



Orenco®
CONTROLS
A Division of Orenco Systems®, Inc.

We speak the language of controls.

ATRTU-TCOM

FIELD USER GUIDE

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1 Introduction

1.1 Scope

This document contains information regarding the ATRTU-TCOM system developed by Orenco Controls, a division of Orenco Systems Incorporated (OSI). It is intended to help users in the field configure, maintain, and support the ATRTU-TCOM based control systems.

NOTE: This document applies to ATRTU-TCOM firmware version 10.01c.f released 7/2018. Due to variations in functionality between firmware revisions, some feature descriptions may not apply to older versions of firmware. Major changes include expansion of the web server subsystem. The basic concepts of interacting with the system, particularly with TCOM Viewer and terminal mode, are fundamentally the same as previous firmware releases.

1.2 System Overview

Control systems incorporate a variety of devices and algorithms to efficiently manage various operations required to manage a process. There are many different types of devices and subsystems involved.

An advanced microcomputer-based system has been developed to control and coordinate the various subsystems and to provide ways to communicate with other devices and humans that may be nearby or literally thousands of miles away from the system. The ATRTU-TCOM system is comprised of multiple interacting mechanical, electrical, and software subsystems. Electro-mechanical components typically include liquid tanks, pipes, pumps, floats, sensors, valves, relays, wiring, and control panels.

The core of the system is the ATRTU-TCOM controller which typically resides in an electrical panel near the system being controlled. The controller is comprised of multiple printed circuit boards, one of which includes an advanced microcomputer based telemetry system. The control computer is programmed to support multiple interfaces to communicate with other devices and to provide human user interfaces.

User interfaces include:

- A built in web server that hosts a web site that can be accessed remotely or locally using a network connection and supports a variety of devices, operating systems, and web browsers.
- A Microsoft Windows® based software application called TCOM Viewer that communicates either remotely or locally using the full range of communication interfaces supported by the ATRTU-TCOM controller.
- A menu driven console style of interface that can be used with TCOM Viewer and a variety of terminal emulation programs.

Additional hardware components include:

- Input/output boards that are physically connected to other electrical components in the system such as relays, sensors, pumps, etc.
- Optional cellular telephone module.
- Optional modem module.
- 10/100 Mbps Ethernet interface for optional network connection.
- USB V2.0 high speed host and client interfaces (one each).
- Modbus RS485 and Modbus TCP communication interfaces.
- LED indicators displaying power on and some status information.

Customizable Control Program:

- A control program that can be customized to monitor system inputs (i.e., sensors, floats, etc.) and control system outputs (i.e., pumps, relays, etc.). This control program incorporates an internally developed scripting language with a wide variety of features and functions tailored to efficiently manage waste water processes and other control applications.

1.3 ATRTU-TCOM Control System Electronics

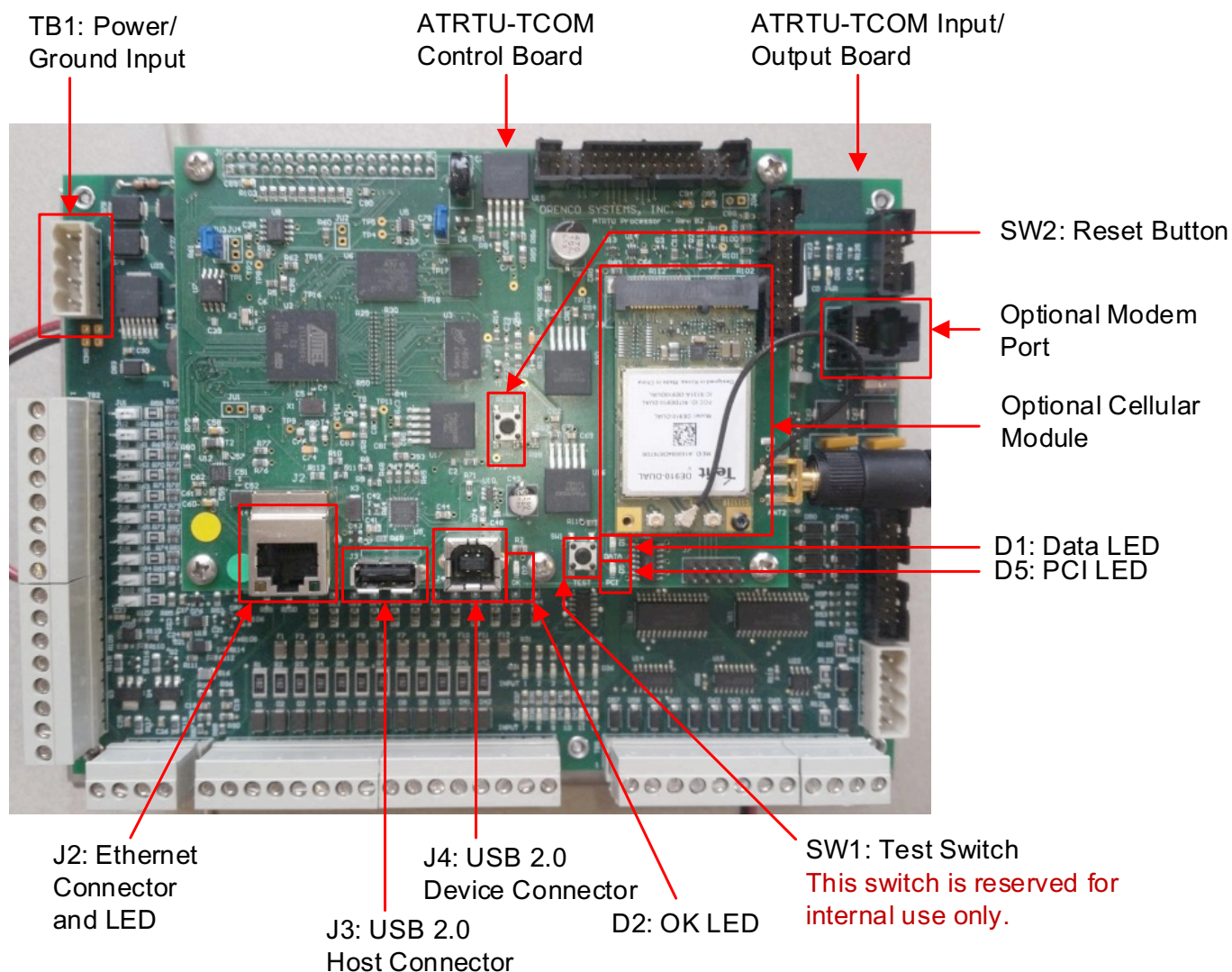


Figure 1: ATRTU-TCOM Control System Electronics

1.4 Introduction to ATRTU-TCOM System Concepts

The ATRTU-TCOM system developed by Orenco Controls incorporates unique features and terminology. This section is intended to provide the user with an introduction to important concepts and terminology. For more information regarding terminology refer to section 7 “Glossary” on page 101.

- Each geographic location that has an ATRTU-TCOM system installed is referred to as a “site”.
- The ATRTU-TCOM system includes an advanced micro-computer system called the “controller”.
- Each site has one or more ATRTU-TCOM controllers installed.
- The term “firmware” refers to the program executed by the ATRTU-TCOM computer.
- The firmware is comprised of two main components called the boot loader and the application firmware.
- The firmware manages all external communication interfaces, interacts with the board hardware, manages LED’s and switches, and interprets and executes the “control program”.
- The “control program” is separate from the firmware.
- The purpose of the “control program” is to monitor sensor inputs such as floats and temperature gauges, execute algorithms specific to the installed site, and control outputs such as pumps and valves.
- The control program can be customized for each installation site, includes site specific information, and contains the logic that controls and monitors the devices directly involved in the system.
- Each ATRTU-TCOM controller managing a site has an associated set of configuration files that contain information specific to that site.

1.4.1 Control Program

The control program is written using a proprietary scripting language developed by Orenco Controls and optimized to efficiently perform the functions required to operate and monitor a process control system. Each control program is developed by Orenco Controls and, depending on the application, may be a standardized program or customized to meet the requirements of the installed system.

The control program can be reprogrammed. Once programmed into the ATRTU-TCOM system, the control program is interpreted at run time by the computer system running in the ATRTU-TCOM.

1.4.2 Firmware

Firmware is a computer industry term for a computer program that is tightly coupled with the underlying hardware. The ATRTU-TCOM firmware includes the boot loader firmware and the application firmware. The application firmware includes the web server subsystem, managing logs, managing event notifications via mailboxes, interacting with other computer systems, and interpreting and executing the control program.

Orenco Controls is continuously evolving the ATRTU-TCOM product line. New versions of firmware become available at times. It is not always necessary or even appropriate to update the firmware each time a new release becomes available. However, depending on the licensing and support agreement, whether the new firmware supports features the user would like to upgrade to, and the specific site configuration, it is possible to update the firmware.

1.4.3 Graphic View

The ATRTU-TCOM system supports an optional upgrade feature called the Graphics View. The graphics view feature enhances the base user interface by providing customizable graphical interfaces tailored specifically for individual site installations.

Depending on the configuration there may be zero or multiple graphic views available. Also depending on the specific system design the user may also be able to interact with and control the state of individual resources by applying or removing timed and/or permanent override values. Each Graphic View web page also provides visual indication of the current state of the associated resource.

Each graphic view is dynamically updated to provide the user ongoing visual feedback on the operating state of the system. The target update rate is configurable and may vary due to network loading and speed.

Graphics View is supported by both the TCOM Viewer Software and also the Web server subsystem. Refer to section 2.12 Web Server Graphic View on page 38 for more information on Graphics View.

To contact the Orenco Controls sales team for more information regarding the Graphics View upgrade option refer to section 6 "Support Information" on page 100.

1.4.4 User Accounts and Permission Levels

Users are required to logon on to use either the terminal or web subsystems. The logon credentials are associated with permission levels which are used to control read/write access to various system features.

The system supports log levels 0-3 with level 0 granting the highest level of access. Access refers to read/write controls which are defined as none, read only, and both read and write access.

Key:

NA: No access. User is not logged on or is not allowed to modify or view specific content.

R: Read access. Logged on user can view but not modify specific content.

RW: Read and write access. Logged on user can view and modify content.

Terminal: Refers to access controls when using TCOM Viewer and terminal mode.

Web: Refers to access controls when using the web server.

1.4.4.1 Run Mode Permission Level

Item	Feature Set	Min Level		Access	Description
		Terminal	Web		
1	View Points	3	3	R	View selected point.
2	View Point Override Page	2	2	RW	View point override page
3	Modify Point Override	2	2	RW	Modify (override) current point temporarily and/or permanently.
4	View Activity Log	3	3	R	View activity log.
5	View Alarm Log	3	3	R	View alarm log.
6	View User Log	3	3	R	View or download select user logs.
7	View System Log	3	3	R	View system log.
8	Digital Out Summary	3	NA	R	View digital output summary.
9	Point Status Report	3	NA	R	View current point status.
10	Setup Report Destination	3	NA	RW	View and change report destination.
11	Backup Program to Flash	3	NA	W	Writes program to flash.
12	Logon Modbus Slave	3	NA	R	Logon allowed if peer enabled.
13	Logon Ethernet Peer	3	NA	R	Logon allowed if peer enabled.
14	Command mode	3	NA	RW	
15	View Mailbox Settings	2	3	R	View mailbox target and message.
16	Modify Mailbox Settings	2	2	RW	Modify mailbox target and/or message.
17	Set Date/Time	3	3	RW	Modify date and time settings

Table 1: Run Mode Permission Levels

1.4.4.2 Program Mode Permission Level

NOTE: The minimum permission level to access the program mode menu is 2.

Item	Feature Set	Min Level		Access	Description	Notes
		Terminal	Web			
1	View Any User Account	0	NA	R	View list of user names.	1
2	Add Any User Account	0	NA	RW	Ability to add a new user name and password at any log level.	1
3	Delete Any User Account	0	NA	RW	Ability to delete any user account.	1
4	View User Account Limited	1/2	NA	R	View list of user names.	2
5	Add User Account Limited	1/2	NA	RW	Ability to add a new user name and password at permission levels equal to or lower than the current user permission level.	2
6	Delete User Account Limited	1/2	NA	RW	Ability to delete another user account with a permission level equal to or lower than the current user permission level.	2
7	Delete Activity Log	1	NA	RW	View and delete/clear activity logs.	
8	Delete Alarm Log	1	NA	RW	View and delete/clear alarm logs.	
9	Delete User Log	1	NA	RW	View and delete select user logs.	
10	Delete System Log	1	NA	RW	View and delete/clear system logs.	

Table 2: Program Mode Permission Levels

Notes:

- 1) Level 0 users can add/delete/change any passwords or permissions.
- 2) Level 1 and 2 users may “see” any user info only if those users have been granted permission by a Level 0 user to add new users. If you have level 1 or 2 and you have permission to add new users, then you can add new users of equal or less permission, and you may view other names/passwords of equal and less permission and change those. Level 1 and 2 users with permission to add new users, may see only the names (not passwords) of other users with higher permissions (0-1).

1.4.5 Points

The term “point” refers to a control point in the set of logical rules and operations used in the custom scripting language developed by Orenco Controls to monitor and operate the target system. The use and mapping of points is defined within the control program.

Typically, the control programs are developed such that similar or logically related points are collected into pages. For example, a point may map to a specific sensor input, pump control output, etc. A point can also map to internal variables within the control program. Examples include variables storing total daily flows, average values over a period of time, etc. Typically input points, output points, and internal points are collected into pages of similar types. The total number of point pages is determined by the program and the number of devices being managed by it.

1.4.5.1 Point Types

The Orenco Controls control programs internally interpret the points as having specific types. The point type defines what range of values it can have. Point types include:

- Analog numbers.
- Digital binary values.
- Label as text strings.
- Date.
- Time.

Analog points are numeric values that may be integer or floating point numbers and can be either positive or negative.

Digital points can be one of two paired values. The pairs are “ON/OFF” or “YES/NO”.

Label points are text strings and are used to associate useful names to point values. The list of labels available for use is defined by the control program. Label points can only be assigned label values that are included in the list defined by the control program.

Date points represent dates in the form “MM/DD/YY” or “MM/DD/YYYY” where MM is a two digit month starting at zero, DD is a two digit day of the month, and “YY/YYYY” represent either a two digit year since 2000 or a full four digit year.

Time points represent time in a 24 hours HH:MM:SS format where HH represents hours, MM represents minutes, and SS represents seconds. SS is usually optional and will default to zero if not entered.

1.4.5.2 Point Override (Operating) Mode

The current value of a point is typically determined by logical rule defined in the control program and the state of the installed system. The control program defines whether the operating mode of a point can be changed such that the point value is forced to another value. Changing the operating mode of a point is called “overriding” the point.

Not all points can be overridden. The control program defines whether a point can or cannot be overridden. Points defined as overridable can only be overridden by users logged on with a permission level that allows them to override points (see section 1.4.4 User Accounts and Permission Levels on page 10 for more information).

Possible operating modes (override types) include:

- Automatic (no override)
- Permanent (overridden)
- Timed (timed override)

When in the automatic operating mode, no override is applied, and the value of the point is determined by the control program and the current system state.

When in the permanent operating mode, an override is applied, and the point value is forced to the override value. Permanent overrides remain in effect until a user intervenes and applies a new override value.

When in the timed operating mode, an override is applied, and the point value is forced to the override value. Timed overrides remain in effect for a duration of time that is specified when the override is applied. When the specified time duration has elapsed, the point returns to the operating mode that was in effect when the timed override was applied.

For example, if the point was in the permanent override operating mode when the timed override was applied, the point state will return to the permanent override mode and have the assigned permanent value after the timed override expires.

Automatic, permanent, and timed overrides can be applied to analog (numeric), digital, label, date, and time points.

1.4.5.3 Point Overrides, Limits, and Lists

In addition to defining whether a point can be overridden, the control program optionally specifies limits that may be applied to the override value. For example, the control program can define a numeric point that can be overridden, but the valid range of overrides is bounded between a high and low limit. Limits are optional. A low limit, a high limit, or both can be defined.

When low or high limits are applied, the point value is allowed to range between the limits where:

Low Limit <= Point value <= High Limit

The control program can also define a list of values that can be applied as overrides. In this case, the allowed override value must be one of the listed values.

Point Type	Limits Allowed	Lists Allowed
Analog	Yes	No
Digital	NA	Yes (ON/OFF or YES/NO)
Label	NA	Yes, constrained to defined labels
Date	Yes	No
Time	Yes	No
Set point	Yes	No

Table 3: Map of Point Types, Limits, and Lists

1.4.6 Logging Information

Each ATRTU-TCOM system is capable of tracking and storing information related to system operation. This information is stored in a “log”. Multiple log types are supported. Some log types are dedicated for specific types of information and there are several log types that are more general purpose.

The control program defines the events that are monitored, and the information stored in the log. Log types include:

- Activity log
- Alarm log
- System log
- User log
- Maintenance log

1.4.6.1 Activity Logs

Activity logs track and store information specific to individual points such as saving a single data value and recording transitions and duration.

Activity logs are available for tracking the recent activity of a specific input (e.g. floats) or output (e.g. pumps). Activity logs are mainly used for troubleshooting. Activity logs may be viewed onscreen using TCOM Viewer or the web server, exported to a comma separated file, and displayed as a line plot versus time within TCOM Viewer.

1.4.6.2 Alarm Logs

Each ATRTU-TCOM system manages one alarm log. The alarm log is used to store information about events that may require operator intervention or otherwise be of interest to an operator. The events that are monitored are determined by the control program in the ATRTU-TCOM system and may vary from one installation site to another. Alarm logs can be displayed onscreen or exported to comma separated file.

1.4.6.3 System Logs

Each ATRTU-TCOM system manages one system log. The control program defines the events that trigger storing information in system logs. Typically, system logs track things such as whether an optional or removable device is or isn't installed, whether it's configured or not, input/output errors, communications errors, and other system events. System logs can be displayed onscreen or exported to comma separated file.

1.4.6.4 User Logs

The ATRTU-TCOM control program can define anywhere from 0 to 48 separate user logs. User logs are very flexible and can be configured to store information about a broad range of user specified events. Up to four data values and a date and time stamp can be stored for each event.

Logs 1 – 16 are stored in high speed RAM and are suitable for tracking events that may occur frequently. However, the content of logs 1 – 16 are volatile and will not persist through a prolonged loss of power. Logs 17 – 48 are stored in non-volatile flash memory and the contents will persist through power cycles of any duration. However, the time required to store information in flash memory is significantly greater than storing information in RAM and therefore should be used for events that occur at relatively low frequency (multiple seconds or longer).

User logs may be viewed onscreen, exported to a comma separated file, and displayed as a line plot versus time within TCOM Viewer.

1.4.6.5 Maintenance Logs

The maintenance log allows operators and service personnel to record actions that have been performed at the installation site. Examples include replacing a part or routine maintenance. This log can be viewed onscreen and exported to a comma separated file.

1.4.7 Event Notification Using Mailboxes

The ATRTU-TCOM system can be configured to notify external systems when specific events have occurred. The external system to be notified is referred to as a “mailbox”. The events that trigger a notification are defined by the control program. When a mailbox is defined, the type of mailbox is also specified.

Supported mailbox types include:

- Phone
- Pager
- Modem
- Email
- Text

The primary objective of the event notification is to inform support personnel that something in the system may require operator attention. Actual message content is limited by the technology hosting the destination mailbox. Depending on the technology, the event notification may be a call showing up on caller ID or a pager, or include an actual message.

Mailbox Technology	Destination Address Format	Notification Type and/or message	Dependencies
Phone/Pager	Phone number	Caller ID. No message.	Requires installed phone line. Must be enabled, configured, and connected.
Email	Email address	Email with limited message.	Requires network connection using either Ethernet or cellular network. Must be enabled, configured, and connected.
SMS Text	Phone number	Text with limited message.	Requires optional cellular module Must be enabled, configured, and connected.

Table 4: Mailbox Types, Event Notification, and Messages

Successful event notification requirements include:

- One or more mailbox types are defined by the control program and associated with an event.
- The mailbox is enabled.
- All components required to communicate between the ATRTU-TCOM system and an external device are connected and functioning.
- The mailbox must be configured with valid information. If it’s a phone, pager, or SMS text mailbox, the target phone number must be valid. If it’s an email address, URL, or IP address, it must be valid.

2 Web Server

The ATRTU-TCOM controller hosts a web site that can be used to monitor and adjust various system settings. Hosting a web site increases the range of devices and operating systems that can be used to interact with the ATRTU-TCOM system to virtually any device that has a web browser, a network connection, and can access a web site.

Examples include, but are not limited to, Android smart phones, iPhones, iPads, Windows® laptops and PC's, Mac® laptops and PC's, Amazon Kindle Fire®, etc.

The range of features supported by the web site is primarily intended to facilitate remote monitoring and adjustment from a wide range of mobile devices therefore making it simpler for support personnel to access the systems on the go.

The web site includes support for:

- Logon mechanisms requiring credentials and access permission controls.
- Remote monitoring and adjustment of system settings.
- View logs and download select logs.
- View and modify notification mailbox settings.
- Adjust date and time settings.

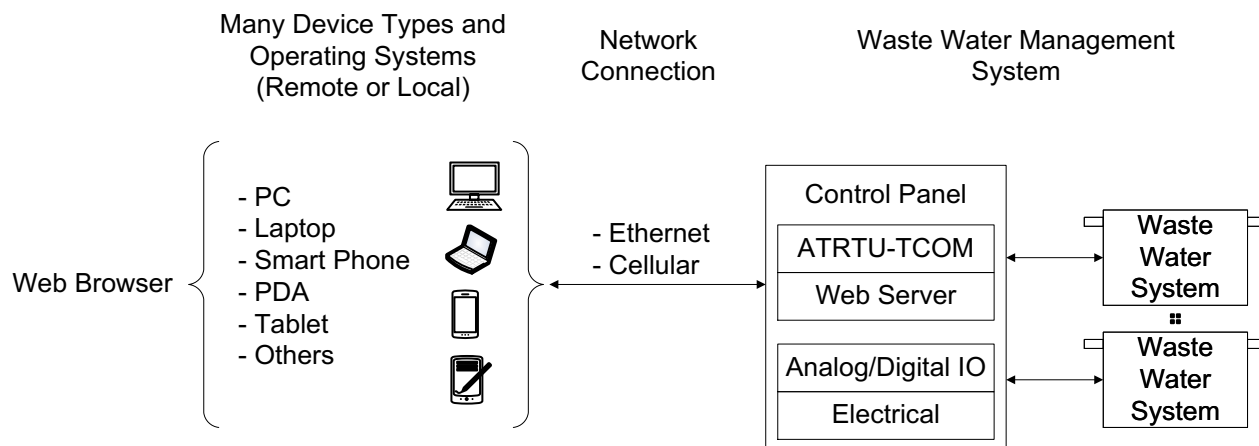


Figure 2: Web Server Overview

2.1 Device and Browser Support

Due to rapidly evolving technology, evolving standards, and the vast range of devices, browsers, and operating systems, Orenco Controls cannot guarantee compatibility with every combination of browser and device. However, if an incompatibility is encountered it can typically be resolved by updating the web browser on the user's system.

