EAGLE Controller

Product Data

by Honeywell

GENERAL

EAGLE is CentraLine's Ethernet-based, freely-programmable Building Automation controller offering a combination of BACnet IP, BACnet MS/TP, and LONWORKS® communication.

It demonstrates CentraLine's full commitment to reducing total installed cost and total building lifecycle cost for building investors and building operators.

EAGLE incorporates the two major open standards in today's building industry: BACnet® and LONWORKS®.

As a native BACnet® Building Controller (B-BC), EAGLE integrates into any 3rd-party BACnet® system with low and predictable effort.

Furthermore, EAGLE (in combination with the IF-LON) is a full LONWORKS® controller. This gives the benefit of making use of CentraLine's complete LONWORKS® product portfolio, which is unique in the building industry.

EAGLE can host a huge variety of building management applications, be it traditional heating, ventilation, and air conditioning (HVAC) applications, energy management functions, including optimum start/stop, night purge, and maximum load demand, supervisory functions for lighting, sun-blind, heat and energy metering and many other applications.

By virtue of its "peer-to-peer" concept, EAGLE is not dependent upon the availability of superordinate centrals or application network controllers.

EAGLE seamlessly integrates into CentraLine's ARENA AX and SymmetrE® front-ends.

FEATURES

- **Reduced the total installed cost:**
  Existing standard Ethernet/LAN infrastructure is used for communication between EAGLE controllers, 3rd-party BACnet® controllers, and BACnet® front-ends. Costs are further reduced by the flexible and optional use of onboard I/Os and Panel Bus I/Os.
- **Universal operation:**
  Operate EAGLE from any place, from any PC connected to the (EAGLE) network! An integrated web-server allows local and remote operation by standard browsers.
- **Reduced cost for service, operation and maintenance:**
  Maintenance or upgrade of Operator Interface Software is superfluous because it resides in EAGLE, itself (single-source principle).
- **Vendor independence:**
  Communication is based on the international ISO 16484-5 BACnet® standard for interoperability with 3rd-party BACnet® controllers (peer-to-peer), front-ends, room and zone controls, and field equipment is based on the BACnet® Building Controller (B-BC) profile of EAGLE. Optionally, interoperability based on LONWORKS® ISO 14908 can be utilized.
- **Trending:**
  100 datapoints can be trended.
- **Fast application control:**
  Four selectable control loop priorities (multitasking), selectable control loop cycle times, and event-driven switching tables allow for tailored and highly effective applications control.
- **Reliable control performance:**
  Embedded LINUX ensures reliable, independent, and secure operation, especially for systems with Internet access.
- **Embedded e-mail/SMS 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 phones.
- **CentraLine CARE tool:**
  Allows re-use of existing applications and application macros, enables highly effective application generation, and supports online application debugging.
- **Network security:**
  Based on its design as an IP device, EAGLE can be easily integrated into any existing network security mechanism.
- **Flexible mounting options:** Mounting onto wall or onto panel back wall, into panel door, onto panel rail, and into sub-panels (fuse boxes).

CE

OPERATOR INTERFACE

EAGLE is operated via a standard browser. By default, an integrated web-server provides all operation pages for a full browser-based operation.

Through the consequent use of software standards, any PC platform can be used as an operator interface (client), including laptops, desktops PCs, or touch screen PCs for direct flush mounting into electrical panel doors (IP65).

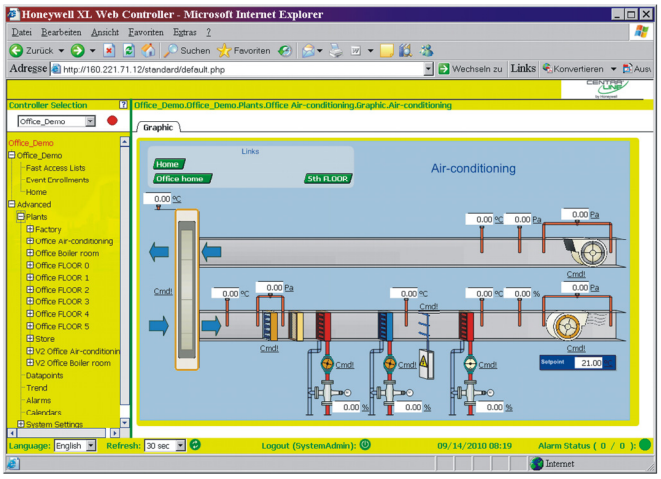

Fig. 1. EAGLE "Homepage" Example

Programming

EAGLE is freely programmable using the graphic CARE Engineering Tool and is thus ideal for all Building Control and Building Management tasks.

