963 Supervisor

Description

963 is a graphical, real-time, user interface for the building control system. It enables the user to monitor plant or building services, and make changes to the way the building is controlled from a graphical display. All pages and actions are accessible using a mouse. The security system ensures that the user is only presented with information and functions that are relevant to their authority or task. The 963 learns the structure of the system allowing the 963's Device Viewer facility to provide system information without the need for engineering.

It is compatible with the Trend Open Protocol Server (TOPS) which allows values from supported 3rd party systems e.g. BACnet to be included in schematic pages, adjustments to be made, and alarms received.

There are several variants of 963 available.

963 Lite provides all the fundamental features required of a supervisory package for control of a Trend System. It now includes features to enforce a secure password policy on site and MKT calculation which assist with the compliance to the FDA regulation 21 CFR Part 11.

963 Server provides the same facilities as 963 Lite plus enables the 963 to act as a secure web server allowing access to 963's graphical displays, alarm viewing/acknowledgement and the display of graphs from a web browser like Internet Explorer.

963 SNMP provides the same facilities as 963 Lite, or 963 Server depending on the variant that has been licensed, plus it enables alarms to be retransmitted in SNMP format.

963 SMS Direct provides the same facilities as 963 Lite, or 963 Server depending on the variant that has been licensed, plus it enables alarms to be retransmitted using SMS text messaging.

Features

All variants
- Client-server operation.
- Can operate in virtual environment hosted using VMWare vSphere 5.1.
- Access to graphic pages in a web browser.
- Access to Device Viewer in a web browser.
- Adjustment of values/occupation times in web browser.
- Access to Diary and all its components in web browser.
- Ability to add and modify Time Schemes and Exceptions in web browser and also view the linked timezones.
- Display of graphs in a web browser.
- Alarm viewing facilities.
- Assists with compliance to FDA regulation 21 CFR Part 11.
- Calculation of MKT values.
- Audit trail for adjustments that effect system performance.
- Support for secure SSL web server.
- Enforces the creation and use of strong passwords.
- Repeated entry of incorrect password temporarily blocks user for a time period that increases with each failed attempt.
- Logged audit trail of user activity.
- Compatibility with the Trend Open Protocol Server (TOPS) which enables 963 to communicate with supported 3rd party systems e.g. BACnet.
- Enhanced alarm monitoring and occupation time control.
- Complete control and monitoring of BMS from colour graphics pages on the 963 machine.
- Alarm handling with alarm retransmission and logging.
- Scheduled recording of logged data from IQ® controllers.
- Recording of schematic pages.
- Indication of hand/Off/auto status on schematic pages.
- Connection to remote sites over TCP/IP using hostnames.
- Management of multiple controller occupation times.
- Display of live, logged, or recorded data in multitrace graphs using either compact or precision logs.
- Ability to graph any value logged in a controller.
- Adjustment of multiple parameters from the Device Viewer.

963 SNMP
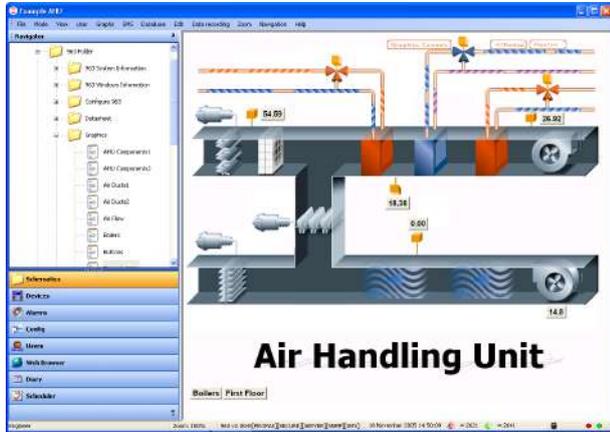- Alarm retransmission in SNMP format.

963 SMS Direct
- Alarm retransmission using SMS text messaging.

FUNCTIONALITY

963 LITE

Schematics: The 963 provides the user with colour graphics pages, which display live information from the system and enable parameters to be adjusted.

The pages can be engineered to suit the individual system requirements and can contain any of the following features:

What can be displayed	Description
Active content	The following file types can be integrated into a page: SWF, HTML, DOC, XLS, XML, PPT, PDF and URL's.
Backdrops	Backdrop files are standard files, sized so that they exactly fill the Data Display. Any object placed on the page will overlay the backdrop.
Buttons that perform 963 actions	Buttons can be added that can perform 963 actions. When these buttons are selected by the user the specified action will be carried out.
Data from the system	Live values from the system. When these points are selected they can be adjusted or graphed depending on the type of value. They can also be represented by a graphic by using analogue graphic files. A map of a specified LAN and controller status can also be displayed. If required, values for which the user specifies the controller from which the values are to be obtained can be added.
Graphics	Graphics can be added to the page to make the information easier to understand. The following file formats can be used: BMP, GIF, JPEG, WMF and EMF.
Graphics that perform 963 actions	Graphics can be added to the page to make the information easier to understand that can perform 963 actions when they are selected by the user. The following file formats can be used: BMP, GIF, JPEG, WMF and EMF.
Seven-state graphics	ON, OFF, waiting, error, alarm, overridden ON, and overridden OFF
Graphs	Graphs of values from the Trend system can be displayed on a page. It is possible to display a graph definition that has been previously saved or a graph of an individual sensor.

Buttons or graphics on the pages provide access to other pages, graphs of parameters, adjustments, and other facilities such as pages of information, 963's documentation, and the Internet. The Navigator organises pages into folders, so that they can be quickly located and displayed. A filter option is provided to help locate information easily in large systems.

Alarm Handling: alarm handling facilities of 963 ensure that the appropriate people are quickly made aware of any alarms that have occurred. When an alarm occurs, an alarm panel can be displayed to alert the user and any actions that have been specified to occur will be carried out. If the user is accessing the 963 using a web browser, a dialogue box is displayed and any specified actions can be carried out.