Supported browsers include (not limited to):

- Google Chrome:
 - o Version: 58.0.3029.83, on Android mobile phone.
 - o Version: 54.0.2840.99 (64 bit), Windows® 10.
 - o Version: 58.0.3029.110 (64 bit), Windows® 7
- Microsoft Edge:
 - o Version: 38.14393.1066.0 Windows® 10

- Firefox:
 - o Version: 50.0.2 Windows© 10
- Safari:
 - o Version 5.1.7 Windows© 10
 - o iPhone, Mac iOS
 - o Version: 5.1.10, Mac OS X 10.6.8
 - o Version: 10.1.1, Mac OS 10.12.5
- Internet Explorer:
 - o Version 11.0.9600.18638, Windows© 7
 - o Version: 11.447.14393.0, Windows© 10
- Silk: Kindle Fire

2.2 Web Server Connection Requirements

Connection to the web site requires a functioning network connection between the user's device and the ATRTU-TCOM.

On the ATRTU-TCOM side of the link, the network connection must use either:

- 1) The hardwired Ethernet interface directly on the main controller board.
- 2) The internal cellular modem module.

The internal cellular modem module plugs into a connector on the main controller circuit board within the ATRTU-TCOM system. Current ATRTU-TCOM systems include a hardwired 10/100 base-T Ethernet interface. The internal cellular modem module is an optional device that may or may not be installed depending on the target site and how it is configured.

For the web server to be used, at least one of the network interfaces must be enabled, properly configured, and have a valid network connection. See section 3.2 "TCOM Viewer Communication Interfaces" on page 47 for more information.

To successfully access the web server:

- 1) The ATRTU-TCOM system must be connected to either a private or public network.
- 2) The ATRTU-TCOM network subsystem must be enabled and configured with a valid IP address and HTTP port number.
- 3) The client device must be connected to either a private or public network which can be hardwired, wireless, or a mixture of both.
- 4) If the client device and the ATRTU-TCOM system are connected to separate networks, there must be a connection between the networks and access controls must be set by the network administrators to allow communication between the two subsystems (i.e., VPN's, firewalls, router settings, etc.).
- 5) The client user must know the IP address and HTTP port number that has been assigned to the ATRTU-TCOM system. This is typically determined by the network administrator of the installation site.
- 6) The client user must have a valid username and password that can be authenticated by the ATRTU-TCOM system.
- 7) The client browser must have JavaScript enabled.
- 8) The client browser must have popup's enabled.

2.3 Connecting a Web Browser to the Web Server

To logon on to the web server:

- 1) Open the web browser on the client device.
- 2) In the navigation field enter:

`http://<IP address or hostname>:<port number>`

For example, assuming the IP address is 192.168.0.10 and the port number is 2080, the user would enter the following into the URL bar of their browser:

<http://192.168.0.10:2080>

Note: The IP address above is for example only. The correct address and port number are determined by the local network administrator.

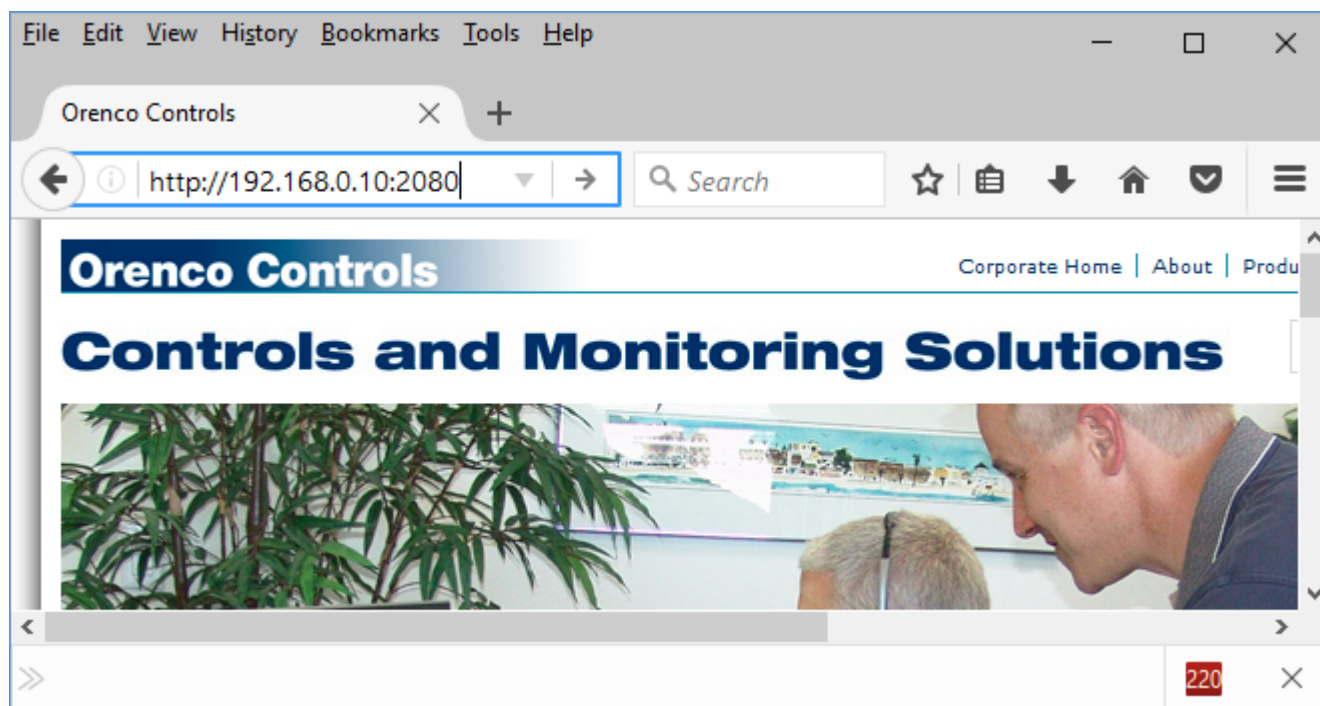


Figure 3: Example Browser Connection to the Web Server

2.4 Web Server Logon

There are two ways to log in to the web server. These include:

- Entering a username and password combination.
- Using a temporary “unlock” mechanism.

By default, the web server presents the user with the logon page shown in Figure 4 below. The web server keeps track of the number of sequential logon attempts from client devices. If the number of sequential logon attempts exceeds a threshold, the user will be directed to another page to request a temporary unlock code.

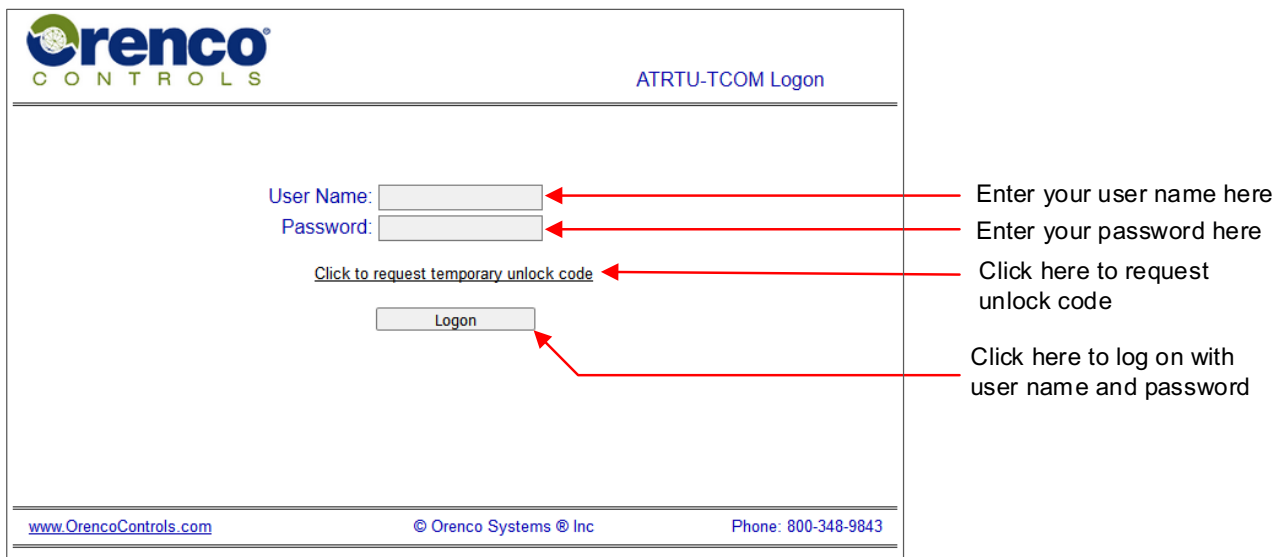


Figure 4: Logon Page: Username and Password

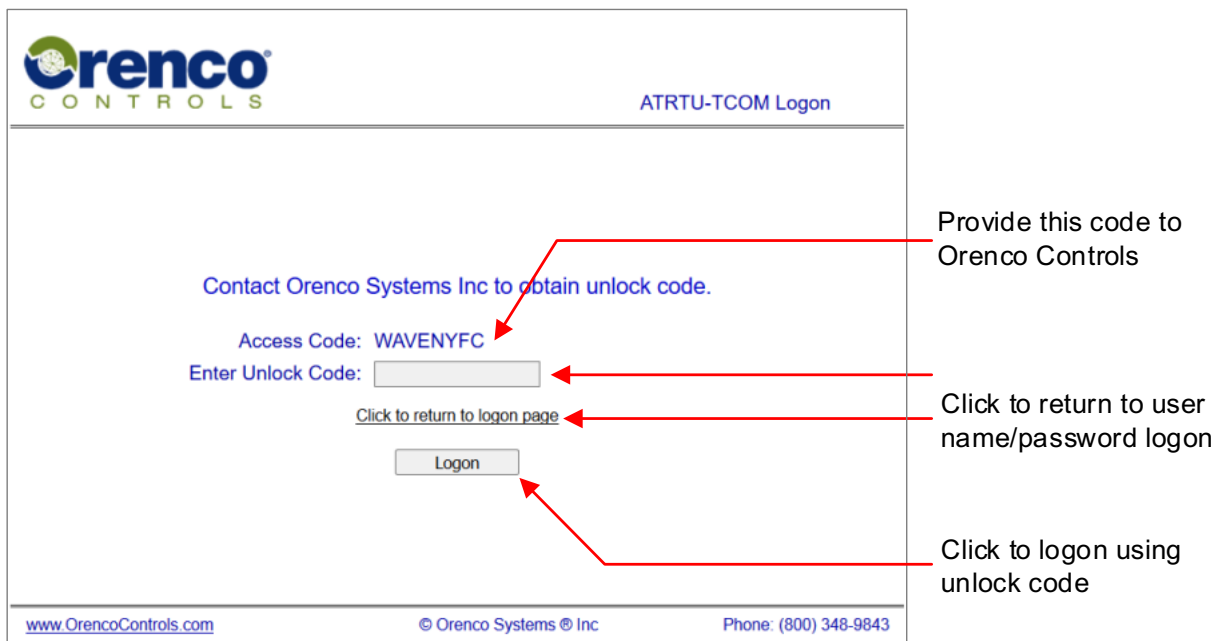


Figure 5: Logon Page: Unlock Key

2.5 Features Common to All Web Server Pages

In general, each web page hosted by the ATRTU-TCOM web server has been designed to have a common look and feel. There may be some variation depending on the configuration of the target site and the user's logon permission level.

For example, the "Mailbox" dropdown menu exists only if there are defined mailboxes. The point page dropdown menu lists only points defined for the control program in the target ATRTU-TCOM system. The figure below shows an example configuration that is representative of most systems.

The user can navigate from any active page to any other page using the "Page Navigation" menu. Each page includes:

- A corporate logo.
- Page name.
- Log off button.
- Page navigation menu.
- Link to Orenco Controls website.
- Copyright notice.
- US toll free telephone number for Orenco Controls.

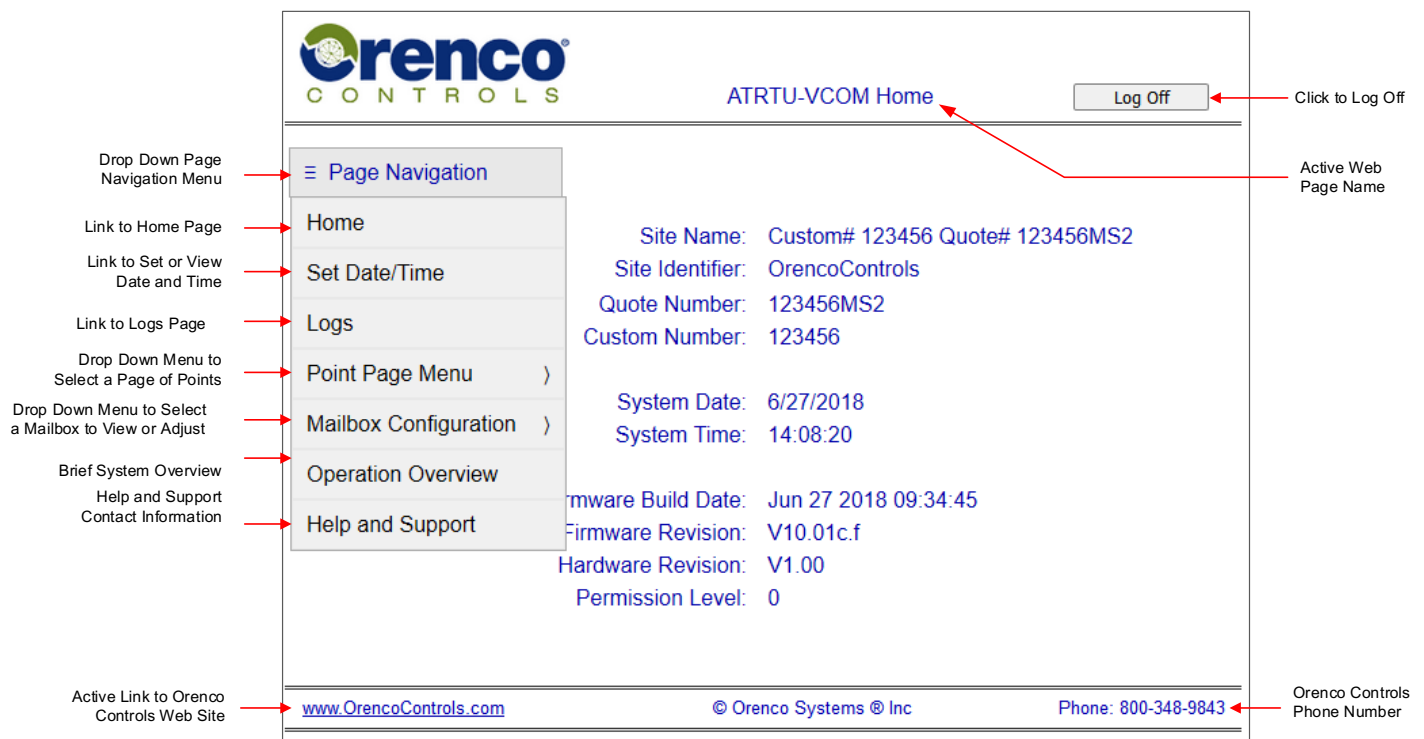


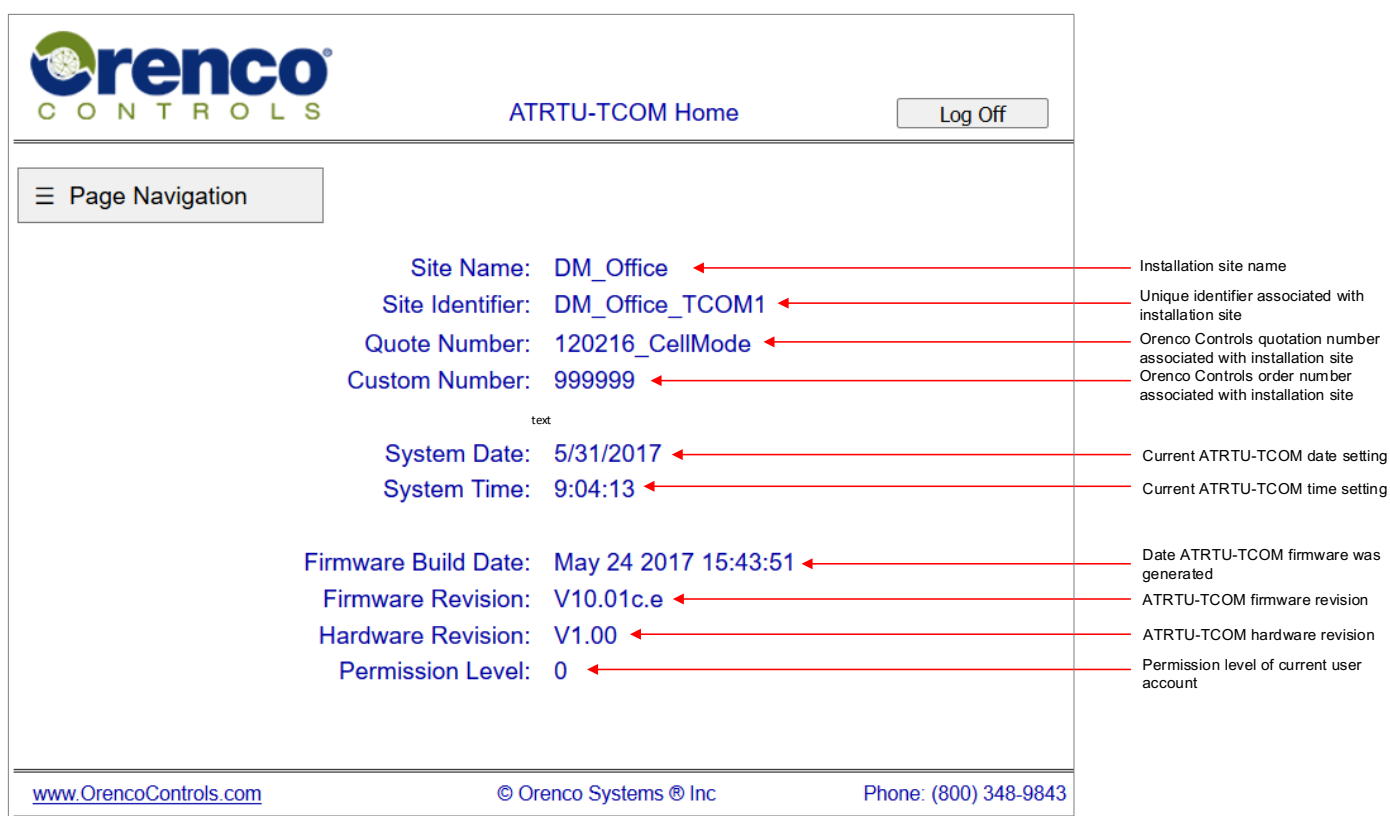
Figure 6: Common Web Page Components

2.6 Log Off – Timed and Manual

As shown in Figure 6 “Common Web Page Components” on page 20, each web page includes a “Log Off” button that the user can select to manually log off at any time. The web server also tracks activity on incoming client IP addresses and will automatically log the user off after approximately 10 minutes of inactivity. If the user attempts to interact with the web server after being automatically logged off, the web server will automatically redirect the user to the log on page.

2.7 Home Page

After the initial log on the user is directed to the “home” page which displays information specific to the target ATRTU-TCOM system. The user is free to navigate the web site from there. Note that the date and time settings are updated on a periodic interval. The default update rate is approximately 10 seconds.



The screenshot shows the ATRTU-TCOM Home page. At the top left is the Orenco Controls logo. To its right is the text "ATRTU-TCOM Home". Further right is a "Log Off" button. Below the logo is a "Page Navigation" menu. The main content area displays the following information:

- Site Name: DM_Office
- Site Identifier: DM_Office_TCOM1
- Quote Number: 120216_CellMode
- Custom Number: 999999
- System Date: 5/31/2017
- System Time: 9:04:13
- Firmware Build Date: May 24 2017 15:43:51
- Firmware Revision: V10.01c.e
- Hardware Revision: V1.00
- Permission Level: 0

Annotations on the right side of the page point to the following values:

- Installation site name (points to Site Name)
- Unique identifier associated with installation site (points to Site Identifier)
- Orenco Controls quotation number associated with installation site (points to Quote Number)
- Orenco Controls order number associated with installation site (points to Custom Number)
- Current ATRTU-TCOM date setting (points to System Date)
- Current ATRTU-TCOM time setting (points to System Time)
- Date ATRTU-TCOM firmware was generated (points to Firmware Build Date)
- ATRTU-TCOM firmware revision (points to Firmware Revision)
- ATRTU-TCOM hardware revision (points to Hardware Revision)
- Permission level of current user account (points to Permission Level)

At the bottom of the page, there is a footer with the following information:

- www.OrencoControls.com
- © Orenco Systems ® Inc
- Phone: (800) 348-9843

Figure 7: Home Page

2.9 Point Menu Page

Point menu pages provide information about the current system state. Depending on the type of page, the specific point, and the user's permission level, the user may also be able to modify point settings.

Depending on the complexity of the control program the ATRTU-TCOM system may be configured with many pages or relatively few pages. The "Page Navigation" pulldown menu allows the user to select an individual page of points defined by the control program. Once on the point menu web page, the user may also browse sequentially through point pages. Each page allows the user to view and potentially interact with up to 16 points at a time.

Each point menu page is built dynamically when requested. Pages with no defined points will not be displayed. The maximum number of points displayed at one time is 16. However, fewer points may be displayed. Non-sequential points are represented by a single blank line on the point menu page.

