JOHNSON CONTROLS

M3 Workstation

The M3 Workstation provides an economical way to manage an integrated Facility Management System (FMS). Through its performance based, contemporary, graphical interface, operators manage environmental comfort, energy usage, lighting control, respond to emergency conditions, and optimize control strategies quickly and easily. To further enhance the wealth of information, the M3 Workstation accommodates integration of third-party applications such as spreadsheets and word processing. For the building owner with a limited budget, the M3 Workstation offers a cost effective means of improving environmental control, enhancing user productivity, and adapting to maximize the return on your facility management investment.

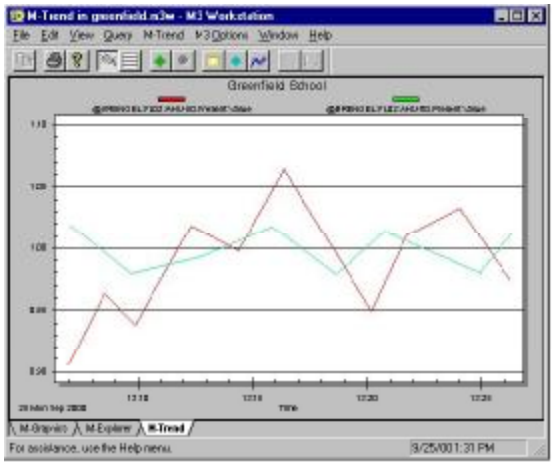

Figure 1: M3 Workstation

Features and Benefits

❑ **Standards Based Architecture**	Incorporates current and leading technology standards for compatibility and growth
❑ **Scalable Workstation**	Offers customers a choice of operating systems, because the software is available on Windows® 98 and Windows NT®
❑ **Consistent Graphical Interface to Integrated Systems**	Enhances user productivity, because it's easy to use, contains common presentation formats, and offers application integration
❑ **World Class Dynamic Color Graphics**	Provides quick building operations views through graphical, information based displays
❑ **Versatile Trend Sampling, Storage, and Analysis**	Accommodates effective decision making
❑ **Simultaneous Network Communications**	Facilitates effective decision making and enhances user productivity
❑ **Advanced Password Control**	Defines the level of security you need with flexible, high performance password access features, and controlled access to data, files, and applications

Flexible Connectivity

To accommodate different facilities and applications, the M3 Workstation provides the flexibility to interface to your Building Automation System (BAS) through multiple connectivity options. Depending on the interface options available within your supervisory controller network, the M3 Workstation communicates over an Ethernet Local Area Network (LAN) or remotely through dedicated lines or dial-up communication links using standard RS-232 connections.

Each M3 Workstation is configured to simultaneously communicate with multiple sites consisting of one or more supervisory controllers using a combination of LAN, direct, or dial-up connections. The M3 Workstation accommodates even simultaneous communication to two separate sites on a continuous LAN network.

Selection and connection to a remote site is easily managed through the versatile M3 Workstation Site Book for N30 Supervisory Controllers and Site Phone Book for Companion™/Facilitator™ directories.

The Site Book (N30) accommodates 100 and the Site Phone Book (Companion/Facilitator) accommodates 1500 independent locations providing a means to meet the monitoring and control requirements of even the most diversified organizations. Modifications, such as phone number updates or adding a new site online, are easily addressed to allow directory maintenance.

Multiple connections are especially useful when controlling a school district, office complex, or a diverse enterprise with remote locations. This centralized monitoring, control, and management capability not only maximizes your investment, it also facilitates the productivity of your employees.

Regardless of how the M3 Workstation is connected to your facility management network, your operators have total access to all system information restricted only by their password rights.

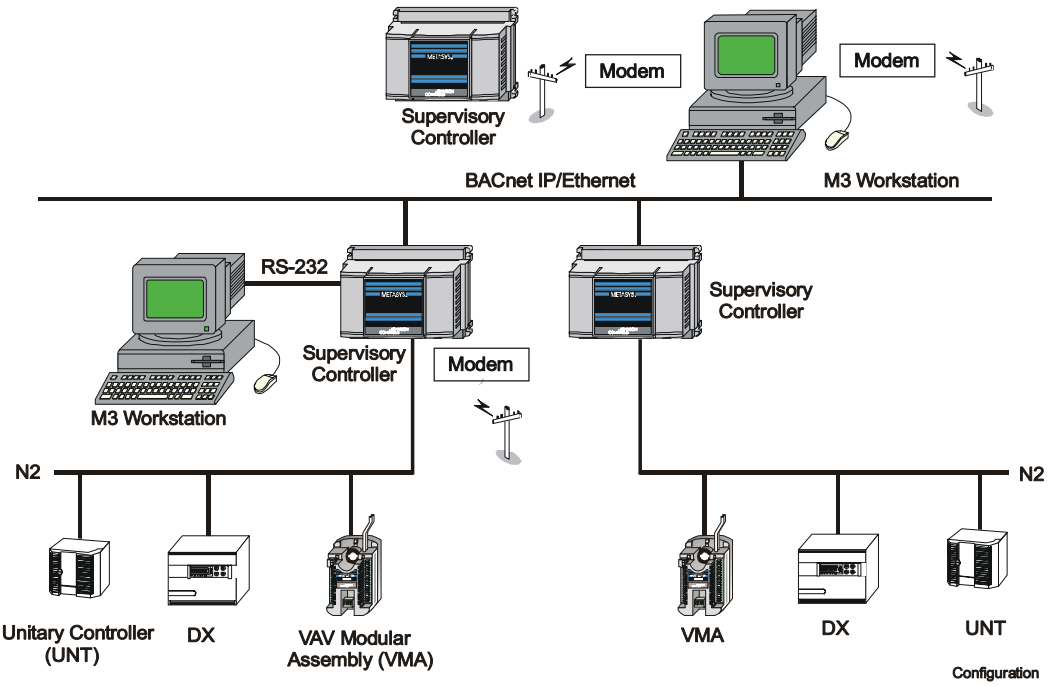

Figure 2: Configuration

Workstation Platform

The M3 Workstation runs on a standard personal computer utilizing the Microsoft® Windows 98 or Windows NT operating system. By focusing on prevalent business world standards, the M3 Workstation offers superior performance and future adaptability to advances in the microcomputer industry.

Each workstation also accommodates various printers to log alarms and for hard copy recording of information based reports and summaries. Please consult with your authorized Johnson Controls representative regarding recommended computer platform configurations.

Intuitive Interface

The M3 Workstation provides a flexible, interactive management device to assist in optimizing facility operations. Its contemporary, tabbed workspace environment encompasses many standard interface components, such as toolbars, scroll bars, and menus. Its simple, quick, point and click navigation allows smooth transitions between and within applications. Plus, a convenient alarm workspace provides a dedicated area to display messages that require immediate user attention.

Within the M3 Workstation interface resides tabbed application workspaces. These workspaces are ActiveX® document servers offering an unparalleled degree of flexibility and seamless application interaction. These workspaces not only contain M3 Workstation applications but also allow the user to add additional ActiveX applications such as spreadsheets and word processing software packages as interactive workspaces.

The M3 Workstation interface is designed to be easy to learn and use while still providing advanced capabilities. It assists operators to quickly become confident in accessing and reviewing information to effectively manage your entire enterprise.

Figure 3: M3 Workstation Human-Computer Interface (HCI)

Focused Exploration

As an active M3 Workstation workspace, M-Explorer provides a dynamic interactive display that allows a user to easily browse through the FMS hierarchy to view and analyze realtime operating conditions of an integrated FMS.

M-Explorer provides a multi-panel display for users to point and click their way through the system. The main navigation panel, the Tree View, allows users to expand and shrink the display of the system's hierarchy. The hierarchy is represented through branch items which reflect the higher level details of a system such as servers, networks, sites, floors, controllers, objects, groups, and applications. An associated Focus panel is used to display the contents of the selected Tree View item in greater detail.

Two selectable views are provided within the Focus panel. The Detail View provides a column format list which highlights an object's name, description, value, status, and a user defined label. The alternate Icon View provides a more graphical display with user defined label, value, and status attributes as the prominent display characteristics.

To proactively assist in identifying those areas that need a little more user focus, M-Explorer provides dynamic realtime color coding to indicate an object's status condition. This special color coding is displayed in the Focus panel in both the Detail and Icon Views. While this coding is predefined, it is modified to match individual preferences. Through color coding, you easily pinpoint an object that is in an alarm, reached a warning range, has been overridden, or may be offline due to a communication problem.

Your facility operators will quickly master using M-Explorer in managing daily operations. Since it reads any OLE for Process Control (OPC) data server, it provides a common interface for operators to view the status of a facility even if you have a mixture of supervisory controllers throughout your enterprise.