All alarms that occur can be seen in the Alarm Viewer display, which enables the alarms in the database to be filtered so that only the alarms in which the user is interested are visible, and sorted so that the relevant alarm can be quickly found. If required, further information about the alarm, such as the description entered by the user who actioned it, can be displayed.

Alarm panels are activated when a group that has been set to display alarm panels is activated. When active the alarm panel will be displayed on the screen. The alarm panel will stay on the screen until the user has acknowledged all the alarms.

If alarm logging is enabled, each alarm will be logged to the 963's database. This is an SQL database that can be viewed in 963's alarm display, or queried using 963's VIEWQUERY action.

Actioning and clearing of alarms can be restricted to ensure that the alarm is seen by an appropriate user. When an alarm is actioned the user is able to enter specific comments or select from a list of previously entered ones.
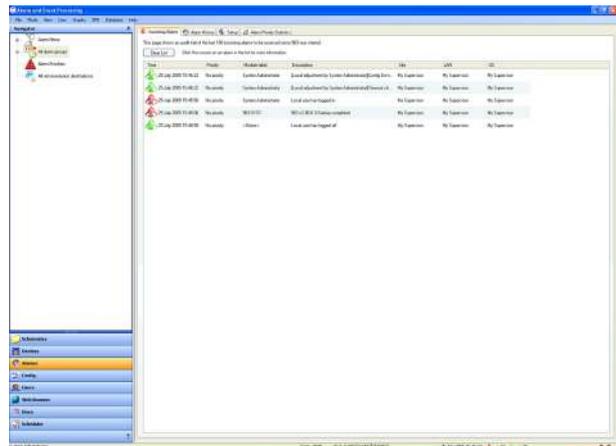

Any of the 963 actions can be specified to occur when an alarm is received. Thus alarms can be retransmitted to another supervisor (963, 962, or 945), another device (e.g. PNC), a pager, or sent using email using the RETRANSMIT action, or a particular page to be displayed using the GOTO action etc. Alarms can also be redirected to any available network printer.

The actions that occur are defined by the Alarm Groups activated by the alarm. Each group enables two different actions to be carried out. The first is only carried out on the 963 and is always performed. The second only occurs if specified users are logged on and will occur on both the 963 and any clients providing one of the specified users is logged in. An alarm may be associated with more than one Alarm Group, which allows more than one action to be performed when the alarm is received and different users to be notified about the alarm in different ways.

963 LITE (continued)

Device Viewer: Once 963 has learnt about the system to which it is connected, it can display inputs, outputs, adjustments, occupation times and current alarms on the system in the Device Viewer without any further engineering. This information can be restricted to parameters in a particular device, LAN, or site, and can be sorted by label, units, item, LAN number, address, or PIN level. Changes can be made to any of the adjustments or occupation times if the user has the correct authority. A PIN level protects against unauthorised adjustments. The Device Viewer also enables graphs to be displayed, the display of information about a selected device such as communications timeouts and timemaster status. The Device Viewer also displays any value that is currently in an alarm condition and what the alarm is.
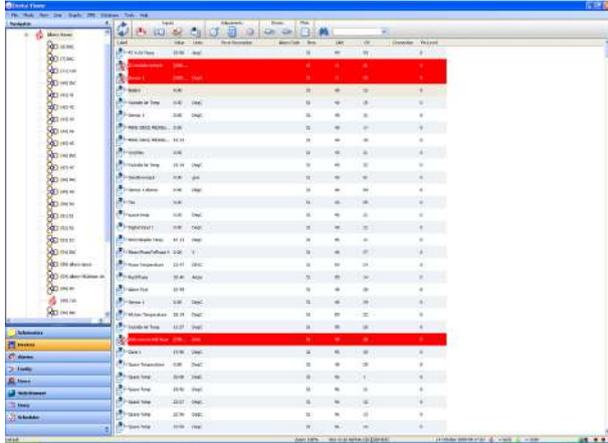

Dynamic menus: Dynamic menus enable custom menus to be added to items in the Device View that run a specified 963 action.