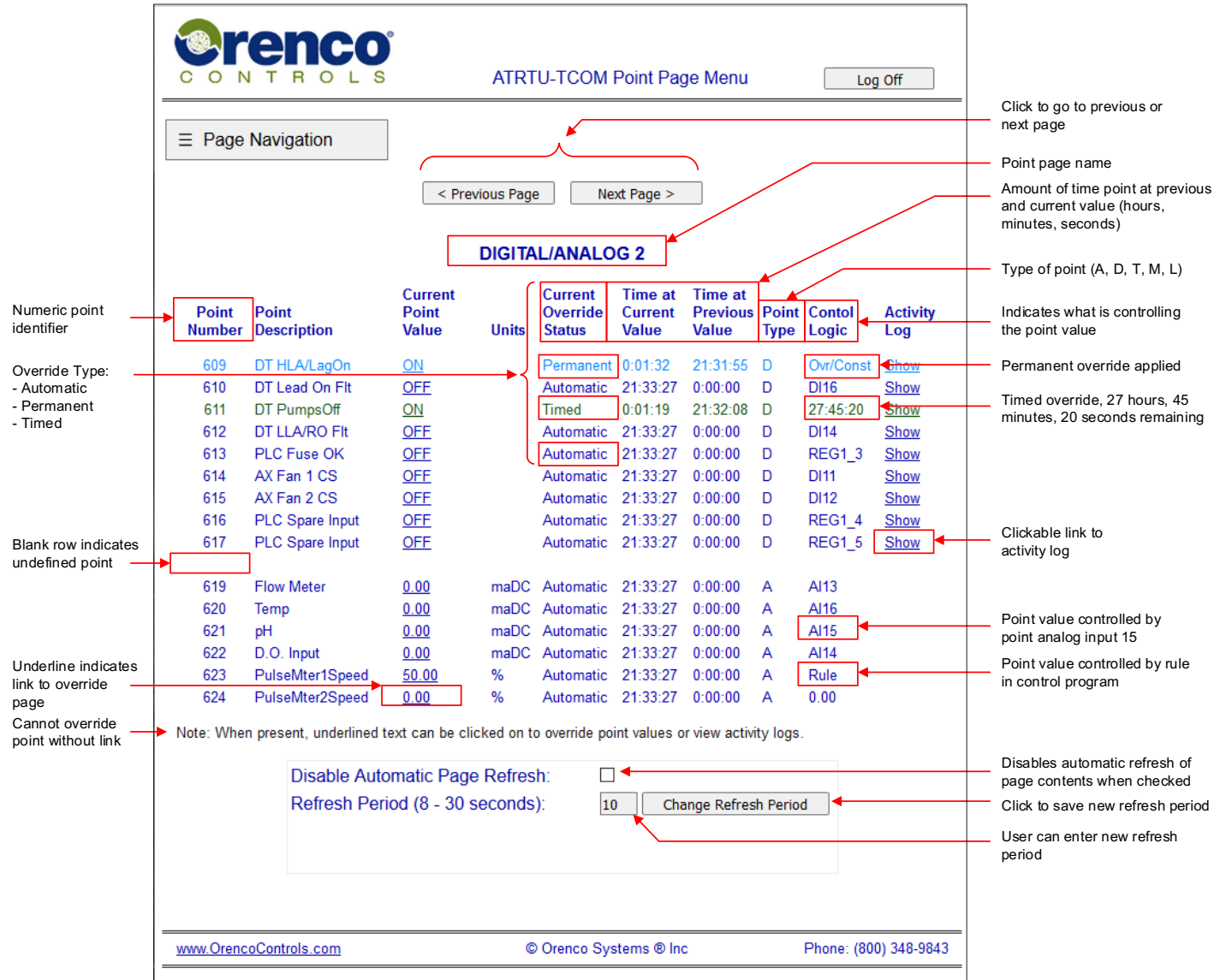
If the user account permission level is high enough and the control program has defined a point as being overridable, the current point value of the point is displayed as a hyperlink with an underline beneath it. Point values that are underlined can be clicked on to navigate the user to another page that allows the user to enter override settings. Point values that are not underlined are either not overridable or the user has insufficient permission.

The point units and activity log columns are only displayed if one or more points has defined units or an activity log associated with it. If there is an activity log, it is displayed as "Show" and the user can click on the link to view the activity log.

By default, the point menu page automatically updates to make it easier to view dynamically changing values. The automatic refresh can be disabled by clicking on the "Disable Automatic Page Refresh" button on the web page. The user can also change the refresh period within the allowed range. Automatic page refreshing does not reset the timer tracking user activity on the web pages. Therefore, if the user does not directly interact periodically with the web site they will be automatically logged out.

The "Control Logic" column indicates what is controlling the point value. Depending on the operating mode of the point the value may be determined by the control program, a permanent override value, or a timed override value.

For more information about "points" see section 1.4.5 "Points" on page 12.



ATRTU-TCOM Point Page Menu

Log Off

Page Navigation

< Previous Page Next Page >

DIGITAL/ANALOG 2

Point Number	Point Description	Current Point Value	Units	Current Override Status	Time at Current Value	Time at Previous Value	Point Type	Contol Logic	Activity Log
609	DT HLA/LagOn	ON		Permanent	0:01:32	21:31:55	D	Ovr/Const	Show
610	DT Lead On Flt	OFF		Automatic	21:33:27	0:00:00	D	DI16	Show
611	DT PumpsOff	ON		Timed	0:01:19	21:32:08	D	27:45:20	Show
612	DT LLA/RO Flt	OFF		Automatic	21:33:27	0:00:00	D	DI14	Show
613	PLC Fuse OK	OFF		Automatic	21:33:27	0:00:00	D	REG1_3	Show
614	AX Fan 1 CS	OFF		Automatic	21:33:27	0:00:00	D	DI11	Show
615	AX Fan 2 CS	OFF		Automatic	21:33:27	0:00:00	D	DI12	Show
616	PLC Spare Input	OFF		Automatic	21:33:27	0:00:00	D	REG1_4	Show
617	PLC Spare Input	OFF		Automatic	21:33:27	0:00:00	D	REG1_5	Show
619	Flow Meter	0.00	maDC	Automatic	21:33:27	0:00:00	A	AI13	
620	Temp	0.00	maDC	Automatic	21:33:27	0:00:00	A	AI16	
621	pH	0.00	maDC	Automatic	21:33:27	0:00:00	A	AI15	
622	D.O. Input	0.00	maDC	Automatic	21:33:27	0:00:00	A	AI14	
623	PulseMter1Speed	50.00	%	Automatic	21:33:27	0:00:00	A	Rule	
624	PulseMter2Speed	0.00	%	Automatic	21:33:27	0:00:00	A	0.00	

Note: When present, underlined text can be clicked on to override point values or view activity logs.

Disable Automatic Page Refresh: ☐

Refresh Period (8 - 30 seconds): 10

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Annotations:

- Numeric point identifier
- Override Type:
 - Automatic
 - Permanent
 - Timed
- Blank row indicates undefined point
- Underline indicates link to override page
- Cannot override point without link
- Click to go to previous or next page
- Point page name
- Amount of time point at previous and current value (hours, minutes, seconds)
- Type of point (A, D, T, M, L)
- Indicates what is controlling the point value
- Permanent override applied
- Timed override, 27 hours, 45 minutes, 20 seconds remaining
- Clickable link to activity log
- Point value controlled by point analog input 15
- Point value controlled by rule in control program
- Disables automatic refresh of page contents when checked
- Click to save new refresh period
- User can enter new refresh period

Figure 9: Example Point Menu Page

2.10 Point Override Page

If the control program defines a point as overridable and the current user has adequate access permission, the user may be able to override the current point value. See section 1.4.5.2 “Point Override (Operating) Mode” on page 13 for more information.

The type of point, any limits that are defined, and the type of override determines how the point override page is generated by the web server. The user should first select the type of override they want to apply to the point. The user interface will then adapt to the new settings.

If the selected override type is automatic all fields associated with entering a value are disabled.

If the selected override type is permanent, the user interface will present either a selection list or text entry field so the user can select or enter a new value.

A selection list is presented for digital points and any point that has a limit list defined. Otherwise, the point override page presents a text entry box. If the point type is a date, the user can enter the new date directly into the text box or click on it. This will cause a graphical calendar to be displayed and allows the user to select the desired date.

If high and low limits are defined, the point override page displays the high and low value. If no limits are defined nothing is displayed.

When a timed override is applied, a text entry box is displayed to allow the user to enter the time duration to apply the override. The maximum time duration is limited to the range displayed by the on screen prompts. When a timed override is applied a count down timer is started. The amount of time remaining for the applied override is displayed on both the point override and point menu pages. The time duration can be entered as a number representing the time in seconds. It can also be entered in hours:minutes format.

If the user decides not to apply an override they can click the cancel button to return to the point menu page or select any page from the page navigation menu. To apply an override, the user must click either the “Save Changes and Return to Point Menu” or “Save Changes and Remain on This Page” buttons.

When a new value is entered it is checked to ensure the data entered is valid for the point type and is within the range of any limits applied. The override is only applied if there are no data entry errors. If an error is detected an error message is displayed and the user is prompted to re-enter the data.

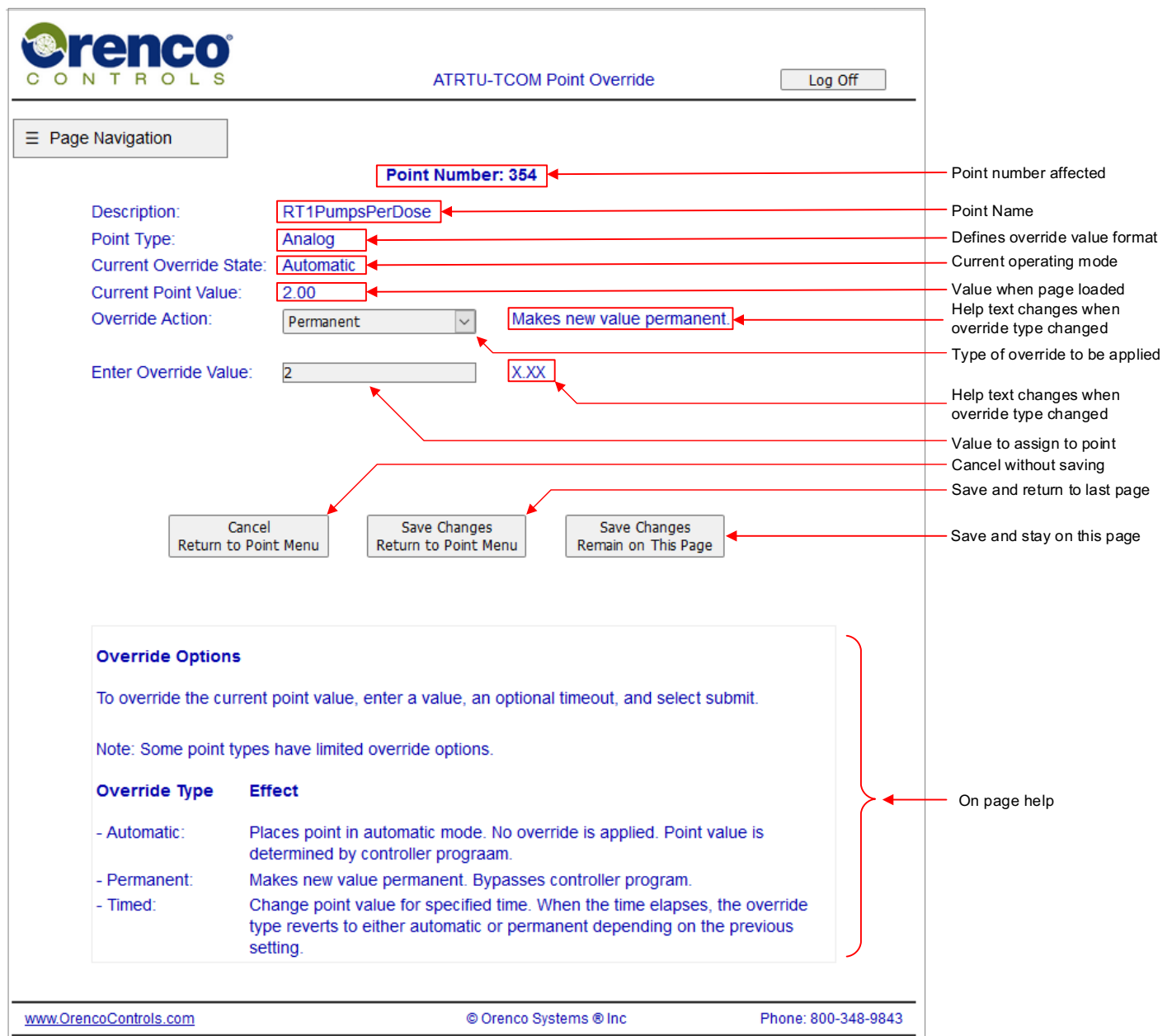
Point Type	New Value Entry	Allowed Format/Content	Notes
Analog	Text field or selection list	0-9, plus (+) or minus (-), decimal point (.)	1
Digital	Selection list	ON/OFF or YES/NO	2
Date	Text field or select from graphical calendar	Two digit fields, month 1 – 12, day 1 – 31, year 2000-2100, and / or separator	3, 4
Time	Text field	Two digit fields, hour 0 – 23, minutes 0 – 59, and : for separator	
Label	Text field or selection list	The label entered must match a label defined by the control program	1

Table 5: Map of Point Type and Point Override Format

Notes:

- 1) The control program defines whether a value list is applied or a range of values is allowed.
- 2) The control program defines whether digital points are treated as “ON/OFF” verses “YES/NO”.
- 3) MM/DD/YYYY where MM = month 1-12, DD = day of month 1-31, YYYY = year between 2000 – 2100.
- 4) Valid day range depends on the number of days in the selected month.

2.10.1 Point Override Page Overview



Point Number: 354 ← Point number affected

Description: RT1PumpsPerDose ← Point Name

Point Type: Analog ← Defines override value format

Current Override State: Automatic ← Current operating mode

Current Point Value: 2.00 ← Value when page loaded

Override Action: Permanent (dropdown) ← Makes new value permanent
 Help text changes when override type changed

Enter Override Value: 2 (input field) ← Type of override to be applied
 X.XX ← Help text changes when override type changed

Buttons:
 Cancel Return to Point Menu
 Save Changes Return to Point Menu
 Save Changes Remain on This Page ← Save and stay on this page

On page help (points to the Override Options section)

Override Options

To override the current point value, enter a value, an optional timeout, and select submit.

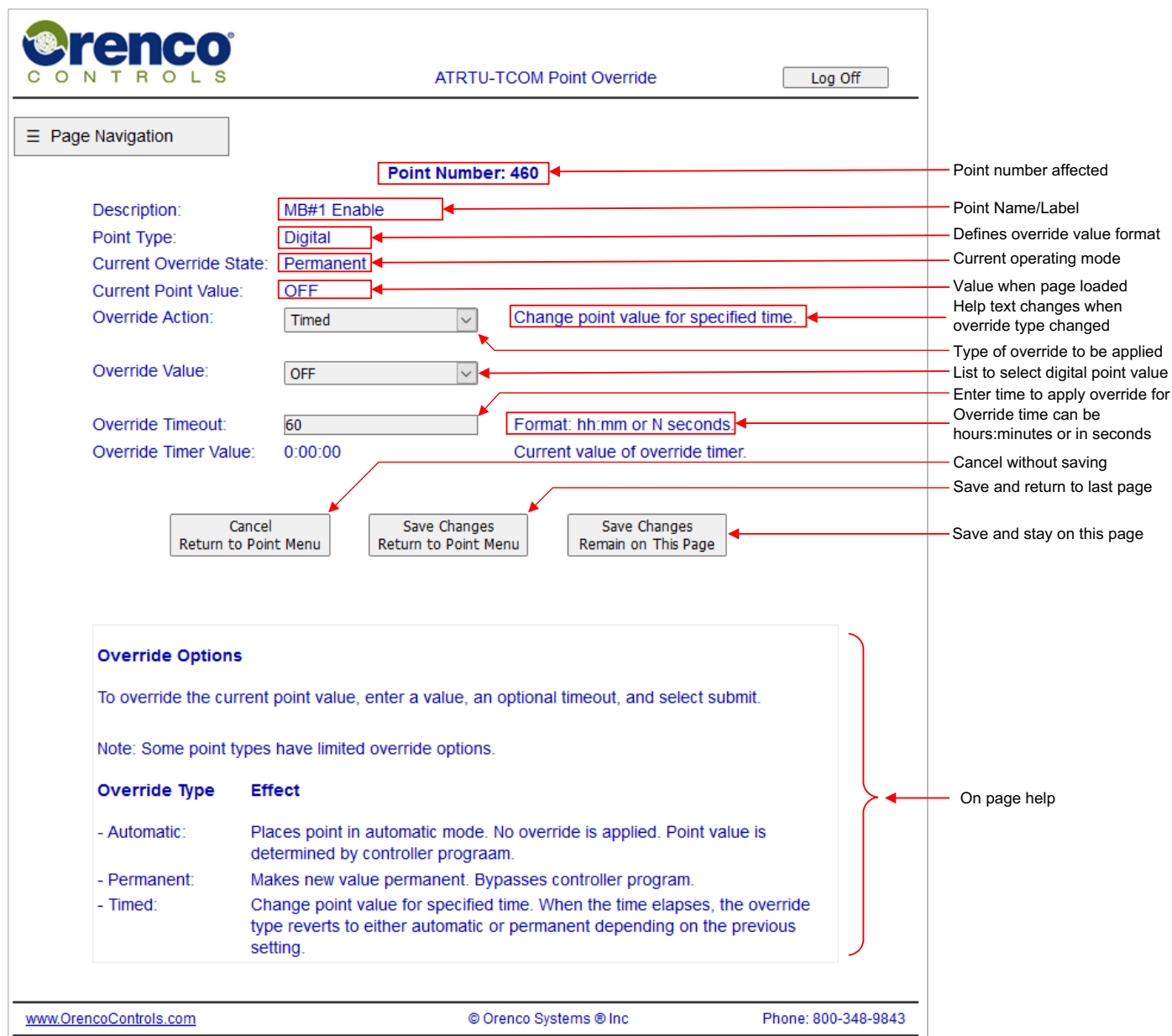
Note: Some point types have limited override options.

Override Type	Effect
- Automatic:	Places point in automatic mode. No override is applied. Point value is determined by controller program.
- Permanent:	Makes new value permanent. Bypasses controller program.
- Timed:	Change point value for specified time. When the time elapses, the override type reverts to either automatic or permanent depending on the previous setting.

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Figure 10: Point Override Page Overview

2.10.2 Point Override Page with Timed Override



Point Number: 460 ← Point number affected

Description: **MB#1 Enable** ← Point Name/Label

Point Type: **Digital** ← Defines override value format

Current Override State: **Permanent** ← Current operating mode

Current Point Value: **OFF** ← Value when page loaded

Override Action: **Timed** ← Help text changes when override type changed

Change point value for specified time.

Override Value: **OFF** ← Type of override to be applied

Enter time to apply override for

Override Timeout: **60** ← List to select digital point value

Format: hh:mm or N seconds

Override Timer Value: **0:00:00** ← Override time can be hours:minutes or in seconds

Current value of override timer.

Cancel without saving

Save and return to last page

Save Changes Return to Point Menu

Save Changes Remain on This Page

Save and stay on this page

Override Options

To override the current point value, enter a value, an optional timeout, and select submit.

Note: Some point types have limited override options.

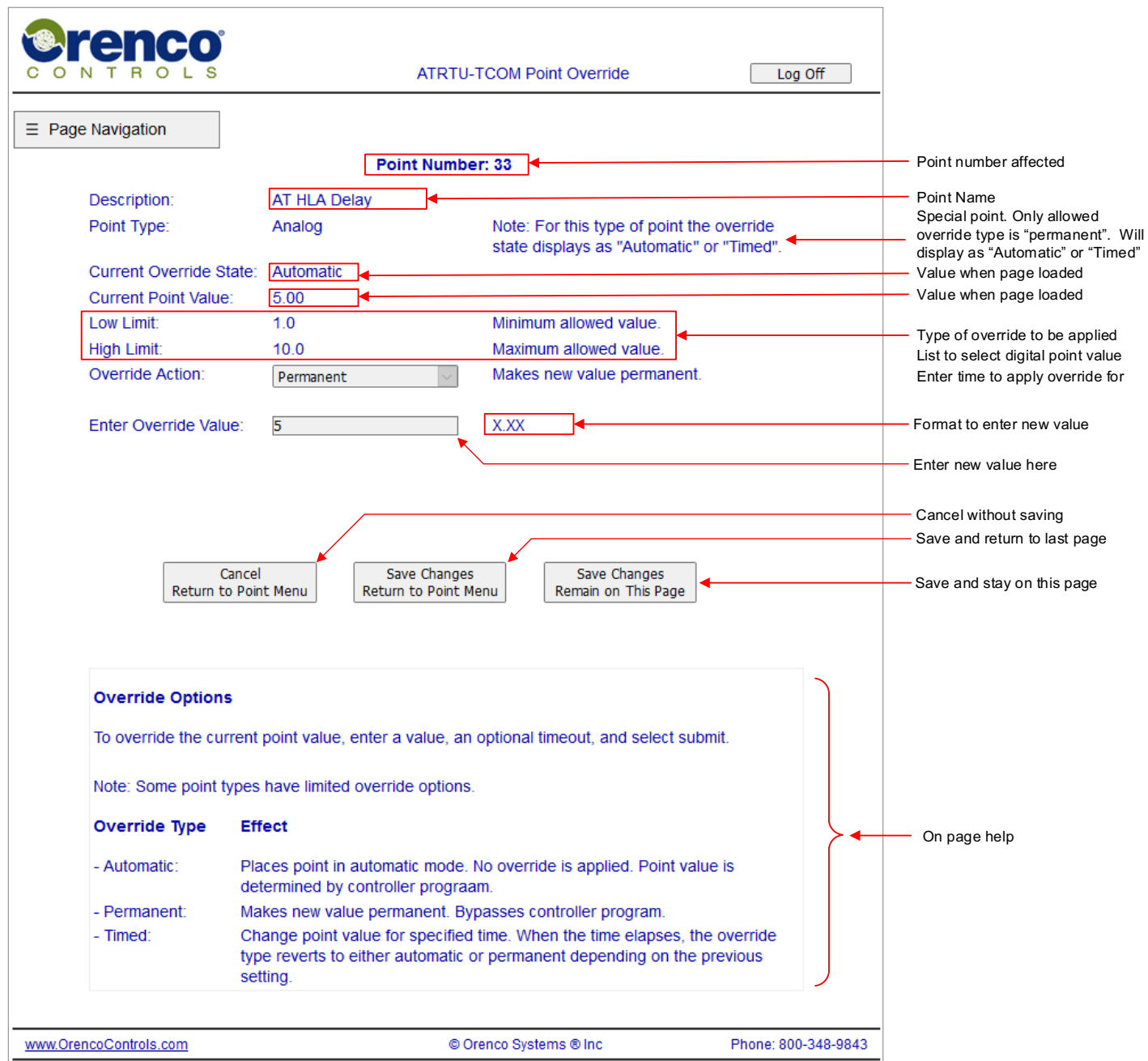
Override Type	Effect
- Automatic:	Places point in automatic mode. No override is applied. Point value is determined by controller program.
- Permanent:	Makes new value permanent. Bypasses controller program.
- Timed:	Change point value for specified time. When the time elapses, the override type reverts to either automatic or permanent depending on the previous setting.