Password Protection

EAGLE allows the definition of up to 6 user levels. Each user level can be assigned different read and write rights. Several users with individual passwords can be defined for each user level.

COMMUNICATION PROTOCOLS

BACnet/IP - ISO 16484-5 – EN 13321-1

Communication with other EAGLE controllers, 3rd-party BACnet devices, Honeywell Enterprise Buildings Integrator™ and SymmetrE front-ends, and with 3rd-party BACnet front-ends is based on the international BACnet Protocol.

EAGLE conforms to the BACnet Building Controller (B-BC) profile.

For details on the BACnet Interoperability, see the EAGLE Protocol Implementation Conformance Statement (PICS).

BACnet MSTP – ISO 16484-5

Communication with other BACnet controllers (Honeywell and 3rd-party) is based on the international BACnet Protocol.

LonTalk® - ISO 14908

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

With the IF-LON, a Free Topology Transceiver (FTT-10A or FT-X1) allows a communication speed of 78 Kbaud.

Max. cable lengths are 320 m to 2,200 m, depending upon the given wiring topology.

By default, the IF-LON comprises the LonMark® node object, plus application-specific LONWORKS objects.

HTTP

EAGLE provides two operating options:

- Internet browsers having a resolution of 800x600 pixels or higher. Operation has been optimized for I.E. (9.0.x) and Mozilla Firefox® (15.0.x).
- Internet Explorer for WIN CE with resolution of 320x240 pixel, optimized for CL Touch or other 5.7" touch panels.

For Internet Browser settings, please consult the Software Release Bulletin.

FTP

The firmware and application are downloaded using CARE via the standard FTP (File Transfer Protocol). Via FTP, product or plant-related literature can be downloaded (without special tools) into EAGLE for later use.

SMTP

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

HARDWARE INTERFACES

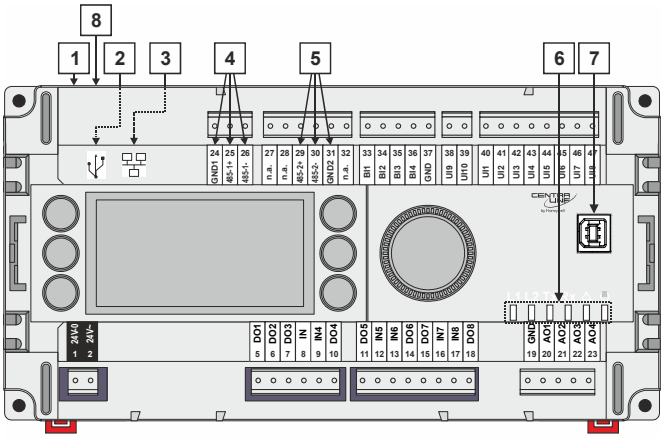

Fig. 2. Bus and port connections, LEDs (top view)

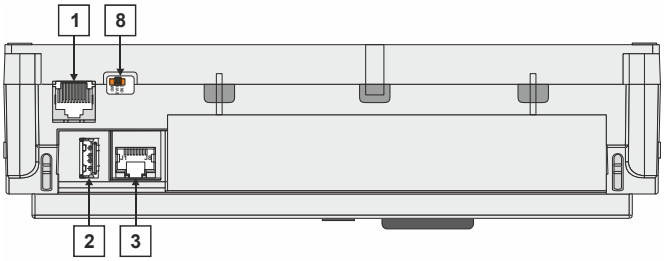

Fig. 3. Bus and port connections (side view)

