MN350
Programmable Controllers

The Satchwell MicroNet MN350 Controllers are fully programmable controllers designed for unitary control, heating, cooling and special applications that may require line voltage relays and line voltage operation. These controllers feature universal inputs, digital (triac) outputs, 230Vac relay outputs and support for one MicroNet MN-Sx sensor.

MN350 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 (MN50-RTC) can be fitted to all variants of the MN350 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
- 230Vac, 24Vac or 24Vdc input power supply
- Three built-in 230Vac relays, optically isolated
- Time schedules for plant and controller switching
- 15Vdc supply output for humidity, pressure sensors, etc.
- S-Link sensor connectivity
- Four triac outputs for 24Vac.
- Eight fully configurable inputs - digital, analogue 0-10Vdc, resistive 0-10kΩ
- 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
- Wall or DIN rail mounting
- Switched outputs may be configured as stepped outputs (including plant rotation), actuator outputs or outputs for lights and fans
- S-Link sensor range as well as T-range gives price point flexibility of local user interfaces
- The 0-10Vdc input can be used for humidity/pressure/velocity control or as a reset input
- Connection to MicroNet View, TAC Xenta 555 web server and optionally, TAC Vista.

APPLICATIONS

- Suitable for new installations, MicroNet MN350 Controllers provide control for the following types of applications:
- 2 and 4-pipe Fan Coil Unit Control
- 3-speed Fan Control
- Chilled Ceiling/Beam with Zone Heating and Compensation Monitoring
- Electric Heater and DX Cooling Control
- Boiler Plants

CONNECTIVITY

The MN350 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, MN350 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, MN350 controllers can connect to a Xenta 555 web server via RS485, and in an ARCNET network, via an MN50-MI-ARC. MN350 LON controllers connect to the Xenta 555 at the LonWorks TP/FT-10 connection.

PART NUMBERS

MicroNet 350 ARCNET Controller	MN350-ARC
MicroNet 350 NCP Controller	MN350-NCP
MicroNet 350 LON Controller	MN350-LON

t.a.c Satchwell

TECHNICAL DATA

Supply Voltage . . . . . 230Vac, 50/60Hz, Class I, or
. . . . . 24Vac, 50/60Hz (supplied from a transformer conforming to EN 61558), or
. . . . . 24Vdc (22.8Vdc to 30Vdc)
Max. power consumption . . . . . 26VA @ 230Vac, 12VA @ 24Vac, 6W @ 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. . . . . Metal case
Flammability class . . . . . UL 94 V-0
Protection class . . . . . IP 20
Dimensions & Weight . . . . . see Fig. 3
Mounting . . . . . Wall or 35mm DIN rail.
Wiring Terminals:. . . . . Fixed screw terminal blocks. Supply terminals accept one 4mm² wire. I/O and relay terminals accept one 2.5mm² wire.

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).	8
Relay output	3 SPDT 230Vac Line Relay Outputs, Type 1B. Current Ratings: Normally Open contacts 10A; Normally Closed contacts 3A. Note: see warnings & cautions on back page.	3
Digital (Triac) Output (DO)	Type 1Y, for switching 24Vac. Current Ratings: 6VA at 230Vac supply, 18VA at 24Vac supply.	4
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 (On/ Speed (Low/Medium/High)/Auto); Override Pushbutton (stand-alone 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.
PCM20H-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 MN350-LON
0-073-0825. . . . . TAC Xenta 555 Web Server
0-073-0902. . . . . TAC Xenta 400 (Terminal Part)

