memory. The controllers can function in stand-alone mode (after programming with the VisiSat Configuration Tool) or as part of a LONWORKS® FTT-10 topology, a Native Communications Protocol (NCP) or an ARCNET® communications network.

An optional Real Time Clock Card (RTC) can be fitted to all variants of the MN450 to maintain the controller's time during a power failure.

An optional, remotely mounted LCD display can be connected to the controller (in stand-alone mode) to enable overrides and reviewing of the controller's parameters.

FEATURES

- ARCNET and NCP (optically isolated) and LONWORKS FTT-10 communications options
- Fully programmable using graphical objects
- Intelligent multi-loop controller - up to 12 PID control loops
- 24Vac or 24Vdc input power supply
- Time schedules for plant and controller switching
- Proportional, integral and derivative control actions can be individually set in controller applications
- Wall or DIN rail mounting
- The 0-10Vdc inputs can be used for humidity/pressure/velocity control or as a reset input
- 15Vdc supply output for humidity, pressure sensors, etc.
- 0-10Vdc for stepped fan control
- Averaging module for analogue inputs
- Six fully configurable inputs - digital, analogue 0-10Vdc, resistive 0-10kΩ
- S-Link sensor connectivity
- Especially suitable for terminal unit, small air handling unit and boiler control applications
- Optional battery-backed Real Time Clock (RTC) available for use on both networks or for stand-alone operation
- Capacitor-backed RAM (up to 1 week)
- LED diagnostics
- Optional LCD Display for interrogation of local parameters
- Three analogue (0 to 10Vdc) outputs.
- Connection to MicroNet View, TAC Xenta 555 web server and optionally, TAC Vista.

APPLICATIONS

Suitable for new or existing system installations, the MicroNet MN450 Controllers provide control for the following types of applications:

- Boiler Compensation with separate Hot Water Supply (HWS) system
- Boiler Sequence Control and HWS system
- Full air conditioning including fan sequence control
- Small control system applications

CONNECTIVITY

The MN450 Controllers can be attached directly to a MicroNet MN-Sx Sensor allowing a user to monitor controller performance and edit operational values.

When used on an NCP or ARCNET communications network, MN450 controllers connect to a PC running VisiSat Configuration Tool and MicroNet View software, either directly using an ARCNET PC card or via the appropriate MicroNet Manager Interface (MN50-MI-NCP or MN50-MI-ARC). For a LONWORKS network, PC connection is direct (via LON® PC card) only.

In an SNP or NCP network, MN450 controllers can connect to a Xenta 555 web server via RS485, and in an ARCNET network, via an MN50-MI-ARC. MN450 LON controllers connect to the Xenta 555 at the LonWorks TP/FT-10 connection.

PART NUMBERS

MicroNet 450 ARCNET Controller	MN450-ARC
MicroNet 450 NCP Controller	MN450-NCP
MicroNet 450 LON Controller	MN450-LON

TECHNICAL DATA

Supply voltage options 24Vac, 50/60Hz (supplied from a transformer conforming to EN 61558), or 24Vdc.
 Max. power consumption 12VA @ 24Vac, 5W @ 24Vdc
 Fuse. 1A anti-surge

Ambient Temperature

Shipping and Storage. -20°C to +70°C
 Operating 0°C to +50°C

Humidity

Operating and Storage 0 to 95% RH, non-condensing

Mechanical

Enclosure. Moulded ABS plastic case
 Flammability class UL 94 V-0
 Protection class IP 20
 Dimensions & Weight see Fig. 3
 Mounting Wall or 35mm DIN rail.
 Wiring Terminals:. Pluggable screw terminal blocks (low voltage only). Max. conductor size 1.5mm²

Real Time Clock Module (optional)

Accuracy at +25 °C ±10 minutes per year
 Battery. Lithium, 3V, 125mAh. Battery life 5 years minimum

Communications

NCP. 9.6k baud, RS 485
 ARCNET 156k baud, RS 485
 LONWORKS FTT-10 Free Topology up to 78k baud

Agency Compliances

CE CE Compliant
 EMC EN 61326 (Emissions) Class A (FCC Class A)
 EN 61326 (Immunity)
 LVD. EN 60950 2001 (Safety IT)
 EN 60730-1 2001 (Safety) (pollution degree 2, impulse voltage 2.5kV)

Power Failure Reserve

Controller EEPROM preserves memory for 10 years under normal conditions of use. RAM contents will be preserved for up to one week in the event of a mains power failure, by a back-up capacitor. The software clock will stop during a power failure. If the controller has an RTC card, then the time will be maintained.

