



GENERAL

EAGLEHAWK NX is a BACnet-compliant heating, ventilation, air conditioning (HVAC) building controller.

It runs the CentralLine Niagara NX framework, integrating all trades in a building.

Thus, EAGLEHAWK NX is the ideal solution for HVAC controls requiring combination with lighting, shading, access control, and security applications.

It provides unparalleled energy efficiency through the use of a vast HVAC Application Library.

EAGLEHAWK NX enables uniform graphical operation, control, data logging, alarming, scheduling, and network management functions for HVAC and non-HVAC applications. Through its integrated web server, it allows real-time access to all information through web-based graphical views.

EAGLEHAWK NX supports full remote engineering, including changes to the control program and the graphical user interface. This greatly supports reduction of life cycle and maintenance cost.

OPERATION IN IP NETWORKS

When operating EAGLEHAWK NX in IP networks, either private (e.g., VPN) networks must be used or protection against the open Internet (e.g., by means of external firewalls) must be ensured. See "Network Security" on pg. 6.

3RD-PARTY SOFTWARE LICENSES

This product contains software provided by third parties. See also EAGLEHAWK NX Controller – Third-Party Software Licenses (Product Literature No.: EN2Z-1041GE51).

FEATURES

- Reduced total installed cost:** Existing standard Ethernet/LAN infrastructure is used for communication between EAGLEHAWK NX controllers, 3rd-party BACnet® controllers, and BACnet® front-ends. Costs are further reduced by the flexible and optional use of Panel Bus I/Os (which allow manual override independent of the controller, thus obviating the need for external switches) and of onboard I/Os. Panel Bus I/Os allow for wiring lengths of up to 800 m, thus obviating the need to lay wire from field devices all the way back to the controller.
- Reduced life cycle cost:** EAGLEHAWK NX supports the highly reliable CentralLine Panel Bus I/O modules, which allow for plugging and replacing without any need for re-wiring or engineering, thus minimizing system down-time. The Panel Bus is polarity-insensitive, thus reducing potential wiring errors. Furthermore, Panel Bus I/O modules allow the predefinition of output safety positions, ensuring safe operation even if communication with EAGLEHAWK NX is disrupted.
- Universal operation:** Via Internet browser, EAGLEHAWK NX can be operated from any place, from any PC and/or mobile device connected to the (EAGLEHAWK NX) network! (Optionally, via the onboard or detached HMI, the controller can be operated independently of any network connection.)
- Vendor independence:** Multiple international communication standards are supported, e.g.: BACnet/IP (ISO 16484-5); BACnet MS/TP (ISO 16484-5); LONWORKS (ISO 14908); Modbus RTU and Modbus TCP; M-Bus (EN 1434-3); oBIX; SNMP; etc.
- Trending:** Datapoints can be trended and historical values stored and viewed.
- Reliable control performance:** Embedded QNX ensures reliable, independent, and secure operation, especially for systems with Internet access.
- Embedded e-mail alarming:** Configurable e-mail alarming options allow alarms to be sent (via network or Internet-DSL connection) to e-mail accounts and thus also to mobile device using SMTP protocol.
- Optional SMS alarming:** SMS alarming via GSM modem using the optional SMS driver.
- CentralLine application library:** Enables highly-effective application generation for optimal energy-efficient control applications.
- Flexible mounting options:** Mounting onto wall or onto panel back wall, into panel door, onto panel rail, and into sub-panels (fuse boxes).
- Direct 24 VAC power supply:** No batteries, no movable parts – thus does not require regular maintenance.

OPERATOR INTERFACE

EAGLEHAWK NX is operated via a standard browser. By default, an integrated web-server provides all freely programmable operation pages for full browser-based operation. Operating devices can be laptops, desktops PCs, or touch screen PCs for direct flush mounting into electrical panel doors (IP65).

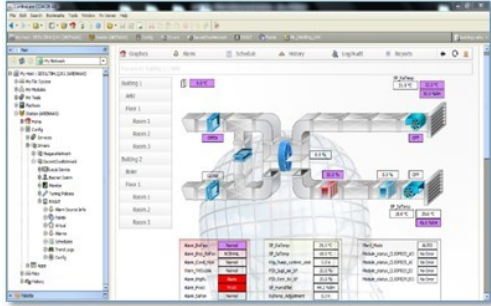


Fig. 1. EAGLEHAWK NX PC homepage (example)

For mobile devices, there is a separate corresponding operator interface.