Legend

1 RS232 / RJ45 socket (for factory debugging, only)
2 USB 2.0 Host Interface (for connection of, e.g., the IF-LON); max. 500 mA, high speed
3 ETHERNET / RJ45 socket (CLEA2000Bxx and CLEA2026Bxx, only); 10/100 Mbit/s; 1 "activity" LED
4 RS485-1 (isolated)
5 RS485-2 (non-isolated)
6 LEDs
7 USB 2.0 Device Interface (for connection to CARE / XW-Online)
8 Three-position slide switch (for setting bias and termination resistance of RS485-1)

CONTROLLER SPECIFICATIONS

Table 1. Controller specifications

Ambient temperature	0 … 50 °C
Storage temperature	-20 … +70 °C
Humidity	5 … 95% r.h. non-condensing
Dimensions	See Fig. 5 and Fig. 6.
Degree of protection	IP20
Fire class	V0
Shock protection	Class II
Pollution degree	2
Installation	Class 3
Rated impulse voltage	300 V for SELV, 2500 V for relay outputs
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 or 20 … 30 VDC
Power consumption	typically dc: 5 W; max. 6 W typically ac: 9 VA; max. 11 VA
Current consumption	typically dc: 210 mA; max. 240 mA typically ac: 370 mA; max. 410 mA

EAGLE and 24 Vac field devices can obtain their power from the same transformer

Overvoltage Protection

The binary input is protected against 24 Vac and 40 Vdc overvoltage as well as against 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: 0.6 kg (without packaging)
Protection Class: IP 20

CPU

Processor

- ARM 9 32-bit processor, 450 MHz

Operating System: LINUX

Memory

- 128 MB DDR2-RAM
- 1 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, and UL60730.
- Refer to Code of Practice standards IEC 61000-5-1 and -2 for guidance.
- The device complies with ETHERNET Protocol versions IEEEC 802.3.
- The device supports BACnet IP and BACnet MS/TP communications as per ANSI / ASHRAE 135-2010.

MMI

The CLEA2014B21, CLEA2014B22, CLEA2026B21, and CLEA2000B21 incorporate a user interface (HMI) featuring the following components:

- one LCD Display (1);
- six operating keys (2);
- one Rotate&Push Button (3); and
- six LEDs (4)

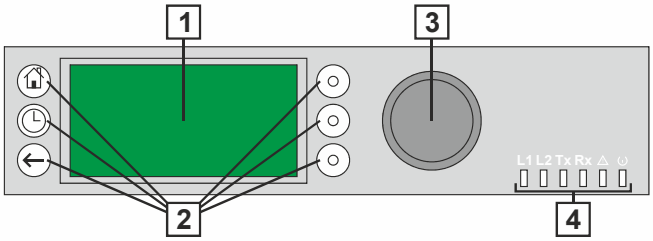

Fig. 4. EAGLE Controller user interface (HMI)

The LCD display is the graphic interface presenting items for application-specific system information, operator entries, and menus of functions. The LCD display can show max. five lines of alphanumeric text with max. 20 characters per line.

The backlight of the LCD is switched on once an operating key or the rotate&push button is pressed. The backlight is switched off if any of the operating keys or the button is not used for 2 minutes.

The six operating keys consist of three fixed-function keys (left) and three soft keys (right).

The Rotate&Push button is used to navigate through menus and lists; to highlight items (menu, list, option, value, command symbol), and to adjust options (ON, OFF, etc.) and values (temperature in °C, etc.).

Mounting

The EAGLE 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;

► in cabinet front doors (using accessory MVC-80-AC2);

► on walls (using accessory MVC-80-AC1).