Diary Display: The Diary Display enables the user to manage multiple controller occupation times. It groups together Trend controller time zones that share the same occupation times. The normal occupation times for a time zone in each group are defined and downloaded to the controllers. Days that are to work different times from the normal (e.g. Bank Holidays) can be set up. 963 will automatically send these times to the controller. It is also possible to view the actual times held in the controllers, and, if required, to adjust them.
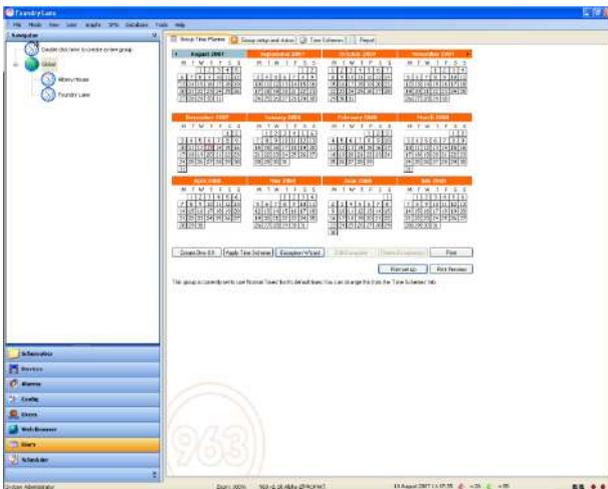
Configuration Mode Display: 963 can access the configuration mode of Trend system devices that support it using the Configuration Mode Display. The display provides a simple text based user interface to the device.
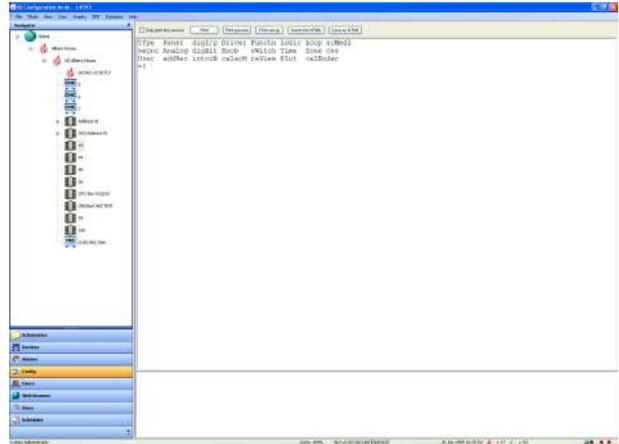
Event Scheduler Display: The 963 enables events such as the recording of information, or backing up of data to be scheduled for a particular time. The Event Scheduler Display is used to organise and display all the automated actions carried out by 963, e.g. sensor-recording actions, or diary exceptions. It contains information about events that 963 is going to perform in the future, or has already performed. It displays events that 963 has been set to perform by the engineer; it also displays scheduled events created by 963's Diary functions.
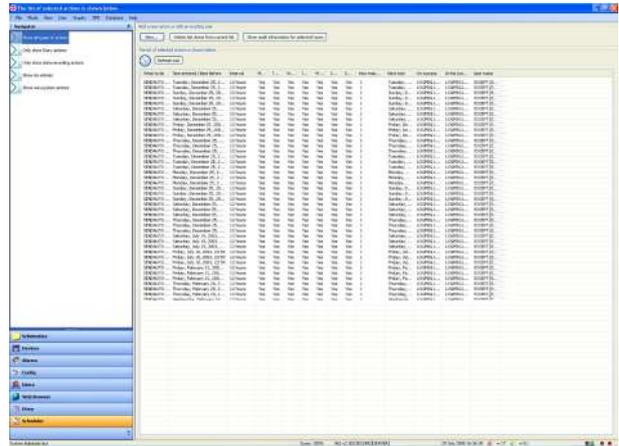

Data Recording: Data being logged in IQ or IQL controllers, or displayed on a schematic page at a particular time can be recorded by 963 for later retrieval. The recording can be performed manually, but to prevent information being missed this recording can be automated and performed at convenient times.

Database: 963 uses SQL Server 2012 SP2 express edition, which supports databases up to 10 GB. Other versions of SQL Server 2012 SP2 that support larger databases are available from Microsoft®. If 963 is using the supplied version of SQL Server (SQL Express) 963 will check the database size on daily basis. If it exceeds 75% usage then an alarm is generated, if it exceeds the 95% usage then along with the SYST alarm a warning message is displayed.

Database backup: 963 provides automatic database backup.

963 LITE (continued)

Multitrace graphs: 963 can display live, logged, or recorded information from IQ, IQL controllers or BACnet devices (TOPS required) in multitrace graphs. This data can be retrieved using either compact logs for faster data retrieval, or precision logs for more accurate information. These graphs can accessed from the colour graphics pages, or from a list of values on the system to which 963 is connected. Once displayed, the graph can be printed out. It is possible to zoom in on selected parts of the graph so that it can be seen in more detail. If required, the underlying data from the graph can be viewed.
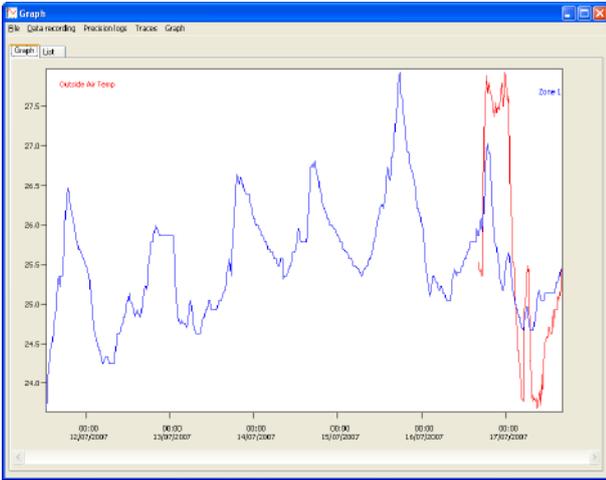
A graph can be displayed for any point that is logged in a controller. Support is provided for triggered logs ensuring that data from these logs is displayed correctly.

Multi-level security system: The multi-level security system accessed from the User Display provides a high level of protection for the data it stores. To view information on 963, the user must log in. 963 uses this information to decide what pages the user can display, and whether or not they have access to particular displays such as the web browser, what adjustments they can perform, and whether or not they can configure 963. This security is enforced on the server, and the clients, ensuring that only authorised users can view and change information.

Each user is a member of a workgroup, which determines their access rights. This allows easy editing of user access rights. The User display shows all the user workgroups, and the users within the selected workgroup. It is also possible to restrict access to particular IP addresses, thus preventing access from unauthorised computers.
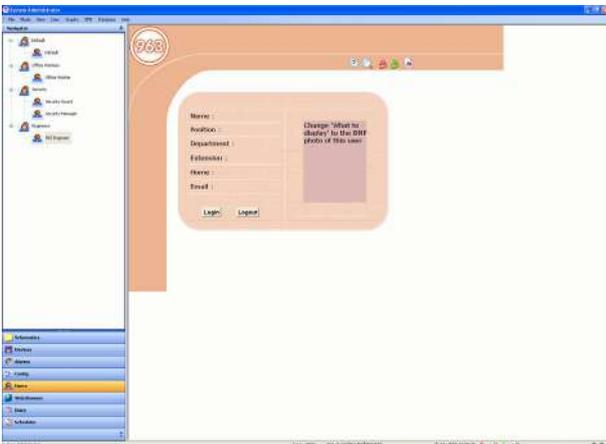
963 imposes a strong password regime, requiring users to regularly change their password. New passwords are checked against required criteria, e.g. minimum length, and contains both letters and numbers.