INPUTS AND OUTPUTS

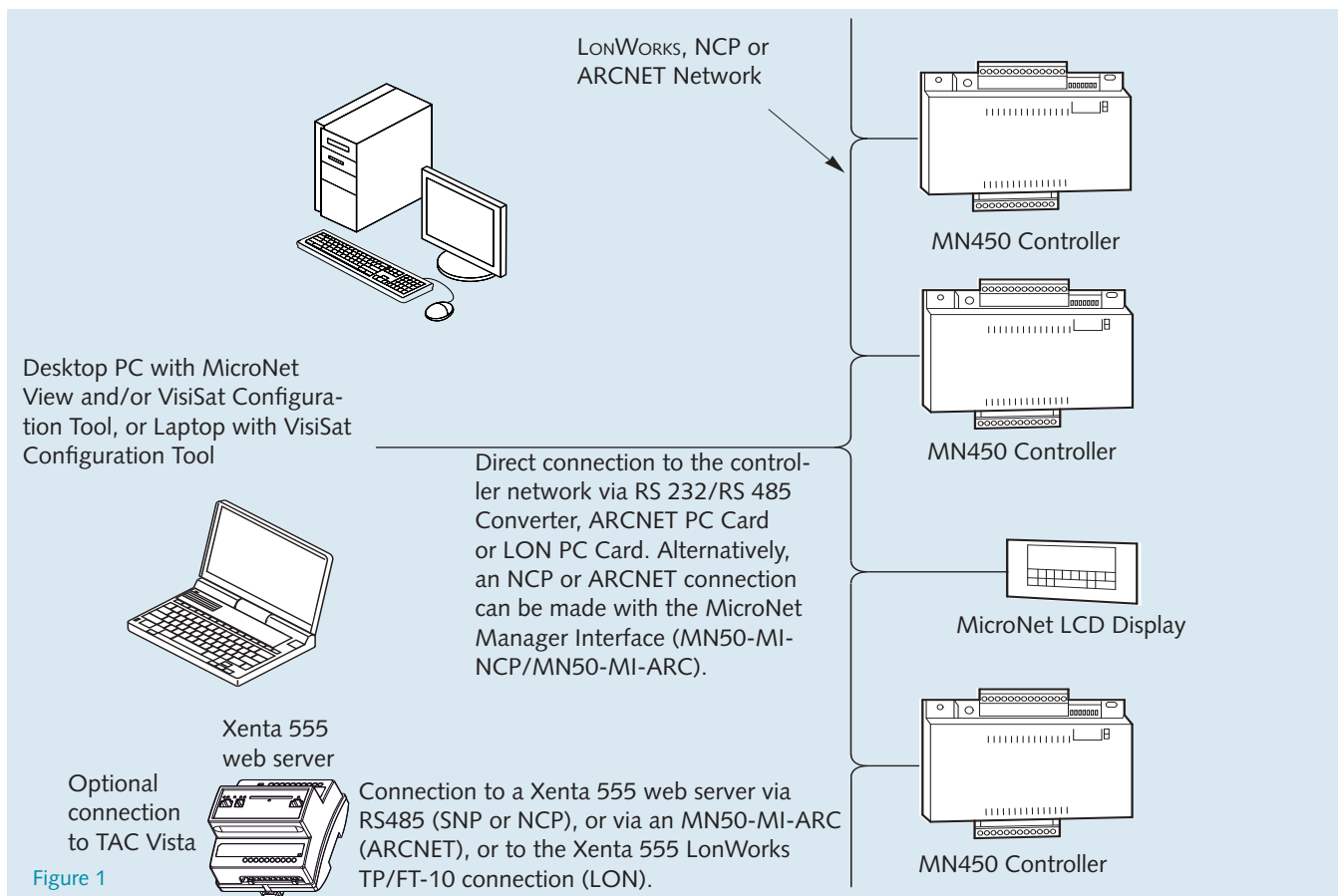
I/O Point Type	Description	Quantity
Universal Input (UI)	Each separately jumper configurable for either resistive (0-10KΩ, 0 - 10Vdc or digital use).	6
Analogue Output (AO)	0 - 10Vdc (at 1mA) for analogue actuator or transducer control (10KΩ minimum input load).	3
Digital (Triac) Output (DO)	Type 1Y, for switching 24Vac. Current Ratings: 6VA at 230Vac supply, 18VA at 24Vac supply.	6
Sensor Link	Sensor Link for MicroNet S-Link sensor. Input comprises: Space Temperature (0°C to 50°C); Adjustable Setpoints (4.4°C to 35°C); Operational Mode (Heat/Cool/Auto/Off); Fan Speed (On/Speed (Low/Medium/High)/Auto); Override Pushbutton (standalone occupancy control or remote status monitoring of local status condition). These features are programmable in VisiSat.	1
15Vdc Output	15Vdc (25mA) supply output for humidity and pressure sensors etc.	1