MODELS

- CLEA2014B21 (with HMI, 14 onboard I/Os, and 52 I/Os in total*)
- CLEA2014B01 (with 14 onboard I/Os and 52 I/Os in total*)
- CLEA2014B22 (with HMI, 14 onboard I/Os, and 52 I/Os in total*)
- CLEA2014B02 (with 14 onboard I/Os and 52 I/Os in total*)
- CLEA2026B21 (with HMI, 26 onboard I/Os, and 600 I/Os in total*)
- CLEA2026B01 (with 26 onboard I/Os and 600 I/Os in total*)
- CLEA2000B21 (with HMI, without onboard I/Os, and 600 external I/Os)
- CLEA2000B01 (without onboard I/Os, and 600 external I/Os)

*I/Os in total include onboard I/Os, I/Os via Panel Bus, and I/Os via LONWORKS Bus.

Table 3. Overview of models

feature	description		max. cable length	order no.							
				CLEA2014B21	CLEA2014B01	CLEA2014B22	CLEA2014B02	CLEA2026B21	CLEA2026B01	CLEA2000B21	CLEA2000B01
UI	NTC20kΩ / 0…10V / slow BI		400 m	4	4	4	4	8	8	-	-
	NTC20kΩ / 0…10V fix pull-up / slow BI		400 m	-	-	-	-	2	2	-	-
BI	open = 24 V / closed 2.0 mA / totalizer 15 Hz		400 m	4	4	4	4	4	4	-	-
AO	0..11 V (max. 1 mA)		400 m	2	2	2	2	4	4	-	-
BO	Relay N.O. contact		400 m	3	3	3	3	4	4	-	-
	Relay N.O. contact (high in-rush)		400 m	1	1	1	1	1	1	-	-
	Relay N.O. contact with one common		400 m	-	-	-	-	3	3	-	-
bus interfaces	RS485-1, isolated, BACnet MS/TP or Panel Bus comm.		*1000 m	1	1	1	1	1	1	1	1
	RS485-2, not isolated, BACnet MS/TP or Panel Bus comm.		*1000 m	1	1	1	1	1	1	1	1
	Ethernet Interface	e-mail communication, browser access	100 m	-	-	1	1	1	1	1	1
		BACnet IP communication	100 m	-	-	1	1	1	1	1	1
	USB 2.0 Device Interface (as Network Interface)		3 m	1	1	1	1	1	1	1	1
	USB 2.0 Host Interface (max. 500 mA)		3 m	1	1	1	1	1	1	1	1
user interface	HMI with graphic LCD		--	X	-	X	-	X	-	X	-
	Fast Access buttons		--	6	-	6	-	6	-	6	-
	push and turn button		--	1	-	1	-	1	-	1	-
HMI	power LED (green)		--	1	1	1	1	1	1	1	1
	status LED (red, controllable by firmware)		--	1	1	1	1	1	1	1	1
	applications-specific LED L1 (yellow)		--	1	1	1	1	1	1	1	1
	USB-A LED (yellow)		--	1	1	1	1	1	1	1	1
	bus status LEDs (for isolated RS485-1 interface)		--	2	2	2	2	2	2	2	2
*Depending upon baud rate.											