Fig. 2. EAGLEHAWK NX mobile device homepage (example)

For network-independent operation, the EAGLEHAWK NX can be operated either via its onboard HMI (option 1) or via an external HMI (option 2) connected to the dedicated HMI port of those models not equipped with an onboard HMI. The operating menu can be customized to suit the building operator's needs.



Fig. 3. CLEAHMI21 External HMI

Programming

EAGLEHAWK NX is freely programmable using the graphic COACH NX Engineering Tool and is thus ideal for all Integration, Building Control, and Building Management tasks.

Password Protection

EAGLEHAWK NX allows the definition of a large number of user levels with defined read and write rights. Several users with individual passwords can be defined for each user level. And different views can be assigned to the individual users.

COMMUNICATION PROTOCOLS

BACnet/IP – ISO 16484-5 and EN 13321-1

Communication with other EAGLEHAWK NX and EAGLE controllers, 3rd-party BACnet devices and ARENA NX Supervisors is possible.

EAGLEHAWK NX conforms to the BACnet Building Controller (B-BC) profile. For details, see Protocol Implementation Conformance Statement (PICS) (Product Literature No.: EN0Z-1042GE51).

BACnet MS/TP – ISO 16484-5 and EN 13321-1

Communication with other BACnet controllers is based on the international BACnet Protocol. Optionally, one or both of the onboard RS485 interfaces can be used for communication via BACnet MS/TP.

LonTalk® - ISO 14908

Optionally, communication with physical I/O modules, with room and zone controllers, and with CentralLine PANTHER, TIGER, and LION controllers can utilize LonTalk.

LONWORKS communication requires the IF-LON2 LONWORKS interface.

Modbus

Optionally, the two onboard RS485 interfaces can be used (even simultaneously) for communication via Modbus RTU. Modbus TCP communication is supported via the two onboard Ethernet RJ45 interfaces. See also EAGLEHAWK NX – Installation & Commissioning Instructions (Product Literature No.: EN1Z-1039GE51) for details.

M-Bus – EN 1434-3

Optionally, M-Bus communication is possible via the onboard RS232 interface. See also EAGLEHAWK NX – Installation & Commissioning Instructions (Product Literature No.: EN1Z-1039GE51) for details.

Panel Bus

Optionally, one or both of the onboard RS485 interfaces can be used for Panel Bus communication with CentralLine Panel Bus I/O modules.

Up to 64 Panel Bus I/O modules can be operated via each RS485 interface, thus permitting 1,000+ Panel Bus / onboard I/O points (see Table 5 on pg. 10 for information on upgrades).

HTTPS

Secure web browser communication is supported for web access via standard web browsers.

SMTP

Simple Mail Transfer Protocol is used for e-mail alarming via network and Internet-DSL connection.

Open Niagara Drivers

Optionally, all available interfaces can also be used with any open Niagara driver. For example: KNX driver can be used via the TCP/IP – KNX interface.

BUS AND PORT CONNECTIONS

WARNING

Risk of electric shock or equipment damage!

- ▶ Do not touch any live parts in the cabinet!
- ▶ Disconnect the power supply before making connections to or removing connections from terminals of the EAGLEHAWK NX controller or Panel Bus I/O modules.
- ▶ Do not reconnect the power supply until you have completed installation.
- ▶ Due to the risk of short-circuiting (see Fig. 9), it is strongly recommended that the EAGLEHAWK NX controller be supplied with power from a dedicated transformer. However, if the EAGLEHAWK NX controller is to be supplied by the same transformer powering other controllers or devices (e.g., the PW M-Bus Adapter), care must be taken to ensure that correct polarity is observed.
- ▶ Observe the rules regarding electrostatic discharge.