When a user needs to interact with a supervisory controller and associated objects, one of two options are applied. For N30 Supervisory Controllers, the user easily launches M-Inspector to view specific object details, interact by sending commands, and even modify associated object attributes online. Since M-Inspector is a tabbed dialog application, the tabs that appear depend on the type of object that is selected. For Companion/Facilitator supervisory controllers, users interact through a VT100 Terminal interface to modify operational status, manage applications, and configure database parameters.

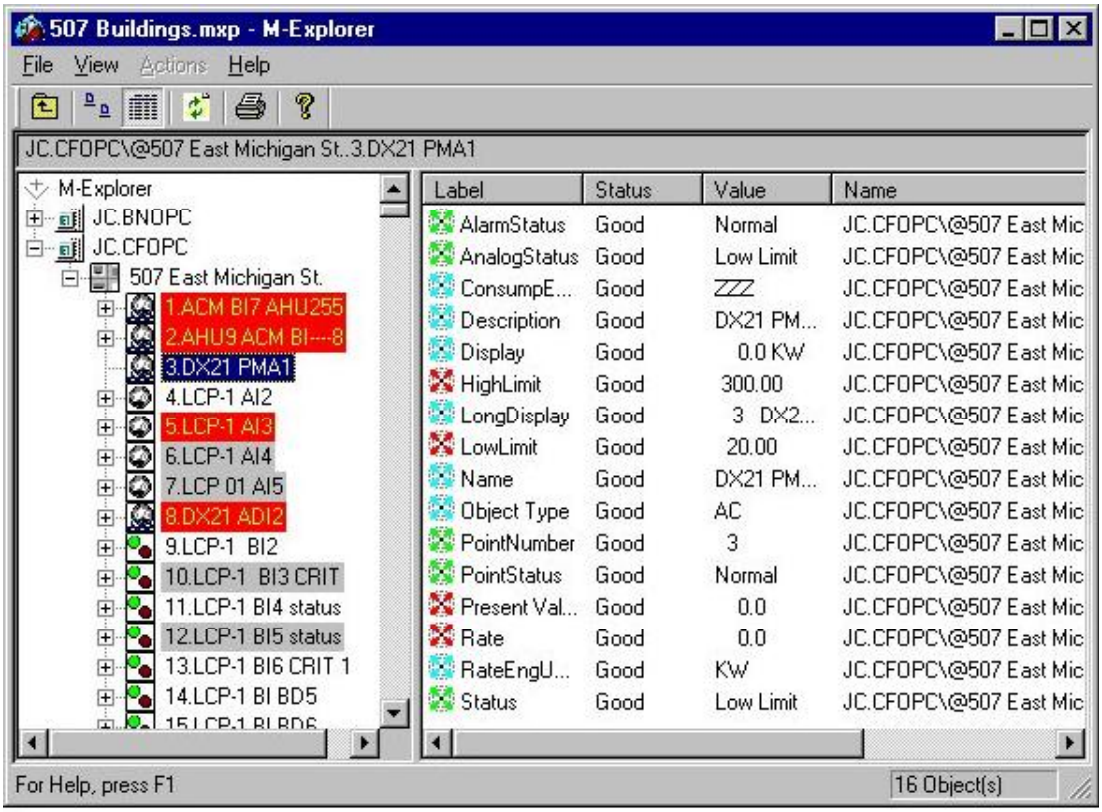

Figure 4: M-Explorer – Details

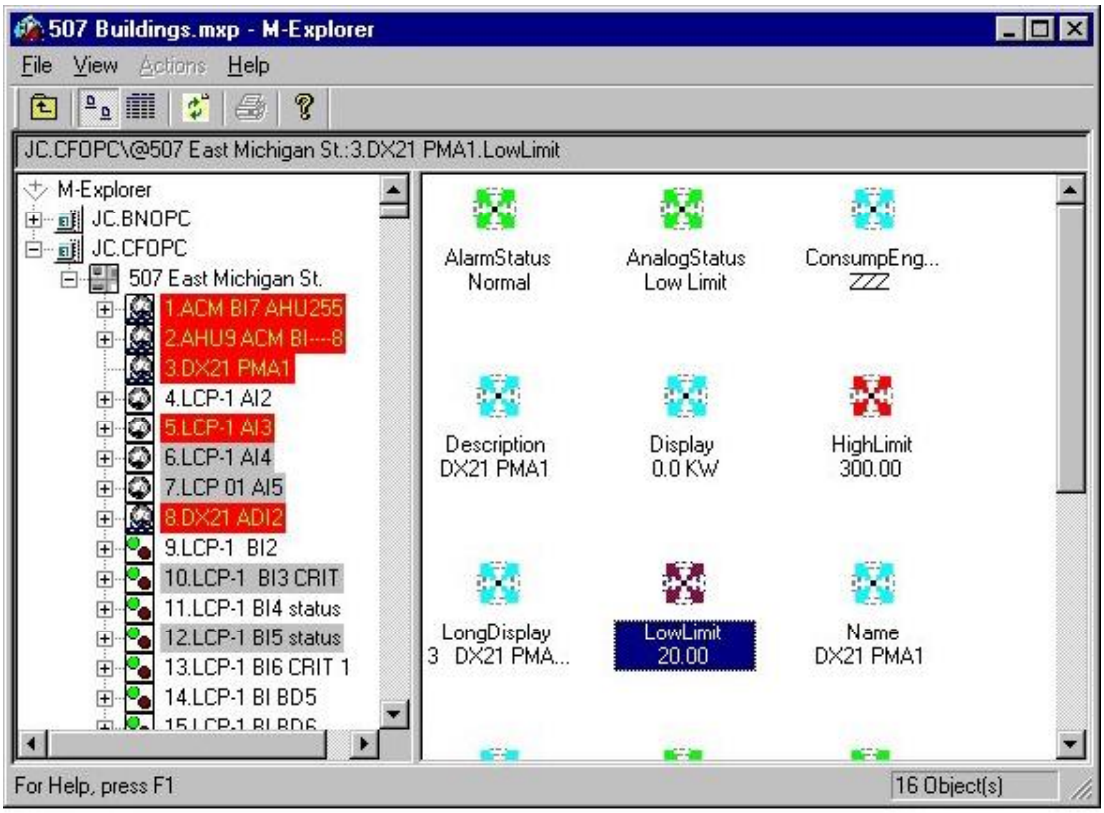

Figure 5: M-Explorer – Icons

M-Graphical Advantage

Through the world class dynamic color M-Graphics component, a user easily glides through buildings, floors, Heating, Ventilating, and Air Conditioning (HVAC) systems, and related areas through simple, quick point and click actions. For example, using these high-resolution dynamic color graphics, an operator may view the digital photographic image of the outside of a building, click on the identified problem area to quickly penetrate to the particular floor, and view all current area information. Once the operator has analyzed the situation, the operator interacts with the graphic display to make any necessary adjustments to resolve the problem and restore the system to optimal operational performance.

The M-Graphics advantage strives beyond its dynamic, high resolution, animated, color displays. Its advantage resides in performance integration. Besides the ability to navigate to anywhere, your users issue commands, launch M-Explorer and detailed tabs of M-Inspector, and access an object's schedules and other application parameters. Graphics have realtime trending embedded integrating a powerful analysis tool. Furthermore, reviewing a system's sequence of operation, diagnostic guidelines, or a detailed equipment drawing are all just a click away.

The M3 Workstation's dynamic color graphics becomes a cornerstone of your facility's operation.

