

Fig. 1. MERLIN (without optional covers)

GENERAL

The MERLIN NX (CLMERxxN) family of room controllers provide flexible, freely programmable, demand-led control that delivers tangible benefits to reduce energy spends and drives new levels of functionality and efficiency in today's buildings. With scalable and freely programmable BACnet MS/TP-based room controllers, smart engineering & commissioning tools, and SYLK technology, multiple and flexible configurations can be achieved to address specific applications.

NOTE: When operating MERLIN NX controllers in combination with IP plant controllers, either private (e.g., VPN) networks must be used or protection against the open Internet (e.g., with external firewalls) must be ensured. See "Network Security" on pg. 2.

FEATURES

- Designed to control terminal units such as 2- and 4-pipe fan coil units, chilled ceilings, hydronic, air quality control, and a mix of these applications.
- For complex applications requiring high I/O count.
- Support for 1-3 stage fans, variable fan speed drives (VSDs), thermal, floating, and proportional actuators.
- Auto-baud rate adaption for BACnet MS/TP communication supported.
- Auto Mac-addressing.
- BACnet BTL®-Listed as Application Specific Controllers (B-AAC) rev 1.14.
- Two housing dimensions and several different I/O versions to match your individual needs.
- 24 VAC and 230 VAC versions.
- Universal mounting options, including terminal covers and color-coded terminals.
- The 230 VAC models feature 24 VAC aux. output voltage, allowing direct connection and powering of field devices.
- A removable two-wire polarity-insensitive bus interface to connect to Honeywell Sylk wall modules.
- All models have a real-time clock and a supercapacitor for 24-hr data retention.
- Support for offline and online programming. Online programming enables quick application optimization without the need for additional application downloads.
- Bulk commissioning of similar rooms. You can create a master template and synchronize it with all rooms having the same application.

SYSTEM OVERVIEW

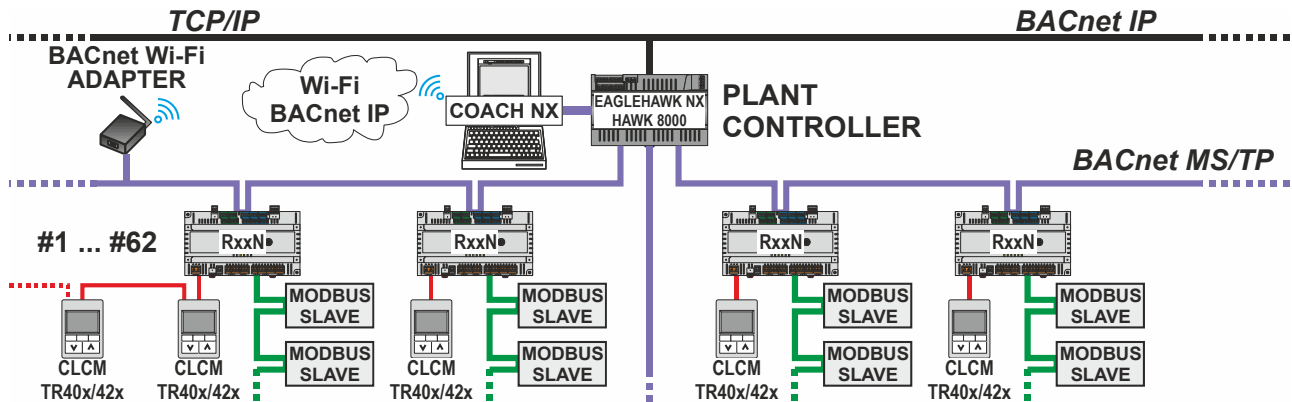


Fig. 2. System overview

Table 1. Overview of models

	OS no.: CLMER...	power supply	AOs	UIs	BlIs	relays ^(A)	triacs ^(B)	total no. of I/Os	remarks
large housing (198 x 110 x 57.5 mm)	RL4N	230 VAC	6	10	0	4	4	24	24-hr data retention ^(E)
	RL6N	24 VAC	6	10	0	4	4	24	24-hr data retention ^(E)
	RL8N	230 VAC	6	6 ^(C)	4 ^(D)	4	4	24	24-hr data retention ^(E) ; supports switch inputs with 24 V pull-up for connection of standard light switches; preferred model for light and blinds control
small housing (162 x 110 x 57.5 mm)	RS4N	230 VAC	4	4	0	4	2	14	24-hr data retention ^(E)
	RS5N	24 VAC	4	4	0	4	2	14	24-hr data retention ^(E)

^(A) See also section "Relay Outputs" on pg. 10.

^(B) See also section "Triac Current Limitations" on pg. 10.

^(C) Of this model's six UIs, only two UIs support NTC; this model is thus not suitable for the hardwiring of wall modules requiring three UIs supporting NTC.

^(D) This model's four binary-only inputs are labelled as UI1-UI4.

^(E) The controller includes a supercapacitor to power the built-in real-time clock 24 hours. In the case of a power failure, this supercapacitor will retain the set time for 24 hours. After 24 hours, the time will reset to the factory default until the user performs BACnet Time Sync.

CPU: 32-bit MK24FN Freescale Kinetis Cortex M4

NETWORK SECURITY

WARNING

Honeywell hereby expressly states that the MERLIN NX controller is not inherently protected against cyber attacks from the Internet and that it is therefore intended solely for use in private, protected networks.

Unprotected Internet connections can expose the MERLIN NX controller to cyber attacks from third parties who can then damage it and connected facility components or cause them to malfunction, or who can misuse it for illegal purposes for which the operator may then be held liable.

When directly connected to the Internet, the MERLIN NX controller automatically becomes a potential target for cyber attacks. Corresponding protective measures are therefore essential if safe and reliable operation is to be ensured.

If it is not necessary for the MERLIN NX controller to be accessible from the Internet, it should be isolated from the Internet via a suitable firewall.

If it is necessary for the MERLIN NX controller to be accessible from the Internet (e.g., in order to perform remote maintenance), the use of a coded VPN connection is indispensable. Suitable VPN routers are available from numerous third-party manufacturers in a wide variety of designs, for operation at 230 V or 24 V.