If a user incorrectly enters their password more than the specified number of times their access will be blocked for a period of time. Further incorrect attempts to enter the password will result in the user being blocked for an increasingly longer period. A blocked user can only be unblocked by another user with System Administrator access rights.

To ensure that user details remain secure, only users with System Administrator access rights are able to make any changes to users on the system. A master recovery password must be created for use in the event that all system administrator users become blocked. All password data is securely encoded.

Audit Trail: 963 maintains an audit trial of changes that are made which effect system performance; it records who made the change, what the change was and when it occurred. This auditing cannot be turned off, and the events can be configured to generate an alarm action to ensure that any attempt to breach security does not go undetected. The table below lists the events that are recorded in the audit trail.

Area	Event Logged
Alarm Filters	Adding, removing and editing
Alarm Groups	Adding, removing and editing.
Automatic data recording	Any automatic data recording function also raises events on success and failure.
Diary Downloads	Automatic downloads
Exceptions	Adding, removing and editing
IQ parameters	Changes through the 963 user interface.
Normal times	Adding, removing and editing
Program	Start up, and shutdown.
Retransmission	Adding, removing and editing.
Scheduled action	Adding, removing and editing
Security	Logging in, logging out. When a user is locked out an alarm is reported.
Site, LAN, Controller or Item.	Deleting and editing
Timezone Groups	Adding, removing and editing.
Users	Adding, removing and changing the password.
Workgroups	Adding, removing and editing.

Web Browser: The 963 provides a built-in web browser to provide access to the company Intranet, or Internet. Because this information is displayed within 963, the security system enables access to the web browser to be limited, and the areas that are accessible restricted. It also enables the use of features, such as the display of video images (e.g. CCTV), which cannot be incorporated into the normal 963 displays.

963 LITE (continued)

Mean Kinetic Temperature calculation: 963 provides a facility to calculate the Mean Kinetic Temperature (MKT) for sensors that are being logged by IQ controllers using synchronised logs. The MKT is defined as the isothermal temperature that corresponds to the kinetic effects of a time-temperature distribution. It is used to monitor the average temperature of drugs whilst being stored in the pharmaceutical industry. The calculation of MKT by 963 can be performed using one of two 963 actions either on a scheduled basis, or on demand. The 963 uses the following formula for the calculation.

$$T_K = \frac{-10000}{In\left(\frac{e^{-\frac{10000}{T_{1_H}}} + e^{-\frac{10000}{T_{1_L}}} + \ldots + e^{-\frac{10000}{T_{n_H}}} + e^{-\frac{10000}{T_{n_L}}}}{2n}\right)}$$

TK = The Mean Kinetic Temperature in °K.
T1H = The high temperature in °K during the 1st week.
T1L = The low temperature in °K during the 1st week.
TnH = The high temperature in °K during the nth week.

TnL = The low temperature in °K during the nth week.
n = The total number of weeks.
T = The absolute temperature in °K.

In order to perform scheduled MKT calculations, the 963 scheduler must be used to run the CALCULATEMKT action at the required times. The CALCULATEMKT enables the MKT for a sensor over a specified period to be calculated, and stored in a virtual sensor. The sensor must be logged in the IQ controller, and that data must be recorded by 963. The virtual sensor used to store the result of the calculation can either be specified manually, or it can be chosen by 963.

The virtual sensor has high and low alarm limits that enable an alarm to be generated if the value is outside the range. The high and low alarm limits are tested against the new MKT value when the scheduled MKT calculation is executed. If the MKT value is found to exceed the alarm limits, an alarm is triggered. If sensor logs for the required period are not complete, e.g. only the last 4 days readings are available; the MKT will be calculated with the available logs with no alarm being raised. However, if a gap in the data is detected (e.g. the third day's sensor data is missing), the MKT is still calculated but an alarm is raised.

In order to calculate the MKT as required (on demand), the 963's CALCULATEMKTDATE action should be used either on a schematic page, or from the Device Viewer. This action calculates the MKT for the specified sensor between two dates. The calculated value is displayed in a message box. The action never writes the value to a database. If any parameters are left out of the action, 963 will ask the user for the parameters when the action is executed.

The result of an on demand MKT calculation can be displayed as part on a schematic page by using the CALCULATEMKTDATE action in the 'What to display' attribute. The calculation will be recalculated every time the schematic page is reactivated.

Print templates: Print templates allow you to specify where the page information will appear and extra details like user name, time and date etc. to be added. A printing template is a standard schematic configured with an extra option.

Simple connection to remote or TOPS sites: All the 963 requires to connect to a remote TCP/IP site is required is the IP address or hostname of the device containing the virtual CNC, and the socket number to which it is to be connected. To connect to an autodialled site all that is required is the site's telephone number, LAN number and the type of autodialling device being used.

8-bit comms support: This allows the use of extended character sets across the Trend system. 8-bit comms is only supported in the following products: 963, IQ3 v1.22, XTEND, IQView v1.2, and IQ4.

Indication of hand/OFF/auto status on schematic pages: The hand/OFF/Auto status of inputs on IQ3 and IQ4 controllers is indicated in schematic pages. .

Simple engineering: 963 can be engineered using drag and drop methods. Objects are dragged from a palette onto pages, and then their attributes are dropped onto them. Engineering can be carried out with or without a connection to the BMS network. Off-line engineering can be performed by manually entering data or by selecting previously learned information. Simulation mode allows off-line users to test the appearance of their schematic pages under different conditions.

Connection to Network: The 963 can be connected to the Trend network using a virtual CNC or a CNC. If connection to the Trend network is made using Ethernet the device containing the virtual CNC to which 963 connects can be specified using a user friendly name. This allows for systems where a DHCP server is used. The AUDIT_LAN action enables 963 to check for existence of controllers on a specified LAN and raise an alarm if devices are missing (DVMS alarm), or new ones added (DVNW alarm).