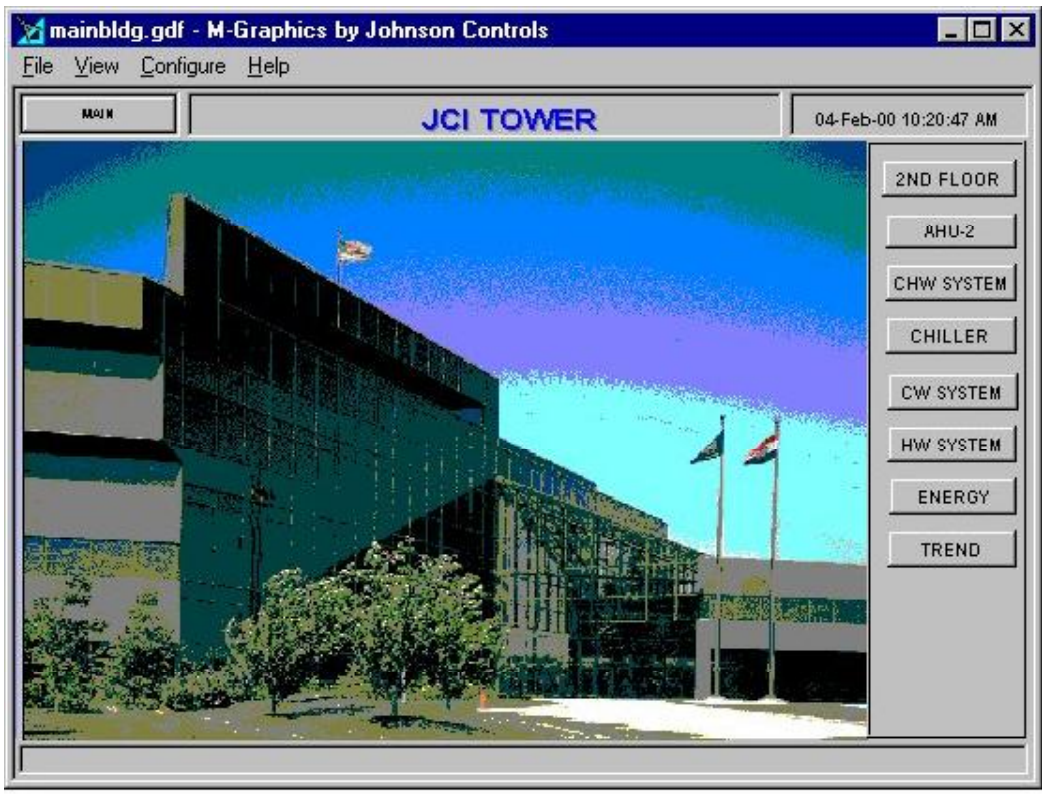

Figure 6: M-Graphics – Building Example

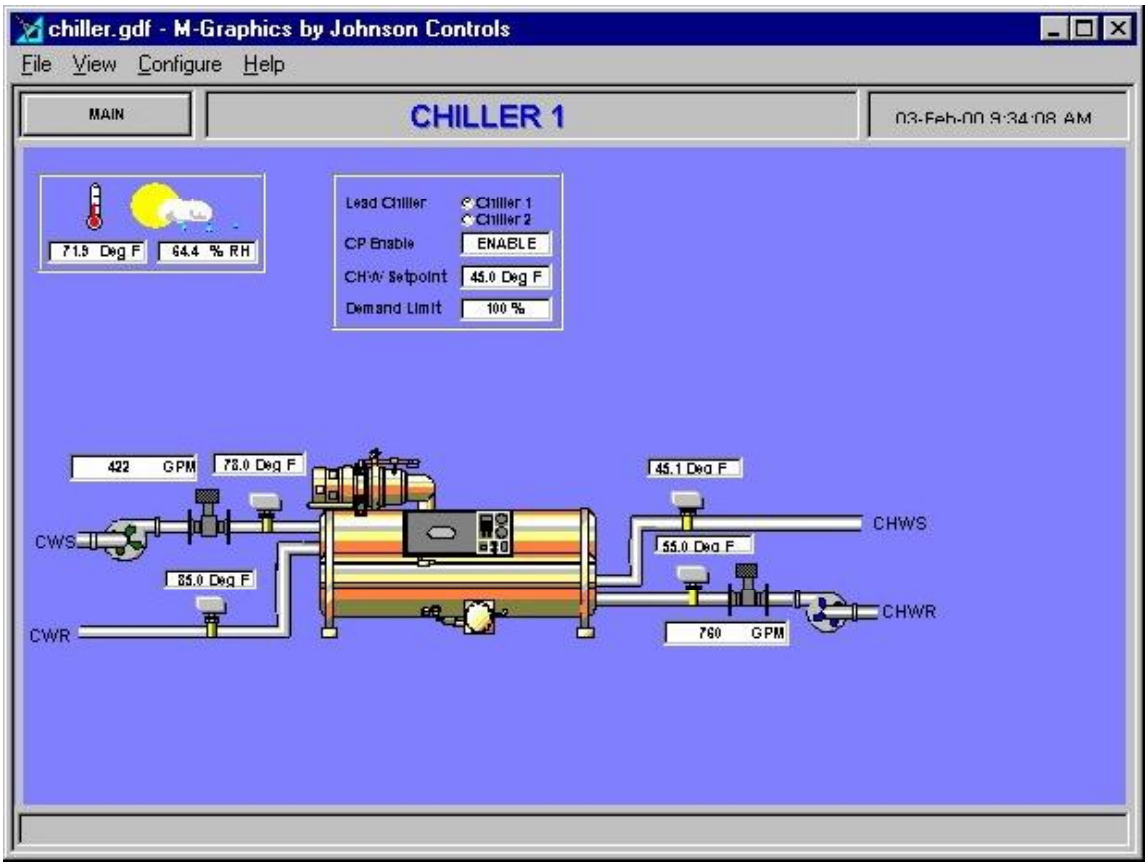

Figure 7: M-Graphics – Equipment Example

Advanced Trend Analysis

The M-Trend component provides a powerful management tool to analyze a breadth of historical operational characteristics of a facility. Through tabular or graphical trend views, a user reviews any combination of data sources from an integrated database. Graphical displays are single or stacked graphs with selectable display characteristics. In addition, any graphical display provides detailed trend source information and supports zooming for precise analysis.

While the local network manages the collection of trend source data, the M3 Workstation offers multiple methods to archive this pertinent information. Buffered trend data can be automatically uploaded periodically from local or remote supervisory controllers and archived into a single or multiple data historians. For those special, temporary situations where a faster sampling rate is required, an operator can initiate a snapshot collection that is managed by the M3 Workstation. Snapshot data can be archived with buffered data and therefore viewed together for analysis.

Through use of M-Trend, a user can optimize energy consumption, diagnose potential problems before they occur, and reduce maintenance costs.

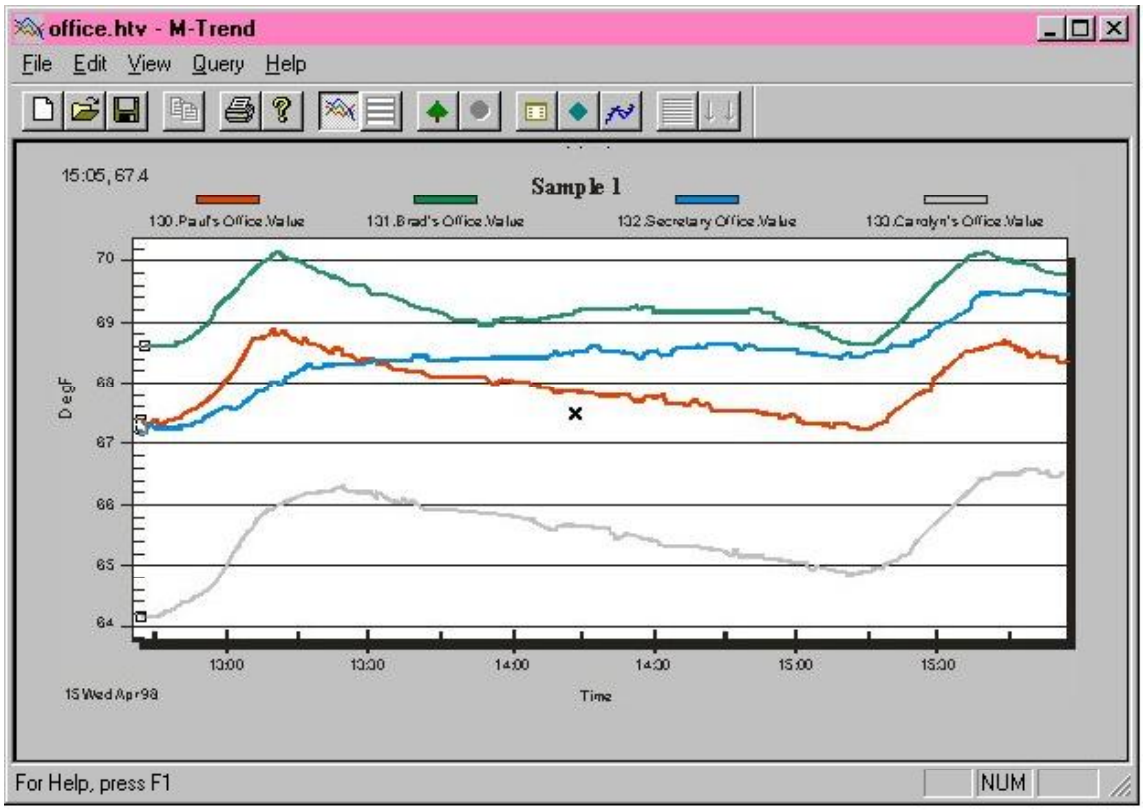

Figure 8: M-Trend

Password Protected

Using the M3 Workstation and its powerful features is easy, but only if you have the correct password. To ensure that only the proper individuals have authorization to use the system, M-Password provides the necessary protection.

M-Password is a highly flexible and customizable multilevel password access feature. Based on the clearance level assigned by the building manager or owner, each individual user or group of users has an associated profile that determines how they interact with the integrated supervisory controller network through the M3 Workstation.

Each profile determines what building equipment/points they interact with, what application files they display, and what days and time of day their password is active.

In addition, characteristics, such as how often a password must change, minimum length, uniqueness, and invalid entries, are determined.

