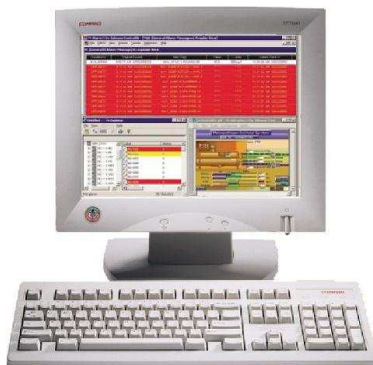


M3*integral*



The Metasys M3i Workstation is one of the Johnson Controls solution for Small Integrated Building and Flat LON where a truly Operator Workstation (OWS) is required. Thanks to the performance of the system Operators can interact with graphic interface, manage environments, monitor energy usage, command light, optimise control strategies and respond to emergency conditions, quickly and easily. The workstation can directly connect to both Johnson Controls and other producers (third party) devices.

Using the most recent technology M3i Workstation connectivity includes fire detection, intrusion, access control and many other systems that make a building functional and safe (Variable Speed Drivers, PLCs, meters etc).

This is made possible through a multi-protocol structure, which can be used for Johnson Controls N2 and Modbus protocols, as well for LonWorks®, BACnet interoperable standards and IT solutions as SNMP traps.

M3i intrinsic flexible communication capability can be further enhanced by the addition of hardware and software interconnection modules for other protocols (standard and proprietary) such as the Metasys Integrator MIG-300 that extend the connectivity to hundreds of devices available on market.

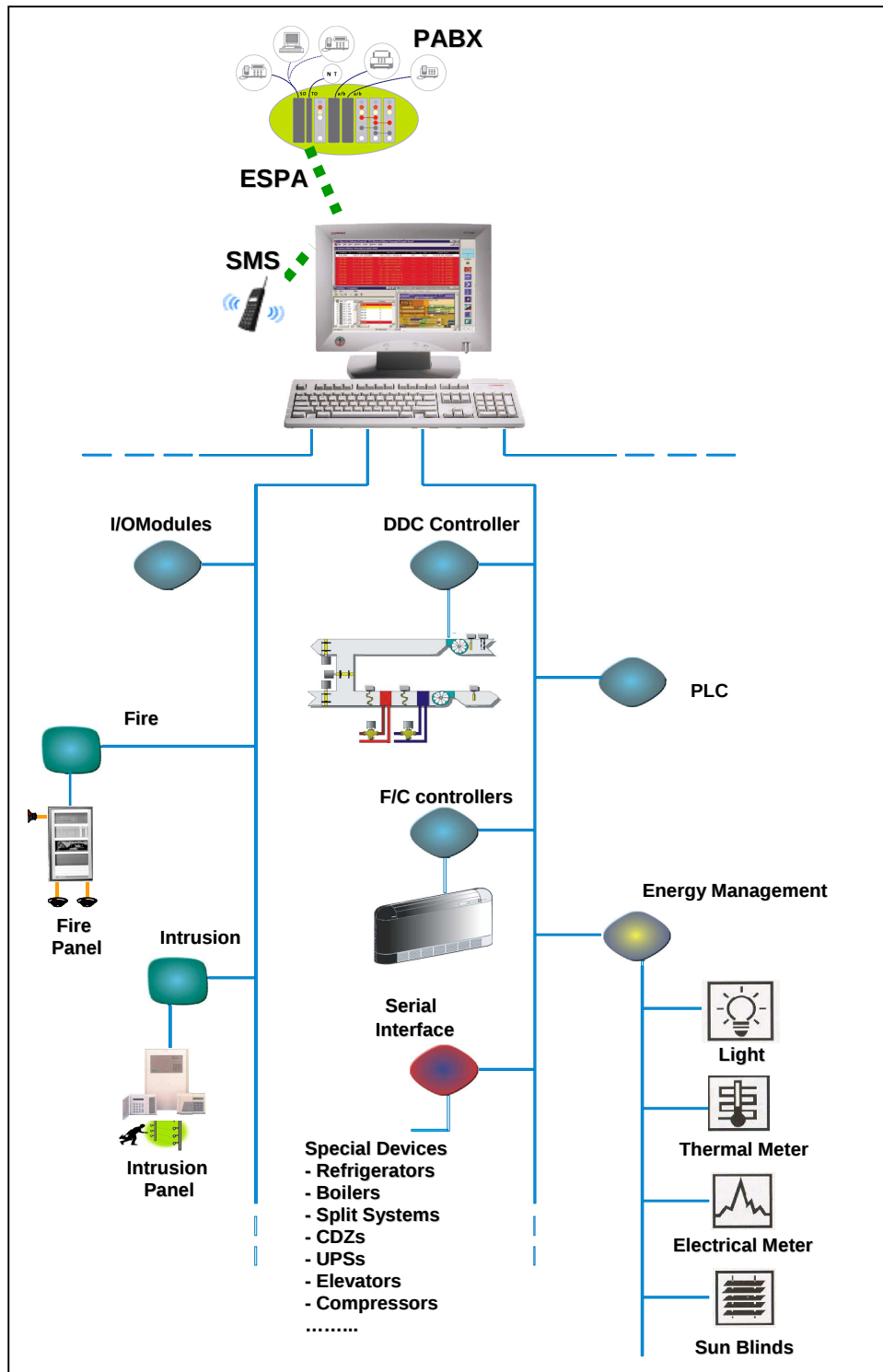
The intuitive user interface of the M3i Workstation includes a dynamic graphic representation of a building and its systems, allowing users to easily interact with building plants.