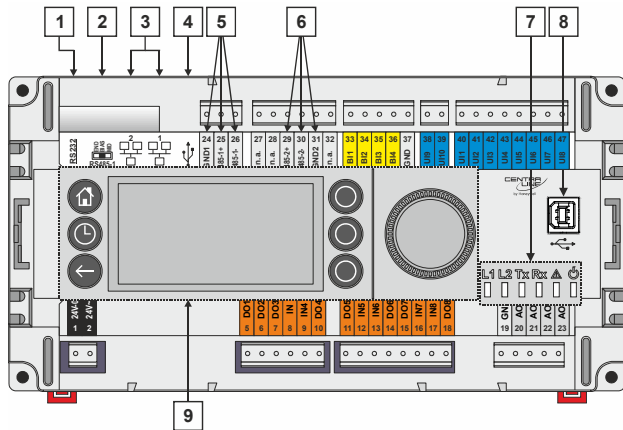


Fig. 4. Top view (with HMI and full complement of onboard I/Os)

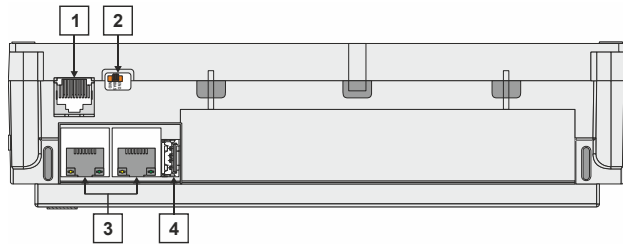


Fig. 5. Side view

Legend

- 1 RS232 / RJ45 socket (for connection of M-Bus and other RS232-based protocols; factory debugging)
- 2 Three-position slide switch (for setting bias and termination resistance of RS485-1)

- 3 Two Ethernet / RJ45 sockets (for BACnet IP communication); 10/100 Mbit/s; 1 "link" LED + 1 "activity" LED
- 4 USB 2.0 Host Interface (for connection of IF-LON2); max. 200 mA, high speed
- 5 RS485-1* (isolated; for BACnet MS/TP, Panel Bus, Modbus RTU communication, etc.)
- 6 RS485-2* (non-isolated; for BACnet MS/TP, Panel Bus, Modbus RTU communication, etc.)
- 7 LEDs
- 8 USB 2.0 Device Interface (for connection to COACH NX web browsers, and 3rd-party touch panels)
- 9 HMI (or RJ45 socket for connection of portable HMI)

*Modbus RTU Master/Slave communication is possible on the two RS485 interfaces.

WARNING

Risk of electric shock or equipment damage!

- ▶ It is prohibited to connect any of the RJ45 sockets of the EAGLEHAWK NX controller to a so-called PoE-enabled device ("Power over Ethernet").

M-Bus Connection

The EAGLEHAWK NX controller supports M-Bus Master functionality via its onboard RS232 / RJ45 socket. It uses standard PW3/PW20/PW60 converters to connect to the M-Bus devices.

Wiring Topology

Max. bus length is 350 meters. M-Bus devices are connected to the bus cable in parallel.

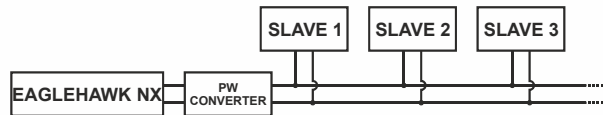


Fig. 6. Allowed M-Bus wiring topology

Cables

See section "M-Bus Connection" in EAGLEHAWK NX Controller – Installation & Commissioning Instructions (EN1Z-1039GE51).

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8.

Shielding

Shielding is especially recommended when the M-Bus cable is installed in areas with expected or actual electromagnetic noise. Avoiding such areas is to be preferred.

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8 and connect the shield to a noise-free earth ground – only once per M-Bus connection.

M-Bus Repeaters

The M-Bus can be extended to 1,000 meters, depending on the communication rate, and provided that the electrical limitations are observed. For details refer to the EAGLEHAWK NX Controller – Installation & Commissioning Instructions (EN1Z-1039GE51).

For bus length extension, M-Bus repeaters can be used, but have not been tested by Honeywell. Hence, it is the responsibility of the installing / commissioning personnel to ensure proper functioning.

M-Bus Master Specifications

For a detailed description of the M-Bus functionality, please refer to the M-Bus Online Help.

Physical Layer

RS232 to PW3/PW20/PW60

Physical connector: RS232 / RJ45 socket (see Fig. 5)

Cable order number: XW586

Communication rates: 300, 2,400, and 9,600 bps are supported, individually per M-Bus slave.