ACCESSORIES

LIB-4-485 RS 232/RS 485 Converter to connect PC to NCP network
 PCI20-485 or PCI20U-485 PCI card* to connect PC to ARCNET network. Type depends on PC's motherboard.
 PCMCIA20H-485 PCMCIA card* to connect Laptop to ARCNET network.
 *PCI and PCMCIA cards available from Contemporary Controls (www.ccontrols.com).
 Echelon® ECH 74501 PCLTA21/FT-10 PCI card to connect Desktop PC to LONWORKS FTT-10 network
 Echelon® ECH 73200 PCC-10 TP/FT-10 card to connect Laptop PC to LONWORKS FTT-10 network
 LON-TERM1 Single LON Terminator for Free Topologies
 LON-TERM2 Double LON Terminator for Bus Topologies (two required)
 MN-Sx. MicroNet Sensors
 MN50-LCD/MN50-LCDP MicroNet LCD Displays (wall/panel mounting)
 MN50-TS-100/MN50-TSP-100. MicroNet Touch NCP Screen Displays (wall/panel mounting)
 MN50-MI-ARC/NCP. MicroNet Manager Interface for ARCNET/NCP networks
 MN50-MI-RTR ARCNET Router
 MN50-RTC Real Time Clock Card for MN Series Controllers (not supported for LON variants)
 MN-VSCORE. VisiSat Configuration Tool (requires Visio 2003 software), core software (NCP & ARCNET).
 MN-VSLON. VisiSat LON plug-in (requires MN-VSCORE), required for MN450-LON
 0-073-0825. TAC Xenta 555 Web Server
 0-073-0902. TAC Xenta 400 (Terminal Part)

TYPICAL SYSTEM DIAGRAM

MICRONET MN450 CONTROLLER



COMMUNICATIONS

ARCNET

If an open communications standard is not necessary, but peer-to-peer communications is required, the high-performance ARCNET network option may be implemented. This network is created by using ARCNET controller models (e.g. MN450-ARC) and an MicroNet Manager Interface (MN50-MI-ARC).

An ARCNET communications network has a communications speed of 156k baud and can host up to 95 devices per sub-LAN (and up to 31 sub-LANs using ARCNET Routers).

ARCNET controllers communicate with each other in a peer-to-peer mode and connect to the MicroNet View software via an MN50-MI-ARC only and with the VisiSat Configuration Tool software via an MN50-MI-ARC or an ARCNET PC card.

An optional LCD Display, when mounted remotely, can be connected to an MN450-ARC controller operating in stand-alone mode.

NCP (Native Communications Protocol)

In cases where an open communications standard is not required, an NCP network can be used.

An NCP network has a communications speed of 9.6k baud and can host up to

20 sub-networks with 63 devices each communicating in a polled-response mode.

Controllers on an NCP network (e.g. MN450-NCP) connect to MicroNet View and the VisiSat Configuration Tool via a direct connection to the PC using an RS 232/RS 485 Converter. Alternatively, connection can be via a MicroNet Manager Interface (MN50-MI-NCP).

An optional LCD Display, when mounted remotely, can be connected to an MN450-NCP controller operating in stand-alone mode.

LONWORKS

A LONWORKS FTT-10 Free Topology communications network has a communications speed of up to 78k baud and can host up to 63 devices per segment (this can be increased to 128 using a repeater). See www.echelon.com/support for network design and wiring requirements.

LONWORKS network controllers (e.g. MN450-LON) communicate with each other in a peer-to-peer fashion and connect to MicroNet View and the VisiSat Configuration Tool via the standard LON FTT-10 cards.

MicroNet View provides alarm management and dynamic trend logging. Applications can be prepared and

downloaded to MicroNet controllers from the VisiSat Configuration Tool.