According to its Active-X compliance, the graphics interface can use panels to allow simultaneous display of trend data, alarms and time schedule programs.

Features and Advantages	
☐ Based on latest Technology	State-of-the-art technology standards for compatibility and expendability: ActiveX, ODBC etc.
☐ Wide range of devices connectivity	N2 and Modbus devices, capability to integrate Chillers, PLCs as well as other third-party products.
☐ Alarm management	Immediate alarms displaying tin a graphic way as well as through M-Alarm summarizing tables.
☐ Measurement sampling	Trend data collection for a graphical and tabular analysis of plant performance.
☐ ESX	Automates the plants activities through time schedules programs
☐ Dynamic graphic maps	Animated symbols guarantee a clear interpretation of the plant status
☐ Sending of notices	Alarms dispatching through SMS, e-mails and in SNMP mode to remote operators.

The M3i Workstation multimedia package option allows alarms reporting to remote users using industry standard protocols such as SMS or ESPA 4.4.4 as well as SNMP-protocol messages for the Network Management Integration.

Thanks to the Metasys® M3i Workstation small buildings can have a state-of-the-art monitoring and control solution using a simple but capable Operator Workstation is required.



Typical Layout 1

A System directed towards global control in small buildings

Even small buildings have a complex plant-engineering reality which includes mechanical parts (Fan Coils and control units), electrical sections and, often, security integration to detect fire and break-in.

The M3i Workstation provides an easy and flexible connection with different devices present in a building, allowing the global supervision of all the building plants.

An extended multi-protocol communication engine can directly connect to both Johnson Controls and Third party devices. This allows an easy way to control data coming from Johnson Controls System 91 series of controllers (DX, TC...), Johnson Controls LonWorks® Controllers (DX-9200, LN Series, FX Platform and all the LonMark® Certified Product), N2Open Certified Devices, as well as other equipment that use Industry-standard protocols such as Modbus.

The M3i Workstation provides to the users all the relevant information needed for the building management, like display and print summaries of the buildings state and alarms, modify control parameters and strategies, analyze operational data (trend), obtain dynamical graphic representations for simplified and effective handling of alarm situations.

Additional M3i Workstation can be added to the main one using the LAN Network. The real-time information of the building is simultaneously updated on all PCs enabling both workstations to manage the plants.

The Access to the System is protected by a UserID and Password Authentication system.

Workstation features

The M3i Workstation is interactive and flexible, optimizing the effectiveness of a building management system.

The working environment is based on a Workspace concept that is customizable, simple, and fast, allowing dynamic navigation between the applications that compose the building management system. One of the Workspace pages is fully dedicated to the visualization of the real-time and historical Alarms, reporting all the events that need a

fast reaction by the Operator. The working folders are ActiveX™ server documents that offer an incomparable Flexibility as well as uniform interaction between applications.