For details, see also MERLIN NX Networking Whitepaper (Product Literature No.: EN2Z-1059GE51).

GENERAL NOTE

The configurable MERLIN AX controllers (order numbers: CLMERxx) and the freely programmable MERLIN NX controllers (order numbers: CLMERxxN) use different firmware, different tools, and different applications. They are thus not compatible with each other and, if used in the same project, will not deliver seamless behavior.

MERLIN AX configurable controllers (CLMERxx):

- Firmware is based on a non-CentraLine firmware.
- The controller cannot be freely programmed.
- Suitable for use with RoomUp.

MERLIN NX freely programmable controllers (CLMERxxN):

- Based on BEATS firmware.
- The controller is freely programmable using the Niagara IRM Engineering Tool.
- Not suitable for use with RoomUp.

DIMENSIONS AND MOUNTING

Housings

The controller is available in two housing sizes, both conforming to IP20:

- RLxN (large housing):
W x L x H = 110 x 198 x 59 mm and
- RSxN (small housing):
W x L x H = 110 x 162 x 59 mm

See also Fig. 3 and Fig. 4.

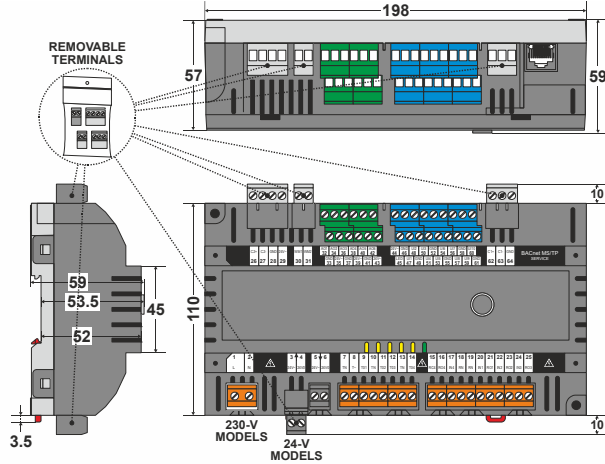


Fig. 3. RLxN dimensions (in mm)

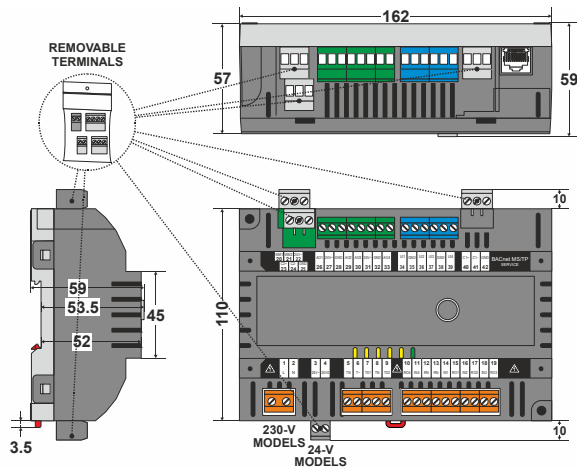


Fig. 4. RSxN dimensions (in mm)

The unit is suitable for mounting on a standard rail, on walls, as well as in wiring cabinets or fuse boxes.

Terminal Protection Covers for IP30

In the case of controllers mounted outside of a cabinet, before applying power to the device, Terminal Protection Covers (10-pc. bulk packs, order no.: IRM-RLC for large housings and IRM-RSC for small housings) must be mounted so as to provide IP30.

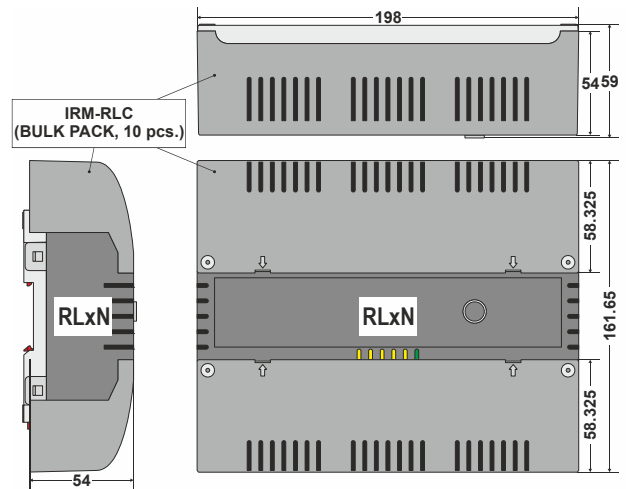


Fig. 5. Large housing, with terminal protection covers, dimensions (in mm)

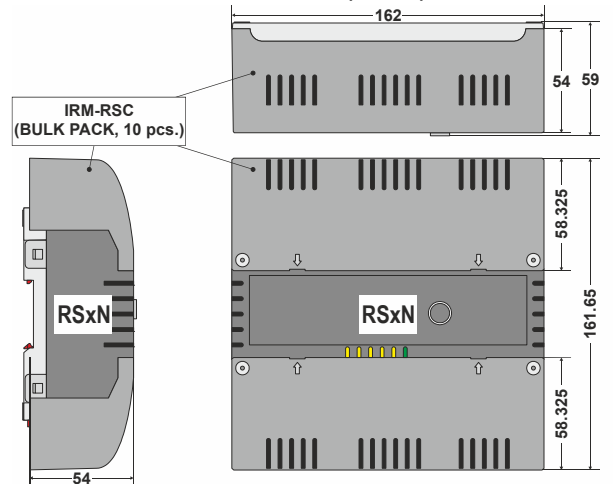


Fig. 6. Small housing, with terminal protection covers, dimensions (in mm)

TERMINAL ASSIGNMENT

General

For a complete list of all terminals and a description of their functions, see Table 2 and Table 6.