To ensure that a user can only issue commands to which they have access, an action association profile is defined. This profile determines which features, menus, and items within menus, are accessible to a user. For example, a user may have access to display graphic files, but they are restricted from editing them.

Since a user only sees those items and commands to which they have access to, M-Password actually adds to the simplicity of the interface as well as ensures its security. It helps minimize the chance of unauthorized use and works in conjunction with other security measures implemented on a workstation or network.

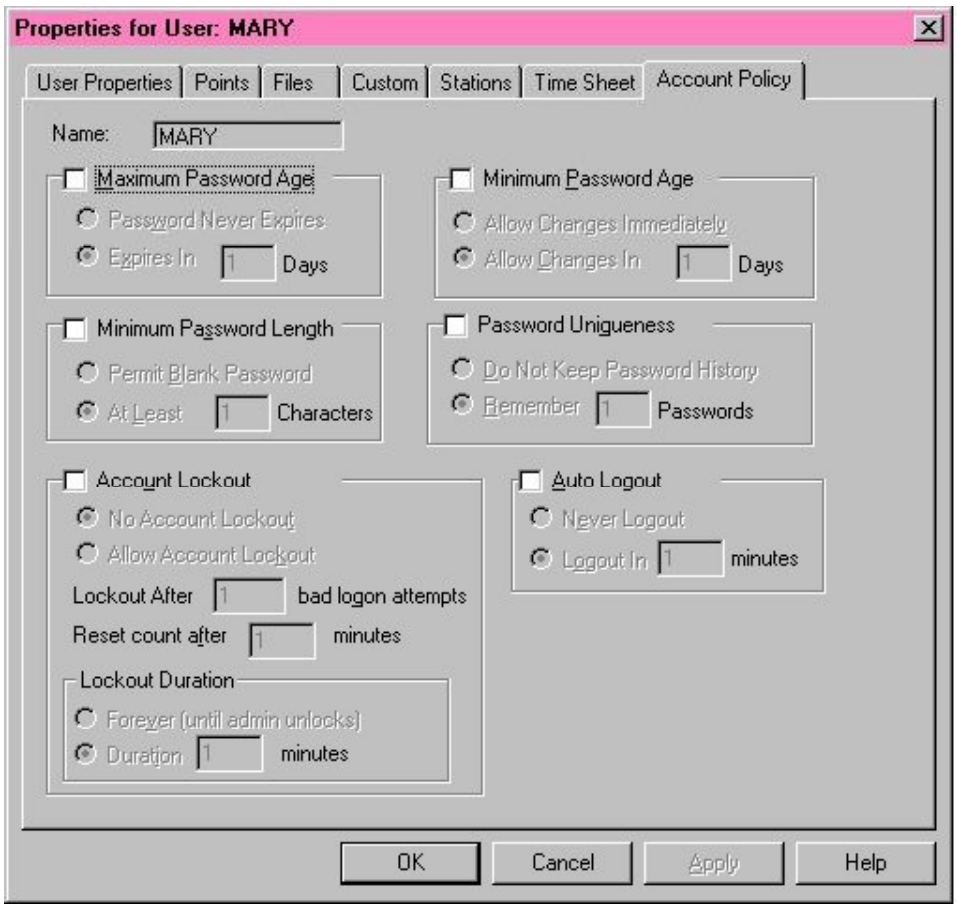

Figure 9: M-Password

Convenient System Monitoring

To keep you informed of special conditions, the M3 Workstation has a dedicated M-Alarm workspace to display information for immediate user attention. This workspace is automatically configured with one or two viewers depending on the configuration of a system. These viewers are associated with N30 Supervisory Controller sites or Companion/Facilitator sites. For example, when a point from an N30 site goes into an alarm, its state, along with an associated operator defined alarm message, is displayed in its current events viewer. Supplementary indications also include an audible signal and making the alarm workspace active as well as having the M-Alarm container tab change color and flash to draw operator attention.

Alarms associated with Companion/Facilitator sites are displayed and acknowledged individually. Messages are prioritized within each site. Should a site need to report multiple conditions, the highest priority message displays first. If multiple sites report conditions simultaneously, the operator selects which site to view first. In addition, you can specify a printer destination for printing messages.

An M3 Workstation simultaneously receives messages from local and/or remote sites. For applications with remote supervisory controllers, designated conditions automatically trigger the dialing process to report the condition to a properly configured remote M3 Workstation.

Conclusion

The M3 Workstation and associated local controller network have many of the same advanced components and techniques that are making Johnson Controls systems the standard in the industry. Now they are economically applied to facilities everywhere. In situations where sophisticated Facility Management System (FMS) features are not needed, and unparalleled economy is, this combination is the perfect fit.

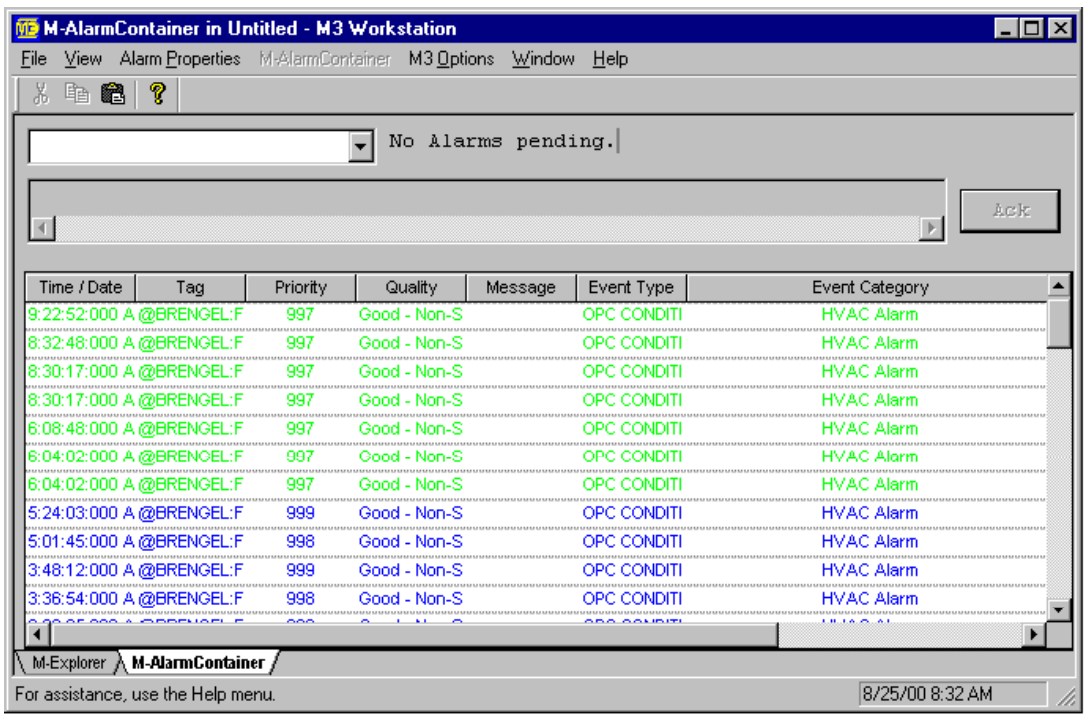

Figure 10: M-Alarm

Specifications

Product	**Branch Customers /Authorized Building Control Specialists (ABCS):** M3 Workstation (MW-M3WHCI-0) M-Graphics (MW-MGRAPH-0) **Network Systems (NS) Distributors:** M3 Workstation (FA-M3WHCI-0) M-Graphics (MW-MGRAPH-0)			
Recommended PC Platform	500 MHz Pentium® III class Personal Computer (PC) particularly if using M-Tool on the same PC (166 MHz Pentium class PC minimum)			
Operating System	Windows 98 Second Edition, or Windows NT 4.0 with Service Pack 6 or higher			
Memory	128 Mb recommended for Windows 98; (64 Mb minimum for Windows 98) 256 Mb recommended for Windows NT; (128 Mb minimum for Windows NT)			
Hard Disk	8 Gigabyte (GB) If running System Tools and M3 Workstation HCI on the same PC, we recommend that you have 500 Mb of free space on the hard drive for virtual memory.			
CD-ROM	4X speed			
Monitor	17 in. monitor with 1024 x 768 minimum resolution			
Video Memory	2 Mb VRAM minimum			
M-Components Memory Required	Access Historian M-Authorize M-Collector M-Password	5 Mb 4 Mb 5 Mb 6 Mb	M-Trend M-Explorer M-Alarm BACnet OPC Server	15 Mb 6 Mb 51 Mb 5 Mb
M3 Workstation Memory Required	M3 HCI	19 Mb	CF OPC Server	5 Mb
Cable	Serial only: 6 foot, DB9F/25M			
Agency Compliance	FCC Part 15, Subpart J, Class A UL® (Underwriters Laboratories, Inc.) 916 CSA C22.2 No. 205			
Agency Listings	UL Listed and CSA Certified			

Note: InfoPlus.21™ requires:

- Windows NT with Service Pack 6 or higher
- 500 MHz Pentium based processor (200 MHz minimum)
- 128 Mb RAM
- 8 GB hard drive (4 GB minimum)
- 200 Mb virtual memory (75 Mb minimum)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulti ng from misapplication or misuse of its products.