The M3i Workstation main components are:

- A Textual Workspace: This shows the building information in a text mode easy to navigate using a tree structure.
- A Graphics Workspace: This displays building information in graphic form.
- A Trend Workspace: This displays recorded trend data in either tabular or graphic mode.
- An Alarm Workspace: This displays current alarms, in tabular mode, depending on the events severity.

The building graphic representation and its systems are made through Johnson Controls M-Graphics software.

Using the high-resolution colour graphics, the operators are informed about any abnormal conditions by a dynamic representation of the monitored systems and with appropriate messages.

It is possible to change from a whole building representation to a specified floor or area with a simple click on the mouse.

The M3i Workstation can display floor maps or plants details with real time data. By clicking on the symbols that represent the different components of a particular system, the operator can carry out any necessary adjustments to correct a possible problem. The operator interface is completed with M-Alarm to manage alarms and M-Trend to create and display historical trend data.

In case alarms report are required at a remote location, an additional software module allows this information to be send as SMS messages or transferred via ESPA 4.4.4 protocol to compatible pager systems.

Finally, the optional Metastore module allows the creation of advanced and complete reports based on trend data stored by the M3i Workstation.

M3 Integral Connectivity

N2 Bus Controllers

The N2 Bus is a local communication network that connects the building devices with the M3i Workstation.

N2 Bus installation is very easy and cost effective it just needs a 3-wire cable.

M3i Workstation supports N2 System 9100 devices as well as N2Open devices like Metasys Integrator (MIG), AHU, UNT, devices using VND protocol and FX devices with a N2 interface.

LonWorks® devices

The M3i Workstation provides connectivity to LonWorks® networks, using a solution based on the Echelon™ LNS Technology and available in two sizes one for small systems and one for large Flat systems.

Using this connectivity solution M3i Workstation integrates System 91 (DX9200), LN and IRC Product Series in the Global

An automatic tool to import data from DX, FX engineering tools and 3rd party communication drivers (VCT Tables) is available to facilitate database creation.

Device/point list duplication (for mass copying of fan coil unit data for example) is supplied as well. Import and export features are provided to optimize engineering efforts.

Building Management System as well as any other 3rd party LonWorks® product like Multimeter, VAV box and Gateway.

A Plug-in configuration tool will automatically generate the tag database allowing the configuration of the M3i Workstation features for Alarms and Event analysis and Trend collection.

Modbus devices

Modbus (Modicon®) and J-bus (April®) protocols are industry standard communications protocols, which set a hierarchical master/slave structure, typically based on a serial transmission.

The interface allows point-to-point (RS232) or multipoint (RS485/RS422) mode connections.

The protocol is supported in RTU mode and in ASCII mode over serial cable and/or over Ethernet network (MODBUS/IP).

Support of this protocol, as default in the M3i Workstation, allows it to connect third-party devices that may be installed in a building without the need to use special protocol converters.

As an additional option, the EDE can provide a direct link as Modbus (serial or IP) device, so it provides an effective method of integration into 3rd party systems.

Fire and Security Panel Connection

Thanks to the usage of recent technologies and market standards M3i Workstation interfaces a wide range of 3rd party product like Fire Alarm Systems, Intrusion Panel and CCTV System (Johnson Controls DVN System).

The interface allows point-to-point (RS232) and multipoint (RS485/RS422) connections

The protocol is supported over Serial cable or over Ethernet network (Serial Tunnelling).

Those protocols are directly supported by the M3i Workstation software and managed in the same way of all the other information coming from Johnson Controls device ensuring a uniformed way to represent real-time data and alarms.

Standard connectivity solutions for M3i are supplied with a tool that automatically import tags and labels from the Fire or Intrusion Panel proprietary database, to optimize engineering time and configuration process.

M-Bus

The M-Bus protocol is a standard protocol for reading of counter devices like Heating or Electrical energy counters.

The data exchange follows a Master-Slave structure.

M3i Workstation can integrate this controller using RS232- M-Bus converters to link large

amount of M-Bus devices (max 255 per bus) or N2 M-Bus modules (connecting up to 8 meters) that enable to integrate it as standard Johnson Controls N2 devices.

Metastore optional package can be used for generate Custom Report about Energy or Water consumption.

EIBus

EIB, European Installation Bus, now changed into KNX (Konnex convergence), is the world's leading system for "intelligent" electrical installation networking.