Communication Interfaces

All models of the controller feature the following communication interfaces:

- A removable two-wire polarity-insensitive bus interface for connection to Honeywell Sylk wall modules;
- A removable non-isolated RS485 interface (RS485-1), suitable for connection with BACnet MS/TP devices;
- A second removable non-isolated RS485 interface (RS485-2), for use with Modbus;
- An RJ45 connector for connection of the BACnet WiFi Adapter.

Table 2. RSxN Room Controller: Overview of terminals and functions

term.	printing	function	RS4N	RS5N
1, 2	"L", "N"	230-VAC power supply input	X	--
3, 4	"24V~", "24V0"	Removable 24-VAC power supply input	--	X
3, 4	"24V~", "24V0"	Aux. output voltage (24 VAC) for all triacs	X ⁽¹⁾	--
5	"TN"	Aux. term. for triac neutral wiring (intern. connected with terminal 8)	X	X
6	"T~"	Input voltage (24 VAC / 230 VAC) for all triacs	X	X
7	"T01"	Triac-switched output	X	X
8	"TN"	Aux. term. for triac neutral wiring (internally connected with terminal 5)	X	X
9	"T02"	Triac-switched output	X	X
10, 11	"RO4", "IN4"	Output of Relay 4, Input for Relay 4	type 2	type 2
12, 13	"RN", "RN"	Aux. terminals for relay neutral wiring	X	X
14, 15	"IN1", "RO1"	Input for Relay 1, Output of Relay 1	type 1	type 1
16, 17	"IN2", "RO2"	Input for Relay 2, Output of Relay 2	type 1	type 1
18, 19	"IN3", "RO3"	Input for Relay 3, Output of Relay 3	type 1	type 1
20, 21	"WM1", "WM2"	Removable interface for Sylk Bus	X	X
22, 25	"24V~", "24V0"	Removable 24-VAC power for field devices	X ⁽¹⁾	X ⁽²⁾
23, 24, 25	"C2+", "C2-", "24V0"	Removable RS485 Modbus interface + corresp. GND	X	X
26	"AO1"	Analog Output 1	type 2	type 2
27	"24V~"	24 VAC power for field devices	X ⁽¹⁾	X ⁽²⁾
28	"GND"	Ground for AOs	X	X
29	"AO2"	Analog Output 2	type 1	type 1
30	"AO3"	Analog Output 3	type 1	type 1
31	"24V~"	24 VAC power for field devices	X ⁽¹⁾	X ⁽²⁾
32	"GND"	Ground for AOs	X	X
33	"AO4"	Analog Output 4	type 1	type 1
34	"UI1"	Universal Input 1	type 1	type 1
35	"GND"	Ground for UIs	X	X
36	"UI2"	Universal Input 2	type 1	type 1
37	"UI3"	Universal Input 3	type 1	type 1
38	"GND"	Ground for UIs	X	X
39	"UI4"	Universal Input 4	type 1	type 1
40, 41, 42	"C1+", "C1-", "GND"	Removable BACnet MS/TP interface and corresponding GND	X	X

Relay output types: See Table 3. Universal input types: See Table 4. Analog output types: See Table 5.

⁽¹⁾ See section "RL4N, RL8N, RS4N (230 VAC)" on pg. 8. ⁽²⁾ See section "RL6N, RS5N (24 VAC)" on pg. 8.

Table 3. Relay output types and characteristics

	type 1 (standard)	type 2 (high in-rush current)
corresponding ROs of RSxN	RO1, RO2, RO3	RO4
corresponding ROs of RLxN	RO2, RO3	RO1, RO4
contact	N.-O.	N.-O.
min. load	5 VAC, 100 mA	24 VAC, 40 mA
switching voltage range	15 ... 253 VAC	15 ... 253 VAC
max. continuous current at 250 VAC (cos φ = 1)	4 A	10 A
max. continuous current at 250 VAC (cos φ = 0.6)	4 A	10 A
in-rush current (20 ms)	5 A	80 A
usage	fan motor	light switching and fan motor

NOTE: The max. sum load of all relay currents at the same time is 14 A.

Table 4. Universal input types and characteristics

	type 1	type 2	type 3
	UI1, UI2, UI3, UI4, UI5, UI6	UI7, UI8, UI9, UI10	UI1, UI2, UI3, UI4 (RL8N, only)
dry contact (closed: res. <10 kΩ; open: res. > 20 kΩ; max. 0.2 Hz; pull-up voltage: 10 V)	X	X	--
dry contact (closed: res. <10 kΩ; open: res. > 20 kΩ; max. 0.2 Hz; pull-up voltage: 24 V)	--	--	X
0(2) ... 10 V	X	X	--
NTC20kΩ	X	--	--
SetPoint and FanSpdSW (from CLCM1T,2T,4T,5T,6T111)	X	--	--
NTC10kΩ	X	--	--
PT1000 + Ni1000TK5000	--	X	--

Table 5. Analog output types and characteristics

	type 1	type 2	type 3	type 4	type 5
output voltage	0...11 V				
output current	0...1 mA	0...5 mA	0...10 mA	0...20 mA	-1...+1 mA
min. accuracy	±150 mV				
max. ripple	±100 mV				
accuracy at zero point	0...200 mV				±150 mV