Max. no. of devices: 60 (excluding the EAGLEHAWK NX controller)

Cable and wiring specifications: See EAGLEHAWK NX – Installation & Commissioning Instructions (EN1Z-1039GE51).

Address Range

M-Bus slaves can have a primary address between 1 and 250.

Measurement Cycle

Individually per M-Bus slave, the measurement cycle can be configured from 1 to 604,800 sec (i.e., 1 second to 7 days).

Modbus Connection

The EAGLEHAWK NX controller can function as a Modbus Master/Slave.

For Modbus RTU, the RS485 wiring rules must be followed.

Wiring Topology

Only daisy-chain wiring topology is allowed.

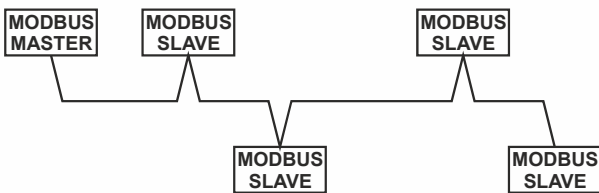


Fig. 7. Allowed Modbus wiring topology

Other wiring topologies (e.g., star wiring, or mixed star wiring and daisy chain wiring) are prohibited; this is to avoid communication problems of the physical layer.

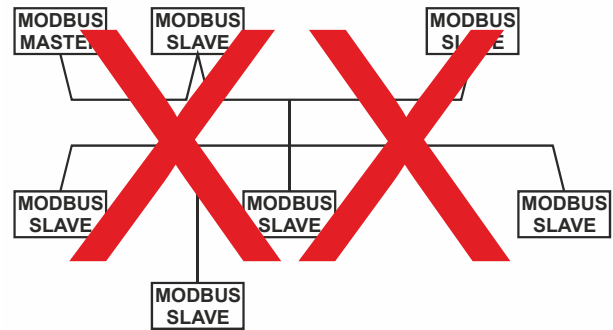


Fig. 8. Prohibited Modbus wiring topology (example)

Cables

See section "EIA 485 Cable Specifications" in EAGLEHAWK NX Controller – Installation & Commissioning Instructions (EN1Z-1039GE51).

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8.

You **must** use three wires:

- One wire for D1 = Modbus +
- One wire for D0 = Modbus –
- One wire for the signal common

When using one pair for D1 and D0 and one wire of another pair for the signal common, CAT5 cable may also be used.

For connection details, see EAGLEHAWK NX Controller – Installation & Commissioning Instructions (EN1Z-1039GE51).

Shielding

Shielding is especially recommended when the Modbus cable is installed in areas with expected or actual electromagnetic noise. Avoiding such areas is to be preferred.

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8 and connect the shield to a noise-free earth ground – only once per Modbus connection.

RS485 Repeaters

RS485 repeaters are possible, but have not been tested by Honeywell. Hence, it is the responsibility of the installing / commissioning personnel to ensure proper functioning.

NOTE: Each Modbus segment requires its own line polarization and line termination.

Modbus Specifications

For Modbus RTU and TCP specifications, please refer to the COACH AX document entitled Niagara AX-3.x Modbus Guide.

WARNING

NETWORK SECURITY

Honeywell hereby expressly states that the EAGLEHAWK NX 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 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 EAGLEHAWK NX 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 EAGLEHAWK NX to be accessible from the Internet, the EAGLEHAWK NX should be isolated from the Internet via a suitable firewall.

If it is necessary for the EAGLEHAWK NX 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.

CONTROLLER SPECIFICATIONS

General

Table 1. Controller specifications

Ambient temperature	0 ... 40 °C (wall-mounting) 0 ... 50 °C (cabinet/door mounting)
Storage temperature	-20 ... +70 °C
Humidity	5 ... 95% r.h. non-condensing
Dimensions	See Fig. 10 and Fig. 11.
Degree of protection	IP20 (mounted on walls, with two accessory MVC-80-AC1 covers) IP30 (mounted in cabinet doors, with accessory MVC-80-AC2)
Fire class	V0
Shock protection	Class II
Pollution degree	2
Installation	Class 3
Rated impulse voltage	330 V for SELV, 2500 V for relay outputs
Overvoltage category	II
Automatic action	Type 1.C
Software class	Class A
Ball-pressure test temperature	housing parts >75°C terminals >125°C