TYPICAL SYSTEM DIAGRAM

MICRONET MN350 CONTROLLER

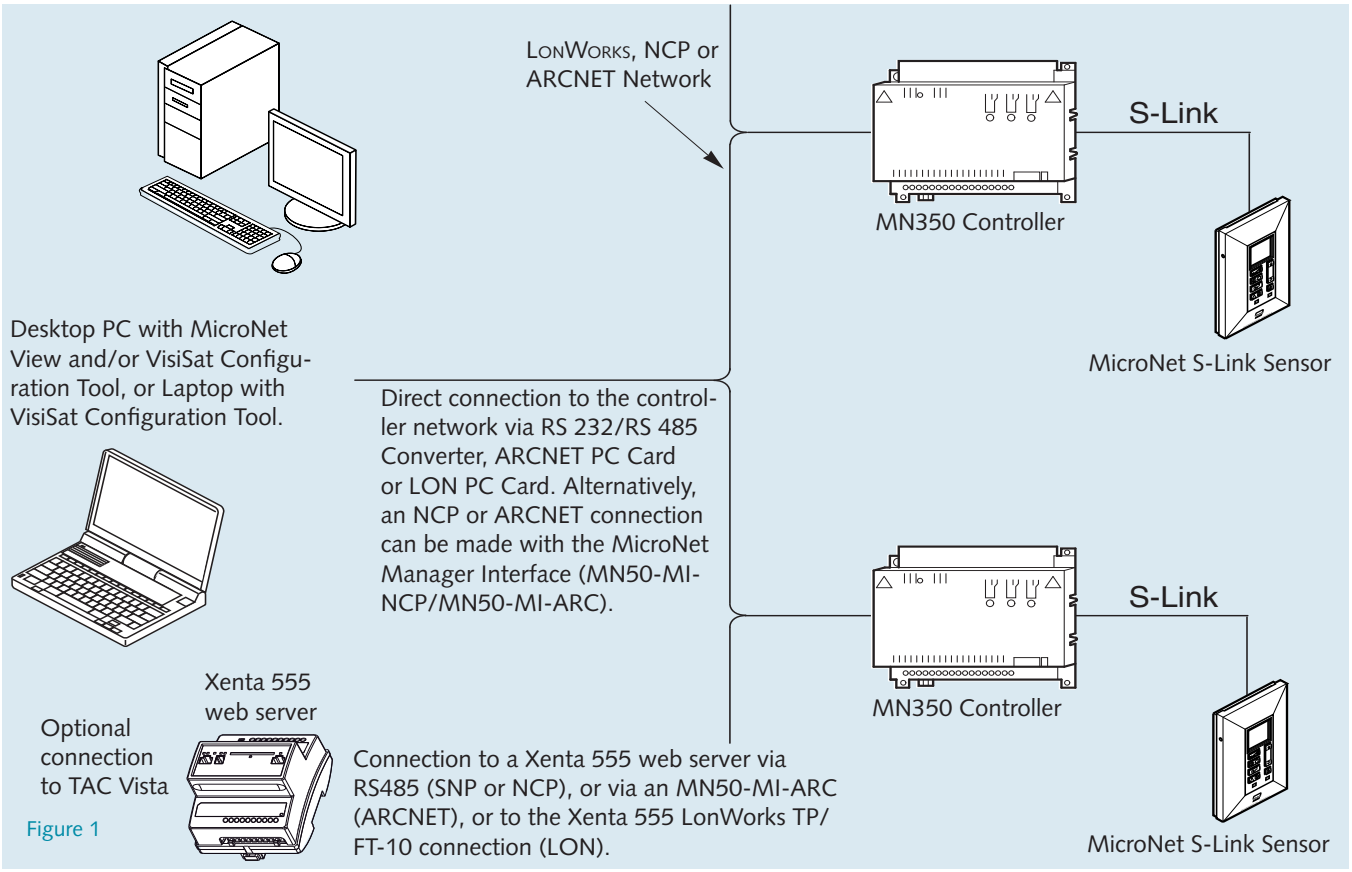


Figure 1

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. MN350-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 MN350-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. MN350-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 MN350-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. MN350-LON) communicate with 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.

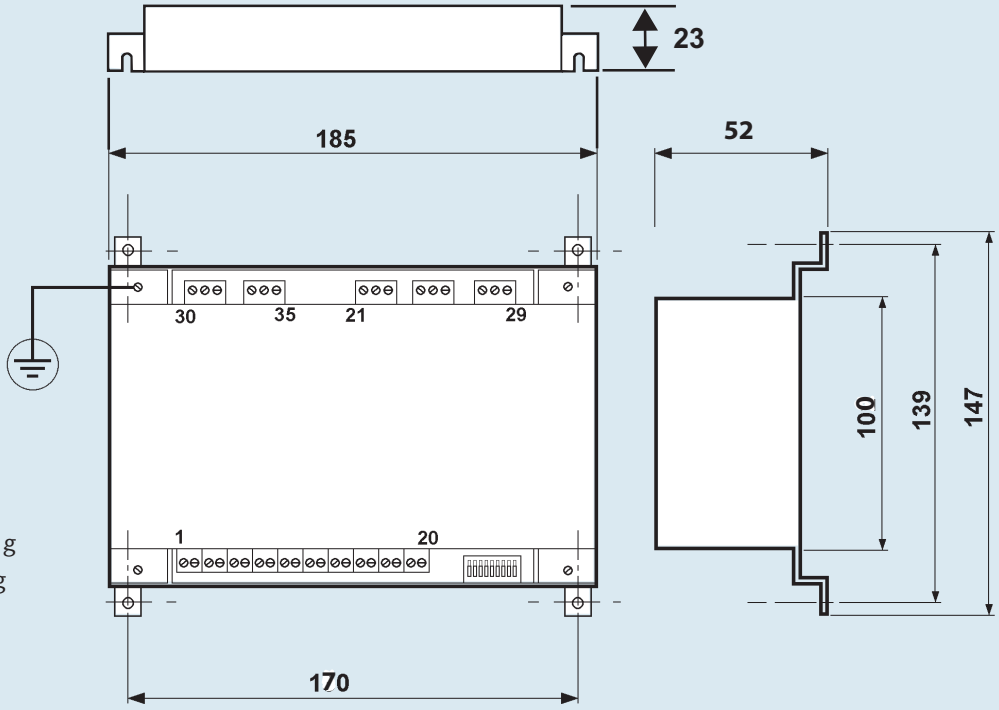
S-Link Sensor

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 MN350 controller and the MicroNet Sensor.

DOCUMENTATION

- MN350 Wiring & Commissioning - DS 10.151A
- MN350 Installation Instructions - MLI 10.151
- 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



Dimensions in mm

Weights:

MN350 approx. 1400 g

MN50-RTC approx. 6 g

Figure 2

WARNINGS

1. THIS DEVICE OPERATES FROM 230Vac, 24Vac or 24Vdc. DO NOT EXCEED RATED VOLTAGE. LOCAL WIRING REGULATIONS AND USUAL SAFETY PRECAUTIONS APPLY.
2. ENSURE THAT BOTH THE CONTROLLER'S COVER AND THE TERMINAL COVER ARE FITTED AND SECURELY CONNECTED TO A SUITABLE EARTH POINT WHEN WIRING/COMMISSIONING IS COMPLETE.
3. ELECTRICAL SHOCK HAZARD. REMOVE ALL POWER FROM BOTH THE CONTROLLER AND RELAY OUTPUTS BEFORE MAKING TERMINATIONS OR CHANGING CONFIGURATION INPUT JUMPERS.
4. RELAY OUTPUTS COULD BE AT MAINS POTENTIAL.

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.
- This controller must be externally fused.
- 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 triac output wiring with any other controller wiring.
- Do not route relay output wiring with any other controller wiring.
- 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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