On page help

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Figure 11: Timed Point Override Example

2.10.3 Point Override Page with Limits



Point Number: 33 ← Point number affected

Description: **AT HLA Delay** ← Point Name

Point Type: Analog Note: For this type of point the override state displays as "Automatic" or "Timed". ← Special point. Only allowed override type is "permanent". Will display as "Automatic" or "Timed"

Current Override State: **Automatic** ← Value when page loaded

Current Point Value: **5.00** ← Value when page loaded

Low Limit: 1.0 Minimum allowed value. ← Type of override to be applied

High Limit: 10.0 Maximum allowed value. ← List to select digital point value

Override Action: Permanent Makes new value permanent. ← Enter time to apply override for

Enter Override Value: 5 **X.XX** ← Format to enter new value

← Enter new value here

Cancel without saving

Save and return to last page

Save and stay on this page

Override Options

To override the current point value, enter a value, an optional timeout, and select submit.

Note: Some point types have limited override options.

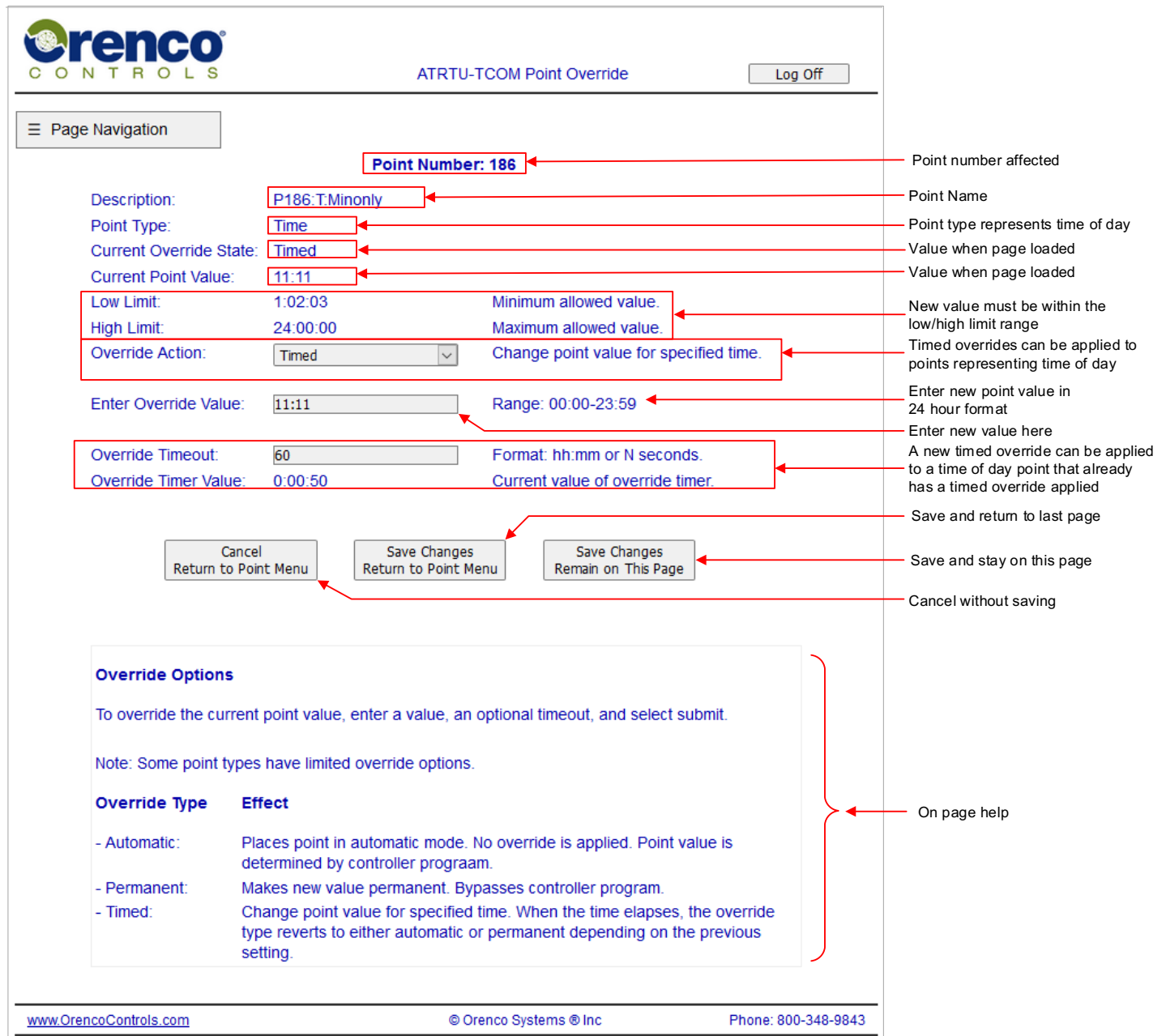
Override Type	Effect
- Automatic:	Places point in automatic mode. No override is applied. Point value is determined by controller program.
- Permanent:	Makes new value permanent. Bypasses controller program.
- Timed:	Change point value for specified time. When the time elapses, the override type reverts to either automatic or permanent depending on the previous setting.

On page help

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Figure 12: Point Override with Limits Example

2.10.4 Point Override Page with Time of Day Point and Timed Override



Point Number: 186 ← Point number affected

Description: **P186:T.Minonly** ← Point Name

Point Type: **Time** ← Point type represents time of day

Current Override State: **Timed** ← Value when page loaded

Current Point Value: **11:11** ← Value when page loaded

Low Limit: **1:02:03** ← Minimum allowed value. New value must be within the low/high limit range

High Limit: **24:00:00** ← Maximum allowed value.

Override Action: **Timed** ← Change point value for specified time. Timed overrides can be applied to points representing time of day

Enter Override Value: **11:11** ← Range: 00:00-23:59 Enter new point value in 24 hour format

Override Timeout: **60** ← Format: hh:mm or N seconds. Enter new value here

Override Timer Value: **0:00:50** ← Current value of override timer. A new timed override can be applied to a time of day point that already has a timed override applied

Buttons:

- Cancel Return to Point Menu ← Cancel without saving
- Save Changes Return to Point Menu ← Save and return to last page
- Save Changes Remain on This Page ← Save and stay on this page

Override Options

To override the current point value, enter a value, an optional timeout, and select submit.

Note: Some point types have limited override options.

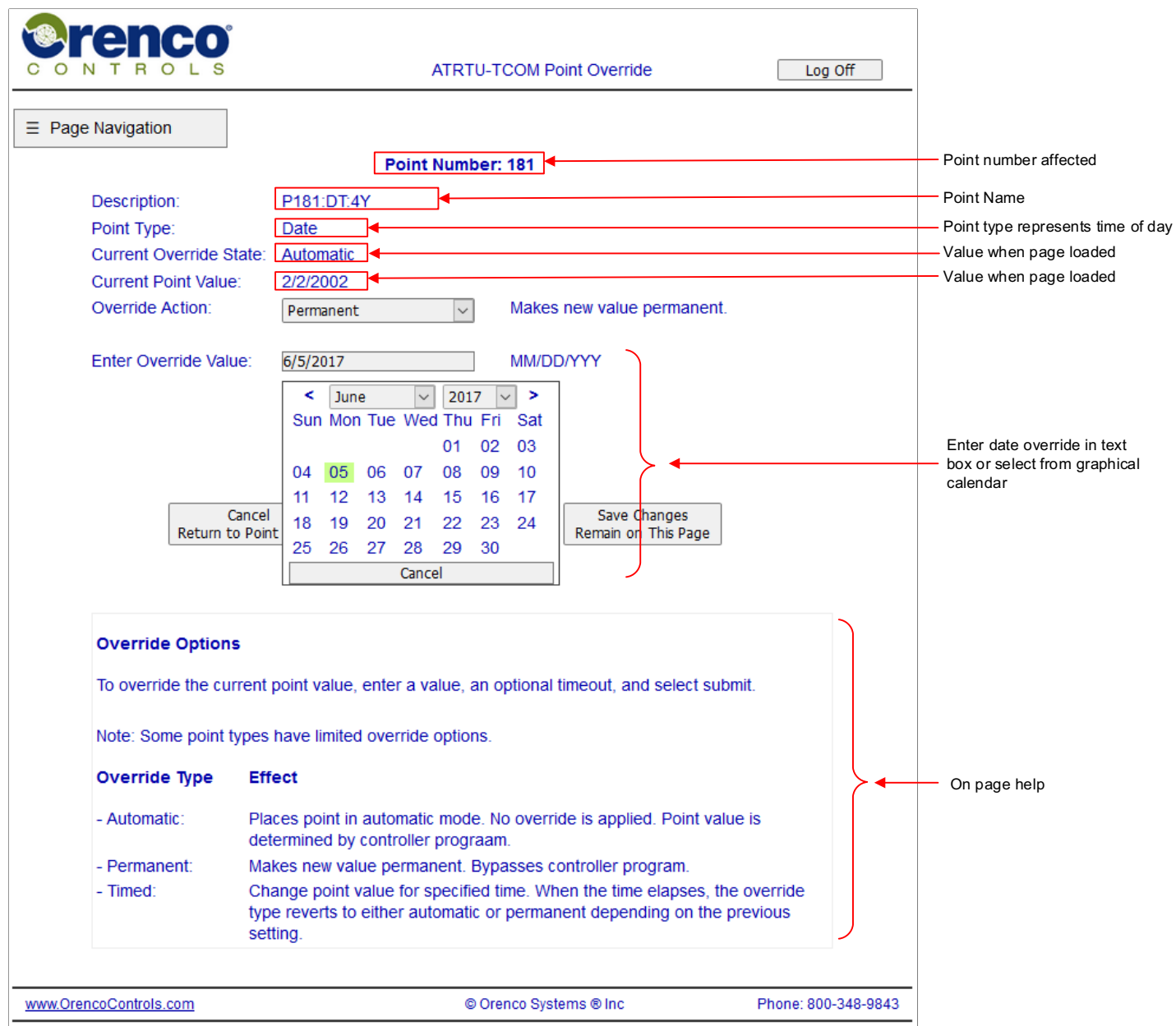
Override Type	Effect
- Automatic:	Places point in automatic mode. No override is applied. Point value is determined by controller prograam.
- Permanent:	Makes new value permanent. Bypasses controller program.
- Timed:	Change point value for specified time. When the time elapses, the override type reverts to either automatic or permanent depending on the previous setting.

On page help

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Figure 13: Point Override Page with Time of Day Point and Timed Override

2.10.5 Point Override Page with Date Point



Point Number: 181

Description: **P181-DT.4Y**

Point Type: **Date**

Current Override State: **Automatic**

Current Point Value: **2/2/2002**

Override Action: **Permanent** Makes new value permanent.

Enter Override Value: **6/5/2017** MM/DD/YYYY

Calendar:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				01	02	03
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Buttons: Cancel Return to Point, Save Changes Remain on This Page

Override Options

To override the current point value, enter a value, an optional timeout, and select submit.

Note: Some point types have limited override options.

Override Type	Effect
- Automatic:	Places point in automatic mode. No override is applied. Point value is determined by controller program.
- Permanent:	Makes new value permanent. Bypasses controller program.
- Timed:	Change point value for specified time. When the time elapses, the override type reverts to either automatic or permanent depending on the previous setting.

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Figure 14: Point Override Page with Date Point Example

2.11 Accessing Log Information

Users with sufficient permission levels can access several types of data logs by selecting “Logs” from the page navigation drop down menu. The content of each log is specified by either the firmware, the control program in the ATRTU-TCOM panel, or both. The content also depends on what events have or have not happened since the log was last cleared.

The user interface presented on the logs page is created when the web page is loaded and is based on default settings, the ATRTU-TCOM system configuration, and user permission levels. As the user interacts with the page the user interface dynamically adapts to the selections made.

Supported operations include viewing a log onscreen, downloading the log in a comma separated file format, and clearing the selected log. Available log types include the alarm log, the system log, activity logs, and user logs.

General Notes:

- The permission level required to clear logs is more restrictive than the permission level required to view logs. The user interface adapts to the permission level of the current user and presents only the options that the user has access to.
- When clearing logs there is no date range option and the entire log will be deleted. The date entry dialog boxes are removed when the user selects the clear log option and restored when the user selects the view or download options. The user is prompted to confirm or cancel all clear log requests before action is taken.
- There is only one alarm log and one system log per ATRTU-TCOM controller.
- There may be zero or multiple user and activity logs.
- If there are zero user or activity logs the option to select them is removed.
- The list of activity and/or user logs is based solely on the system configuration.

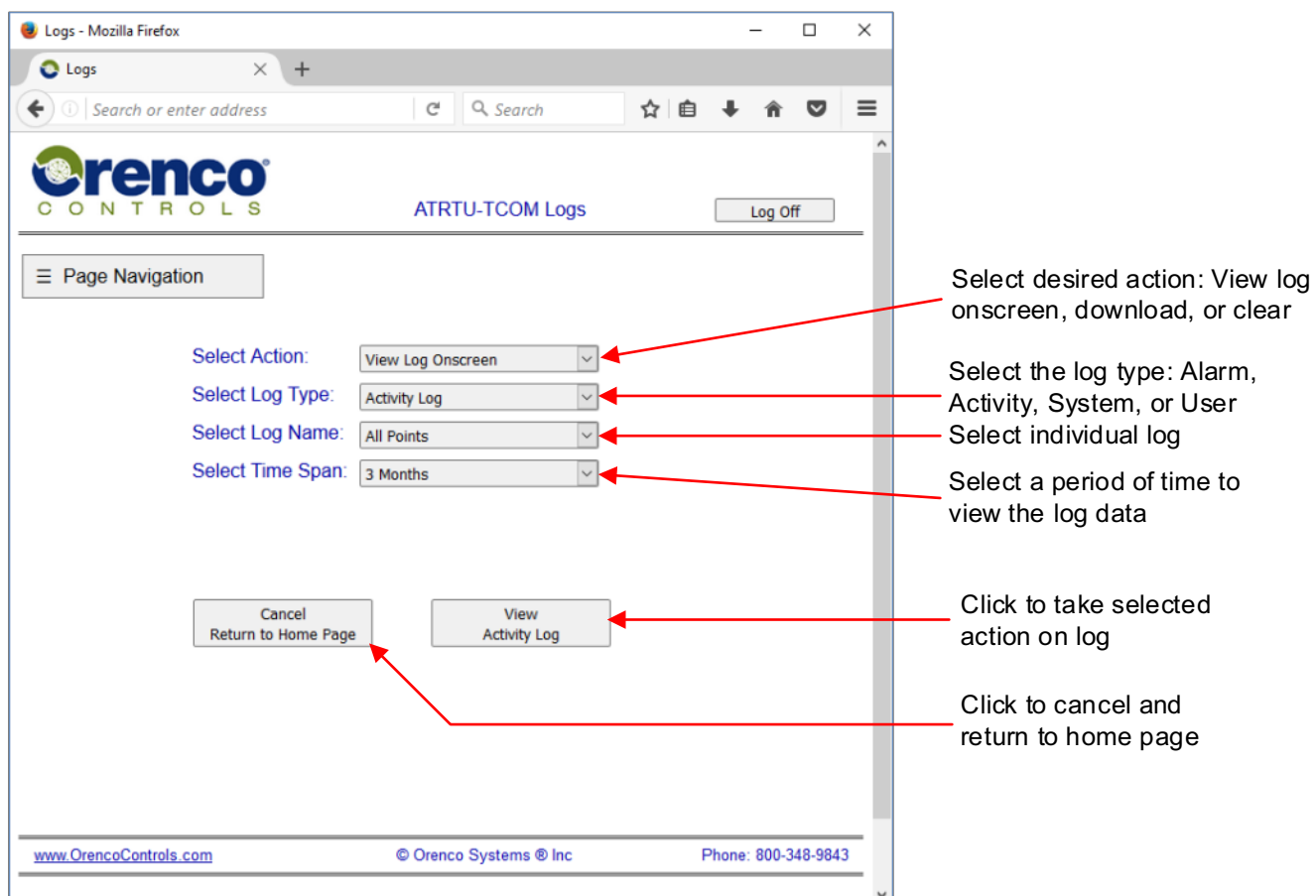


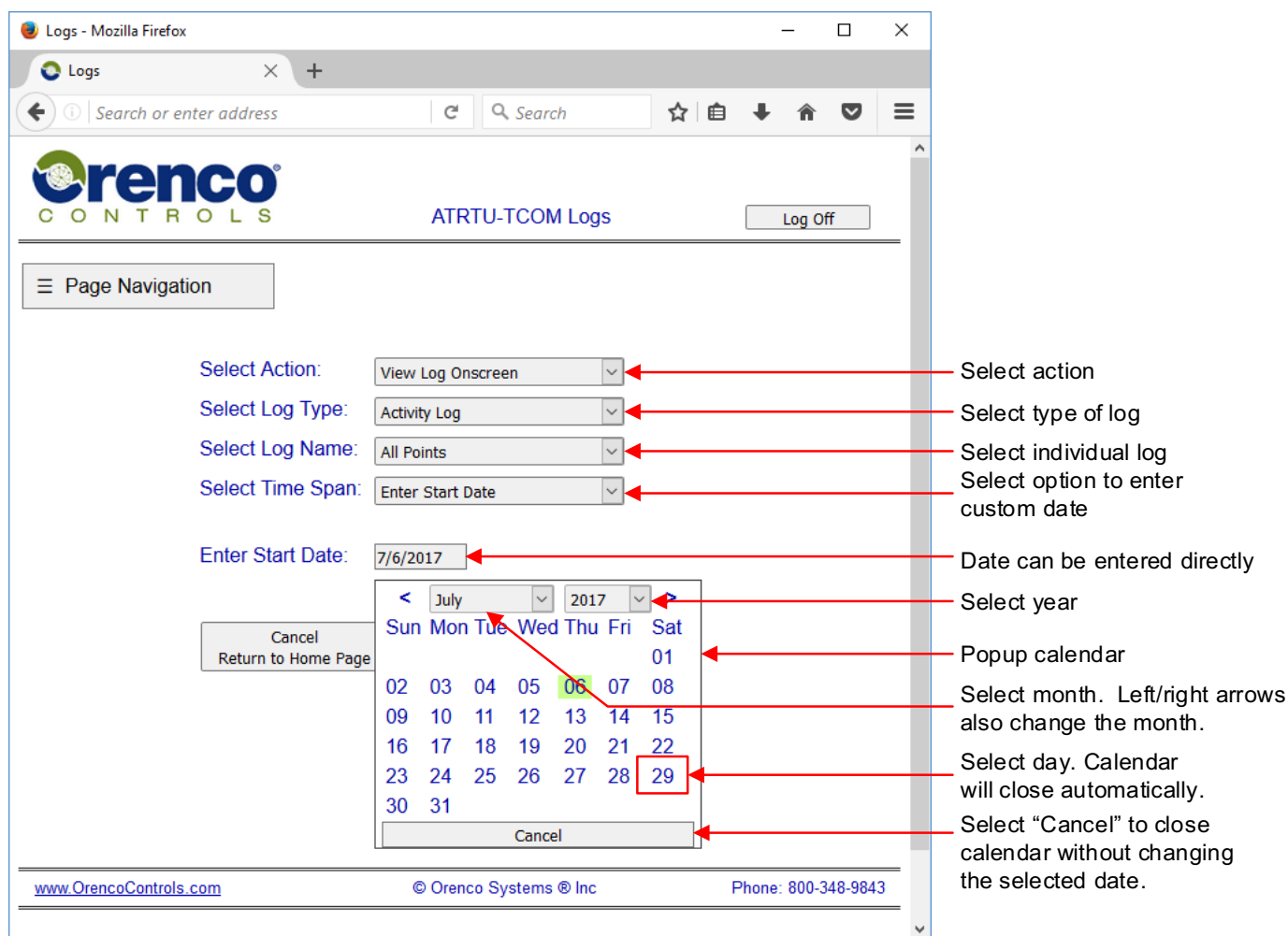
Figure 15: Logs Page

2.11.1 Selecting the Log Date Range

Logs can be gathered over long time periods. The user has the option to specify, from the current date, how far back in time they would like to view the log. The web page provides a list of time ranges the user can select from. It also allows the user to enter a specific date. The date entry dialog box is only available when the user has selected "Specific Start Date" from the "Select Time Span" menu.

To specify a specific start date the user can enter the desired date directly in the format MM/DD/YYYY where MM is the month, DD is the day, and YYYY is the year. Valid year selections range from the current date to the year 2100.

Clicking on the date entry field will also pop up a graphical calendar which allows the user to select the desired month, day, and year.