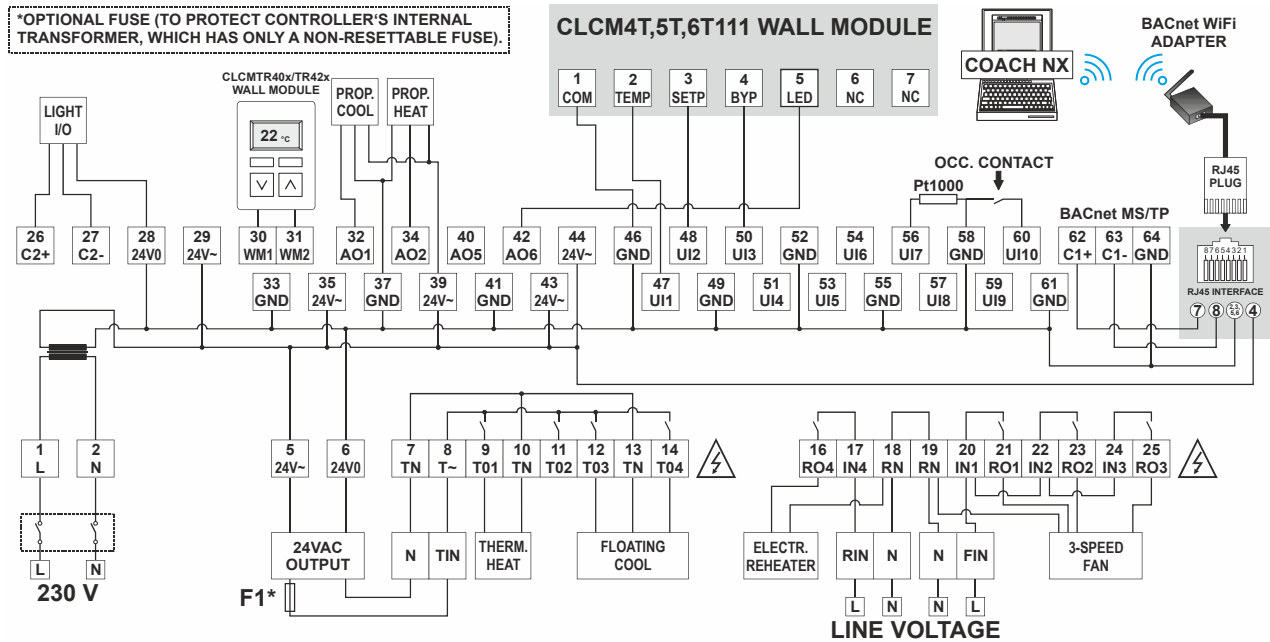


Fig. 7. RL4N (230-V model) example wiring

Table 6. RLxN Room Controllers: Overview of terminals and functions (by model)

term.	printing	function	RL4N	RL6N	RL8N
1, 2	"L", "N"	230-VAC power supply input	X	--	X
3, 4	"24V~", "24V0"	Removable 24-VAC power supply input	--	X	--
5, 6	"24V~", "24V0"	Aux. output voltage (24 VAC) for all triacs	X ⁽¹⁾	X ⁽²⁾	X ⁽¹⁾
7	"TN"	Aux. terminal for triac neutral wiring (internally connected with terminals 10 + 13)	X	X	X
8	"T~"	Input voltage (24 VAC / 230 VAC) for all triacs	X	X	X
9	"T01"	Triac-switched output	X	X	X
10	"TN"	Aux. terminal for triac neutral wiring (internally connected with terminals 7 + 13)	X	X	X
11	"T02"	Triac-switched output	X	X	X
12	"T03"	Triac-switched output	X	X	X
13	"TN"	Aux. terminal for triac neutral wiring (internally connected with terminals 7 + 10)	X	X	X
14	"T04"	Triac-switched output	X	X	X
15	"RC4"	Not used.	--	--	--
16, 17	"RO4", "IN4"	Output of Relay 4, Input for Relay 4	type 2	type 2	type 2
18	"RN"	Aux. terminal for relay neutral wiring	X	X	X
19	"RN"	Aux. terminal for relay neutral wiring	X	X	X
20, 21	"IN1", "RO1"	Input for Relay 1, Output of Relay 1	type 2	type 2	type 2
22, 23	"IN2", "RO2"	Input for Relay 2, Output of Relay 2	type 1	type 1	type 1
24, 25	"IN3", "RO3"	Input for Relay 3, Output of Relay 3	type 1	type 1	type 1
26, 27, 28	"C2+", "C2-", "24V0"	Removable RS485 Modbus Interface and corresponding GND	X	X	X
28, 29	"24V0", "24V~"	Removable 24-VAC power for field devices	X ⁽¹⁾	X ⁽²⁾	X ⁽¹⁾
30, 31	"WM1", "WM2"	Removable interface for Syk Bus	X	X	X
32	"AO1"	Analog Output 1	type 3	type 3	type 4
33	"GND"	Ground for AOs	X	X	X
34	"AO2"	Analog Output 2	type 3	type 3	type 3
35	"24V~"	24 VAC power for field devices	X ⁽¹⁾	X ⁽²⁾	X ⁽¹⁾
36	"AO3"	Analog Output 3	type 1	type 1	type 5
37	"GND"	Ground for AOs	X	X	X
38	"AO4"	Analog Output 4	type 1	type 1	type 5
39	"24V~"	24 VAC power for field devices	X ⁽¹⁾	X ⁽²⁾	X ⁽¹⁾
40	"AO5"	Analog Output 5	type 1	type 1	type 1
41	"GND"	Ground for AOs	X	X	X
42	"AO6"	Analog Output 6	type 1	type 1	type 1
43	"24V~"	24 VAC power for field devices	X ⁽¹⁾	X ⁽²⁾	X ⁽¹⁾
44	"24V~"	24 VAC power for field devices	--	--	X ⁽¹⁾
45	"LED"	Output to LED of CLCM4T,5T,6T111	--	--	X
46	"GND"	Ground for UIs	X	X	X
47	"UI1"	Universal Input 1	type 1	type 1	type 3 (BI)
48	"UI2"	Universal Input 2	type 1	type 1	type 3 (BI)
49	"GND"	Ground for UIs	X	X	X
50	"UI3"	Universal Input 3	type 1	type 1	type 3 (BI)
51	"UI4"	Universal Input 4	type 1	type 1	type 3 (BI)
52	"GND"	Ground for UIs	X	X	X
53	"UI5"	Universal Input 5	type 1	type 1	type 1
54	"UI6"	Universal Input 6	type 1	type 1	type 1
55	"GND"	Ground for UIs	X	X	X
56	"UI7"	Universal Input 7	type 2	type 2	type 2
57	"UI8"	Universal Input 8	type 2	type 2	type 2
58	"GND"	Ground for UIs	X	X	X
59	"UI9"	Universal Input 9	type 2	type 2	type 2
60	"UI10"	Universal Input 10	type 2	type 2	type 2
61	"GND"	Ground for UIs	X	X	X
62, 63, 64	"C1+", "C1-", "GND"	Removable BACnet MS/TP interface and corresponding GND	X	X	X

Relay output types: See Table 3. Universal input types: See Table 4. Analog output types: See Table 5.