Electrical Data

Table 2. Electrical data

Power supply	19 ... 29 VAC, 50/60 Hz, or 20 ... 30 VDC
Power consumption	typically DC: 7 W; max. 9 W typically AC: 10 VA; max. 12 VA
Heat dissipation	Max. 9 W at DC power supply max. 9 W at AC power supply
Current consumption	typically DC: 300 mA; max. 375 mA typically AC: 400 mA; max. 500 mA

Due to the risk of short-circuiting (see Fig. 9), it is strongly recommended that the EAGLEHAWK NX controller be supplied with power from a dedicated transformer. However, if the EAGLEHAWK NX controller is to be supplied by the same transformer powering other controllers or devices (e.g., the PW M-Bus Adapter), care must be taken to ensure that correct polarity is observed.

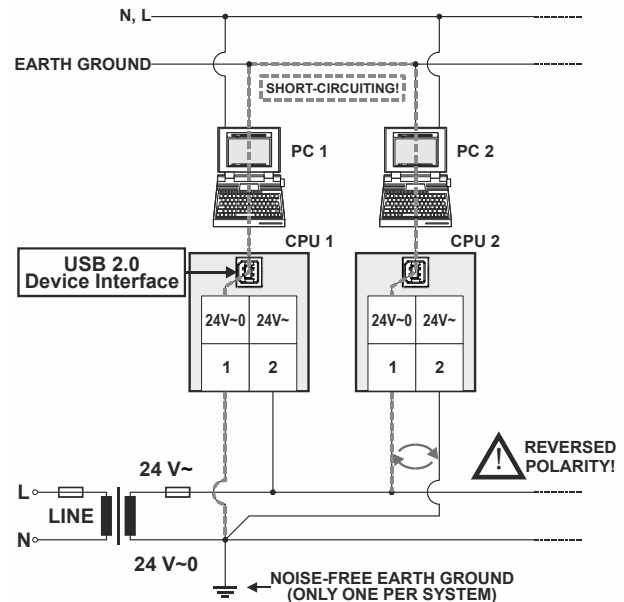


Fig. 9. Incorrect polarity → SHORT-CIRCUITING!

Mechanical Data

Housing Dimensions (L x B x T): 215.5 x 110 x 61 mm
Housing Material: ABS blend; flame retardant V0
Weight: 400 g (without packaging)
Protection Class: IP 20

CPU

Processor

- NXP i.MX 6SoloX 32-bit dual core processor with 1 GHz Arm® Cortex®-A9 core and 227 MHz Arm Cortex-M4 core

Operating System

- QNX

Memory

- 1 GB DDR3-RAM
- 512 KB MRAM
- 4 GB Flash Memory

Real-Time Clock

- accuracy: ± 2 minutes per year (at, typically, 25 °C)
- buffered typically for 72 h by gold capacitor

Standards, Approvals, etc.

- Device meets EN 60730-1, EN 60730-2-9, UL60730, and UL916.
- The device complies with Ethernet Protocol versions IEEE 802.3.
- The device supports BACnet IP and BACnet MS/TP communications as per ANSI / ASHRAE 135-2012.



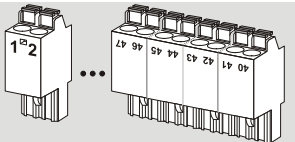
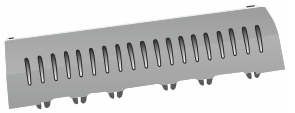

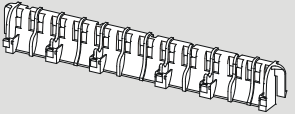
Mounting

The EAGLEHAWK NX controller is suitable for mounting as follows:

- ▶ in cabinets;
- ▶ in fuse boxes conforming with standard DIN43880, and having a slot height of max. 45 mm;
- ▶ on walls (using accessory MVC-80-AC1 covers);
- ▶ in cabinet front doors (using accessory MVC-80-AC2).