Compatibility with TOPS: 963 can be used in conjunction with TOPS to provide the usual 963 functionality plus communications with BACnet devices. Values from BACnet devices can be included in schematic pages, adjustments made, and alarms received from the BACnet devices.

963 SERVER

The 963 Server provides the same facilities as 963 Lite plus the ability to act as a web server enabling a client to display information from the 963 in a web browser. When viewing a page in a web browser, the user may make adjustments, view graphs, move from page to page, enter configuration mode on a device, make changes to Diary groups, or carry out other actions in a similar way to working on the 963 itself.

The 963 allows full client-server operation. 963 can provide information to a number of client machines over a TCP/IP network. When operating as a server, the 963 automatically converts the information and passes the information to the client machine for display in a web browser when requested and no additional engineering is required to provide the benefits of the 963 across the business.

Client machines do not require any additional software to be installed, providing they have a connection to a TCP/IP network, and a web browser installed.

963 can operate using HTTPS (recommended) or HTTP (not recommended). It is recommended to operate 963 using a secure protocol, SSL (https). This means a certificate must be provided to ensure that the web server connection is secure. This certificate can either be purchased online or a self signed certificate can be generated. 963 provides a utility to create a self signed certificate. Refer to 963 Engineering Manual for more information.

963 Server operates in two modes graphic mode and text mode depending on the type of web browser accessing the server. Graphic mode requires Microsoft Internet Explorer 8 or greater, or Firefox 3.5, and the Oracle JAVA runtime environment J2SE 7.0 or greater. Other browsers are only able to access the server in text mode. The table below lists features that are available to a client.

Alarm printing is a server function only, but can be directed to a network printer convenient to the client.

Note: 963 has not been tested with all devices. Trend cannot guarantee a particular device's compatibility with 963 server.

Feature	Notes
Schematic Pages	In graphics mode any page may be displayed, however there may be some slight differences in the appearance of the page. WMF and EMF format graphics are not supported. Both dynamic and static objects as well as the backdrop will be displayed. In text mode graphics are not displayed, the page is reproduced as 3 tables containing live data (dynamic objects), actions, and static objects. In both modes static objects, which perform unsupported actions are not displayed. Active content such as Excel files is not supported on the client.
963 Actions	Supported actions, CONFIG, BROWSER_POPUP, DROPALLLINES1* EXECUTESMS1* GOTO, GOTO Diary,*GOTO NEXT*, GOTO PREVIOUS*, LOGINAS, LOGOUT, MESSAGE*, PLAY*, POPUP*, SEND, SENDAUTO*, SETGENERIC*, VIEWGRAPH*, VIEWPOINTS*, VIEWQUERY, WEB. *Graphic mode only. The EXECUTESMS action is only available if the SMS Direct option has been licensed.
Adjustment of values	Fully supported.

Display of graphs	Allows the following:
	    Display plot traces from controllers.
	    Display saved graph definitions when launched from an action on a schematic.
	    Loading recorded data from the active 963 database (not archived databases).
	    Display a dynamically updating point chart
	When in text mode a table of the graph's values is displayed.

Movement between pages	Fully supported.
Access to device configuration mode	Fully supported.
Viewing/acknowledgement of alarms	Fully supported in graphic mode only. Only the GOTO, MESSAGE, PLAY, and WEB actions are available for use with viewing/acknowledging alarms in a web browser.
Adjustment of controller occupation times	Fully supported.
System security	Fully supported.
Device Viewer	Only allows viewing of information plus the facility to adjust values, graph values, and enter configuration mode on device that support configuration mode. It is not possible to learn the system. Graphic mode only.

963 SERVER (continued)

Schematics: The schematic display enables access to any of the 963's schematic pages subject to their security. When in graphics mode they will appear virtually the same on the client as they do on the 963 Server. There is no Navigator on the client; navigation must be provided through buttons engineered directly on the pages.
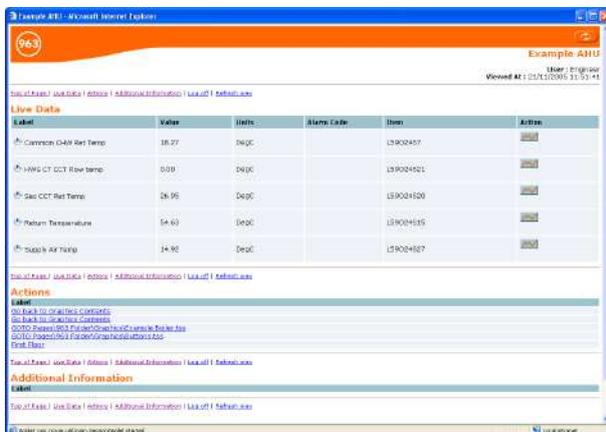
An example page viewed on the 963 server machine:

The same page displayed on a client (graphic mode only):

In text mode graphics are not displayed, the page is reproduced as 3 tables containing live data (dynamic objects), actions, and additional information (static objects):

There are a number of different text mode layouts to allow for different device types. The appropriate layout for the client device is automatically selected. Each layout provides the same functionality, but data displayed varies to accommodate different screen sizes.

Alarm Viewer: The Alarm Viewer is only available in graphic mode, it displays the alarms that have been received, and providing the user has authority enables them to be acknowledged. Colours are used to indicate whether the alarm is a set alarm or a cleared alarm. A red bell indicates a set alarm, and a green bell indicates a cleared alarm. If the alarm has been actioned a bell with appear with a tick over it. Alarms can also cause an alarm panel to be displayed on the client personal computer to draw the user's attention to the alarm.