⁽¹⁾ See section "RL4N, RL8N, RS4N (230 VAC)" on pg. 8. ⁽²⁾ See section "RL6N, RS5N (24 VAC)" on pg. 8.

*OPTIONAL FUSE (TO PROTECT CONTROLLER'S INTERNAL TRANSFORMER, WHICH HAS ONLY A NON-RESETTABLE FUSE)

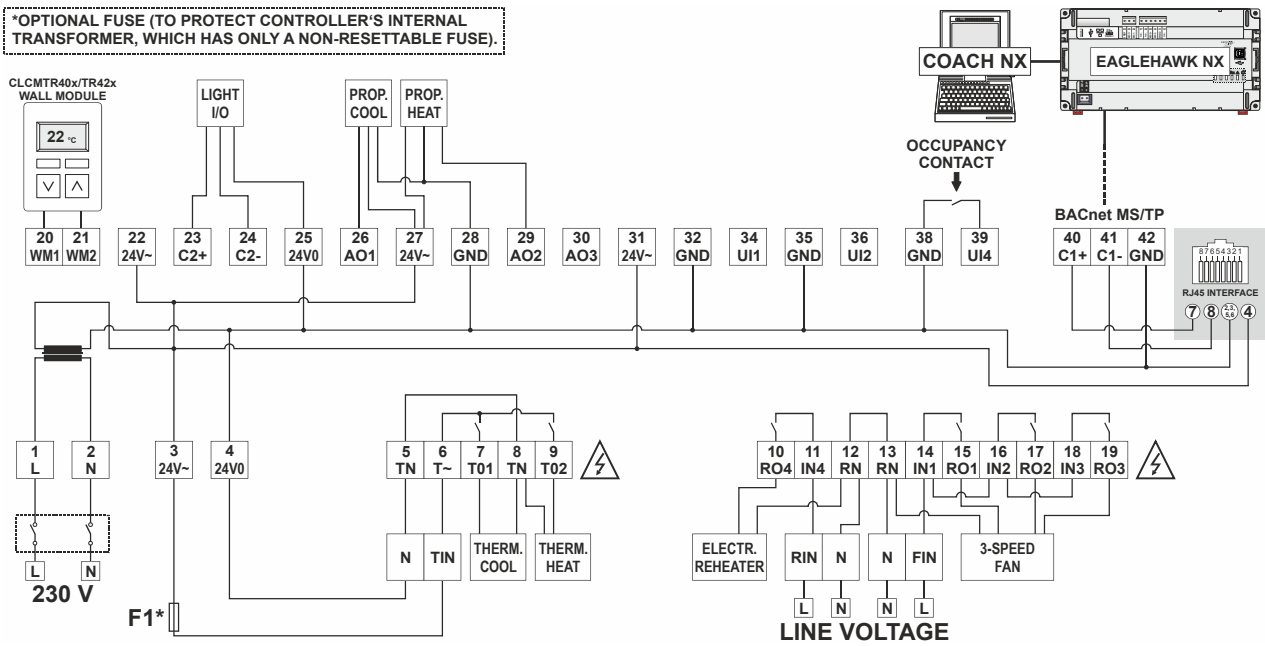


Fig. 8. RS4N example wiring (230-V model)

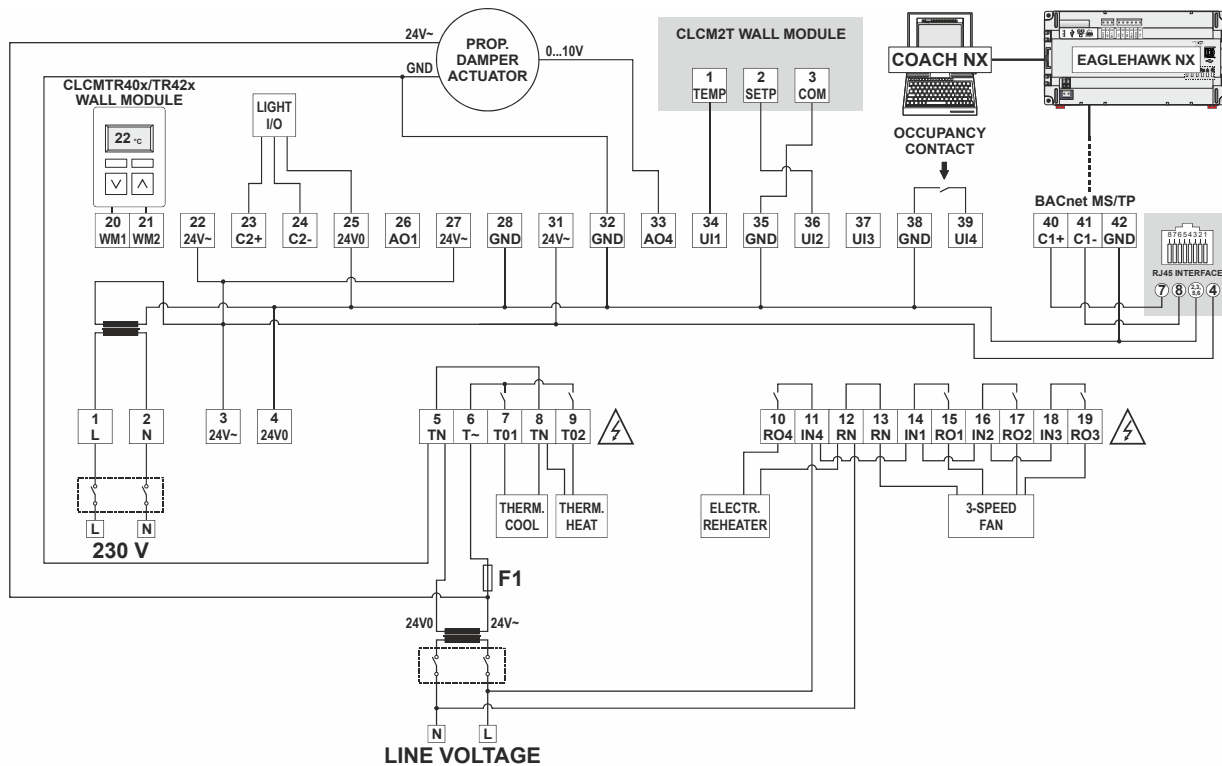


Fig. 9. RS4N example wiring (230-V model)

ELECTRICAL DATA

RL4N, RL8N, RS4N (230 VAC)

Power via terminals 1 + 2: 230 VAC +10% / -15%, 50/60 Hz.