JOHNSON CONTROLS

Controls Group
507 E. Michigan Street
P.O. Box 423
Milwaukee, WI 53201

www.johnsoncontrols.com
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Printed in U.S.A.

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M-Graphics

Unparalleled ease, speed and power. It's all at your fingertips with M-Graphics, the premier dynamic graphical interface in the facility management industry. Just imagine your facility operators gliding through animated graphic displays, selecting operating strategies to fine tune your enterprise's operations, launch third-party software applications to access pertinent energy consumption information, review sequence of operations or diagnostic guides, or request comprehensive management reports as quickly as they can move their hand. Then consider extending that sphere of influence by integrating diverse subsystems, active custom control strategies, embed ActiveX™ controls to view realtime trends and full motion video. You can enjoy all this advanced capability and more through M-Graphics—a powerful management tool that delivers confidence to your staff.

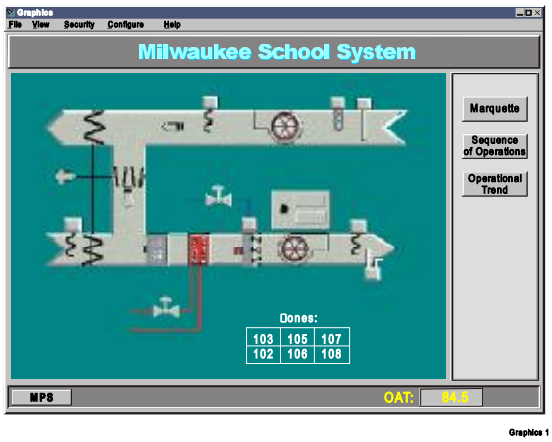


Figure 1: M-Graphics

Features and Benefits

❑ **Fully OLE for Process Control (OPC) Compliant**	Accesses data via OPC data servers, an industry standard, open architecture interface
❑ **ActiveX Compliant**	Provides universal standard for sharing and integrating data. Provides means to launch compliant applications from graphical displays. Allows display/embedding of ActiveX controls within graphical displays.
❑ **Comprehensive Library with Prebound Tags**	Easy to engineer. Library provides symbols, subsystems, and complete HVAC systems
❑ **Dynamic Animated Displays**	Easy to visualize operational conditions
❑ **Full Feature Online Editor**	Provides built-in editor to quickly handle desired modifications
❑ **Multifaceted Zooming on any Portion of Graphical Display**	Provides detailed focus to assist analysis
❑ **Versatile Import Capabilities**	Allows use of various formats and applications for graphic development

Intuitive Navigation

Whether your facility is large or small, single or multi-site, basic or complex, you require a flexible facility management solution to help you manage it efficiently. Your staff needs the ability to quickly and confidently navigate from one area to another. You want them to make informed, up-to-the-second decisions regarding comfort and operating efficiency. Plus, you need a simple, intuitive design.

Through M-Graphics your staff can easily and intuitively glide throughout your entire networked enterprise by way of graphical displays. Using simple, quick point and click actions, navigation between buildings, floors, animated HVAC or other integrated systems, and related third-party software applications is simple and quick.

For example, using these high-resolution dynamic color graphics, an operator may view the digital photographic image of the outside of a building, click on the identified problem area to quickly penetrate to the particular floor to view all current information. Once the operator has analyzed the situation, the operator can strategically interact with the graphic display to make any necessary adjustments to resolve the problem and restore optimal operational performance.

This simplicity truly maximizes an operator's efficiency. All pertinent information is easily accessible, letting them focus on facility operations. There is no need to memorize or type command formats, or use special key combinations. M-Graphics will encourage system utilization, enhances productivity and lowers overall operating costs. It's a natural edge to bring performance navigation to your facility.

Figure 2: Example of M-Graphics Navigation

Performance Integration

M-Graphics enhances your perspective of facility operations. Not only can you see more pertinent information on your screen, you have access to a wider variety of ways to access and manipulate it.

Besides having the ability to navigate and visually view information anywhere in your facility, your users have access to other integrated facility management functions. Depending on subsystem capabilities, users can easily command the status and value of objects, launch detailed focus windows, access an object's schedules, view totalization records, and other application parameters all in a familiar format. Graphical displays can have realtime and historical trend graphs embedded, integrating a powerful analysis tool. Furthermore, reviewing a system's sequence of operation, diagnostic guidelines or a detailed equipment drawing can all just be a click away.

Your M-Graphics performance integration can be extended to launch popular third-party software applications; such as a spreadsheet calculating energy consumption and efficiency reports, trigger a Visual Basic® application to initiate a custom control strategy and much more. Performance integration—limited only by your creativity.

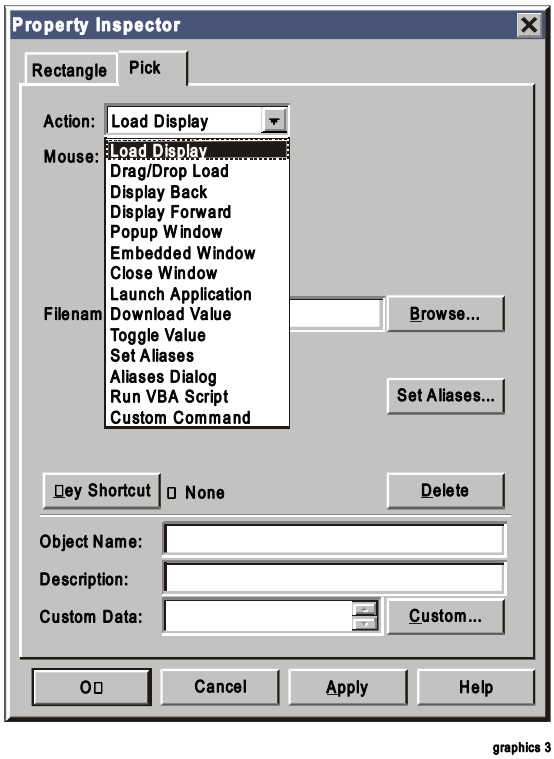


Figure 3: Pick Action Dynamics

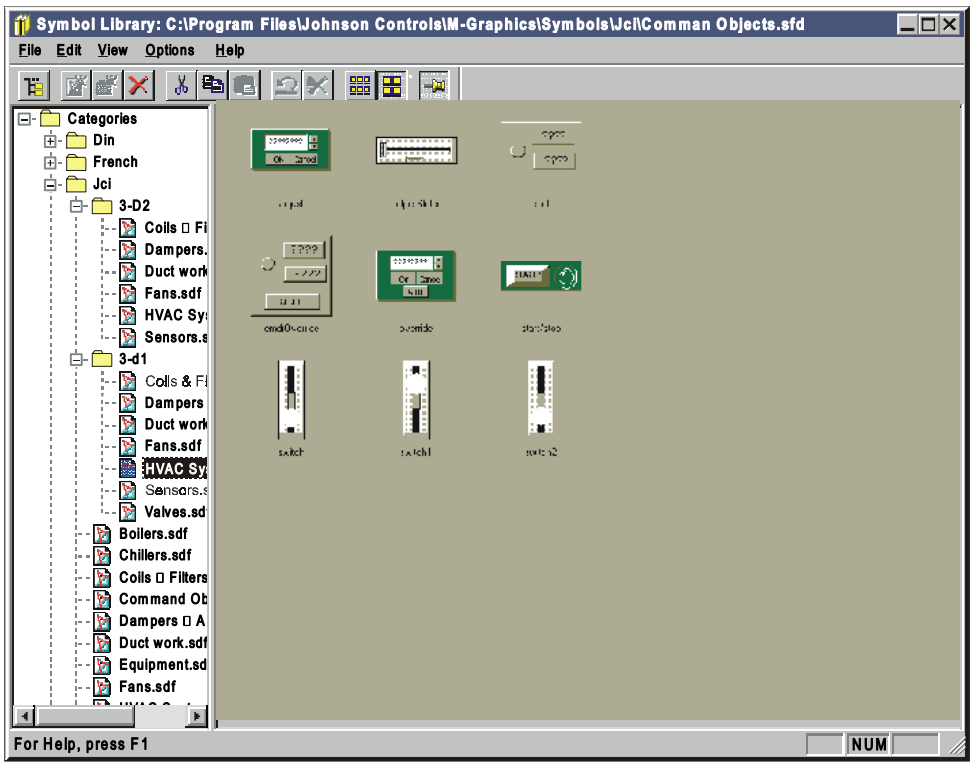
Visual Dynamics

M-Graphics brings a dynamic, visual perspective to your facility through a combination of industry leading characteristics. Backgrounds and static elements can easily be draw, scanned, or imported. Runtime dynamics include;

- Changing the size and/or location of an object such as the volume level in a tank based on a realtime value
- Rotating the position of an object such as door or damper based on an object's realtime value
- Hiding drawing components such as special messages based on associated logic condition
- Change display color distinctly or by color gradient such as floor room temperatures based on an object's realtime value
- Blink/flash a drawing component on/off or between two colors such as for emergency conditions based on associated logic condition
- Select which object of a group is displayed such as maximum load value based on realtime value of an analog object
- Animate the operation objects such as pumps, fans, dampers, fluid flows, humidifying vapor sprays, and valves
- oom any portion of a graphical display by fixed/custom percentages or by flexible box (rubber banding) and much more

Any display can be further enhanced using pushbuttons, check boxes, sliders and radio buttons. Time and date can be added in a variety of formats. Add realtime data values from any number of OPC data servers. Plus, display values can be the result of custom created expressions; such as: arithmetic, relational, logic, bitwise/Boolean, or functions, providing a unique level of flexibility.