Select Action: View Log Onscreen

Select Log Type: Activity Log

Select Log Name: All Points

Select Time Span: Enter Start Date

Enter Start Date: 7/6/2017

Calendar: July 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						01
02	03	04	05	06	07	08
09	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Buttons: Cancel, Return to Home Page, Cancel

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Figure 16: Log Date Select

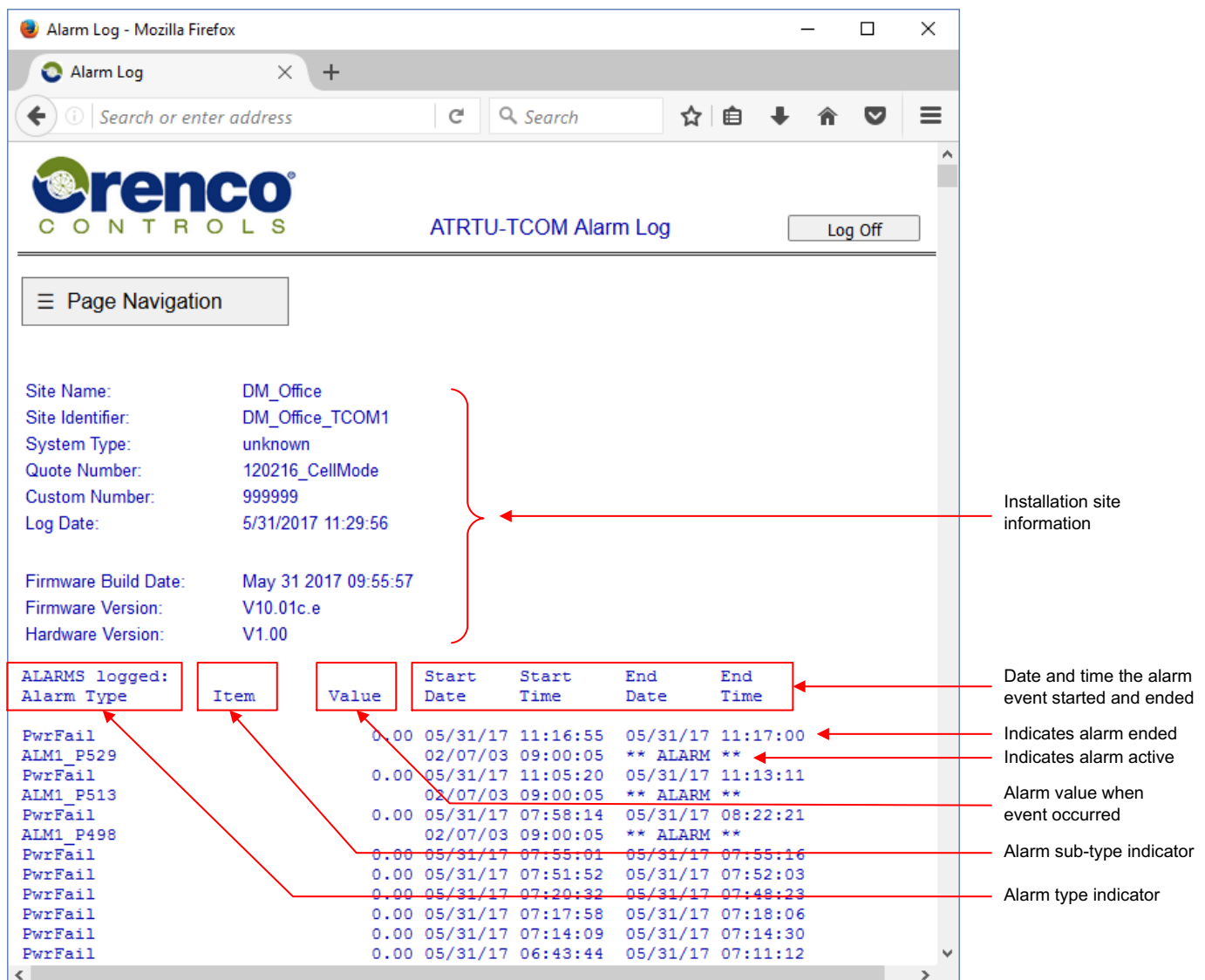
2.11.2 Alarm Log

There is a single alarm log used to store information about events that may require operator intervention. The events that are monitored are determined by the control program in the ATRTU-TCOM system and may vary from one installation site to another.

If no events that are being monitored have occurred the log will contain only log header information and will otherwise be empty. If events have occurred, the log will contain information about the events. The figure below shows an example alarm log file.

Note:

- 1) The log file tracks alarm events that have occurred and been resolved. Alarms that are still active do not have an end date specified.
- 2) This log was captured from an engineer's office development system. There weren't any power failures. Rather, it's just that the engineer frequently cycles the power for testing purposes.



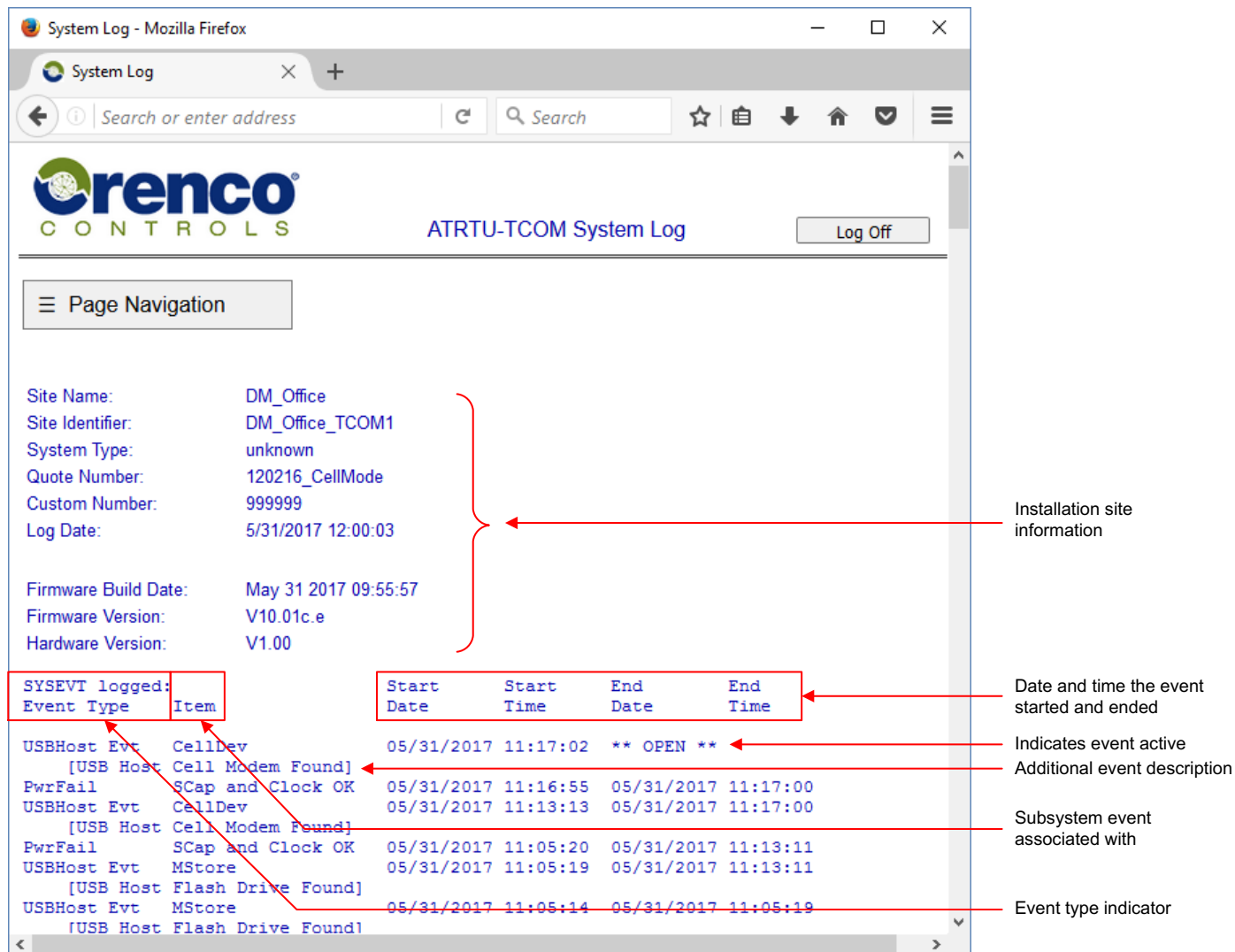
Alarm Type	Item	Value	Start Date	Start Time	End Date	End Time
PwrFail	ALM1_P529	0.00	05/31/17	11:16:55	05/31/17	11:17:00
PwrFail	ALM1_P513	0.00	02/07/03	09:00:05	** ALARM **	
PwrFail	ALM1_P498	0.00	05/31/17	07:58:14	05/31/17	08:22:21
PwrFail	ALM1_P498	0.00	02/07/03	09:00:05	** ALARM **	
PwrFail	ALM1_P498	0.00	05/31/17	07:55:01	05/31/17	07:55:16
PwrFail	ALM1_P498	0.00	05/31/17	07:51:52	05/31/17	07:52:03
PwrFail	ALM1_P498	0.00	05/31/17	07:20:32	05/31/17	07:48:23
PwrFail	ALM1_P498	0.00	05/31/17	07:17:58	05/31/17	07:18:06
PwrFail	ALM1_P498	0.00	05/31/17	07:14:09	05/31/17	07:14:30
PwrFail	ALM1_P498	0.00	05/31/17	06:43:44	05/31/17	07:11:12

Figure 17: Example Alarm Log

2.11.3 System Log

There is a single system log. Typically, system logs are used to capture system wide events that have been detected by the ATRTU-TCOM firmware. For example, during a power up sequence the firmware may make a log entry indicating whether an optional or removable device that may or may not be installed was detected.

For example, the system log depicted below shows that an optional cellular modem module was detected as being installed in the system and a USB Flash storage device was detected. The actual content of the system log at any time depends on the ATRTU-TCOM control program and what, if any, events have been detected since the log was last cleared.



System Log - Mozilla Firefox

System Log

Search or enter address Search

crenco
CONTROLS

ATRTU-TCOM System Log Log Off

Page Navigation

Site Name: DM_Office
Site Identifier: DM_Office_TCOM1
System Type: unknown
Quote Number: 120216_CellMode
Custom Number: 999999
Log Date: 5/31/2017 12:00:03

Firmware Build Date: May 31 2017 09:55:57
Firmware Version: V10.01c.e
Hardware Version: V1.00

SYSEVT logged: Event Type Item

Event Type	Item	Start Date	Start Time	End Date	End Time
USBHost Evt	CellDev	05/31/2017	11:17:02	** OPEN **	
	[USB Host Cell Modem Found]				
PwrFail	SCap and Clock OK	05/31/2017	11:16:55	05/31/2017	11:17:00
USBHost Evt	CellDev	05/31/2017	11:13:13	05/31/2017	11:17:00
	[USB Host Cell Modem Found]				
PwrFail	SCap and Clock OK	05/31/2017	11:05:20	05/31/2017	11:13:11
USBHost Evt	MStore	05/31/2017	11:05:19	05/31/2017	11:13:11
	[USB Host Flash Drive Found]				
USBHost Evt	MStore	05/31/2017	11:05:14	05/31/2017	11:05:19
	[USB Host Flash Drive Found]				

Installation site information

Date and time the event started and ended

Indicates event active

Additional event description

Subsystem event associated with

Event type indicator

Figure 18: Example System Log

2.11.4 User Logs

The data sampled and stored in user logs is defined by the control program and can be different for each of the 0 - 48 possible user logs. The column headers displayed in the log are determined by the control program. Individual user logs can be viewed, downloaded, and cleared independently of other user logs.

An example user log is shown below.



ATRTU-TCOM User Log

Log Off

Page Navigation

User Log 1: DMUserLog

Site Name: DM_Office

Site Identifier: DM_Office_TCOM1

System Type: unknown

Quote Number: 120216_CellMode

Custom Number: 999999

Log Date: 6/2/2017 14:18:37

Firmware Build Date: May 31 2017 09:55:57

Firmware Version: V10.01c.e

Hardware Version: V1.00

Date

Time

DO Now

pH Now

Temp Now

06/02/17 14:57:38

11.25

7.00

118.63

06/02/17 14:57:36

11.25

7.00

118.63

06/02/17 14:57:34

11.25

7.00

118.63

06/02/17 14:57:32

11.25

7.00

118.63

06/02/17 14:57:30

11.25

7.00

118.63

06/02/17 14:57:28

11.25

7.00

118.63

06/02/17 14:57:26

11.25

7.00

118.63

06/02/17 14:57:24

11.25

7.00

118.63

Installation site information

Date and time data sample/ event occurred

Column labels are specific to site control program

Date log is specific to site control program

Figure 19: Example User Log

2.11.5 Activity Log

The data sampled and stored in activity logs is defined by the control program and the firmware. Activity logs typically store information about transitions or state changes within the system. For example, a sensor on/off change mapping to an input point may be logged.

Multiple activity logs are supported. Activity logs related to individual point numbers can be accessed from both the logs page and also from the point menu page. See section 1.4.6.1 "Activity Logs" on page 14 and section 2.9 "Point Menu Page" on page 23 for more information.

The logs page allows the user to view or download logs tracking activity on a single point and on all points. The user can also view a non-point specific activity log that tracks events such as user logons, clock changes, etc.

Note: Activity logs cannot be cleared individually. When the clear option is applied to activity logs all activity logs are cleared.

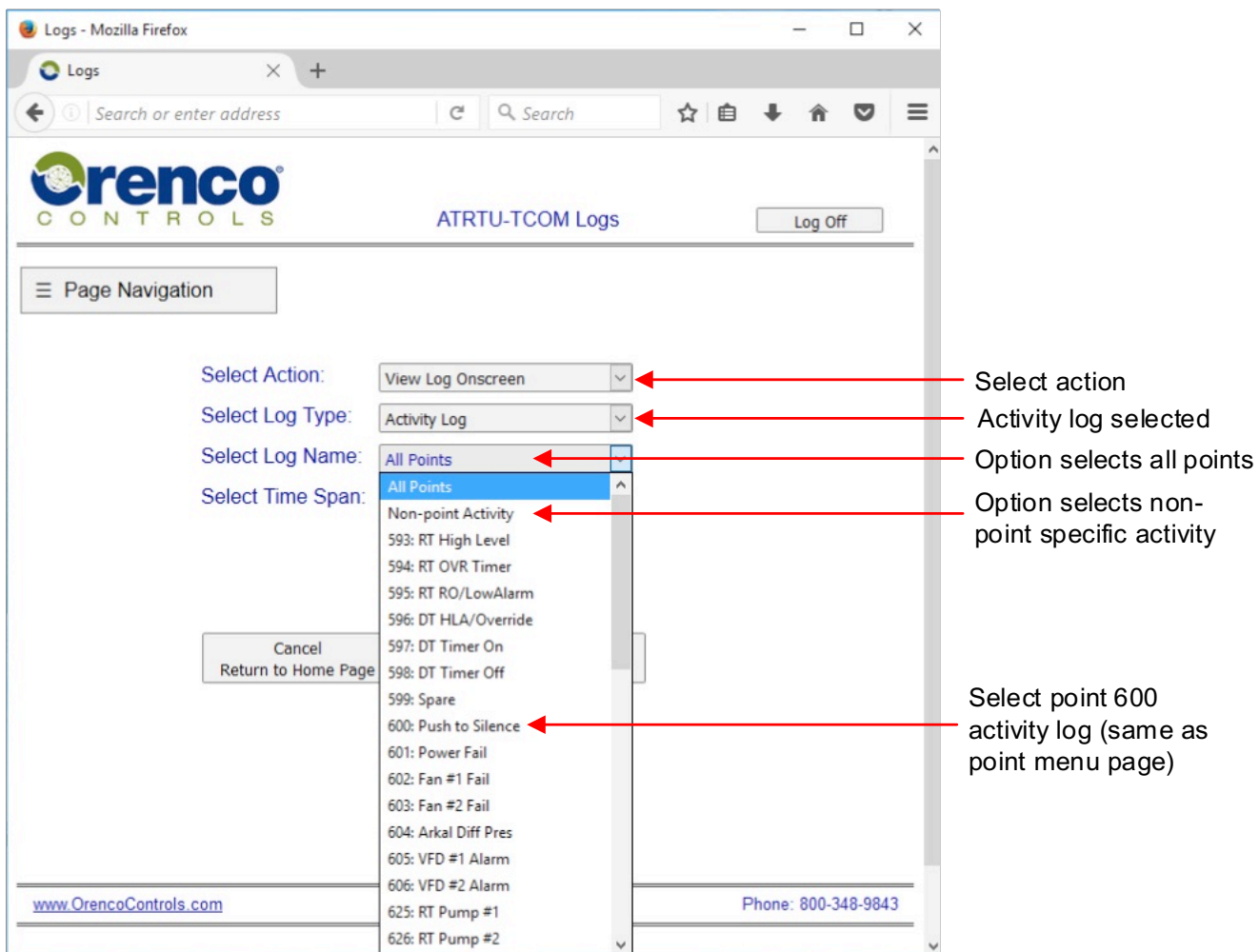


Figure 20: Selecting an Activity Log

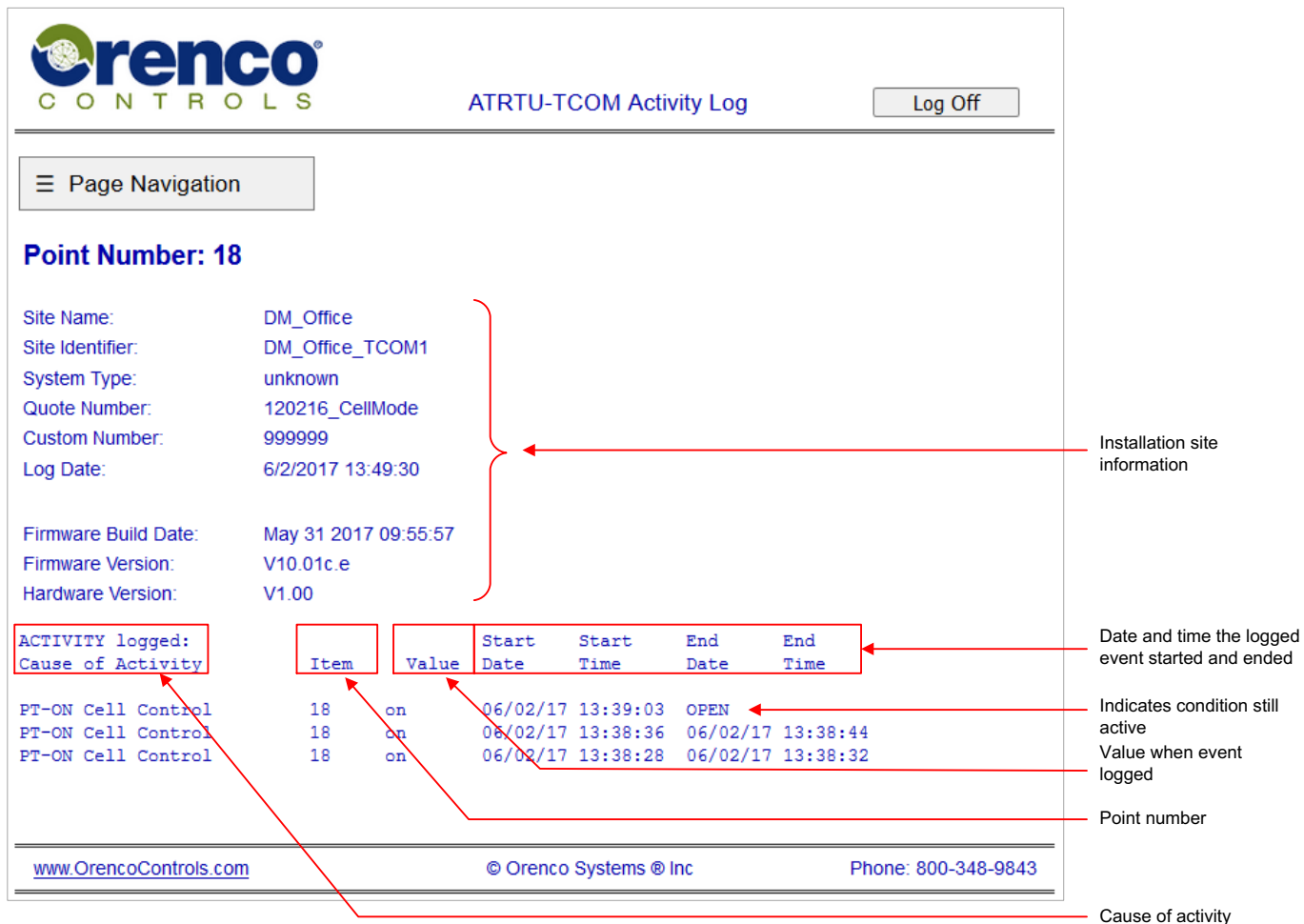


Figure 21: Example Activity Log

2.12 Web Server Graphic View

The web server graphics view is an optional upgrade feature that may or may not be available at a particular installation. Graphics View is customizable, tailored to each installation site, and typically specific to each installation. Because of this the following descriptions and images are likely to vary from installation to installation.

This section is intended to provide a conceptual overview of the common graphics system capabilities and operation and should be viewed as a reference rather than an exact depiction of the system the user is interacting with.

2.12.1 Overview of Web Server Graphics Configuration

Depending on the system configuration, there may be zero or multiple web pages associated with Graphics View. Each web page is generated from a base template. There are multiple base templates and multiple web pages can be created from each base template.

The base templates have a predefined number of objects placed on them that can be enabled or hidden when the graphics system is being designed. The objects represent text fields and graphic images and are associated with resources in the control system. In this context, resources refer to “points”, digital inputs, digital outputs, analog inputs, and analog outputs.

When the Graphics View subsystem is configured for an installation, designers choose the configuration of each page by:

- 1) Selecting a base template.
- 2) Selecting which objects on the template are enabled or hidden.
- 3) If applicable, selecting which graphical images are associated with the object.
- 4) Selecting the resource to associate with the object.
- 5) Repeat steps 1-4 until the desired number of pages/views are created or the maximum number of pages is reached.

Note: The maximum number of pages is limited by available memory, the total number of bytes consumed by each page, and an internal limit currently set at 20.

2.12.2 Selecting a Web Server Graphic View

The “Page Navigation” menu is automatically populated with a “Graphic View” dropdown menu on systems with graphics view installed. Systems that do not display the “Graphic View” dropdown menu do not support graphic view.