Max. power consumption (when unloaded): 8 W.

Max. power consumption (when loaded): 18 W.

The controller is "unloaded" when it has no external load. Thus, the only load on the controller is the inherent load (8 W) of the electronics, themselves. The heat dissipation then amounts to 8 W. The controller is "loaded" when – besides the inherent load – an additional sum load resulting from max. **300 mA** is applied to the 24 VAC output terminals.

All 24-VAC output terminals (RS4N: terminals 3, 22, 27, and 31; RL4N and RL8N: terminals 5, 29, 35, 39, 43, 44) are internally connected.

The voltage at the 24-VAC output terminals is sourced by the internal transformer and can be 20 ... 33 VAC. Max. allowed load in sum is 300mA.

The 24-VAC output terminals **must not** be used for 24-VAC power supply input.

RL6N, RS5N (24 VAC)

Power via terminals 3+4: 24 VAC ±20%, 50/60 Hz.

Max. current consumption (when unloaded): 300 mA.

Max. current consumption (when loaded): 900 mA.

The controller is "loaded" when – besides the inherent load (300 mA) – an additional sum load resulting from max. **600 mA** is applied to the 24 VAC output terminals.

All 24-VAC output terminals (RS5N: terminals 22, 27, 31; RL6N: terminals 5, 29, 35, 39, 43, and 44) are internally connected with terminal 3 (24-VAC power supply input). Thus, the voltage at these terminals is identical with the output voltage of the external supplying transformer connected to terminals 3 and 4. Max. load at 24-VAC output terminals in sum is 600 mA.

The 24-VAC output terminals should not be used for 24-VAC power supply input.

FREELY PROGRAMMABLE APPLICATIONS

All models can be used with applications which the application engineer can freely program for each controller. This process is performed on a PC on which COACH NX has been installed.

Supported Actuators

The application supports a variety of actuators.

- Analog 0(2)...10 V
- Floating
- PWM
- Staged actuators
- 6-way valve actuators

Supported Sensors

A variety of sensors (e.g., room temperature sensors, supply temperature sensors, condensation switch, window sensors, occupancy sensors, card readers, etc.) may be used to optimize control quality.

Applications

Applications requiring a fast reaction time can be implemented as event-based applications for, e.g.:

- Dali Gear/CFL lamps respond within 500 milliseconds of the Light ON command being issued by the Loytec Wall Module / ISMA I/O modules.
- The light ON/OFF relay responds within 500 milliseconds of the push button at the input terminal being pressed. To achieve this, use the LightA function block in the periodic program.

Automatic MAC Addressing

In contrast to many other MS/TP controllers, the MERLIN NX controller features automatic MAC addressing. There is thus no need to manually set the MAC address.

OPERATOR INTERFACES

LEDs

The controller features the following LEDs:



Fig. 10. Controller LEDs

Table 7. Description of LED behaviors

symbol	color	function, description
T2	yellow	Not used
R2	yellow	Not used
T1	yellow	LED indicating transmission of communication signals via the BACnet MS/TP interface
R1	yellow	LED indicating reception of communication signals via the BACnet MS/TP interface.
△	yellow	Status LED indicating firmware problems, hardware problems, etc.
⏻	green	Power LED indicating firmware problems, hardware problems, etc.

Service Button

The controller's Service Button is used to trigger dedicated events.

COMMUNICATION INTERFACES

System Overview

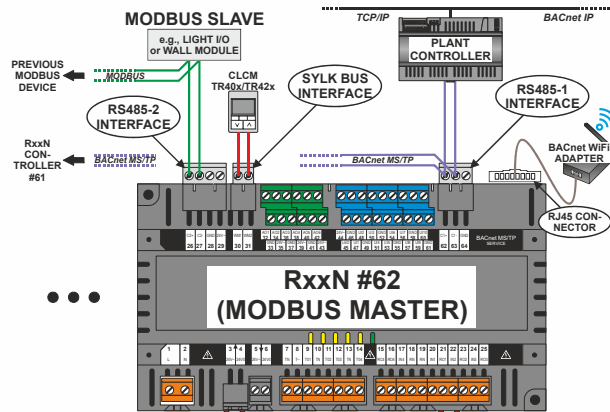


Fig. 11. System overview

BACnet MS/TP Interface

The controller features a removable RS485 interface (RLxN: terminals 62, 63, and 64; RSxN: terminals 40, 41, and 42) suitable for BACnet MS/TP communication. The terminal block containing it is gray. The cable length affects the baud rate. See Table 8.

Table 8. Baud rate vs. max. cable length

baud rate	max. cable length (L)
9.6, 19.2, 38.4 , 57.6, and 76.8 kbps	1200 m

The controller supports auto-baud rate adaption for BACnet MS/TP communication at all of the aforementioned baud rates (the default is: 38.4 kbps).

For information on wire gauge, max. permissible cable length, possible shielding and grounding requirements, and the max. number of devices which can be connected to a bus, refer to standard EIA-485.