The bus cable installed in addition to the supply cable combines devices and systems (e.g. heating, lighting or ventilation) which

previously functioned separately from one another.

EIB devices can be connected to the M3i Workstation using EIB to N2 that enable to integrate it as standard Johnson Controls N2 devices or using an RS232/EIB interface or IP/EIB interface.



Metasys Integrator and Metasys Compatible Certified Products

Thanks to long experience in the field of building integrated systems dating back to the early 90's, JCI has developed hundreds of integration drivers for special equipment and devices supporting only proprietary protocols. These devices can be connected with the M3i Workstation via the Metasys Integrator: for example electrical analyzers, calorie counters, UPS, PLC, emergency lights, chillers, independent CDZ, lights, etc...

Some major manufacturers of devices for buildings have, over time, developed support of the JCI N2Open protocol in their devices; these devices are called 3rd party devices.

These devices can be directly connected to N2-bus to become part of M3i Workstation. Vendors implemented Johnson Controls N2 protocol over a wide range of product like Multimeter, Energy Counter, Variable Speed Driver, and many other products.

This simplifies the system topology and reduces the total cost of ownership for our customers. The M3i Workstation can connect to a large range of such products available on the building automation market today.

For full details about Vendor name and products please contact your local Johnson Controls representative.

Other types of connectivity

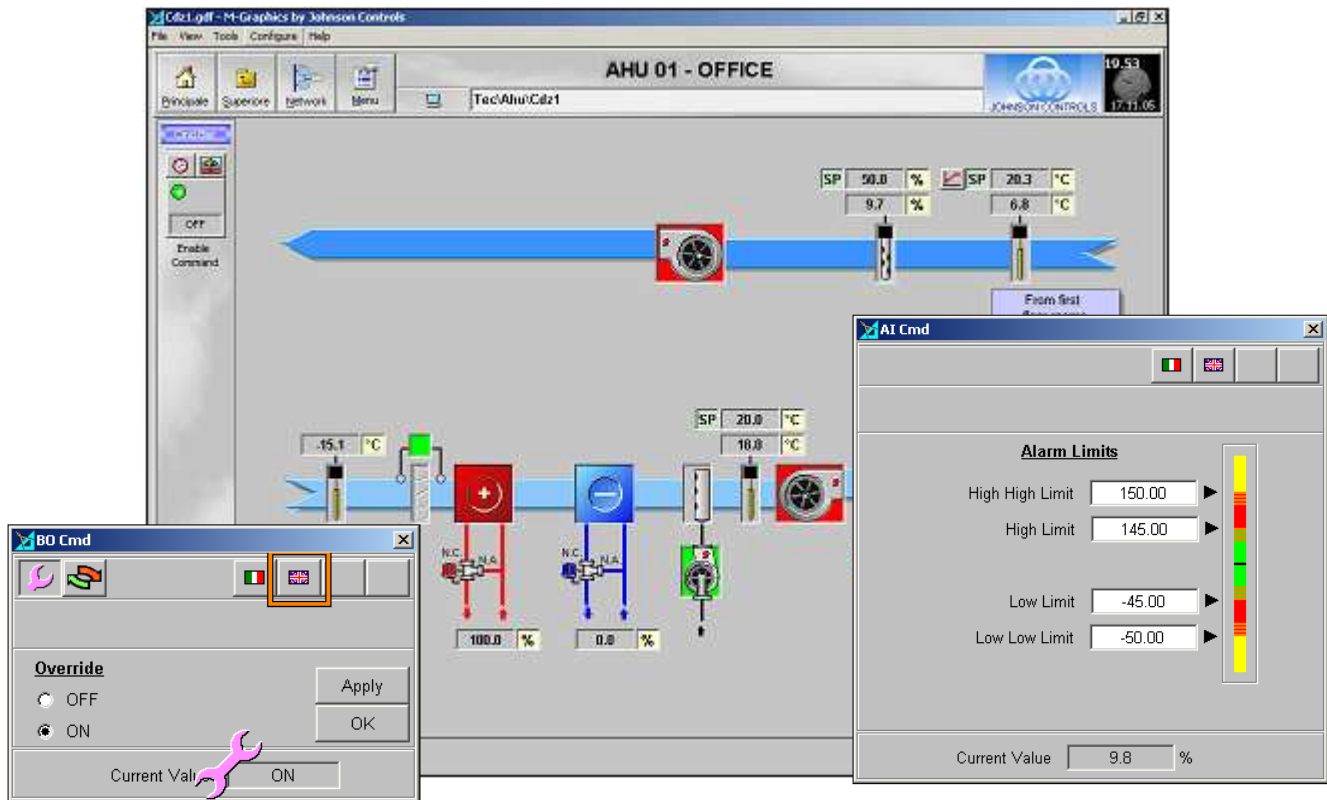
The M3i Workstation is open to many types of integration based on proprietary and standard protocols such as BACnet.