The Alarm Viewer has two tabs: Alarm History, and Incoming Alarms. The Alarm History stores the all the alarms in the database that have been processed whether or not they have been actioned by the user. The alarms can be viewed in chronological order or a summary view. The Alarm History is colour coded to indicate whether or not the alarm is current, red indicates that the alarm is current. The Incoming Alarms contains the last 100 alarms received.
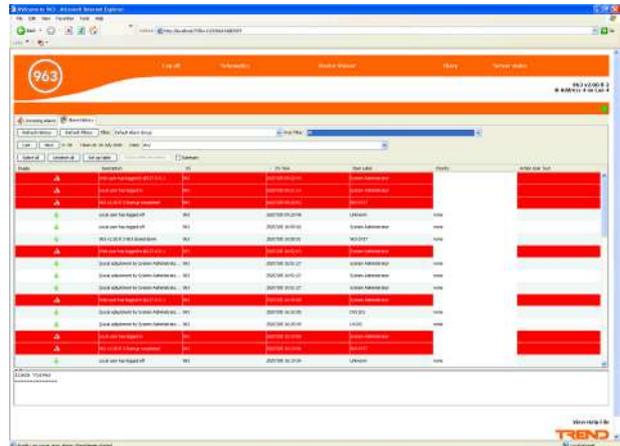
The Device Viewer: The Device Viewer is only available in graphic mode, it displays all inputs, outputs, adjustments, and occupation times on the system that have been learnt. This information can be restricted to parameters in a particular device, LAN, or site. Changes can be made to any of the adjustments or occupation times if the user has the correct authority. These changes are limited by a PIN level, which is the same as that defined for the parameter in the device itself. Single trace graphs of selected parameters can be displayed. The Device Viewer also provides access to the configuration mode of Trend system devices that support that feature.

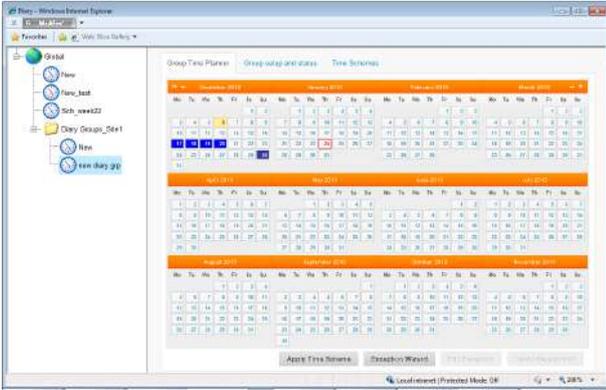*Note: It is not possible to learn the system from a client.*
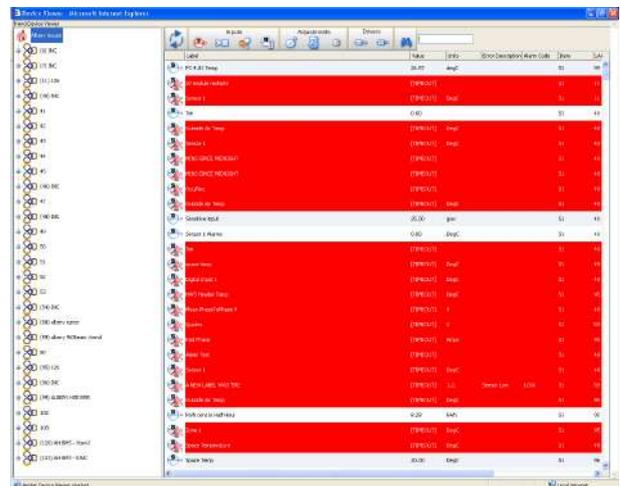
963 SERVER (continued)

Diary: The Diary provides access to the occupation times configured in 963, and enables the user to make adjustments to the times provided they have the appropriate authority.

Depending on your privileges you can use the Diary feature to:

- View the time schemes for all days
- Add exceptions for special days and weeks
- View linked timezones

COMPATIBILITY

Trend System: 963 can display all devices on the Trend System connected using LANs, internetworks, autodialled links, and TCP/IP links in the Device Viewer. It provides access to all parameters in all Trend system devices that support text communications. Parameters within other 963 supervisors engineering tools and network displays are inaccessible. IQL controller parameters can be accessed using a XTEND, fieldbus device parameters can be accessed using an FNC. It can communicate over LANs and internetworks including remote TCP/IP sites, autodialled links (PSTN) or digital networks (PSDN). It will not operate on network running at 1k2 or 4k8 baud rates. Graphs are available from IQ controllers, and TOPS devices however there are some limitations on the graphs that are available see the table below for details.

Device	Graphs available from
IQ1 series controllers	Sensors 1 to 99, and plot modules.
IQ2 series controllers	Sensors 1 to 99, and plot modules.
Pre IQ3 v2.1 controllers	Sensors 1 to 99, and plot modules.
IQeco v1.0 controllers	Sensors 1 to 99, and plot modules.
IQeco v2.0 or greater controllers	All plot modules and any module with a value logged by a plot module.
IQ3 v2.1 or greater controllers	All plot modules and any module with a value logged by a plot module.
IQ41x series controllers and IQ422	All plot modules and any module with a value logged by a plot module.
TOPS v1.0 BACnet device	No graph support.
TOPS v1.1 or greater BACnet device	All plot modules and any module linked to a plot module.
IQ4NC	All plot modules and any module linked to a plot module.

Communications: It provides compatibility with 8-bit communications from Trend system devices that support 8-bit comms (IQ3, IQ4 controllers, XTEND and IQView v1.2). 8-bit comms allows the use of extended character sets across the Trend system. The extended character sets are not supported in line printing (alarm printing).

963 SNMP

The 963 SNMP provides the same facilities as 963 Lite, or 963 Server depending on the version that has been licensed, plus the ability to retransmit alarms in SNMP format. This enables users with Network Management Systems (NMS) to receive alarms from the Trend system into their IT system to provide warning of system faults, such as HVAC failure and supports SNMPv1. It acts as an agent and only supports the 'trap' command, and therefore cannot respond to SNMP commands.