Your creativity is the cornerstone to the dynamic visual impact that is provided with M-Graphics. It opens up new dynamic opportunities for managing your facility's operations.



graphics 10

Figure 4: Example of Command Bars and Sliders

On Call Editing

One thing we can count on is change. Even when we think a graphic is complete, something can come along to require changes.

M-Graphics addresses these real life occurrences by providing a full featured, online graphics editor. There is no need to use or purchase a separate software package; this editor is always available.

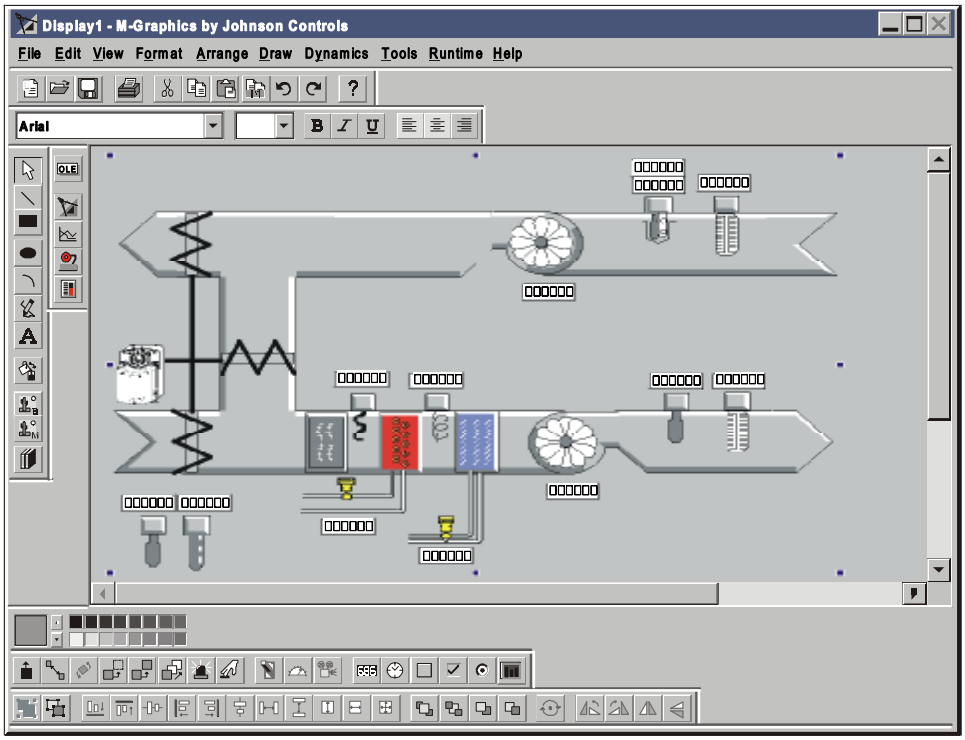


Figure 5: M-Graphics Configure Mode

The M-Graphics online editor provides a full range of functions including:

- Drawing tools for lines, segmented lines, arcs, rectangles and ellipses with the ability to apply color, style and width characteristics
- Text tools for inserting text with effects such as color, shadows, patterns, font, size and style
- A full color palette with custom color creation and an eyedropper option to distinctly select a color and apply it.
- Aligning, arranging, and grouping functions
- Importing of bitmaps and metafile formats
- Templates to easily apply standard formats and much more

To assist in graphics creation, M-Graphics includes a comprehensive symbol library in 2D and 3D formats. Symbols include boilers, chillers, coils, dampers, actuators, duct work, fans, filters, meters, piping, tanks, controls, motors, pumps, and complete HVAC systems to mention a few. Plus, each library symbol is associated with a prebound tag to aid in the creation of facility drawings

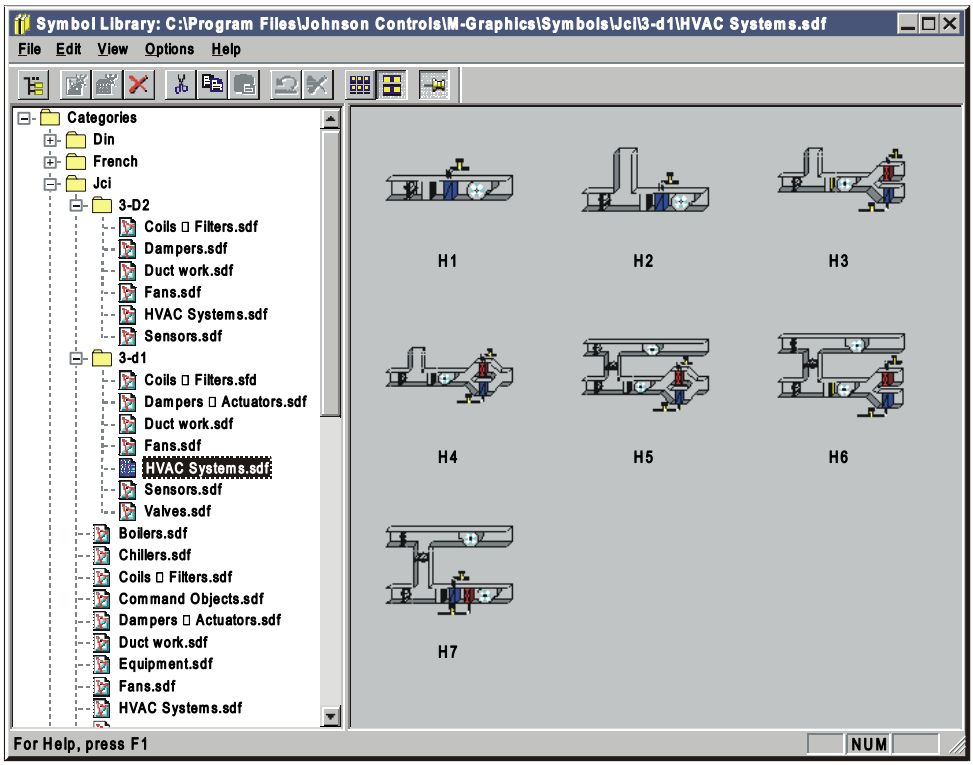


Figure 6: M-Graphics Symbol Library

M-Graphics object binding is so quick, fast, and simple—you'll enjoy it. Since M-Graphics is an OPC compliant application, tag browsing and binding is just point and click. Users have the flexibility to select which OPC data server, object and attribute to bind within a graphic display. Plus there is no physical limit to the number of bindings associated with a graphic or restriction of data source. Therefore, you can easily intermix data from a variety of systems, subsystems and OPC data servers.

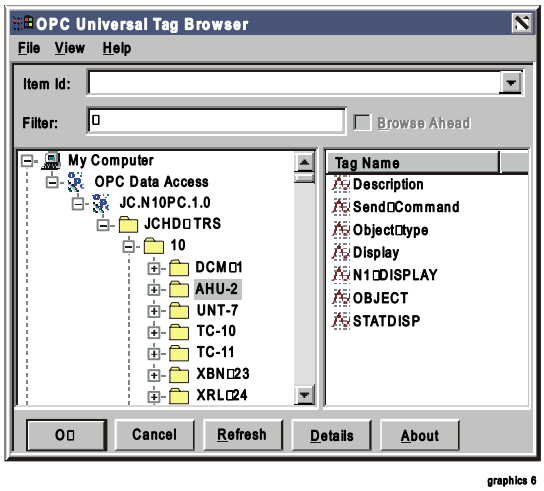


Figure 7: OPC Tag Browser

Active Ingredients

As versatile as M-Graphics is, it provides additional industry leading benefits.