Extra Parts

Table 3. Extra parts

	order no.	description
	XS830	Set of ten terminals. Each package consists of two groups of nine internally connected push-in terminals, for distributing signals / power.
	XS831	Set of ten terminals. Each package consists of two groups of four pairs of push-in terminals (each with a 499 Ω resistor), for converting 0...20 mA signals into 0...10 VDC signals, and one push-in ground terminal per group.
	TPU-11-01	Removable terminal plugs, push-in type; complete set of 3 plugs (for terminals 1, 2, 24-32); for the CLNXxxx00xxx.
	TPU-45-01	Removable terminal plugs, push-in type; complete set of 9 plugs (for terminals 1 - 47); for the CLNXxxx14xxx and CLNXxxx26xxx.
	MVC-80-AC1	Terminal cover (color: RAL9011); package of ten.
	MVC-80-AC2	Front door mounting accessory (color: RAL9011); package of ten.
	MVC-40-AC3	Strain relief; package of ten.

MODELS

Table 4. Overview of models (hardware)

feature	description	max. cable length	order no.											
			without HMI						with HMI					
			CLNXEH00ND100A, CLNXEHS00ND100A	CLNXEH00ND100A, CLNXEHS00ND100A	CLNXEH14ND100A, CLNXEHS14ND100A	CLNXEH14ND100A, CLNXEHS14ND100A	CLNXEH26ND100A, CLNXEHS26ND100A	CLNXEH26ND100A, CLNXEHS26ND100A	CLNXEH00D100A, CLNXEHS00D100A	CLNXEH00D100A, CLNXEHS00D100A	CLNXEH14D100A, CLNXEHS14D100A	CLNXEH14D100A, CLNXEHS14D100A	CLNXEH26D100A, CLNXEHS26D100A	CLNXEH26D100A, CLNXEHS26D100A
UI	NTC10kΩ / NTC20kΩ / 0...10V / slow BI, 0.4 Hz	400 m	0	0	4	4	8	8	0	0	4	4	8	8
	NTC10kΩ / NTC20kΩ / 0...10V fix pull-up / slow BI, 0.4 Hz	400 m	0	0	0	0	2	2	0	0	0	0	2	2
BI	open = 24 V / closed 2.0 mA / totalizer 15 Hz	400 m	0	0	4	4	4	4	0	0	4	4	4	4
AO	0..11 V (max. 1 mA)	400 m	0	0	2	2	4	4	0	0	2	2	4	4
BO	Relay N.O. contact: 3 A, 250 VAC, 30 VDC	400 m	0	0	3	3	4	4	0	0	3	3	4	4
	Relay N.O. contact (high in-rush): 10 A, 250 VAC, 30 VDC	400 m	0	0	1	1	1	1	0	0	1	1	1	1
	Relay N.O. contact with one common: 3 A, 250 VAC, 30 VDC	400 m	0	0	0	0	3	3	0	0	0	0	3	3
total I/Os		--	0	0	14	14	26	26	0	0	14	14	26	26
bus interfaces	RS485-1, isolated, BACnet MS/TP, Panel Bus, or Modbus RTU Master or Slave communication	¹⁾ 1200 m	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1
	RS485-2, non-isolated, BACnet MS/TP, Panel Bus, or Modbus RTU Master or Slave communication (NOTE: It is imperative that the RS485-2 be powered by a power supply having the proper polarity. Failure to do so will make data transmission impossible.)	¹⁾ 1200 m	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1	1	²⁾ 1
	Ethernet Interfaces (e-mail communication, browser access, BACnet IP communication, Niagara Network, Modbus TCP)	100 m	2	2	2	2	2	2	2	2	2	2	2	2
	USB 2.0 Device Interface (as Network Interface)	3 m	1	1	1	1	1	1	1	1	1	1	1	1
	USB 2.0 Host Interface (max. 200 mA)	3 m	1	1	1	1	1	1	1	1	1	1	1	1
	RS232 M-Bus communication via 15-meter-long PW3 / PW20 / PW60 converters	¹⁾ 1000 m	1	1	1	1	1	1	1	1	1	1	1	1
LEDs	power LED (green)	--	1	1	1	1	1	1	1	1	1	1	1	1
	status LED (red; indicates an active alarm; is controlled by Niagara Alarm System; is configurable)	--	1	1	1	1	1	1	1	1	1	1	1	1
	LED L1 (yellow; lit = Daemon starting; flashing = station starting; if L2 is also flashing, then the station has started)	--	1	1	1	1	1	1	1	1	1	1	1	1
	LED L2 (yellow; lit = platform has started / is reachable; flashing = station has started / is reachable)	--	1	1	1	1	1	1	1	1	1	1	1	1
	bus status LEDs (for isolated RS485-1 interface)	--	2	2	2	2	2	2	2	2	2	2	2	2