These integrations are evaluated case by case by our Centre of Excellence for Integration

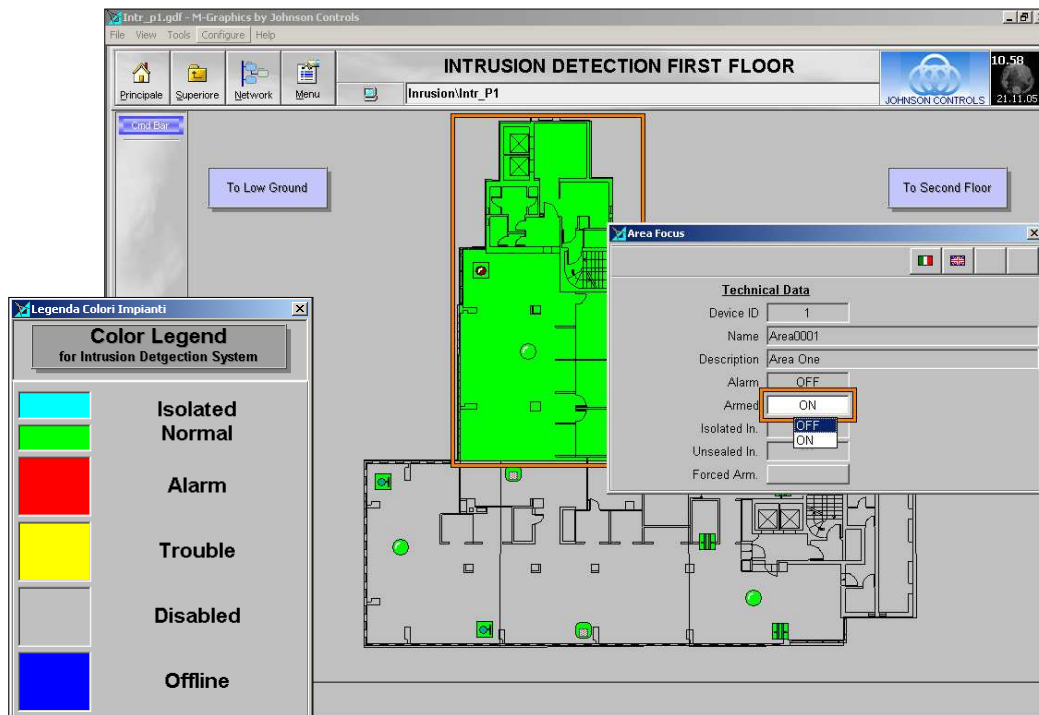
Developments (SIS Europe) to verify the integration feasibility and to guarantee that the best technical solution will be applied.

Contact your local Branch to verify the availability of the integration you require.