963 SMS DIRECT

963 SMS Direct provides the same fundamental features as 963 Lite, or 963 Server, however it additionally provides the ability to retransmit alarms to a GPRS phone using SMS text messaging. To use 963 SMS Direct the personal computer running 963 must be connected to a GPRS modem. This modem is supplied with 963 SMS Direct, the modem supplied is the only one supported for use with 963 SMS Direct. Modems are supplied without SIM cards therefore it is necessary to supply your own SIM card for use on the network of your choice. The modem (Serial Model only) is supplied with a US/ UK/EU transformer plug, other countries will have to source a local adaptor or transformer. 963 SMS Direct has built in alarm handling. This means that if the transmission fails an alarm will be generated, or if there is a problem communicating with the phone/modem an alarm will be generated.

Note: 963 SMS Direct cannot receive SMS text messages.

SET: It is possible for both SET and 963 to be installed and run on the same PC at the same time however only one will be able to communicate with a BACnet network see the 963 Engineering Manual (TE200637).

TOPS: The 963 is compatible with the Trend Open Protocol Server.

BACnet: When used with TOPS, 963 can display and adjust parameters from devices on the BACnet network to which TOPS is connected, and receive alarms from those devices. 963 only supports binary schedules. For details of the BACnet capabilities of 963 when used in conjunction with TOPS see the '963 and TOPS Protocol Implementation Conformance Statement' (TP201011).

963 SMS Modem

International use: The GPRS modem supplied with 963 SMS Direct complies with all applicable RF safety standards. It meets the standards and recommendations for the protection of public exposure to RF electromagnetic energy established by governmental bodies and other qualified organisations such as the Directives of the European Community, and Directorate General V in Matters of Radio Frequency Electromagnetic Energy.

The Multi-Tech MultiModem® Cell GPRS cellular modem connects to a USB port on the PC. It is based on industry standard open interfaces and can be desktop or panel mounted. It provides wireless data communication and integrates seamlessly with virtually any application.

INSTALLATION

A step-by-step installation program performs the installation of the 963 software. After installation the software must be licensed, and configured to operate as required, as described in the 963 Engineering Manual (TE200637). If 963 SMS Direct has been purchased it is supplied with a GPRS modem which must be installed according to the installation instruction supplied with it.

Note: If installing 963 on a PC that has a full installation of SQL server earlier than SQL Server 2012 SP2 edition it is necessary to separately upgrade to SQL Server 2012 SP2 edition, this installation is not included as part of the 963 installation.

The installation of 963 software is NOT required on client PCs requiring to access the 963 Server, however to use make use of graphic mode the Oracle JAVA runtime environment J2SE 7.0 or greater is required. For the 963 is to communicate with devices on the Trend network a connection to the Trend network is needed. This requires installation of a Trend System device containing a virtual CNC (e.g. XTEND or IQ4NC) or Communication Node Controller (CNC2). If the connection is to be via a virtual CNC the device containing the vCNC should be selected according to the type of access that is required.

- Casual access to point data for general browsing of the system can be carried out through any vCNC.
- Time critical, or densely populated displays of data (such as Schematic pages on fast refresh rates, or with more than 20 points per page) are recommended to be used on vCNC's in either a XTEND, IQ4NC, IQ3, or IQ4 controller with no significant control strategy in them (e.g. an IQ3Xact placed in the system solely as a vCNC access point).
- Where the highest level of performance is required and/or multiple vCNC connections are required, an XTEND should be used.

If the 963 is to act as a server it must be connected to a TCP/IP network that is accessible by the client. If the 963 is to communicate with devices on a BACnet network TOPS must also be installed. This installation can be on the same PC as 963, or on a different PC providing communication is possible between the two over Ethernet. The installation of TOPS is carried out by a step-by-step installation program. Once installed TOPS must be licensed, and configured, as described in the 963 Engineering Manual (TE200637).

For 963 Server, and 963 SNMP, or if BACnet functionality is required the PC running 963 must be connected to a TCP/IP network.

ORDER CODES

The 963 software is available on a trial basis. This trial version allows 963 to be run for 28 days with full functionality (except access to the configuration mode, SMS, SNMP, and BACnet functionality) including a licence for up to 25 clients. After this period a valid licence must be purchased.

A connection to the Trend network will also be required; this can be achieved using TCP/IP using an Trend System device that contains a virtual CNC (E.g. XTEND, IQ3, or IQ4), which must be purchased separately. Alternatively connection can be made to the Trend network using the Trend System current loop with a Communications Node Controller or LAN card Node Controller (which can be supplied with the software). If 963 SMS Server, 963 SNMP, or communication with BACnet devices is required, an Ethernet card and access to an Ethernet network is required.

963 SMS Direct includes a GPRS modem; however a SIM must be purchased separately and is not available from Trend.

ORDER CODES

Non USA Order Codes

963[Server]/[SNMP]/[SMS]/[Node]/[Users]/[Training]

[Server]	L	963 Lite
	S	963 Server
[SMS]	Blank	No SMS
	SMS	SMS included. This option is supplied with a GPRS modem. The modem (Serial Model only) is supplied with a US/UK/EU transformer plug, other countries will have to source a local adaptor or transformer. *Note that a SIM must be obtained separately.*
[SNMP]	Blank	No SNMP
	SMNP	SNMP included
[Node]	CD	Software only on DVD
[Users]	Blank	If ordering 963 Lite
	[x]USER	963 Server with [x] client licence. Where [x] can be between 3 and 25.
[Training]	Blank	No Training Course
	TRAIN	2 day 963 training course for 1 person at a training centre.

Ordering 963 with BACnet Functionality

If you require 963 to communicate with BACnet devices it is necessary to order 963, and the Trend Open Protocol Server. Order the required version of 963 (e.g. 963 SMS) using the order codes above, and then order the Trend Open Protocol Server for BACnet see the Trend Open Protocol Server Data Sheet (TA201049) for details.

USA Order Codes

963L/CD/USA	963 Lite (Software only on DVD).
963S/CD/3USER/USA	963 Server plus 3 clients (Software only on DVD).
963S/SNMP/CD/3USER	963 Server plus 3 clients and SNMP feature (Software only on DVD).