- Besides distinct data source tags, a display can use local variables and Runtime aliasing that automatically loads the appropriate data sources upon display. For example, create only one detailed VAV box graphic and through Runtime aliasing, apply it to every VAV box in your facility. Plus, aliasing can be specified within each individual M-Graphics display or be sourced from an external tab-delimited text file.
- Through ActiveX controls, M-Graphic displays can be embedded in other ActiveX control containers such as Visual Basic forms and HTML pages.
- M-Graphics fully supports Visual Basic for Applications, an industry standard and powerful programming environment to create and customize Microsoft® Windows® applications. This high-level application programmability features cross-platform support for ActiveX technology and is identical with VBA in Microsoft Office applications and those of third-party products.

Conclusion

Unparalleled ease, speed and power. With all the versatility and advantages of M-Graphics, your decision couldn't be simpler. We think you'll agree that M-Graphics is perfect for you. Why not make it an integral part of your team to assist in the management and optimization of your enterprise's operations.

Specifications

Product M-Graphics (MW-MGRAPH-0)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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Controls Group
507 E. Michigan Street
P.O. Box 423
Milwaukee, WI 53201

www.johnsoncontrols.com
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N30 Supervisory Controller

The N30 Supervisory Controller is an economical supervisory controller designed to monitor and supervise Heating, Ventilating, and Air Conditioning (HVAC) equipment as well as lighting, security, and building access. The N30 efficiently supervises the networking of Application Specific Controllers (ASCs) and provides building automation features including time scheduling, alarm management, controller data exchange, energy management, and remote communications. Equipment operates at peak efficiency while maintaining optimum occupant comfort.

Facility personnel can review the system status and modify control parameters for the N30 Supervisory Controller and its associated ASCs using a VT100 Terminal, VT100 Terminal Emulator, or an M-Series Workstation.

With the addition of a network card, multiple N30s communicate over an Ethernet peer-to-peer network, providing increased functionality for more complex systems.

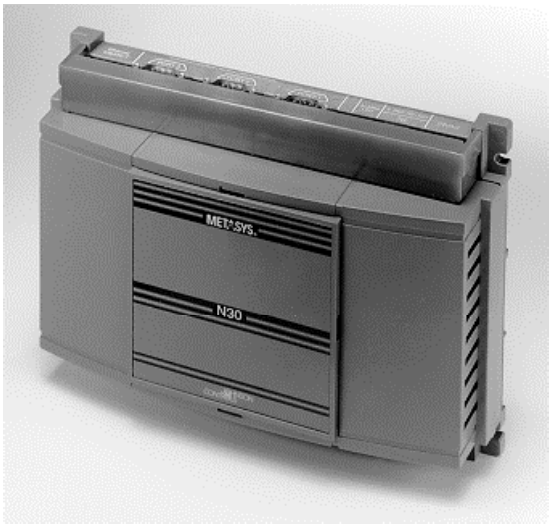

Figure 1: N30 Supervisory Controller

Features and Benefits	
■ **Built-in Energy Management Features**	Provides advanced environmental controls for energy cost-savings
■ **Network-wide Interlocking**	Supports integrated control between distributed controllers for efficient operation
■ **Peer-to-Peer Communication**	With a network card, provides direct communication between devices using BACnet® protocol
■ **Dial-In – Dial-Out**	Allows access to/from remote sites to ensure proper operation
■ **Single Seat User Interface**	Allows operator to review entire system for fast and simple access to system data
■ **Password Protection**	Provides secure user access to system

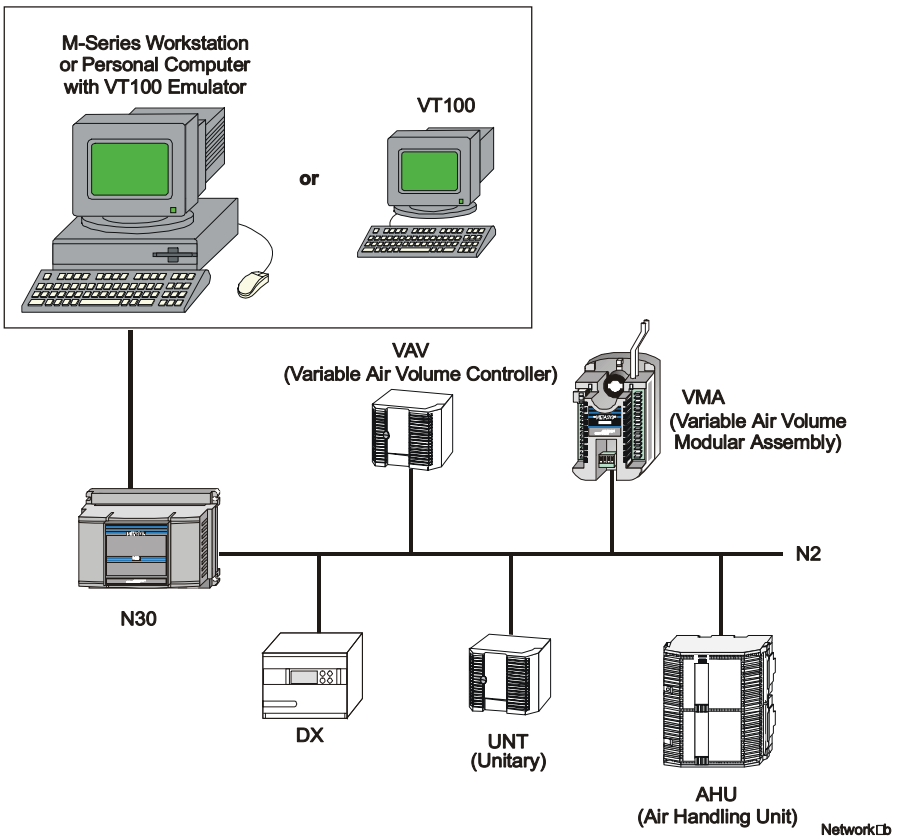

Figure 2: N30 Support of N2 Devices

*N*2 Device Support

The N2 Bus is a local communications network that links HVAC controllers within the facility.

A proven communication network, the N2 Bus is widely accepted by HVAC control suppliers. Installing the N2 system is easy and economical, requiring only simple wire connections.

Up to 50 N2 devices can be supported on a single N30. Total distance between devices is application-specific. Network repeaters and other accessories, available through third-party suppliers, may also be used.

In addition to Johnson Controls HVAC controls, the N30 supports Metasys® compatible devices that monitor and control lighting, card access, and security systems. The N30 supports many other HVAC control components, including variable speed drives, boilers, chillers, fire systems, and power monitoring equipment.

Built-in Applications

HVAC network controllers contain their own routines so each controller can perform independently. The breadth of this HVAC controller line is unparalleled in the industry.

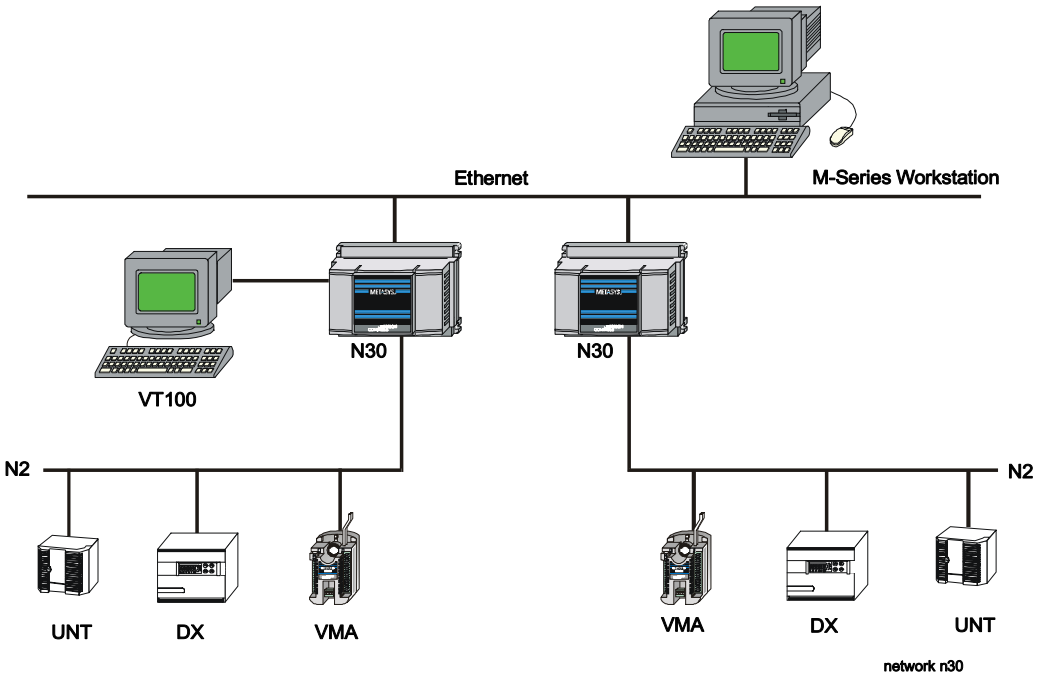

Figure 3: N30 Network Example

Network Protocol

With a network card installed, up to 50 N30s can communicate peer-to-peer using BACnet messaging over the Ethernet bus. This means each node shares data and has access to information on all other controllers.