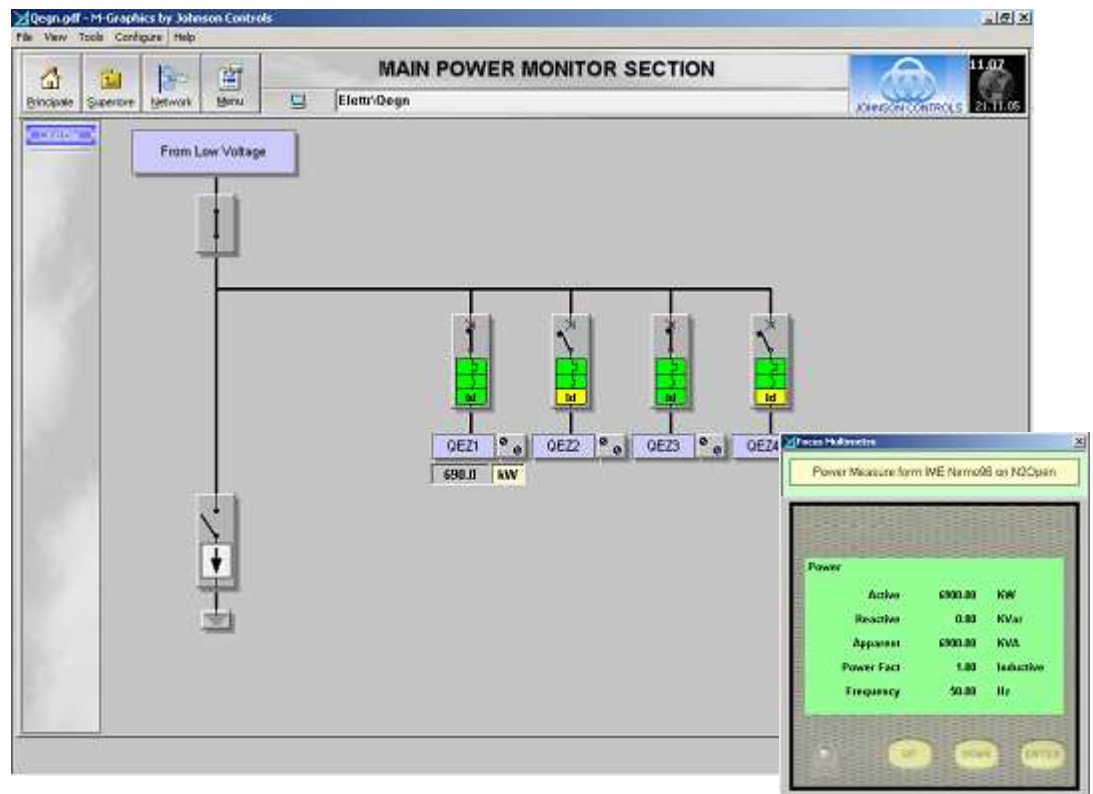
The graphical user interface



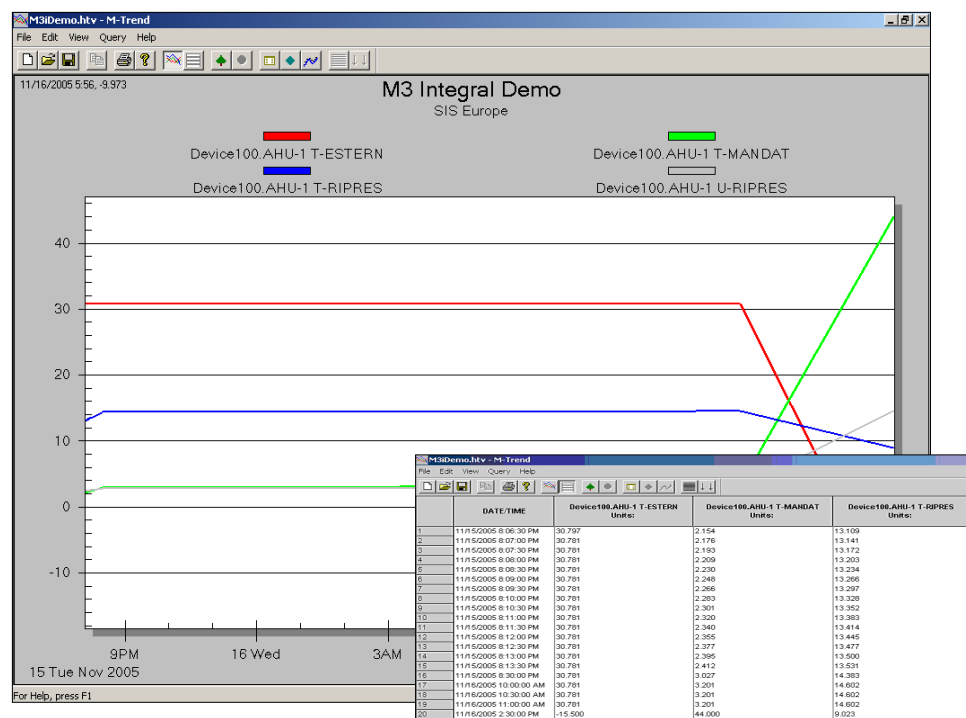
Typical graphical screen for system control. A simple click of the mouse is enough to open command Windows or Pop-Up or relevant data that building operators may need.