UPGRADE ORDER CODES

Non USA Upgrade Order Codes

963S/[xx]/UP/[nn]/[yy]USER	Additional client licences for 963S/......,only. Up to a maximum of 25 client licences (Licence upgrade only). [xx] = 963 variant that is being upgraded, [nn] = existing number of clients, [yy] = proposed number of clients.
[xx]/UP/[yy]	Upgrade of one variant of 963 to another. [xx] = variant that is being upgraded, [yy] = variant being upgraded to.

USA Upgrade Order Codes

963L/UP/963S/3USER	Upgrade form 963 Lite to 963 Server with 3 users.
963L/UP/963L/SMS	Upgrade from 963 Lite to 963 Lite with SMS feature.
963L/UP/963L/SNMP	Upgrade from 963 Lite to 963 Lite with SNMP.
963S/UP/963S/SNMP/3USER	Upgrade from 963 Server to 963 Server with SNMP.

SPECIFICATIONS

Protocols used: TCP, UDP, SMTP, HTTP

Max. database size   :10 GB
Max. number concurrent
    autodialled (TMN) site connections :20

963 (all variants)

963 will run on the following operating systems. The PC must be of a suitable specification to run the required operating system:

> Windows 7 Enterprise SP1 32 bit
> Windows 7 Enterprise SP1 64 bit
> Windows 7 Professional SP1 32 bit
> Windows 7 Professional SP1 64 bit
> Windows Server 2008 SP2 32 bit Standard
> Windows Server 2008 SP2 32 bit Enterprise
> Windows Server 2008 SP2 64 bit Standard
> Windows Server 2008 SP2 64 bit Enterprise
> Windows 2008 R2 SP1 64 bit Standard
> Windows 2008 R2 SP1 64 bit Enterprise
> Windows 8 32 bit
> Windows 8 64 bit
> Windows 8 Enterprise 32 bit
> Windows 8 Enterprise 64 bit
> Windows 8 Pro 32 bit
> Windows 8 Pro 64 bit
> Windows 8.1 32 bit
> Windows 8.1 64 bit
> Windows 8.1 Enterprise 32 bit
> Windows 8.1 Enterprise 64 bit
> Windows 8.1 Pro 32 bit
> Windows 8.1 Pro 64 bit.
> Windows Server 2012 64 bit Standard
> Windows Server 2012 R2 64 bit Standard
> Windows 10 (all variants)

Note: Windows 10 installations will require Internet access in order to download some system components.

Windows 8, 8.1, Windows Server 2008 R2 SP1, and Windows Server 2012 require the .NET (dot net) Framework v3.5 to be installed before 963.

963 is a real time application; installed PCs must have enough free resources to run 963 under peak load conditions. System performance cannot be guaranteed if other 3rd party software is installed.

In addition to meeting the requirements for the operating system 963 requires the following:

DVD reader   :for 963 installation disc.
Disk space   :a minimum of 10 GB free space for installation + space for site data.
Network card   :Ethernet Network Card (required for 963 Server, communication with BACnet devices, 963 SNMP, or access to the IT network, e.g. if connecting to the Trend network over Ethernet).
COM port   :If connectng to the Trend network using a CNC.
Parallel port   :For printer connection (if required).
USB ports   :For printer connection (if required), also for GPRS modem (963SMS only).

Printer(s)
A dot matrix printer is recommended for printing alarms (extended character set not supported). The use of inkjet or laser printers for alarm printing is likely to cause undesirable results, e.g. each line of the alarm on a separate page.

A graphics printer (e.g. inkjet or laser) is recommended for printing graphs and schematic pages.

Both an alarm printer and graphics printer can be connected using the parallel or USB port(s) of the PC running 963, or over the office IT network (providing a network card is fitted). This should be taken into account when specifying the required ports for the personal computer.

SQL Server
963 requires SQL Server 2012 SP2. An express edition of SQL Server 2012 SP2 is included and installed as part of the standard 963 installation.

If a full version of SQL Server is required then this will need to be purchased separately and installed prior to 963.

963 CLIENTS

PCs: 963 Clients may be any configuration providing they are running TCP/IP networking protocol, have an Ethernet card, and a web browser. For full graphics capabilities (graphic mode) Internet Explorer (v8 or greater), or Firefox (v3.5 or greater) and the Oracle JAVA runtime environment J2SE 7.0 or greater is required. The browser must have JAVA script enabled. Other browsers provide a text only display (text mode).

Note: 963 has not been tested with all devices and Trend cannot guarantee a particular device's compatibility with 963 server.

Popup blocking software must be disabled, or configured to allow popups from the 963 Server.

963SMS GPRS MODEM

Input Power	:Bus powered USB connection.
Dimensions	:125 mm (4.1") x 86 mm (2.4") x 27 mm (1.1").
Weight	:200 g (7.05 oz)
Connectors	
RF Antenna	:50 ohm SMA female
Power	:2.5 mm miniature screw
SIM	:Standard 1.8 V and 3 V SIM receptacle
USB	:USB Type B
Operating temperature	:-30°C (-22°F) to 70°C (158°F)
Certifications	
CE Mark, R&TTE	
EMC Compliance	:FCC Part 15 Class B; EN 55022 Class B; EN55024
Radio Compliance	:FCC Part 22, 24; RSS 132, 133; EN 301511; EN 301489-1; EN 301489-7; AS/ACIF S042.1,.3
Safety	:UL60950-1; cUL60950-1; IEC 60950-1; AS/NZS 60950-1
Network	:PTCRB

Please send any comments about this or any other Trend technical publication to techpubs@trendcontrols.com

Trend Control Systems Limited

Albery House, Springfield Road, Horsham, West Sussex, RH12 2PQ, UK. Tel:+44 (0)1403 211888 Fax:+44 (0)1403 241608 www.trendcontrols.com