RJ45 Connector for BACnet WiFi Adapter

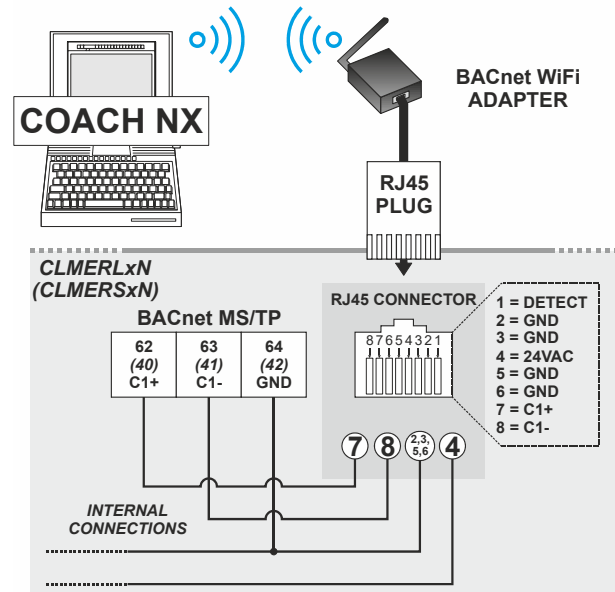


Fig. 12. RJ45 interface and BACnet WiFi Adapter

NOTE: When using the BACnet WiFi Adapter (BACA-A) to commission the controllers, the following steps should be followed:

1. Set the property maxMaster to a value of 35 for all controllers on the MS/TP bus to which the BACnet WiFi Adapter is to be connected.
2. Ensure that one of the following MAC addresses is free on this MS/TP bus: 31 or 32 or 33 or 34.
3. Connect the BACnet WiFi Adapter to the MS/TP bus.

⚠ CAUTION

It is permitted to connect **only** the BACnet WiFi Adapter to this RJ45 connector. Do **not** connect IP!

A BACnet WiFi Adapter can be connected to the controller's RJ45 connector in order to establish wireless communication with a PC with COACH NX so that the application engineer can commission the controller.

NOTE: When the BACnet WiFi Adapter is connected to the controller's RJ45 connection, it is powered by the controller. It is then prohibited to simultaneously power the BACnet WiFi Adapter via a wall adapter. When, on the other hand, the BACnet WiFi Adapter is instead connected to the controller's BACnet MS/TP interface, it is prohibited to simultaneously use an RJ45 plug; instead, the BACnet WiFi Adapter must then be powered by a wall adapter (standard 5-V USB wall adapter with micro USB connector).

Modbus Interface

The controller features a removable non-isolated RS485 interface suitable for Modbus communication:

- RLxN: terminals 26, 27, and 28 (GND);
- RSxN: terminals 23, 24, and 25 (GND).

The controller can function only as a Modbus Master. In general, the RS485 wiring rules must be followed.

NOTE: The GND is internally connected with 24V-0 (small controllers: terminal 4; large 24-V controllers: terminals 4 and 6; large 230-V controllers: terminal 6).

For more information about Modbus, see Niagara IRM Engineering Tool – User Guide (EN2B-0414GE51).

Wall Modules

A variety of wall modules can be used in conjunction with the controller to perform room temperature sensing, setpoint adjustment, fan speed manual override, and occupancy override.

Wall Modules Supported for Connection to Sylk Interface

The following wall module types are supported for connection to the controller's Sylk interface:

- CLCMTR40, CLCMTR40-H, CLCMTR40-H-CO2, and CLCMTR40-CO2
- CLCMTR42, CLCMTR42-H, CLCMTR42-H-CO2, and CLCMTR42-CO2
- CLCMTR71, CLCMTR71-H, CLCMTR75, and CLCMTR75-H
- CLCMTR120 (TR75E) and CLCMTR120-H (TR75-HE).

Wall Modules Supported for Connection to I/Os

The following wall module types are supported for connection to the controller's respective I/Os:

- CLCM1C155A and CLCM4C155A;
- CLCM1T11N, CLCM2T11N, CLCM4T111, CLCM5T111, and CLCM6T111.

I/O TERMINALS



CAUTION

Failure to observe the following max. permissible current outputs of the power output terminals will result in damage to the device.

Max. Current Output of Power Output Terminals of 230 VAC Controllers

The 24 VAC power output terminals of the 230 VAC RLxN controllers are terminals 5, 6, 28, 29, 35, 39, 43, and 44 plus pin 4 of the controller's RJ45 interface. Two of these terminals (typically: 5 and 6) will be used to supply the triacs.

The 24 VAC power output terminals of the 230 VAC RSxN controllers are terminals 3, 4, 22, 25, 27, and 31 plus pin 4 of the controller's RJ45 interface. Two of these terminals (typically: 3 and 4) will be used to supply the triacs.

Regardless of whether the triacs are supplied by the controller's internal transformer or by an external source, the max. permissible combined current output of the afore-

mentioned 24 VAC power output terminals is 300 mA (or 320 mA for max. 2 minutes).

Consequently, if only those two 24 VAC power output terminals used to supply the triacs already have the max. permissible combined current output of 300 mA (or 320 mA for max. 2 minutes), then the current output of the remaining 24 VAC power output terminals must, of course, equal zero.

Max. Current Output of Power Output Terminals of 24 VAC Controllers

The 24 VAC power output terminals of the 24 VAC RLxN controllers are terminals 5, 35, 39, 43, and 44 plus pin 4 of the controller's RJ45 interface.

The 24 VAC power output terminals of the 24 VAC RSxN controllers are terminals 3, 22, 27, and 31 plus pin 4 of the controller's RJ45 interface.

The max. permissible combined current output of these 24 VAC power output terminals is 300 mA.

Relay Outputs



CAUTION

Mixing of line voltage and low voltage within the relay block is not allowed.

The terminal blocks containing the controller's relay outputs are orange. Relay output types: See Table 3.

NOTE: If inductive components are to be connected to the relays and if these relays switch more often than once every two minutes, these components must be prevented from causing harmful interference to radio or television reception (conformance with EN 45014).

Triac Outputs

NOTE: Recommended fuse (F1): 1.25 A time-lag fuse (IEC). User must consider the correct voltage and max. breaking capacity / interrupting rate (line voltage urgently requires high breaking capacity / interrupting rate).

The terminal blocks containing the controller's triac outputs are orange.