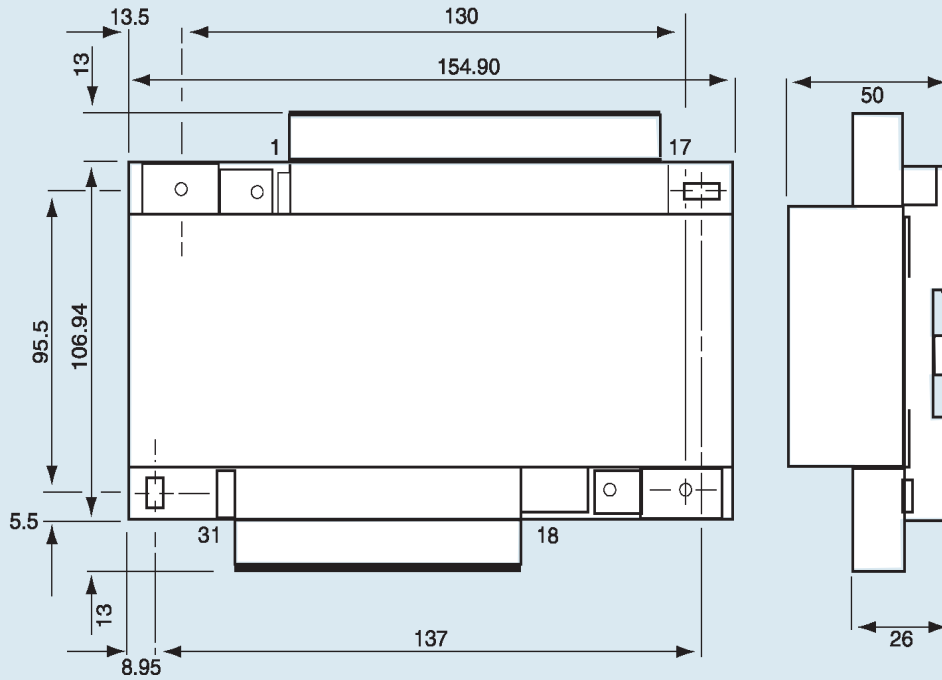
S-Link Sensor

A Sensor Link (S-Link) (two-wire, unscreened, communications wiring) provides a power and communication interface to an MicroNet (MN-Sx) series sensor. From some MN-Sx models, the user can view and adjust application parameters. A maximum of 61m is allowed between the MN450 controller and the MicroNet Sensor.

DOCUMENTATION

- MN450 Wiring & Commissioning - DS 10.152A
- MN450 Installation Instructions - MLI 10.152
- MicroNet Manager Interface - DS 10.217
- MicroNet MN-Sx Sensors - DS 10.000
- MicroNet Touch Screen - DS 10.050
- MicroNet LCD Display - DS 10.060
- MicroNet View - DS 10.201
- VisiSat Configuration Tool - DS 10.202
- VisiSat Engineering Guide
- MicroNet System Overview
- MicroNet System Engineering Guide
- TAC Xenta 555 - 03-00044-01-en.

DIMENSIONS



Weights:	Dimensions in mm
MN450	approx. 300 g
MN50-RTC	approx. 6 g

Figure 2

WARNING

THIS DEVICE OPERATES FROM 24Vac or 24Vdc. DO NOT EXCEED RATED VOLTAGE. LOCAL WIRING REGULATIONS AND USUAL SAFETY PRECAUTIONS APPLY.

Cautions

- Do not apply any voltages until a qualified technician has checked the system and the commissioning procedures have been completed.
- 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.
- 24Vac must be supplied by a transformer conforming to EN 61558.
- Do not exceed the maximum ambient temperature.
- Interference with parts under sealed covers invalidates guarantee.
- Do not charge, short-circuit or solder the MN50-RTC battery. Do not allow contact with water, nor heat, disassemble or dispose of in fire. Do not reverse polarity in application.
- Do not route power and output wiring with signal wiring.
- Do not run Extra Low Voltage (24Vac or less) wiring in the same harness as mains wiring.
- The design and performance of TAC Satchwell equipment is subject to improvement and therefore liable to alteration without notice.
- Information is given for guidance only and TAC Satchwell 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 check of the Building Management System is recommended. Please contact your local sales office for details.
- All installation wiring must conform to BS 6701:2004 & EN 50174.

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