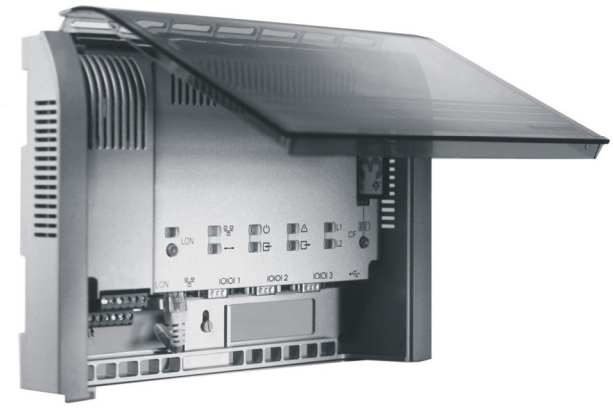
FALCON Controller

Product Data

by Honeywell



GENERAL

FALCON is CentraLine's new Ethernet-based, freely-programmable Building Automation controller.

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

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

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

Furthermore, FALCON 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.

FALCON 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, FALCON is not dependent upon the availability of superordinate centrals or application network controllers.

FALCON seamlessly integrates into CentraLine's Enterprise Buildings Integrator™ (EBI) and SymmetrE® front-ends.

FEATURES

- **Reduced the total installed cost:** Existing standard Ethernet/LAN infrastructure is used for communication between FALCON controllers, 3rd-party BACnet® controllers, and BACnet® front-ends.
- **Universal operation:** Operate FALCON from any place, from any integrated PC! An integrated web-server allows local and remote operation by standard browsers.

NETWORK SECURITY

When operating FALCON in IP networks, 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. 4.

- **Reduced cost for service, operation and maintenance:** Maintenance or upgrade of Operator Interface Software is superfluous because it resides in FALCON, itself (single-source principle).
- **Vendor independence:** Communication is based on the international ISO 16484-5 BACnet® standard and LONWORKS®. Interoperability with 3rd-party BACnet® controllers (peer-to-peer) and front-ends is based on the BACnet® Building Controller (B-BC) profile of FALCON. Interoperability with room and zone controls, field equipment, and field I/Os is based on LONWORKS®.
- **Expandable trend buffer:** The onboard trend buffer can store 64,000 trend entries, and can be expanded using standard Compact Flash Cards (type 1 or 2).
- **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, Internet-DSL connection, or Internet-modem 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 and offline debugging and application simulation.
- **Flexible mounting options:** Inside cabinet (snapped onto DIN-rail or fastened to inside wall via screw holes provided in housing).

OPERATOR INTERFACE

FALCON 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).

Alternatively, the CentraLine CLMMI00N31 (a 5.7" touch-panel operator unit) can be used. In this case, 320x240 pixel web-pages will be displayed.

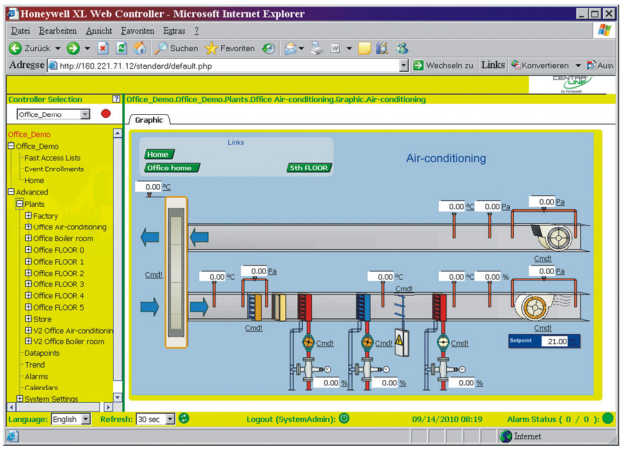


Fig. 1. FALCON "Homepage" Example

SPECIFICATIONS

Communication Protocols

BACnet/IP - ISO 16484-5 – ENV 13321-1

Communication with other FALCON 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.

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

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

LonTalk®

Communication with physical I/O modules, with room and zone controllers, and with CentraLine PANTHER, TIGER, and LION controllers is based on LonTalk.

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

In typical cases, field devices are controlled via LION I/O modules. Max. cable lengths: 320 m to 2,200 m.

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

HTTP

FALCON provides two operating options:

- Internet browsers having a resolution of 800x600 pixels or higher. Operation has been optimized for I.E. 5.5 or higher, but Netscape (6.2.1 or higher) and Mozilla Firefox® are likewise suitable.
- Internet Explorer for WIN CE with resolution of 320x240 pixels.

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 FALCON for later use.

SMTP

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

Hardware Interfaces

Ethernet

- 10/100 Mbit/s, RJ45
- 1 LED “link”, 1 LED “activity”

LONWORKS®

- 78 Kbit/s
- FTT10A, FT-X1
- 2x screw terminal, removable
- 1x RJ45
- LONWORKS® Service button
- 1 service LED

RS232C Port 1

- Service interface (root terminal = LINUX console)
- data transmission rate: 9.6, 19.2, 76.8, or 115.2 Kbaud (depending upon configuration)
- 9-pin Sub-D

RS232C Port 2

- Browser interface
- data transmission rate: 9.6, 19.2, 76.8, or 115.2 Kbaud (depending upon configuration)
- 9-pin sub-D

RS232C Port 3

- Modem Interface for analog modems, ISDN Adapters, or GSM Adapters
- data transmission rate: 9.6, 19.2, 76.8, or 115.2 Kbaud (depending upon configuration)
- 9-pin sub-D

Compact Flash Type 1 or Type 2

- Standard Compact Flash card (not included)
- 1 "active" LED

Reset Button

USB
- USB Spec. 2.0, full-speed (12 Mbit/s)
- application download using CARE

Electrical Data

Operating Voltage
- 24 Vac ± 20% or 24...38 Vdc, electrically isolated
- FALCON and 24 Vac field devices can obtain their power from the same transformer
- 1 "power" LED

Power Consumption: Max. 8 VA

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): 278 x 190 x 61 mm
Housing Material: ABS blend; flame retardant V0
Weight: 1 kg (without packaging)
Protection Class: IP 20

Mounting
- Inside cabinet (snapped onto DIN-rail or fastened to inside wall via screw holes provided in housing).