DIMENSIONS

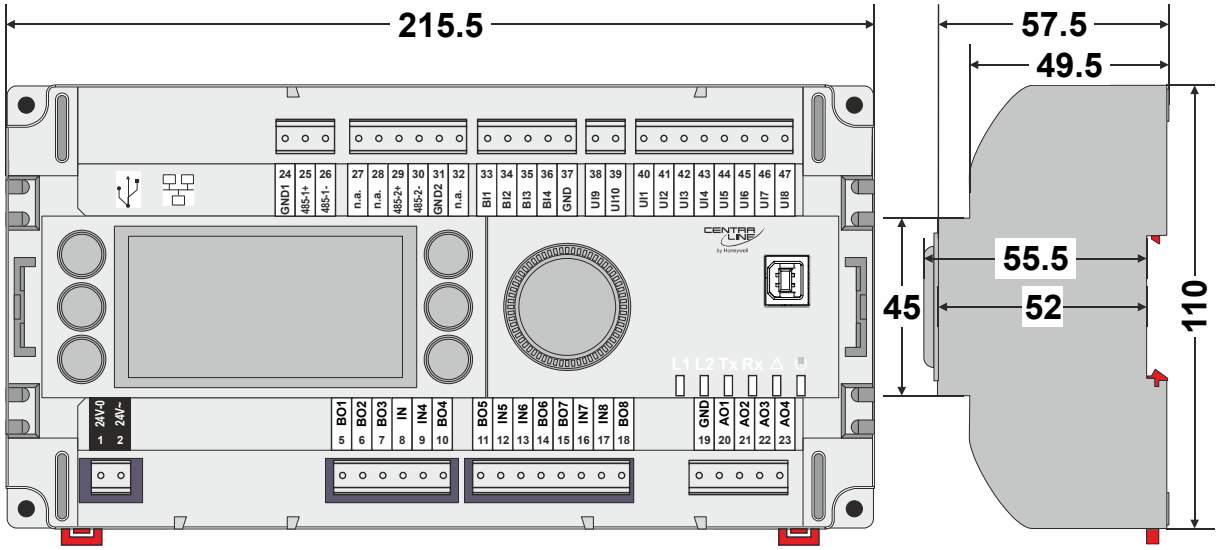

Fig. 5. EAGLE Controller, dimensions (in mm)

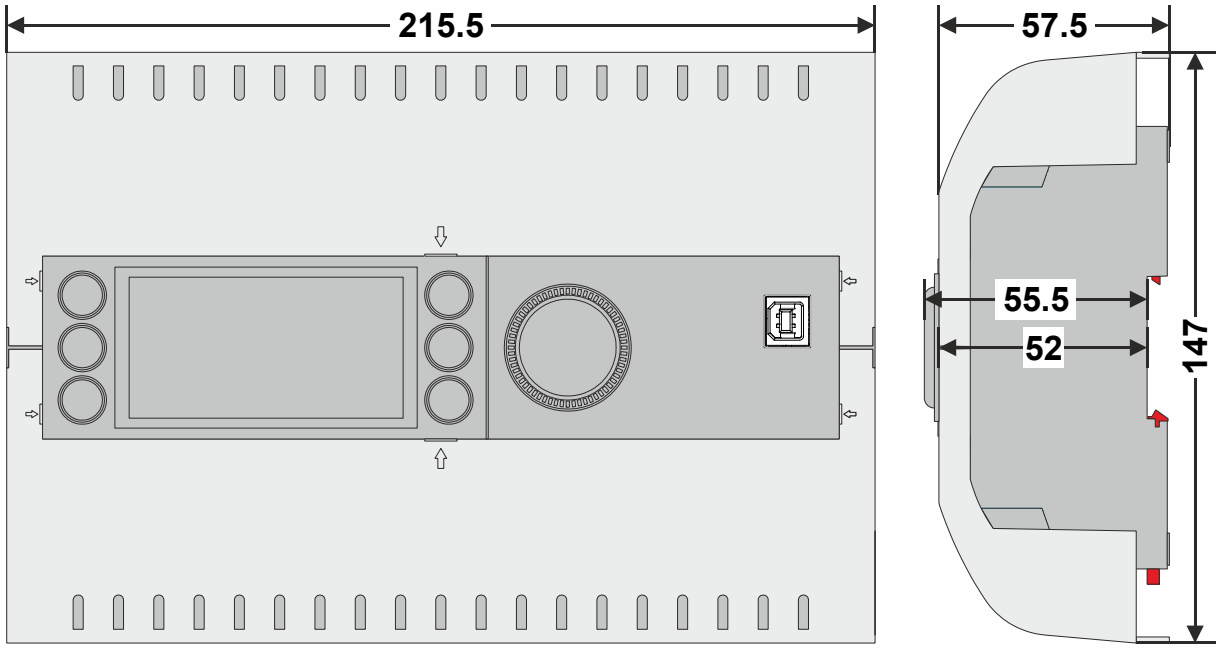

Fig. 6. EAGLE Controller (shown here with two MVC-80-AC1 covers in place), dimensions (in mm)

NOTE: Use of the covers (MVC-80-AC1) will obstruct access to the ETHERNET and USB 2.0 Host Interfaces

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