Each selection on the graphic view dropdown menu is a link to an individual web page. To select a specific graphic view, open the “Page Navigation” menu, select “Graphic View”, then select the desired graphic view web page.

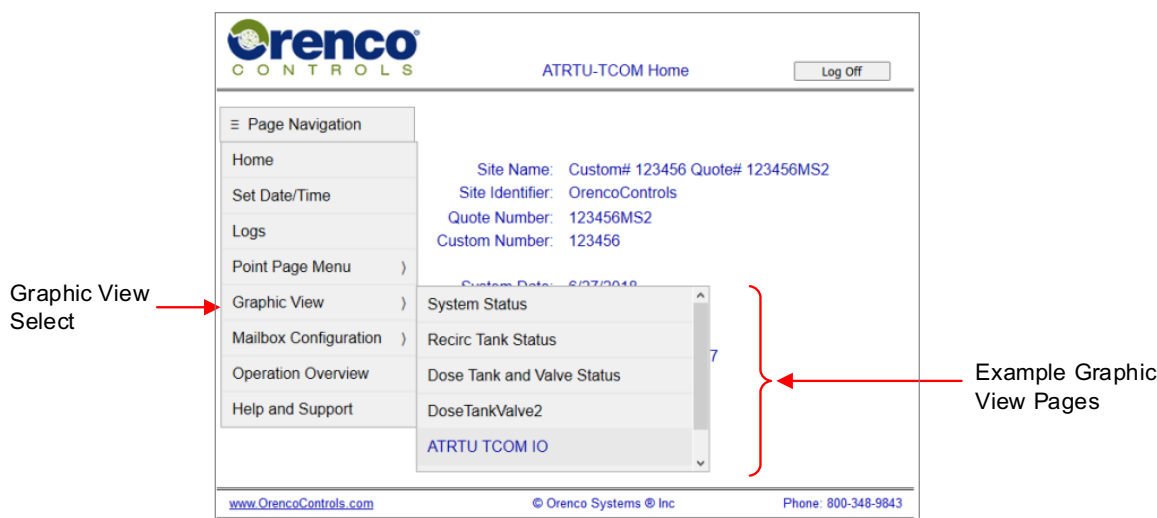


Figure 22: Selecting a Web Server Graphic View

2.12.3 Features Common to Web Server Graphic Views

Features common to each Graphic View include:

- There can be multiple instances of each base template.
- Each base template can be configured to display information about a different set of resources.
- Unused objects can be hidden to avoid screen clutter.
- Resource labels are configurable.
- Graphic images representing on/off or other states of resources are configurable.
- Displayed values and graphic images are updated periodically to show the current state of the resource and enhance visual monitoring of the real time system state.
- The override state of each resource is also displayed and updated at each refresh cycle.
- Dashed outlines indicate the resource cannot be overridden.
- Solid outlines indicate overrides can be applied.
- The color of the outline indicates the current override state.
- Each graphic view web page includes a color key and set of notes describing the outline and color mapping of the override states.
- To view more information or to apply an override the user can click on the target resource. If the resource is overridable a dialog box is then displayed providing a user interface to show the current state and available override options.
- If a user is working in a situation where the outline color is difficult to see, such as using a small cell phone in bright sunlight, the user can click on the object to open the override dialog box which provides additional information in text form. The dialog box can be closed without applying an override and, if an attempt to apply an override is made, the user is required to confirm the selection.
- The override dialog box is a popup window and requires popups to be enabled on the host browser.
- The override dialog box supports overrides for point, digital outputs, and analog outputs.

See section 2.10 "Point Override Page" on page 25 for more information on applying overrides.

Note:

The point override page is a stand alone web page while the override dialog box is popup dialog box. However, the features and operation are basically the same.


2.12.4 Web Server Graphic View IO Template

Each ATRTU-TCOM controller hosts a set of digital inputs, digital outputs, analog inputs, and analog outputs. The IO template includes up to 12 digital inputs, 18 digital outputs, 10 analog inputs, and 2 analog outputs.

Unused resources can be hidden at design time to reduce screen clutter. The graphic images associated with the on/off state of each resource are configurable at design time. The labels assigned to each resource are also configurable (example: RT Pump 1).

Graphics indicating on/off state are configurable. In this example green is on and grey is off.

Describes current override state of each resource


ATRTU-TCOM TCOM IO
Log Off

Page Navigation

Digital Inputs		Digital Outputs		Analog Inputs		Analog Outputs	
DI1		RT Pump 1		AI1	9.00	DP1 SP	25.00
DI2		RT Pump 2		AI2	9.00	DP2 SP	25.00
DI3		RT Pump 3		AI3	9.00		
DI4		RT Pump 4		AI4	9.00		
DI5		RT Pump 5		AI5	0.00		
DI6		RT Pump 6		AI6	0.00		
DI7		Alarm Lt		AI7	0.00		
DI8		Audible		AI8	0.00		
DI9		DP1		AI9	0.00		
DI10		DP2		AI10	0		
DI11		Fan 1					
DI12		Fan 2					
		Digital Out 12					
		Digital Out 13					
		Digital Out 14					
		Digital Out 15					
		Digital Out 16					
		Digital Out 17					

Override State Color Key:

- Automatic
- Permanent
- Timed
- Override Not Enabled

Note:

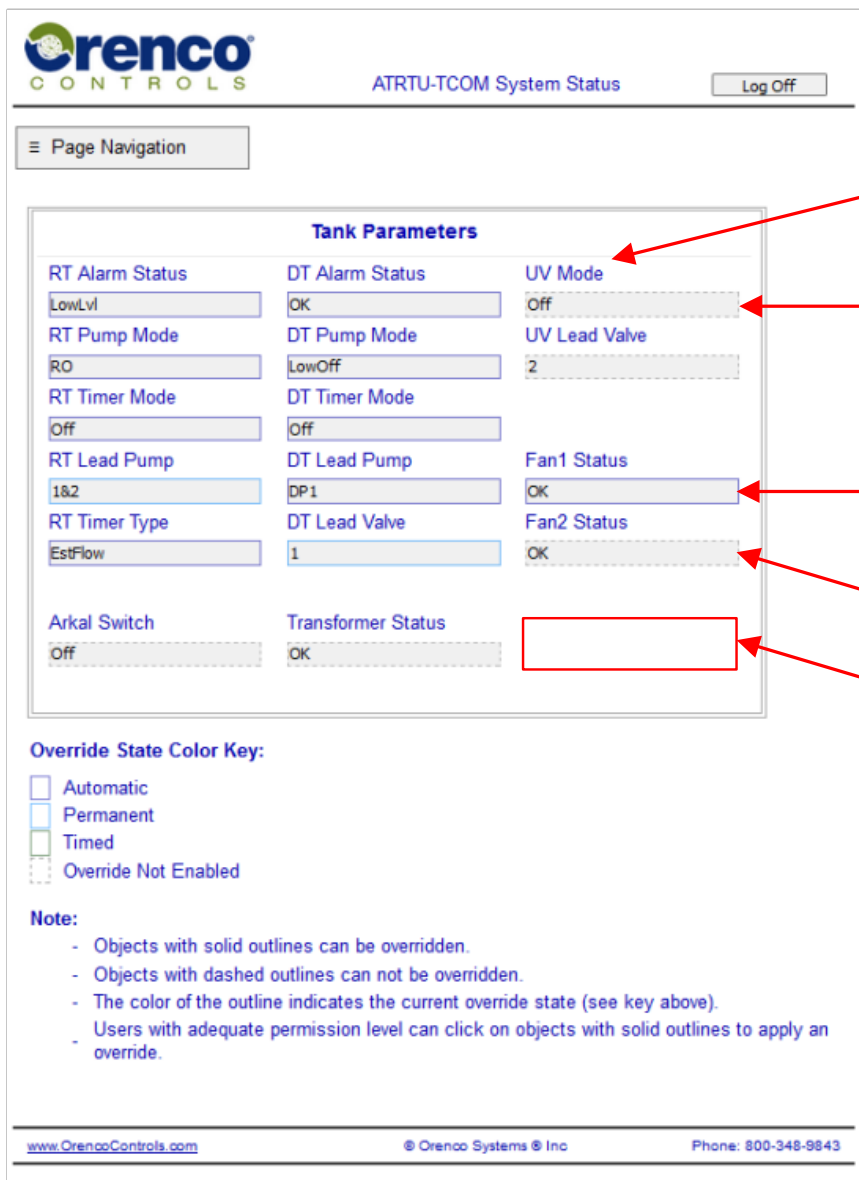
- Objects with solid outlines can be overridden.
- Objects with dashed outlines can not be overridden.
- The color of the outline indicates the current override state (see key above).
- Users with adequate permission level can click on objects with solid outlines to apply an override.

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Phone: 800-348-9843

Figure 23: Web Server Graphic View IO Template

2.12.5 Web Server Graphic View Parameter Template

The parameter template is typically used to represent text values. As with all templates, the parameter values are updated periodically and the parameters and labels are selected at design time. Depending on the control program design, parameters may or may not be overridable. Overridable parameters can be clicked on to pop up a dialog box showing more detail about the parameter and providing a user interface to support applying or removing an override.



Tank Parameters

RT Alarm Status LowLvl	DT Alarm Status OK	UV Mode Off
RT Pump Mode RO	DT Pump Mode LowOff	UV Lead Valve 2
RT Timer Mode Off	DT Timer Mode Off	
RT Lead Pump 1&2	DT Lead Pump DP1	Fan1 Status OK
RT Timer Type EstFlow	DT Lead Valve 1	Fan2 Status OK
Arkal Switch Off	Transformer Status OK	

Override State Color Key:

- ☐ Automatic
- ☐ Permanent
- ☐ Timed
- ☐ Override Not Enabled

Note:

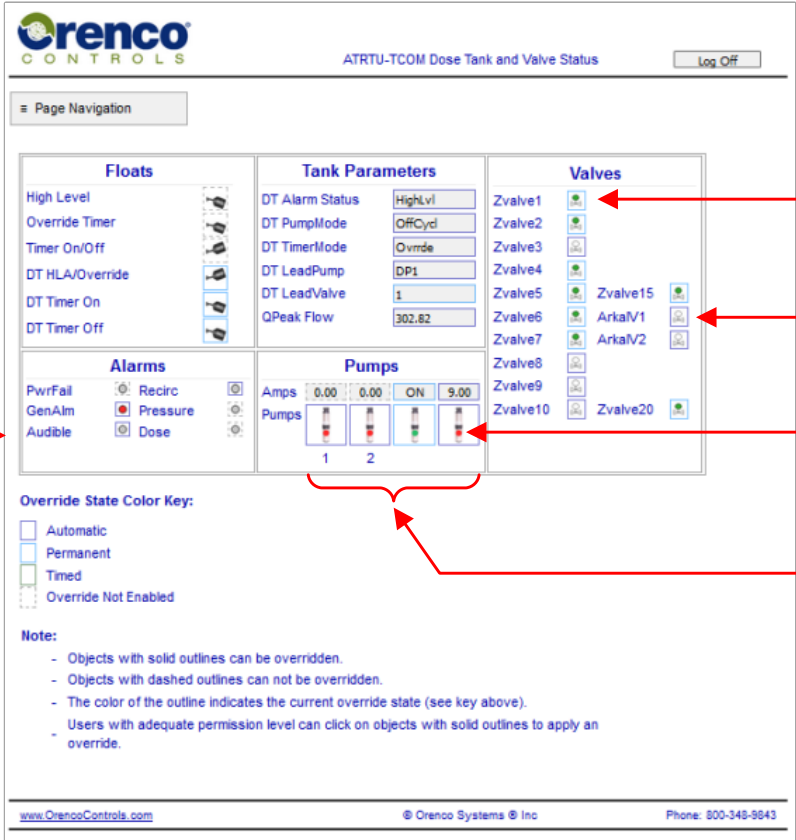
- Objects with solid outlines can be overridden.
- Objects with dashed outlines can not be overridden.
- The color of the outline indicates the current override state (see key above).
- Users with adequate permission level can click on objects with solid outlines to apply an override.

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Figure 24: Web Server Graphic View Parameter Template

2.12.6 Web Server Graphic View Tank with Valves

The tank with valves template shows a combination of resources in graphical and text format including floats, pumps, parameters, alarms, and valves. As with all templates, the values are updated periodically and the resources and labels are selected at design time. Depending on the design the resources may or may not be overridable. Overridable resources can be clicked on to pop up a dialog box showing more detail about the resource and providing a user interface to support applying or removing an override.



The screenshot displays the 'ATRTU-TCOM Dose Tank and Valve Status' web interface. The interface is divided into several sections: 'Floats', 'Tank Parameters', 'Valves', 'Alarms', and 'Pumps'. Annotations with red arrows point to specific features:

- Float up/down graphics track float state:** Points to the 'High Level' float indicator in the 'Floats' section.
- Alarms/Status source and graphics configurable:** Points to the 'DT HLA/Override' and 'DT Timer On/Off' options in the 'Floats' section.
- Custom label configured by design:** Points to the 'DT LeadValve' label in the 'Tank Parameters' section.
- Overridable parameter in permanent mode:** Points to the 'HighLvl' parameter in the 'Tank Parameters' section.
- Green/Gray color indicates valve on/off state:** Points to the 'Zvalve1' through 'Zvalve20' indicators in the 'Valves' section.
- Red/Green color indicates pump on/off state:** Points to the 'Pumps' section, specifically the '1' and '2' indicators.
- Labels can be visible or hidden:** Points to the 'Override State Color Key' section, which includes options for 'Automatic', 'Permanent', 'Timed', and 'Override Not Enabled'.

Override State Color Key:

- ☐ Automatic
- ☐ Permanent
- ☐ Timed
- ☐ Override Not Enabled

Note:

- Objects with solid outlines can be overridden.
- Objects with dashed outlines can not be overridden.
- The color of the outline indicates the current override state (see key above).
- Users with adequate permission level can click on objects with solid outlines to apply an override.

Figure 25: Web Server Graphic View Tank with Valves

2.12.7 Web Server Graphic View Tank Without Valves

The tank without valves template shows a combination of resources in graphical and text format including floats, pumps, parameters, alarms, and valves. As with all templates, the values are updated periodically and the resources and labels are selected at design time. Depending on the design the resources may or may not be overridable. Overridable resources can be clicked on to pop up a dialog box showing more detail about the resource and providing a user interface to support applying or removing an override.

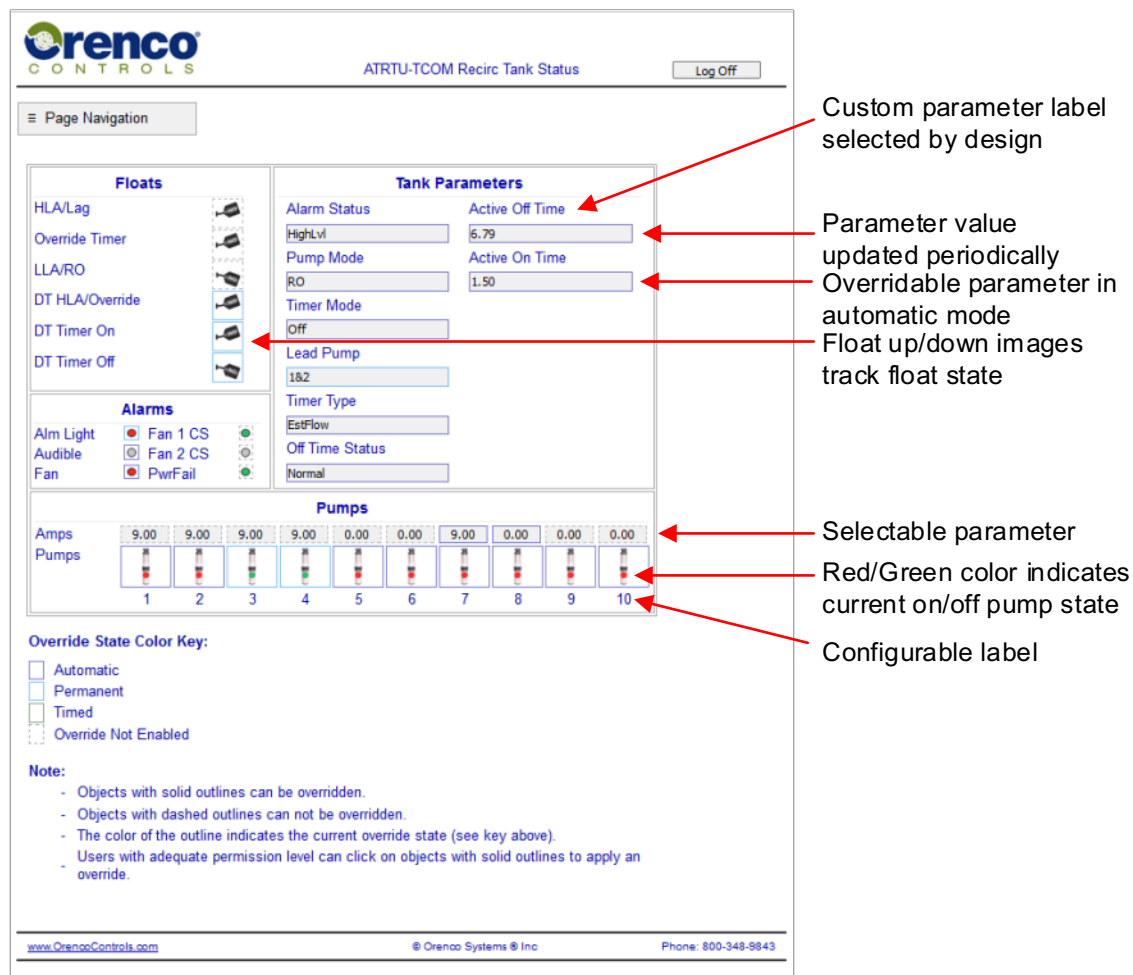


Figure 26: Web Server Graphic View Tank Without Valves

2.13 Mailbox Page

The ATRTU-TCOM system supports event notification to a variety of external systems referred to as “mailboxes”. As described in section 1.4.7 “Event Notification Using Mailboxes” on page 15, multiple interacting subsystems are required for successful event notification using mailboxes. The web server supports assigning message and destination information for mailboxes that have been defined by the control program. Currently, the web server does not support adding, removing, or changing the type of mailboxes.

To configure a mailbox the user must enter information that is valid for the destination device and mailbox type.

For a pager, phone, or modem the user must enter the pager or phone number to call. No message information is required and no message will be left. The notification is via caller ID. The phone number must be entered as it would be from the site location. This includes an area code or any other prefix numbers that are required by the phone system the panel is connected to. Five commas must be appended to the end of the phone number.

For example: “1800554444,,,,,”.

For an email, the user must enter the destination email address and a message. In some configurations, it may be possible to send an email to a wireless cellular network and have it converted into an SMS text message.

For a direct cellular SMS text, the user must enter the phone number and a limited message.

Note: The mailbox type depicted below is for an optional cellular module that is not installed in all systems.



The screenshot shows the "ATRTU-TCOM Mailbox Configuration" page. At the top left is the "Orenco CONTROLS" logo. To its right is the page title "ATRTU-TCOM Mailbox Configuration" and a "Log Off" button. Below the header is a "Page Navigation" menu. The main content area includes:

- Mailbox Number:** 16 (Annotated: System dependent mailbox number.)
- Mailbox Type:** Cellular SMS (Annotated: Indicates the type of this mailbox as defined by the control program.)
- Enter Phone Number:** Example: 1-800-555-5555 or 1800555555 (Annotated: Prompts and format depend on the mailbox type.)
- Phone Number Field:** Contains "1800555555" (Annotated: Target device address (phone number, IP address, etc) (150 char max))
- Enter Message:** Notice: ATRTU-TCOM system X may require operator attention (Annotated: Message that will be sent if the mailbox type supports sending messages. (60 char max))
- Note:** 1) To disable this mailbox enter two commas in the target field and click Save.
- Buttons:** "Cancel Return to Home Page" (Annotated: Click to cancel without changing mailbox settings.) and "Save Changes" (Annotated: Click to save mailbox settings.)

The footer contains the website "www.OrencoControls.com", copyright "© Orenco Systems © Inc", and phone number "Phone: 800-348-9843".

Figure 27: Example Mailbox Page for SMS Text Messaging

2.14 System Overview Page

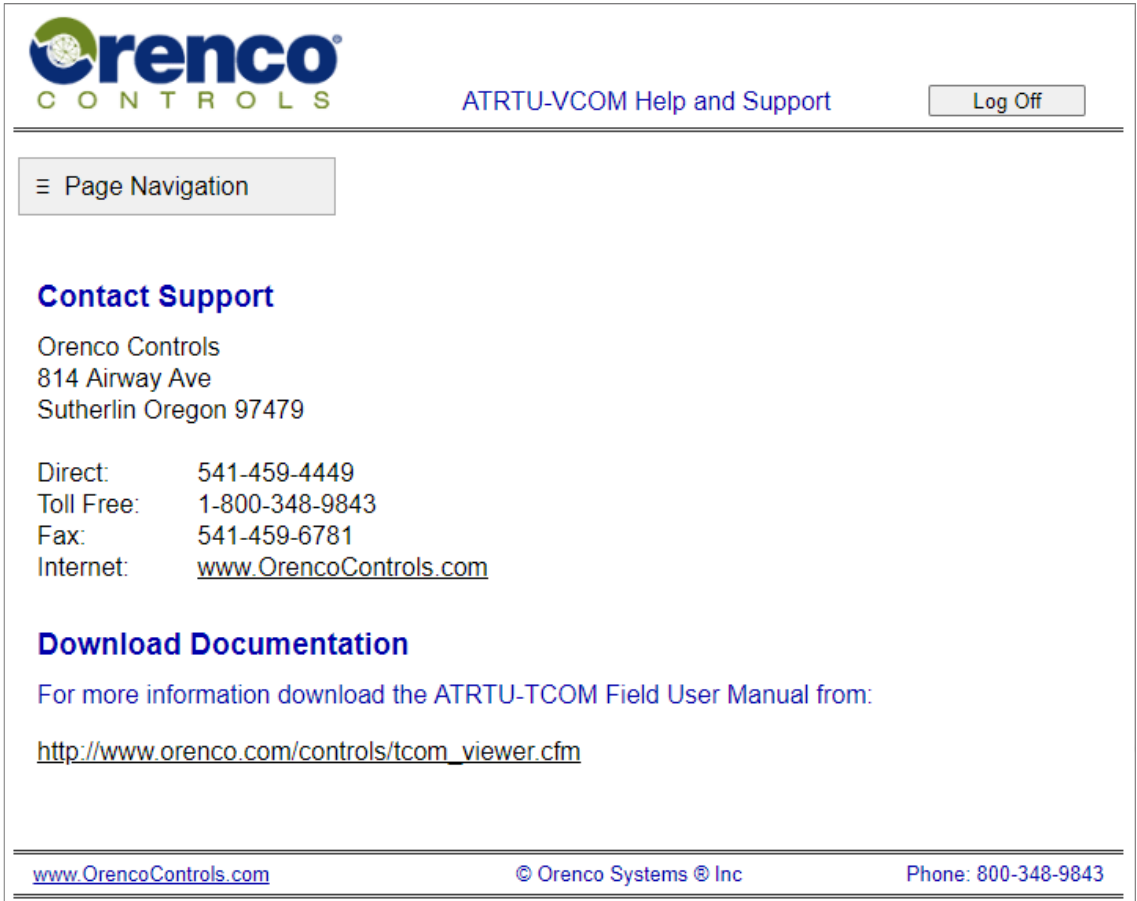
The web site includes a system overview support page that provides an overview of the system.