¹⁾ Depending upon bit rate. However, in the case of configuration of RS485-2 for Panel Bus, the communication rate is set to 115.2 kbps, and the max. cable length is hence 800 m.
²⁾ In the case of these devices, for Panel Bus functionality, an additional license must be purchased (see Table 5).

Software Licenses and Upgrades

Table 5. Software Licenses and Upgrades

model	License content / upgrade license
CLNXEH00ND100A	100 integration points + 255 Panel Bus / onboard I/O points + 1 st year of Software Maintenance Agreement
CLNXEH14ND100A	
CLNXEH26ND100A	
CLNXEHS00ND100A	100 integration points / onboard I/O points
CLNXEHS14ND100A	
CLNXEHS26ND100A	
CLNXEHSERIES00ND	N/A
CLNXEHSERIES14ND	N/A
CLNXEHSERIES26ND	N/A
CLNXEH00D100A	100 integration points + 255 Panel Bus / onboard I/O points + 1 st year of Software Maintenance Agreement
CLNXEH14D100A	
CLNXEH26D100A	
CLNXEHS00D100A	100 integration points / onboard I/O points
CLNXEHS14D100A	
CLNXEHS26D100A	
CLNXEHSERIES00D	N/A
CLNXEHSERIES14D	N/A
CLNXEHSERIES26D	N/A
CLNXEHPB100UP	+102 Panel Bus / onboard I/O points upgrade
CLNXEHPB255UP	+255 Panel Bus / onboard I/O points upgrade
CLNXEHRBAC250UP	+250 Honeywell BACnet points (for BACnet room devices, e.g., MERLIN / CPO-R) upgrade
CLNXEHRLON250UP	+250 Honeywell points (for LONWORKS room devices, e.g., SERVAL / Excel 10) upgrade
CLNXEH-DEVICE-UP-1	+50 open points upgrade
CLNXEH-DEVICE-UP10	+500 open points upgrade
CLNXEH-DEVICE-UP25	+1250 open points upgrade
CLNXEH-DEVICE-UP50	+2500 open points upgrade

NOTE: For more details on the licenses, please refer to the Release Bulletin.