Workstations can view data anywhere in the network when connected on the Ethernet network or connected directly to an N30.

The BACnet protocol standard allows inter-vendor communication and easy system integration. The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) defined the standard and it is a requirement in many applications.

BACnet Conformance

The N30 communicates via BACnet, an industry standard protocol developed by ASHRAE for intervendor communication.

- Supports Annex J BACnet standard including Internet Protocol (IP) support.
- Protocol Implementation Conformance Statement (PICS) is in the appendix of the *N30 Supervisory Controller Technical Manual (FAN 689.1)*.
- Fully meets Conformance Level 4, providing data sharing and alarm management.
- Interoperability is dependent on media type, protocol level, and conformance level.

User Interface Options

M-Web

N30 Release 2.0 and later can be used with M-Web Release 3.0. M-Web provides an economical way for customers to increase system access, locally or remotely, to a Metasys system.

M-Series Workstations

N30 Release 2.0 and later can be used with M-Series Workstations. These workstations allow the N30 to:

- connect via direct connection through serial port or over an Ethernet network
- move through buildings, floors, and areas, by simply pointing and clicking on symbols in M-Graphics
- support trending, dynamic graphics, OLE for Process Control (OPC) and ActiveX® interfacing, and much more, using multiple software components that are available to customize the workstation for each system's requirements

VT100 Terminal

The N30 can be accessed with a VT100 Terminal or a Personal Computer (PC) with a VT100 Terminal Emulator. This option allows low cost:

- direct or remote connection to the N30
- support for text configuration of objects

User Access

The N30 Supervisory Controller identifies legitimate users and their access privileges through password identification. For authorized users, using the N30 is easy.

Six levels of password protection are available. The authorization levels range from Configure to View Only. Access to the functions of the N30 is granted according to the specific needs of a given user.

Feature Set

Alarm Processing

When a point goes into alarm, the N30 sends information to display the alarm point and an operator-defined alarm message, allowing a fast response to any system problems.

Trending

User-defined Trend logs monitor the attributes of specified points over time. They are used to define system wide characteristics.

Totalization

Analog, Event, and Runtime Totalization objects allow the tracking of consumable usage, number of times specific events occur, and how long equipment remains in specified states.

Remote Dial-In/Out

This feature allows remote access to your Building Automation System (BAS) in order to:

- set Alarm dial-out to a workstation or printer for specified alarms
- dial-in from M-Series Workstations or PC with VT100 emulation
- dial-in for commissioning/troubleshooting

Efficient Building Operation

The N30 is specifically tailored to meet the needs of building owners and managers who are looking for an affordable way to monitor and control standard mechanical systems such as:

- dual-duct, single-duct, and packaged air handling units
- rooftop units, unit ventilators, heat pumps, chillers, and boilers
- Variable Air Volume (VAV) systems

Flexible Scheduling

The N30 Weekly Scheduling feature allows the user to define when an event should occur. An event can be programmed for any day of the week, holiday, or calendar date.

Group Objects

Users may define groups for easy facility management. These groups include devices, points, or other objects according to the user's needs.

Database Management

Users define a database offline or online, either directly connected to an N30, via the Ethernet network, or from a remote site via a phone line. The users upload/download application specific controllers through the N30 without affecting system operations.

Installation/Hardware

Some of the installation and hardware features of the N30 include:

- DIN rail or wall mount
- non-volatile memory to archive all programs and data
- communication and alarm Light-Emitting Diodes (LEDs) to allow easy troubleshooting

Network-Wide System Interlocking

Interlocking enables information from one or more HVAC controllers to trigger a set of control instructions to be issued to other HVAC controllers. It also allows analog or binary data to be shared between controllers. For example, this feature could be used to eliminate the need for an outdoor air temperature sensor wired to each controller, saving hardware and installation costs.

Energy Management Features

Optimal Start

Optimal Start automatically determines the correct time to start HVAC systems to ensure the facility is ready for occupants at the scheduled time. It adjusts to seasonal variations and minimizes the energy used.

Demand Limiting and Load Rolling (DLLR)

Demand Limiting sheds and restores outputs on a rotating basis to prevent demand from exceeding defined limits.

Load Rolling cycles equipment on and off to manage the total electrical power consumption.

Multi-Site Connections

For efficient management of remote sites, a single workstation can monitor multiple sites via telephone dial-up connections or a Local Area Network (LAN).

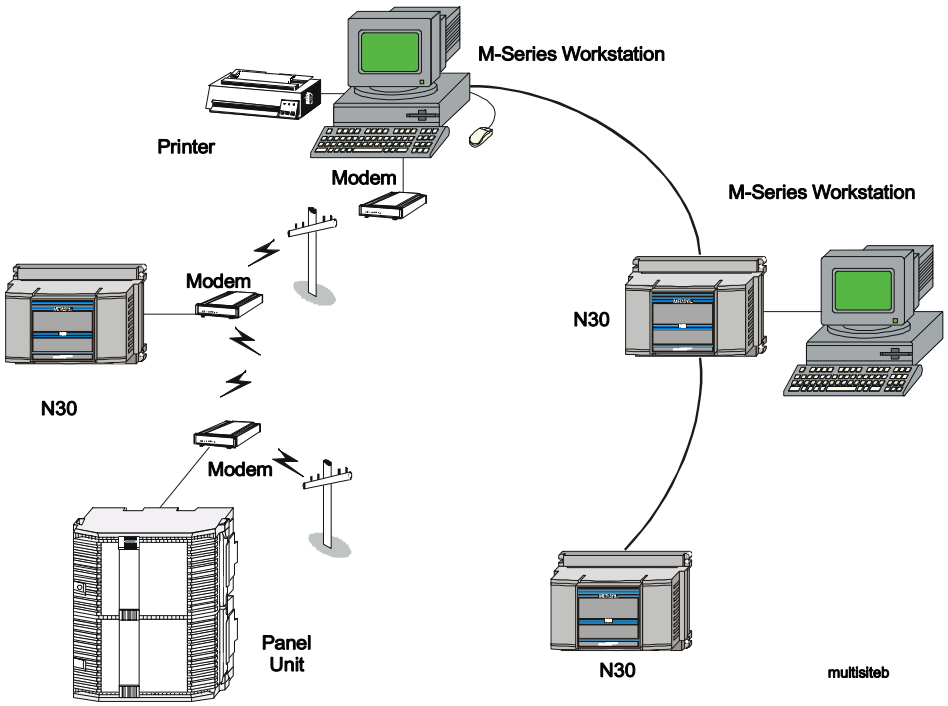

Figure 4: Multi-Site Connection

Conclusion

The N30 offers many of the same advanced components that make the Johnson Controls Metasys® Building Automation System (BAS) the industry leader. Now the powerful features of Metasys systems can be economically applied to smaller facilities everywhere. In situations where comprehensive, but less-sophisticated BAS features and unparalleled economy are required, the N30 is the perfect fit.

Specifications

Product	N30 Supervisory Controller (MS-N30 1010-1) N30 Supervisory Controller with Ethernet Peer Bus (MS-N30 1310-1)
Power	Nominal 24 VAC □/- 10□ at 50/60 Hz
Recommended Local Terminal	VT100 Class Terminal or PC with VT100 Emulation Software
Recommended Workstation	M3 Workstation Release 3.0 or later M5 Workstation Release 2.0 or later
Ambient Operating Conditions	0 to 50□C (32 to 122□F) 10 to 90□ RH 30□C (86□F) maximum dew point
Ambient Storage Conditions	-40 to 70□C (-40 to 158□F) 5 to 90□ RH 30□C (86□F) maximum dew point
Dimensions (H x W x D)	64 x 168 x 236 mm (2.5 x 6.6 x 9.3 in.)
Shipping Weight	Approximately 0.68 kg (1.5 lb)
Agency Compliance	UL Listed, CSA Certified and CE Mark
Accessories	Ethernet Communication Card for N30 (MS-NET 1300-0) M-Tool 2.0 or later, Programming Toolset for N30 and related ASCs. (Replaces Configuration Tools/Winpro.) Includes M-Tool Computer Based Training (MW-MTOOL-0). Upgrade from previous version of M-Tool. Includes M-Tool Computer Based Training (MW-MTOOL-6). M-Tool Computer Based Training Package (MW-MTCBT-0) Repair Unit - N30 Supervisory Controller (MS-N301010-701) Repair Unit - N30 Supervisory Controller w/Ethernet Peer Bus (MS-N301310-701)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulti ng from misapplication or misuse of its products.

JOHNSON CONTROLS

Controls Group
507 E. Michigan Street
P.O. Box 423
Milwaukee, WI 53201

www.johnsoncontrols.com
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