Calculated Lifetime of Weakest Components
- MTBF ≥ 13.7 years

CPU

Processor
- 32-Bit Motorola Power PC MPC 859, 128 MHz

Watchdog
- Alarm relay indicates watchdog in closed state (SPDT, normally closed, 24 Vac ± 20%, max. 2 A perm. load)
- 1 "watchdog" LED

Operating System: LINUX

Memory
- 128 MB SDRAM
- 128 kB RAM, buffered 72 h by gold capacitor
- 2 MB Boot Flash Memory
- 256 MB Flash Memory (application)
- Onboard trend memory: 64,000 trend entries

Real-Time Clock
- accuracy: ± 20 ppm
- buffered 72 h by gold capacitor

Integrated Binary Output
- potential-free relay, SPST, normally open, 24 Vac ±20%, max. 2 A permanent load
- application-driven
- 1 "active" LED, illuminated when contacts closed

Integrated Binary Input
- potential-free contact, max. 36 Vdc
- application-driven
- 1 "active" LED, illuminated when contact closed

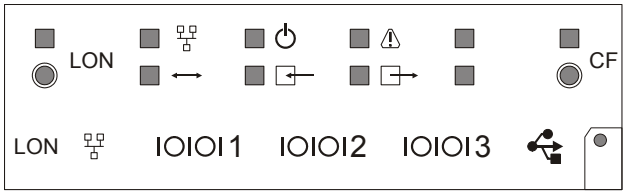


Fig. 2. LEDs and interfaces

Environmental
- operation: 0...50 °C; storage: -20...+70 °C
- 5 to 93% r.h. (operating and storage), non-condensing

Certifications
- CE
- Meets FCC Part 15, Subpart J for Class A equipment
- BTL (BACnet® Testing Laboratories)
- UL 916
- UL 864 (UUKL)
- DIN EN60730-1:2005-12, DIN EN60730-2-9:2005-10

Behavior of Outputs during Download

Table 1. Behavior of outputs during firmware download / application download

analog, binary, and floating outputs	output behavior during firmware / Linux download	output behavior during application download
outputs of LONWORKS I/O modules (CLIOL82x)	As soon as "receive heartbeat" (the value of which can be altered using CARE) expires, outputs go to safety position.	Outputs remain in the previous position / state.

NOTE: These behaviors were determined using a test application with a cycle time of 10 seconds. A value update was triggered every 10 seconds.

PROGRAMMING

FALCON is freely programmable using the graphic CARE Engineering Tool and is thus ideal for all Building Control and Building Management tasks. An existing, large Application Library or existing Application Macros (Honeywell XFM's) from the Excel 5000 System can be re-used, allowing the use of standard, pre-tested, and pre-documented application and control strategies.

PASSWORD PROTECTION

FALCON 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.

⚠ WARNING

NETWORK SECURITY

Honeywell hereby expressly states that the FALCON 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 FALCON 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 FALCON 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 FALCON to be accessible from the Internet, the FALCON should be isolated from the Internet via a suitable firewall.
If it is necessary for the FALCON 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 Excel Web Networking Whitepaper (Product Literature No.: EN2B-0396GE51).

MODELS

- CLFA50LB0C: 52 physical datapoints, 50 Schedule Objects, and 128 trend objects
- CLFA100LB0C: 104 physical datapoints, 50 Schedule Objects, and 128 trend objects
- CLFA300LB0C: 300 physical datapoints, 50 Schedule Objects, and 128 trend objects
- CLFA600LB0C: 600 physical datapoints, 100 Schedule Objects, and 128 trend objects
-

DIMENSIONS

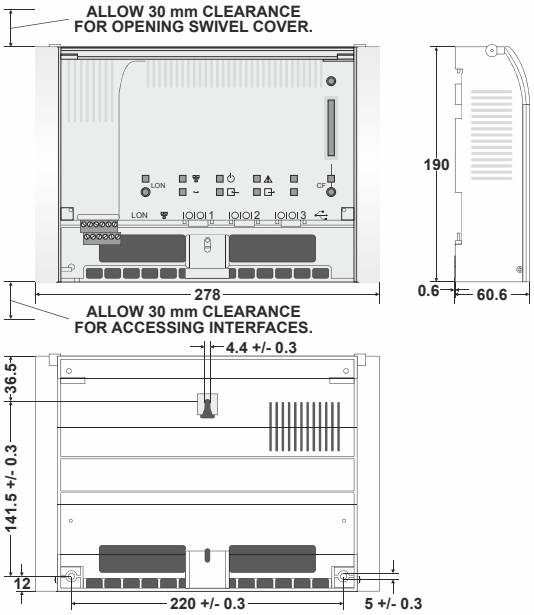


Fig. 3. Dimensions (mm)

Manufactured for and on behalf of the Environmental and Combustion Controls Division of Honeywell Technologies Sàrl, Rolle, Z.A. La Pièce 16, Switzerland by its Authorized Representative:

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