These triac outputs can be used for a variety of different functions, e.g., for connection to either a floating drive or to a thermal actuator. Once the triac outputs have been programmed, the corresponding devices can then be connected to them directly.

NOTE: The VC6983 actuator is intended for use at relay outputs, only and must not be used at the controller's triac outputs.

Triac Current Limitations

The max. allowed current with which the ensemble of a controller's triacs may be loaded is dependent upon whether the given model is powered with 24 VAC or with 230 VAC (and, in the case of models powered with 230 VAC, upon whether the outputs are supplied by the controller's internal transformer or by an external current supply). Specifically:

- In the case of 24 VAC models, the ensemble of a controller's triacs may be loaded with 600 mA.
- In the case of the 230 VAC models, if the triacs are supplied with 24 VAC current by the controller's internal transformer, the ensemble of a controller's triacs may be loaded with 300 mA (or 320 mA for a max. of 2 minutes); when supplied by an external source, this value is doubled.

However, regardless of whether the triacs are supplied internally or externally, a single triac must never be loaded with a current of more than 300 mA (320 mA for max. 2 minutes).

Nevertheless, the ensemble of triacs can be loaded for very short periods of time (on the order of milliseconds) with a current on the order of 2500 mA typically encountered when switching on multiple thermal actuators.

Universal Inputs

The terminal blocks containing the controller's universal inputs are blue. Universal input types: See Table 4.

The universal inputs are protected against voltages of max. 29 VAC and 30 VDC (due to, e.g., miswiring).

Bias Resistors

Each universal input is equipped with one bias resistor.

Analog Outputs

The terminal blocks containing the controller's analog outputs are green. Analog output types: See Table 5.

The analog outputs of the RLxN controllers (large housing) are protected against voltages of max. 29 VAC and 30 VDC (due to, e.g., miswiring).

NOTE: Connecting 24 VAC to any analog output of the RSxN controller (small housing) will damage the hardware.

TROUBLESHOOTING

All units feature a Status LED, Power LED, and Service Button for commissioning and troubleshooting. See also sections "LEDs", and "Service Button".

Check if the Status LED's behavior is changed if you switch the power OFF/ON. Please contact Honeywell if this does not solve the problem.

ACCESSORIES

Terminal Protection Cover

Required for wall mounting. Bulk pack, set of ten covers.

- For LARGE controllers, order no.: **IRM-RLC**
- For SMALL controller, order no.: **IRM-RSC**

CPU

- Processor type: NXP MK24FN1M0VLQ12 with internal 256KByte RAM and 1 MByte program flash memory
- Memory size: 8 Kbyte serial SRAM, supercap-buffered
- Flash memory size: 4 Mbyte serial flash memory

APPROVALS, CERTIFICATIONS, AND STANDARDS

Approvals and Certifications

- UL 60730-1, Standard for Automatic Electric Controls for Household and Similar Use, Part 1: General Requirements;
- CAN/CSA-E60730-1:02, Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements;
- Complementary listing for UL916, CSA C22.2 No. 205;
- BTL-listed, BACnet B-AAC profile;
- SASO-approved;
- CE-approved;
- FCC part 15B-compliant.

Classification according to EN 60730-1

EN 60730 sub part: EN 60730-2-9
 Environmental conditions: For use in home (residential, commercial, and light-industrial) environments
 Construction: Independently mounted electronic control unit with fixed wiring; panel-mounted on DIN rail
 Action: type 1.C
 Rated impulse voltage: 230 V circuits: 2500 V
 24 V circuits: 500 V
 Pollution degree: 2
 Protection against shock: Class 0 (without terminal cover)
 Class II (with terminal cover)
 Software class: A

Classification according to EN 60529

(Degree of protection provided by enclosures)
 IP20. In the case of controllers mounted outside of a cabinet, before applying power to the device, Terminal Protection Covers (10-pc. bulk packs, order no.: IRM-RLC for large housings and IRM-RSC for small housings) must be mounted so as to provide IP30.

Ambient Environmental Limits

5...95% r.H., non-condensing

Operating temperature (floor/ceiling mounting): 0 ... +40 °C
 Operating temperature (wall/rail mounting): 0 ... +50 °C
 Storage temperature: -20 ... +70 °C

RELATED TECHNICAL LITERATURE


Table 9. Related Technical Literature

Title	Product Literature no.
CLMERxxN Room Controller – Mount. Instr.	MU1Z-1035GE51
CLMERxxN Room Controller – Data Sheet	EN0Z-1035GE51
CLMERxxN Room Controller – Inst. & Comm. Instr.	EN1Z-1035GE51
CentralLine NX BACnet Utilities – User Guide	EN2Z-1020GE51
CentralLine NX C-Bus Driver – User Guide	EN2Z-1021GE51
CentralLine NX Printout – User Guide	EN2Z-1022GE51
CentralLine NX Panelbus Driver – User Guide	EN2Z-1030GE51
CentralLine NX Point List Widget – User Guide	EN2Z-1048GE51
Niagara IRM Engineering Tool – User Guide	EN2B-0414GE51
Niagara IRM Function Blocks – User Guide	EN2B-0415GE51
IRM N4 – Application Guide	EN2B-0416GE51
IRM N4 – PICS	EN0B-0766GE51
CLCM1T,2T,4T,5T,6T – Product Data	EN0Z-0901GE51
CLCM1T,2T,4T,5T,6T – Installation Instructions	MU1Z-0901GE51
CLCMTR40x/TR42x – Specification Data	EN0Z-0990GE51

Trademark Information

BACnet™ is a trademark of ASHRAE Inc.

Manufactured for and on behalf of the Connected Building Division of Honeywell Products and Solutions SARL, Z.A. La Pièce, 16, 1180 Rolle, Switzerland by its Authorized Representative:

Centraline Honeywell GmbH Böblinger Strasse 17 71101 Schönaich, Germany Phone +49 (0) 7031 637 01 www.centraline.com	Subject to change without notice EN0Z-1035GE51 R0221	 by Honeywell
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