Figure 28: System Overview Page

2.15 Support Page

The web site includes a simple support page that provides contact information for Orenco Controls and a link to this document.



The screenshot shows the 'ATRUTU-TCOM Help and Support' page. At the top left is the Orenco Controls logo. To its right is the page title 'ATRUTU-TCOM Help and Support' and a 'Log Off' button. Below the header is a 'Page Navigation' menu. The main content area is divided into two sections: 'Contact Support' and 'Download Documentation'. The 'Contact Support' section lists the company's address (814 Airway Ave, Sutherlin Oregon 97479) and contact details (Direct: 541-459-4449, Toll Free: 1-800-348-9843, Fax: 541-459-6781, Internet: www.OrencoControls.com). The 'Download Documentation' section provides a link to the ATRTU-TCOM Field User Manual from http://www.orenco.com/controls/tcom_viewer.cfm. At the bottom, there is a footer with the website URL, copyright information, and a phone number. Two red annotations with arrows point to the contact information and the download link.

Orenco Controls
contact information

Link to additional
documentation

Contact Support
Orenco Controls
814 Airway Ave
Sutherlin Oregon 97479

Direct: 541-459-4449
Toll Free: 1-800-348-9843
Fax: 541-459-6781
Internet: www.OrencoControls.com

Download Documentation
For more information download the ATRTU-TCOM Field User Manual from:
http://www.orenco.com/controls/tcom_viewer.cfm

www.OrencoControls.com © Orenco Systems © Inc Phone: 800-348-9843

Figure 29: Help and Support Page

3 TCOM Viewer Software

The TCOM Viewer software is an application provided by Orenco Controls that can be installed on a computer and used to monitor, program, configure, and interact with ATRTU-TCOM systems that are installed and controlling the target systems. To connect to a system using TCOM Viewer, the user may need to be physically present at the installation site or may be at a geographically remote location from the installation site.

TCOM Viewer is a Microsoft Windows© based application compatible with Windows© 7 and newer.

The TCOM Viewer software features include:

- The built in “Terminal Mode” which offers a series of menus that provide prompts to the user and allow the user select from the options. Terminal Mode is similar to previous generations of Orenco Control systems.
- As a standard offering, TCOM Viewer also offers improvement in the ability to view, plot, and export historical log data.
- Methods to configure the various communication interfaces between the user’s computer (client) and the ATRTU-TCOM system.
- Methods to view system status and modify settings.
- As an optional add-on purchase for each site, TCOM Viewer AT can be enhanced to support graphical views and defined plots.

3.1 Computer System Requirements

TCOM Viewer is designed to run on computers running Windows© 7/8/10.

Depending on the computer and the method of communication used to connect to the panel, additional accessories for the computer may be required. Contact Orenco Controls if assistance is required. See section 6 “Support Information” on page 100 for contact information.

3.2 TCOM Viewer Communication Interfaces

Users can connect to the ATRTU-TCOM system using either a network connection or a direct point to point connection. Network connections allow the user to be virtually any distance from the ATRTU-TCOM system. Local connections require the user to be within close physical proximity to the system.

Remote interaction requires either a modem connection, a network connection, or a cellular connection between the client computer running the TCOM Viewer software and the target ATRTU-TCOM system.

Physical connection options include:

Network:

- 1) Built in 10/100 base-T hardwired Ethernet Interface (IPV4).
- 2) Optional Cellular Modem interface.
- 3) Optional Modem.

Local:

- 1) Built in USB 2.0 High Speed compatible client interface.
- 2) Optional Bluetooth Port.

A functioning network requires at least one of the above network interfaces to be installed and connected. It also requires that the subsystem be enabled and correctly configured. Correct configuration requires compatible settings on the host network side and on the ATRTU-TCOM system side. For more information contact your local network administrator, Orenco Controls support, or refer 3.7.3 “Configuring Network (WAN/LAN) and Optional Cellular Connections” on page 60.

3.3 Overview of TCOM Viewer Installation and Operation Sequence

This section provides an overview of the basic sequence of steps required to install and operate the TCOM Viewer application. More detailed information is included in following sections of this document.

At a high level, the steps required to install and operate the TCOM Viewer application include:

- 1) Download and install TCOM Viewer.
- 2) Determine what physical interfaces (network, USB, etc.) the specific site supports.
- 3) Decide which interface to connect to and configure TCOM Viewer to use the desired interface.
- 4) Add a site to TCOM Viewer. Refer to section 3.5.1 Adding Sites to TCOM Viewer on page 50.
- 5) Optionally install a configuration file to enhance the capabilities of TCOM Viewer for a better user experience.
- 6) Connect to a site.
- 7) Once connected, the system is ready for the user to interact with.

3.4 Installing TCOM Viewer

The following sections describe how to install the TCOM Viewer software which can be downloaded from the Orenco Controls website. A USB flash storage device typically provided with this user manual also includes the TCOM Viewer software.

3.4.1 Install TCOM Viewer from USB Flash Storage Device

To install the TCOM Viewer software from a USB flash storage device:

- 1) Insert the USB flash storage device into a USB client port on the host computer.
- 2) Use the Windows® file explorer to navigate to the USB flash storage device.
- 3) Double click on the TCOM View <xxx>.exe file to begin the installation process. Note that the <xxx> refers to the version number of the TCOM Viewer installation program which changes as new releases are created.
- 4) Follow the onscreen prompts.

3.4.2 Download TCOM Viewer from Website and Install

Prior to installing TCOM Viewer AT, it is recommended that any Windows® service packs or security updates from Microsoft® are installed. The user is also advised to close any open applications prior to initiating the installation process.

Internet access is required during the TCOM Viewer AT install process as required Microsoft libraries will be downloaded and installed if they are not already on the computer. Required USB drivers will be installed if they aren't already.

To decrease the time required to download the installation file it has been compressed using a common "zip" file format. Once downloaded the compressed file must be uncompressed (unzipped). Once decompressed, the TCOM View executable file can be run without further installation.

To download and install TCOM Viewer the user should:

- 1) Optionally review the notes below.

- 2) Ensure that the ATRTU-TCOM system powered is on.
- 3) Ensure that the computer they are working with has an active connection to the internet.
- 4) Navigate to the following link: http://www.orenco.com/controls/tcom_viewer.cfm
- 5) Locate the "TCOM View Software Download" link on the web page and click on it to download the file.
- 6) Note the location in the local computers file system where the file is being downloaded to (see Notes 1, 2, and 3 below). Depending on your browser and operating system version, a link to the file may show on on the browser's page.
- 7) Find the compressed zip file and, at the user's discretion, copy the file into another directory of their choice (see Note 3, 4, 5). The specific folder the file is copied to doesn't really matter. What important is that the user knows where it is located and can easily find it when needed. Example location: "C:\OrencoTools\TCOMViewer"
- 8) Click on the uncompressed TCOM Viewer file to start the installation process.
- 9) Follow the onscreen prompts.

Notes:

- 1) If additional assistance is required, please contact the computer administrator, network administrator, or Orenco Controls.
- 2) Computers can be configured to control what specific users are allowed to do with the computer. Depending on how the user's computer is configured, "Administrator" privilege may be required to install new programs. If the user sees prompts or error messages indicating a need for "Administrator" privilege they may need to contact their computer administrator for assistance.
- 3) Unless otherwise specified, the default download directory will typically be "c:\Users\<username>\Downloads". However, the download directory is configurable and may be a different location depending on how the user's computer is configured and what version of operating system it running.
- 4) The file must first be unzipped (uncompressed). Depending on the users computer configuration, simply double clicking on the compressed file will automatically decompress it. Otherwise the user may need to use "Winzip" which is a software application that can be used to compress (zip) or de-compress (un-zip) files with the "*.zip" file extension

3.4.3 Installing the TCOM Viewer USB Driver

The USB driver for the ATRTU-TCOM controller is automatically installed when TCOM Viewer is installed on Windows® 7, 8, and 10.

3.5 TCOM Viewer Configuration Files

TCOM Viewer uses configuration files to store information specific to each ATRTU-TCOM controller, the control program in the ATRTU-TCOM system, and some information about the computer the TCOM Viewer application is running on.

Since multiple ATRTU-TCOM controllers may be installed at an individual site, and some support personnel manage multiple sites, the TCOM Viewer software allows the user to set up multiple configurations where each configuration maps to a single instance of an ATRTU-TCOM controller.

The configuration information is stored in two separate files. One file is used to store information specific to the installation site and primarily contains settings required to establish a communication channel with the target ATRTU-TCOM system. This is referred to as a "site" file. The optional second file stores information specific to the control program in the ATRTU-TCOM system. This is referred to as the "config" file.

TCOM Viewer configuration files are typically stored on the computer running the TCOM Viewer application in the following directory: C:\ProgramData\Orenco Systems\Data

3.5.1 Adding Sites to TCOM Viewer

To add site information, click on the “Add Site” tab. The “Add Site Process” dialog box will pop up and prompt the user to choose whether to attempt an automatic setup or a manual setup. Note that the user cannot cancel this dialog box. However, after selecting an option the user does have the option to cancel the add site process. The recommended method to add site files is via the automated process. However, depending on the installation site and the version of ATRTU-TCOM system it is sometimes necessary to add the site using the manual process.

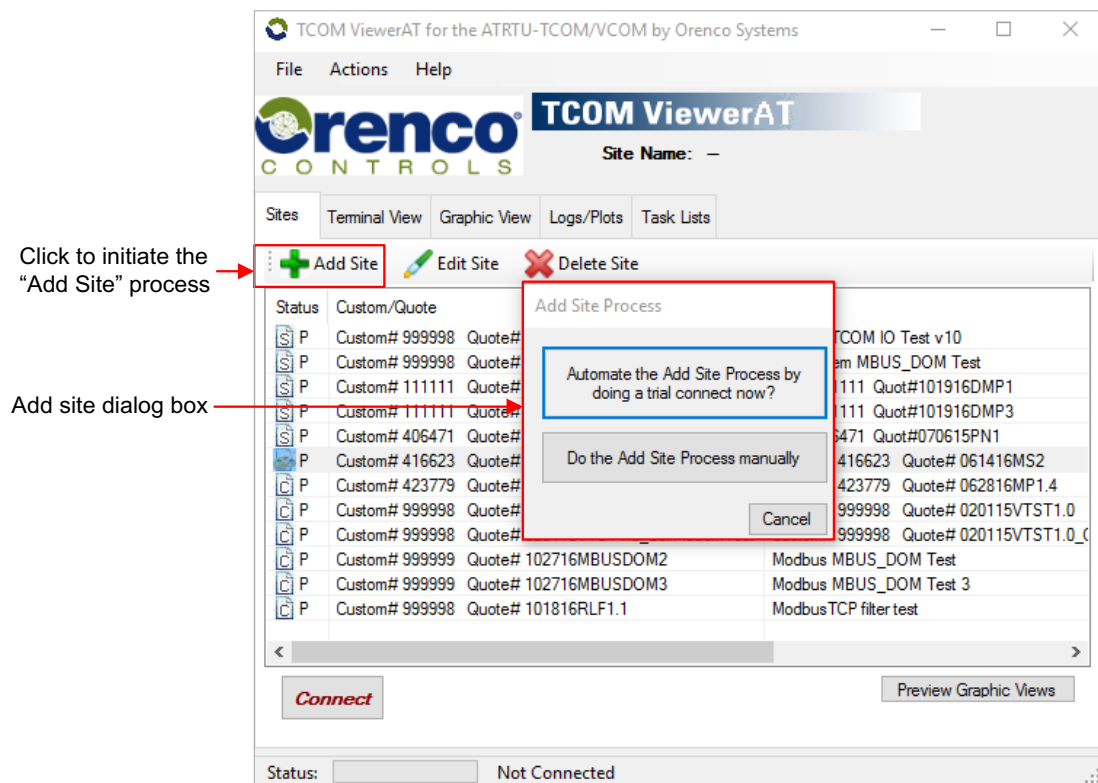
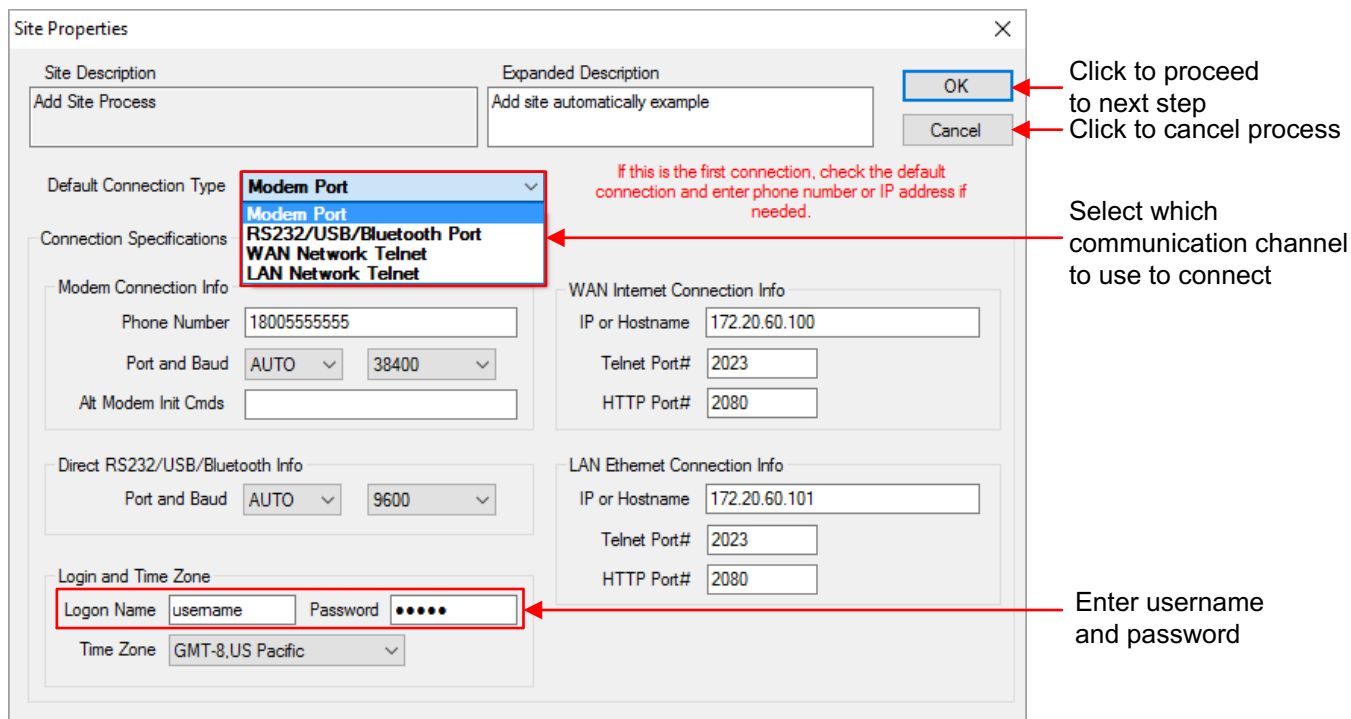


Figure 30: Adding Site Files

3.5.1.1 Adding Sites Using the Automated Method

Using the automated process, TCOM Viewer will attempt to make a trial connection using the communications settings entered by the user. The user will need to know a valid user name and password combination. The user will also need to decide which communication interface to use and settings required for that interface. Depending on the installation site, there may be multiple communication channels available. Only one is required for this process.

See section 3.7 “Configuring TCOM Viewer Connection Parameters” on page 57 for detailed information on how to configure each communication channel. After configuring the communication parameters and entering a username and password click “OK” to proceed to the next step.

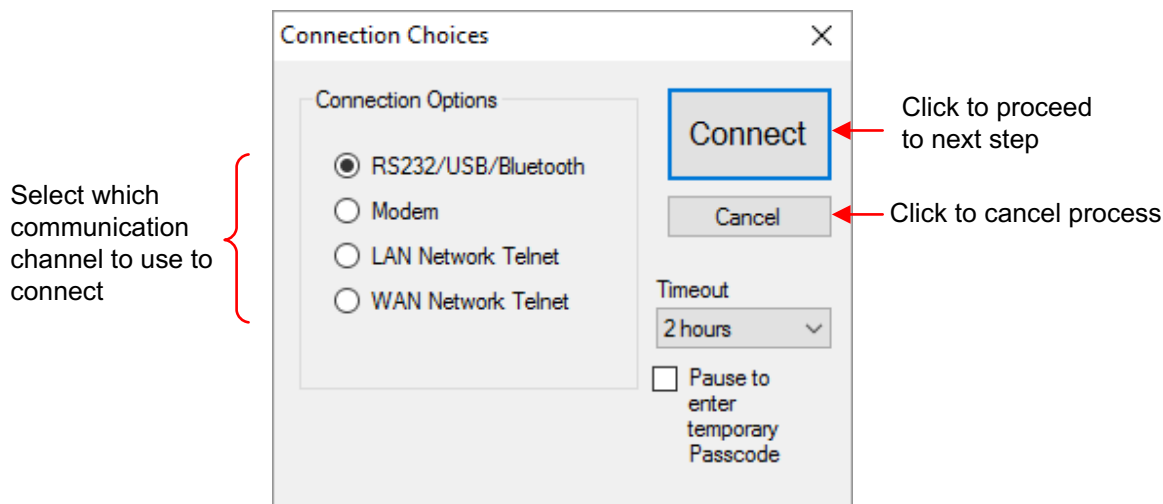


The **Site Properties** dialog box is shown with the following sections and annotations:

- Site Description:** Includes fields for "Add Site Process" and "Expanded Description" (containing "Add site automatically example").
- Buttons:** "OK" and "Cancel" buttons are at the top right. Annotations point to them: "Click to proceed to next step" for OK and "Click to cancel process" for Cancel.
- Default Connection Type:** A dropdown menu is set to "Modem Port". A red box highlights the dropdown list, which includes "Modem Port", "RS232/USB/Bluetooth Port", "WAN Network Telnet", and "LAN Network Telnet". An annotation points to this list: "Select which communication channel to use to connect".
- Connection Specifications:**
 - Modem Connection Info:** Includes fields for "Phone Number" (1800555555), "Port and Baud" (AUTO, 38400), and "Alt Modem Init Cmds".
 - WAN Internet Connection Info:** Includes fields for "IP or Hostname" (172.20.60.100), "Telnet Port#" (2023), and "HTTP Port#" (2080).
 - Direct RS232/USB/Bluetooth Info:** Includes fields for "Port and Baud" (AUTO, 9600).
 - LAN Ethernet Connection Info:** Includes fields for "IP or Hostname" (172.20.60.101), "Telnet Port#" (2023), and "HTTP Port#" (2080).
- Login and Time Zone:**
 - Logon Name:** "username" (highlighted with a red box and annotation: "Enter username and password").
 - Password:** "*****" (highlighted with a red box and annotation: "Enter username and password").
 - Time Zone:** "GMT-8,US Pacific".

A red text note in the center says: "If this is the first connection, check the default connection and enter phone number or IP address if needed."

Figure 31: Adding Site Information Automatically



The **Connection Choices** dialog box is shown with the following sections and annotations:

- Connection Options:** A group box containing four radio buttons:
 - ☒ RS232/USB/Bluetooth
 - ☐ Modem
 - ☐ LAN Network Telnet
 - ☐ WAN Network Telnet
 An annotation points to this group: "Select which communication channel to use to connect".
- Buttons:** "Connect" and "Cancel" buttons are on the right. Annotations point to them: "Click to proceed to next step" for Connect and "Click to cancel process" for Cancel.
- Timeout:** A dropdown menu set to "2 hours".
- Pause to enter temporary Passcode:** An unchecked checkbox.

Figure 32: Initiate Connection

If the trial connection is successful, TCOM Viewer will obtain unique identification from the target ATRTU_TCOM system the user connected to.

To complete the add site process, the user can optionally enter a description of the site for their own reference under the "Site Expanded Description".

If the trial connection was not successful, the process can be cancelled or the site properties screen can be returned to, adjustments can be made, and another attempt at a trial connection can be initiated.

Enter Required New Site Information

To define a new Site, an Orenco Custom# and Quote# must be provided. Use alpha-numeric chars, some chars will be replaced by dashes.