DIMENSIONS

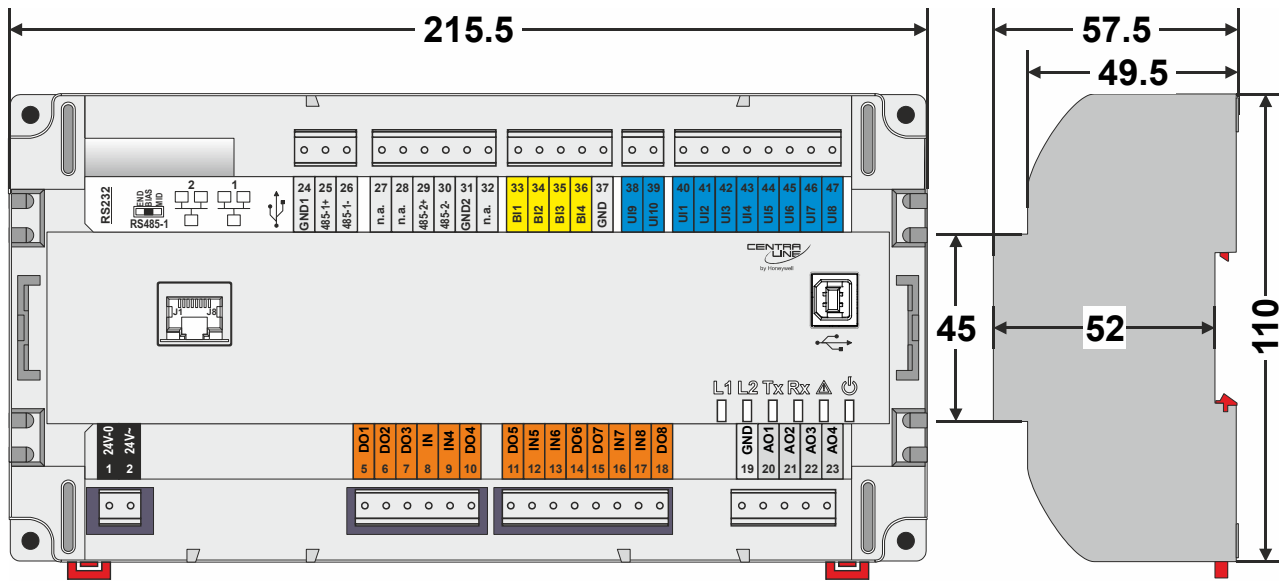


Fig. 10. EAGLEHAWK NX controller (w/o HMI but with RJ45 socket for connection of portable HMI, and with full complement of onboard I/Os), dimensions (in mm)

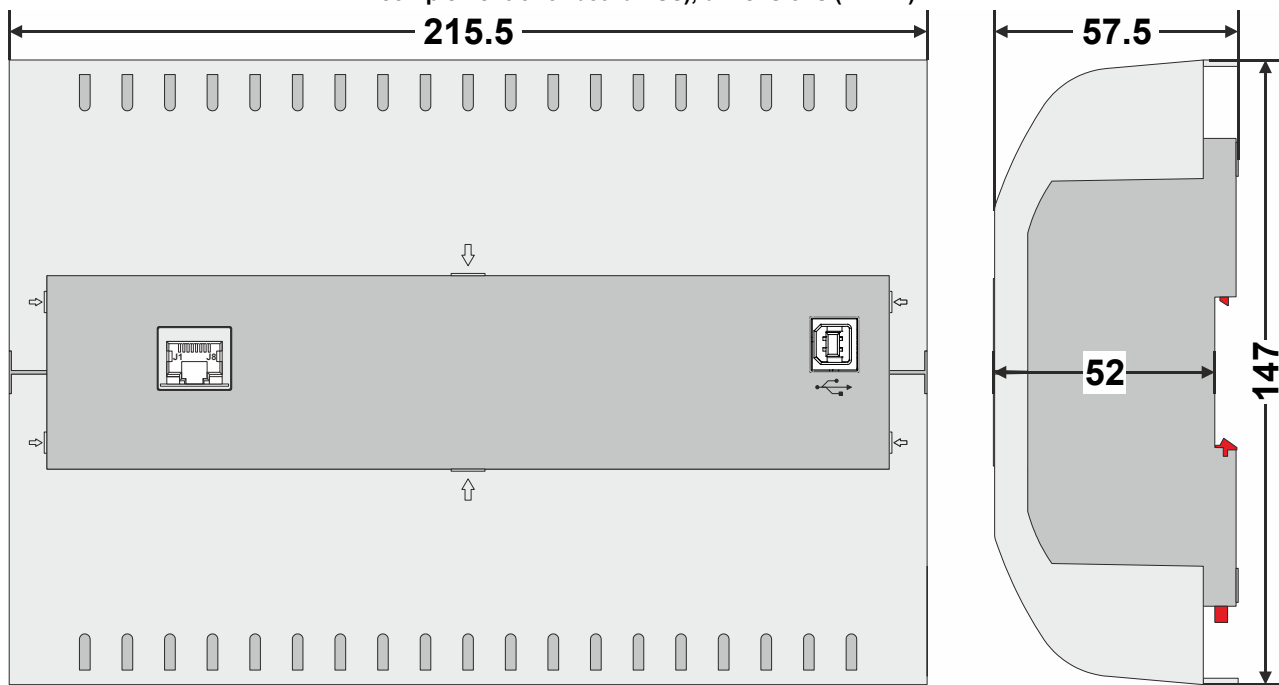


Fig. 11. EAGLEHAWK NX controller with covers, dimensions (in mm)

NOTE: Use of the covers (MVC-80-AC1) will obstruct access to the Ethernet, USB 2.0, and RS232 interfaces.

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 637 845
 Fax +49 (0) 7031 637 740
info@centraline.com
www.centraline.com

Subject to change without notice
 EN0Z-1039GE51 R0319