Typical floor representation, showing relevant information about the state of building security, Fire Alarm System status and, if required, the temperature of the spaces shown. Each display may have access to a legend pop up that can help even inexperienced operators interpret the display.



Here is a typical example of UPS and switchboard control. The electrical analyzer integration allows the display of instantaneous values and states as well as the total of the energy consumed. Thanks to the dynamic graphics, it is possible to identify at glance open switches or those in thermal overload.



Analysis of system performance can be made through M-Trend, which offers data comparative screens in graphic or tabular form.

Table 1: Functionality

SW Module	Description	Goal
M3i Workspace	Workspace to manage the navigation among the software modules, which compose the system, including N2, N2Open and Modbus communication drivers.	Allows the operator to interface with system.
M-Graphics	This allows monitoring, control and analysis of systems through dynamic graphic screens. It allows for system navigation throughout buildings monitoring systems. It supports launching and interaction of ActiveX applications for the integration of electronic documents and service films.	Easy and intuitive interface to the building and its systems.
M-Password	This controls system access according to customizable profiles based on the user and the permitted activities (monitoring only, control, modification, and administrator) with an individually assigned UserID and Password.	Assures secure system access by defining the authority levels from the daily operator to the Facility Manager.
M-Alarm	This displays system alerts or alarms in tabular form, showing priority and state as well as description and name of the alarm. Besides, by a simple click of the mouse, its display can be customized by a privileged user to for example change the sorting criteria for the alarm display Upon request, it is possible to open an electronic spreadsheet specific for alarm point automatically in order to give operating instructions or to add possible comments.	Keeps the building operator constantly informed of any critical situations so that appropriate action may be taken.
ESX	It manages hourly, daily, weekly and monthly programs taking into consideration holiday, and/or special day yearly calendar. Emergency-time programs can temporarily force the occupation periods.	Occupation period management with relevant automatic plant activation/deactivation.
M-Collector	Collect trend samples through active communication drivers configured on M3i Workstation.	Manages data collection on time base and transfer them in Trend database
M-Trend	Allows collected data viewing using charts or table format	Allows the operator to analyze historical building performance to optimize energy consumption as well as to reduce the maintenance charges.
METASTORE Option	Advanced trend analysis tools which allows specific points to be to group and displayed according to definable time spans. It can automatically produce reports in both electronic and paper format on a definable periodic basis.	Produces advanced reports in multiple formats (MS Excel or Borland DB) for an in-depth and when required offline data analysis.
ANX Option	This allows for system alarms to be sent via SMS and ESPA. The message includes date and time, description of the alarmed point as well as its state and priority. To send an SMS it is necessary to use a GSM modem.	Allows alarms to be sent to remote personnel ensuring that the correct personnel are informed of critical or important situations independent of their location.
SNMP Option	This allows the workstation to , report a arms back to a Server Farm handler found in IT environments	Integrates the system into IT infrastructure
Connectivity Option	OLE module for Process Control usually specialized in direct import of data coming from specific devices, for instance fire stations.	Allows the integration of special devices.
MIG-Driver Option	Module for protocol conversion to use with Metasys Integrator for the integration of special devices.	Allows the integration of devices with proprietary protocol (UPS, chillers or PLCs).

Features

Table 2: Technical specifications for PC M3i Workstation

Product	M3i Workstation
Recommended PC platform	PC Pentium 4, 3,0 GHz, expansion board for second serial port if necessary for required application and not available on PC
Memory	Recommended 1GB RAM
Hard Disk Drive	Minimum 80 GB
Floppy Disk Drive	3.5 in. 1.44 MB diskette drive
CD-RW	Multiform CD writer 8x - 4x - 32x
Video card	Minimum 32 MB VRAM
Operating environment	Windows 2000 SP3 or higher
Monitor	Recommended 17" CRT or 15" LCD, resolution 1024 x 768
Software	Workstation

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