OK
Cancel

Custom# and Quote# are Ok, check and then press the OK Button

Custom#/Quote# info obtained from the Site, if available:

Custom# 999999 Quote# 999999MP1.4

Site Expanded Description (ie Sunrise School):

Edit the Custom# and Quote#

Custom# 999999
ie "123456" (6 digit number)

Quote# 999999MP1.4
ie "012010MP1.0" (alph-numeric)

Preview of the final Custom#/Quote# Description:

Custom# 999999 Quote# 999999MP1.4

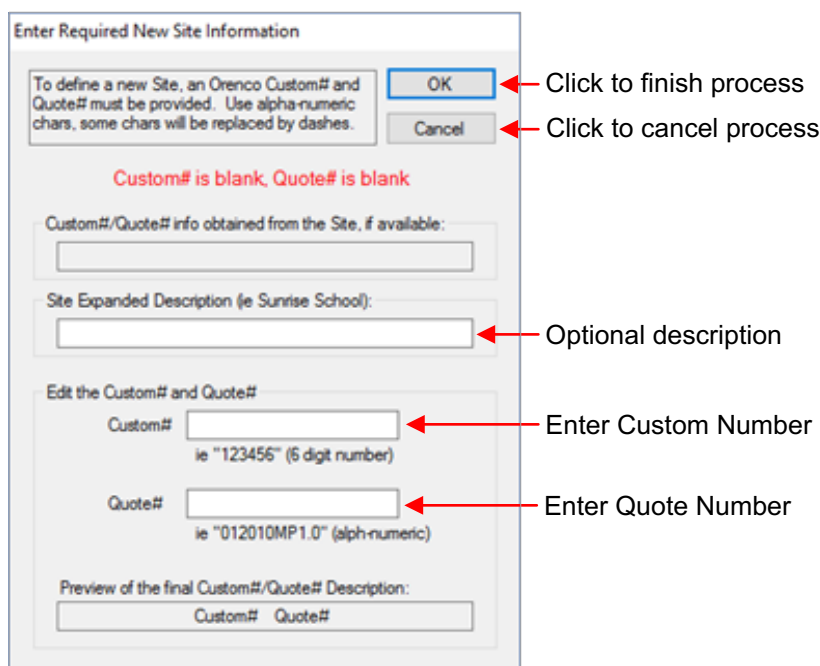
Figure 33: Successful Connection Using Automated Method to get Site Information

3.5.1.2 Adding Sites Using the Manual Method

The manual process is only recommended if the automated process cannot be used. If the manual process is selected the user will be required to enter a Custom# and a Quote# for the site. The user may also enter an optional description of the site for reference under the “Site Expanded Description”

The custom number (Custom#) and and quote number (Quote#) is needed to uniquely identify the site and to create a properly named data folder to hold logs and reports obtained from the site. These numbers are also used to link the site to any Orenco Controls provided configuration files, including those with graphic views.

All custom ATRTU-TCOM systems produced by Orenco Controls should have these numbers included on the wiring diagram and other paperwork sent with the panel. If none of the numbers are known, a “One-Time Connect” process can be used to connect to the panel and look for the numbers in the Terminal view (see top left corner of screen shot depicted in Figure 42: TCOM Viewer Main Screen on page 63).



The screenshot shows a dialog box titled "Enter Required New Site Information". It contains the following elements:

- Instructions:** "To define a new Site, an Orenco Custom# and Quote# must be provided. Use alpha-numeric chars, some chars will be replaced by dashes."
 - OK button:** Annotated with "Click to finish process".
 - Cancel button:** Annotated with "Click to cancel process".
- Status:** "Custom# is blank, Quote# is blank" (in red text).
- Custom#/Quote# info obtained from the Site, if available:** A text input field.
- Site Expanded Description (ie Sunrise School):** A text input field, annotated with "Optional description".
- Edit the Custom# and Quote#**
 - Custom#:** A text input field with the example "ie '123456' (6 digit number)". Annotated with "Enter Custom Number".
 - Quote#:** A text input field with the example "ie '012010MP1.0' (alph-numeric)". Annotated with "Enter Quote Number".
- Preview of the final Custom#/Quote# Description:** A text input field showing "Custom# Quote#".

Figure 34: Manually Adding Installation Site Information

After entering the required and optional information for the “Enter Required New Site Information” screen, click “OK”. The site properties screen will be displayed next. The site properties screen is similar to the one used during the automated add site process and a description of it can be found there (see Figure 32 on page 51). For the manual add site process, once the communication information is entered on the site properties screen, the process will be completed when “OK” is clicked.

3.5.2 Adding Configuration Files to TCOM Viewer

TCOM Viewer supports optional configuration information that can be obtained directly from Orenco Controls and is often stored on a USB flash drive provided to the customer. The configuration file contains site specific information to support enhanced features, such as graphical views, point and log names, and defined plots.

In most cases, it is recommended that the configuration file be imported after the site has been created through the “Add Site” process (see section 3.5.1 “Adding Sites to TCOM Viewer” on page 50).

If the site exists, TCOM Viewer will simply update the site with the new enhancements and no other action is required. If the site definition does not already exist (or does not match), TCOM Viewer will automatically create a new site. The new site will appear on the list of sites. If the site is new, the user must select that site and perform an “Edit Site” process using the tab menu above the site list. The user must define the communications settings for the new site (i.e. phone number, IP address etc.) before the first connection attempt.

To import a configuration file select “File” then “Import Site Config File”, navigate to the location of the file, and select it. TCOM Viewer will move the configuration file into the existing or newly created site folder. Upon completion, the site list graphic column should update to indicate the presence of the configuration file and whether it includes graphic views.

Select “Import Site Config File” from the “File” Menu

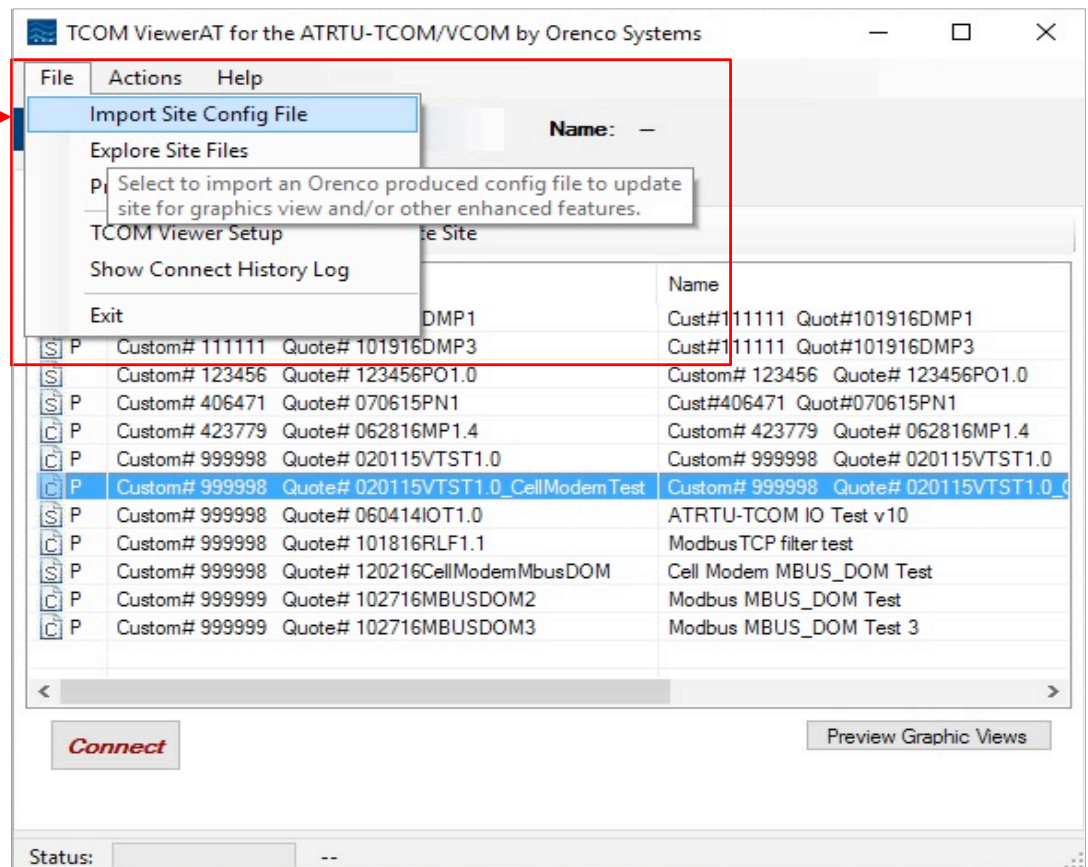


Figure 35: Import TCOM Viewer Configuration File

After a successful automated site add process completes, and a user connects to the new site, the TCOM Viewer software will automatically query the site controller for the presence of a USB flash drive plugged into J3. If a valid "OSD_C..Q..xml" configuration file is found in the root folder of the USB flash drive, the user will be asked permission to retrieve this file, and if permitted, will retrieve the file and place it into the site folder for future connection usage.

3.6 TCOM Viewer Setup

The TCOM Viewer software allows the user to define a set of default values which are then used to pre-populate fields in a variety of dialog boxes in the program. Much of the information entered here will be used as default settings whenever a new site is added.

To open the setup dialog box select “File” and then select “TCOM Viewer Setup”.

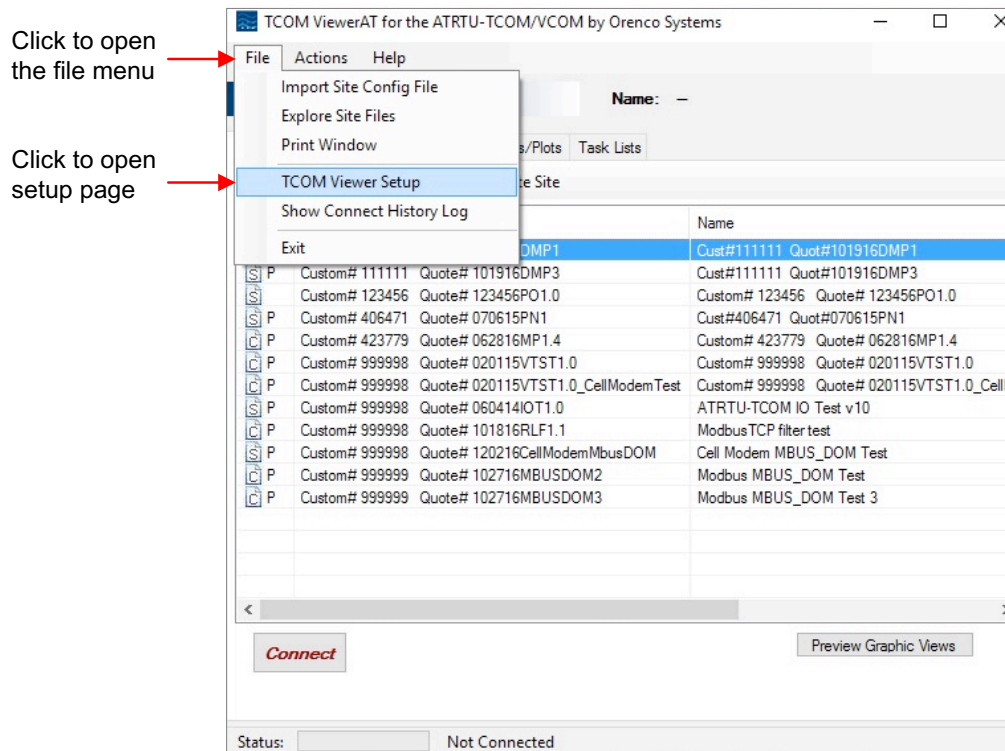


Figure 36: Open TCOM Viewer Setup

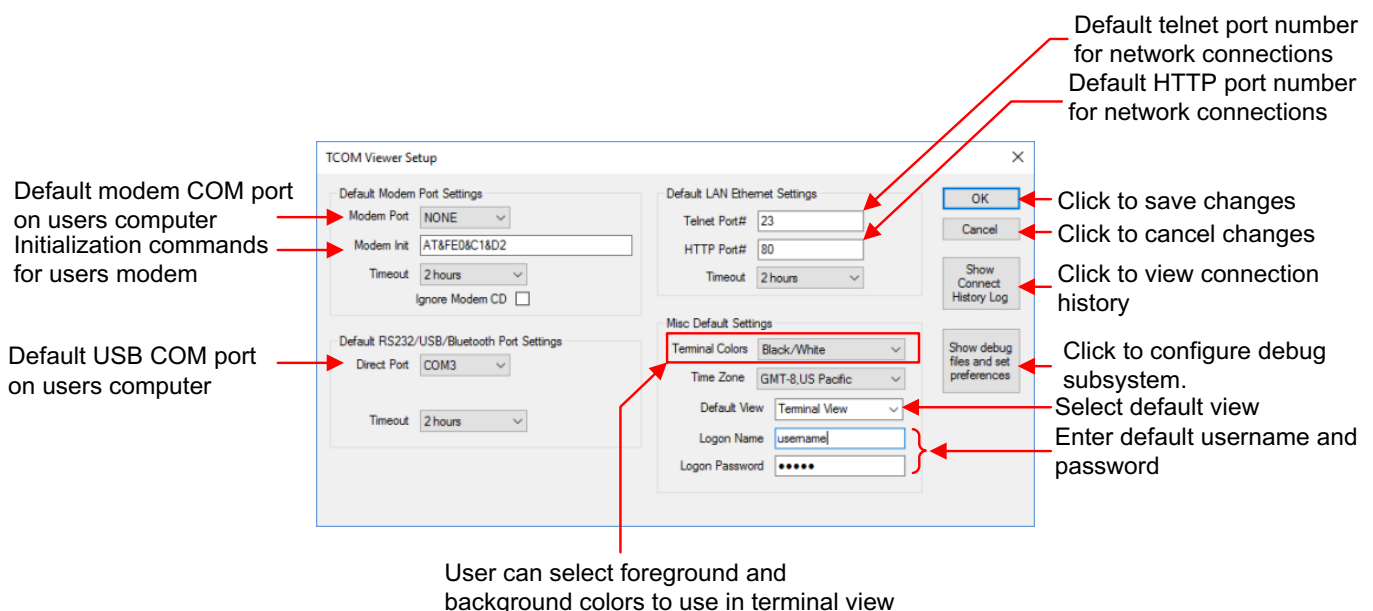


Figure 37: TCOM Viewer Setup

See section 3.7.5 “Determining Modem COM Port Numbers on Windows© 7/8/10” on page 62, and section 3.7.6 “Determining Assigned USB COM Port Numbers on Windows© 7/8/10” on page 62 for more information regarding identifying the correct COM port numbers.

Notes:

Timeout	This setting specifies the amount of dead/inactivity time that will be allowed before the software automatically disconnects from the TCOM Panel.
Modem Init	This setting is used to initialize the Modem device. The standard “AT&FE0&C1&D2” entry is usually sufficient.
Telnet Port	This setting is determined by network administrator of individual sites.
HTTP Port	This setting is determined by network administrator of individual sites.
Terminal Colors	This setting controls the text foreground and background colors used as the initial color scheme for the terminal view for any new connection.
Ignore CD	The “Ignore Carrier Detect” checkbox is a rarely needed option for modem use on some non-standard computer configurations such as in a virtual machine environment. This should not be checked in most cases.
Default View	This setting specifies the view displayed by default once a new connection is established with a panel. The choices are graphic view or terminal view. If a site does not have a configuration file with graphics, it will always start in the terminal view.
Logon Name	Default user name to use when logging in to an ATRTU-TCOM controller.
Logon Password	Default password to use when logging in to an ATRTU-TCOM controller.

Each time a new site is created the default username and password values will initially be presented in the “Site Properties” window where they can be confirmed or changed as needed for each site.

3.7 Configuring TCOM Viewer Connection Parameters

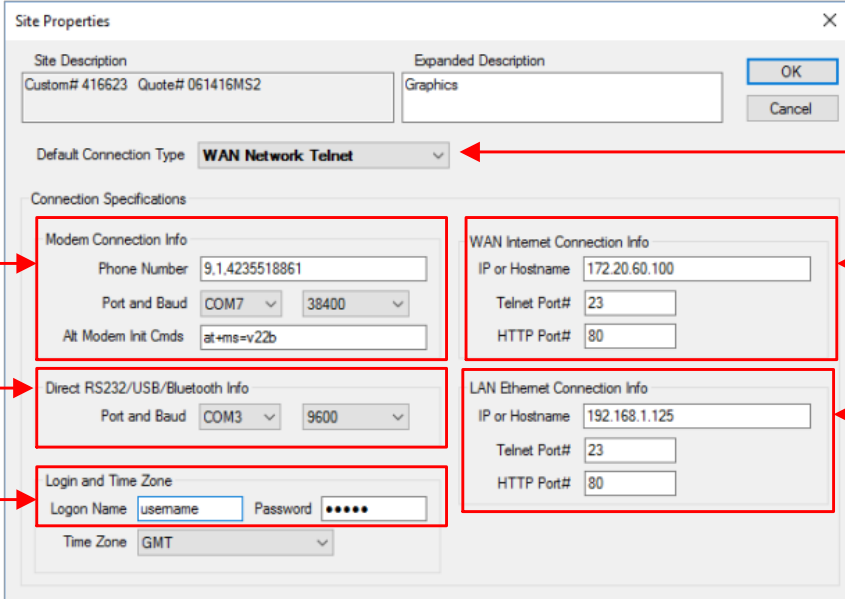
The ATRTU-TCOM system supports a variety of communication channels including optional expansion modules and channels that are included in all systems. This section describes the TCOM Viewer parameters that must be configured to use each communication channel. Installation sites typically do not include all possible communication channels. It is only necessary to configure channels that are actually used.

See section 3.2 “TCOM Viewer Communication Interfaces” on page 47 for more information regarding available communication channels.

See Figure 1: ATRTU-TCOM Control System Electronics on page 7 for connector and module locations.

Note:

- 1) Entering a username and password is required.
- 2) Only parameters for connections that are installed and intended for use need to be configured.
- 3) Regardless of whether the communication channel is built in or an installed optional module, there are additional requirements that must be met to successfully establish communication. See section 3.7 “Configuring TCOM Viewer Connection Parameters” on page 57 for more information.



Modem settings →

USB Port Settings →

Username and password →

Network settings →

Network settings →

Click to save changes →

Click to cancel changes →

Click to choose connection type →

Figure 38: Configuring Connection Parameters

3.7.1 Configuring the Optional Modem Port

The modem port is typically used to connect to an ATRTU-TCOM controller from a remote location.

Basic Requirements:

- An optional modem is installed, has an assigned phone number, and is connected to a telephone network.
- The optional modem must be connected to the ATRTU-TCOM system.
- The computer running TCOM Viewer must be connected to a telephone network with a modem.

The phone number assigned to the ATRTU-TCOM controller must be entered in the “Phone Number” field (see modem settings, Figure 38 on page 57) and should include any prefixes and/or area codes required to call from the user’s location to the controller’s location.

The COM port number is assigned by the Windows® Operating System running on the user’s computer when their modem is connected and/or installed in their computer. The assigned COM port number should be entered in the “Port” portion of the modem settings area in TCOM Viewer or the “Port” field should be set to “DEFAULT” to use the setting that was defined in the TCOM Viewer setup.

For additional information on how to identify the COM port number on the users computer, see section 3.7.5 ” Determining Modem COM Port Numbers on Windows® 7/8/10” on page 62.

The baud rate default of 38400 may need to be reduced if the phone connection is unstable. If adjustments are needed for the modem for a specific site, additional modem commands can be entered in the “Alt Modem Init Cmds” area.

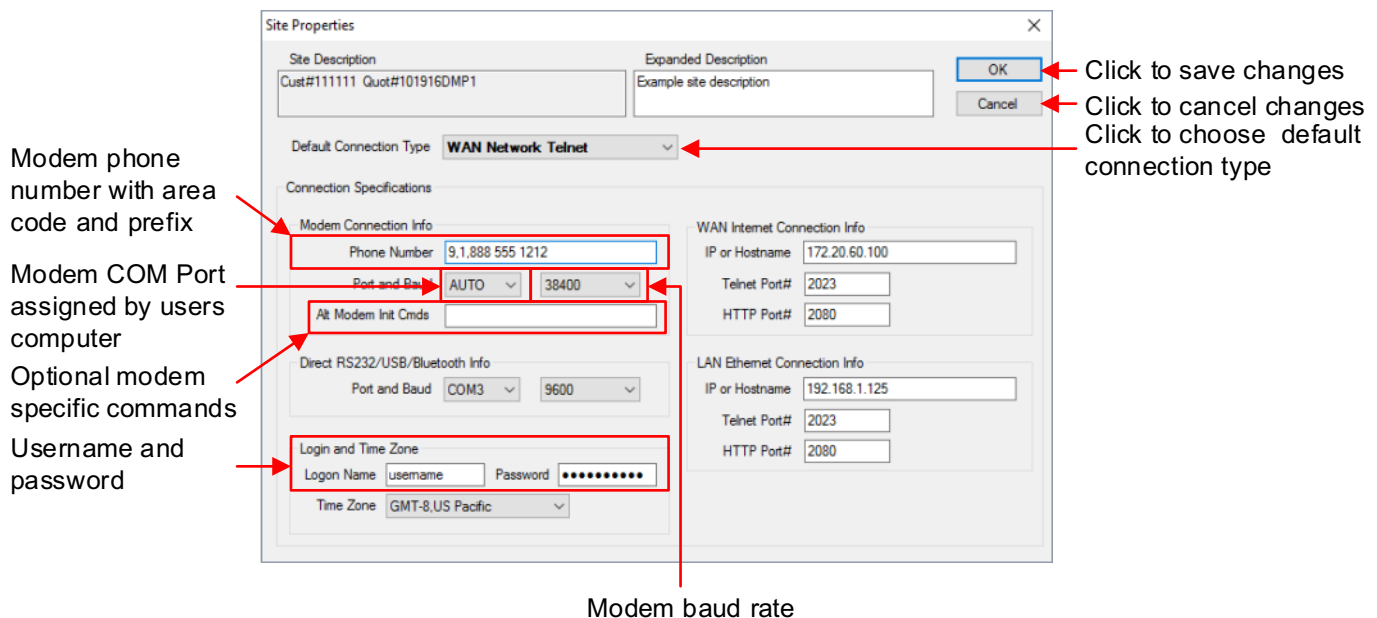


Figure 39: Modem Connection Parameters

3.7.2 Configuring a Direct Connection Using the USB Port

The user must be physically located near the ATRTU-TCOM installation site to connect using the USB port.

Basic Requirements:

- The TCOM Viewer USB driver has been installed on the user's computer.
- The target ATRTU-TCOM controller power is on.
- A USB cable has been connected from the user's computer to the client USB port (see Figure 1 on page 7).
- The user has identified the COM port number assigned to the USB channel (see section 3.7.6 "Determining Assigned USB COM Port Numbers on Windows© 7/8/10" on page 62).

The COM port number assigned to the USB channel connecting the user's computer and the ATRTU-TCOM controller must be entered in to the USB Port Settings field (see Figure 38 on page 57). The COM port field can also be set to "AUTO" to use the setting defined in the TCOM Viewer setup.

As of this date, all ATRTU-TCOM controllers are configured to use the default baud rate of 9600.

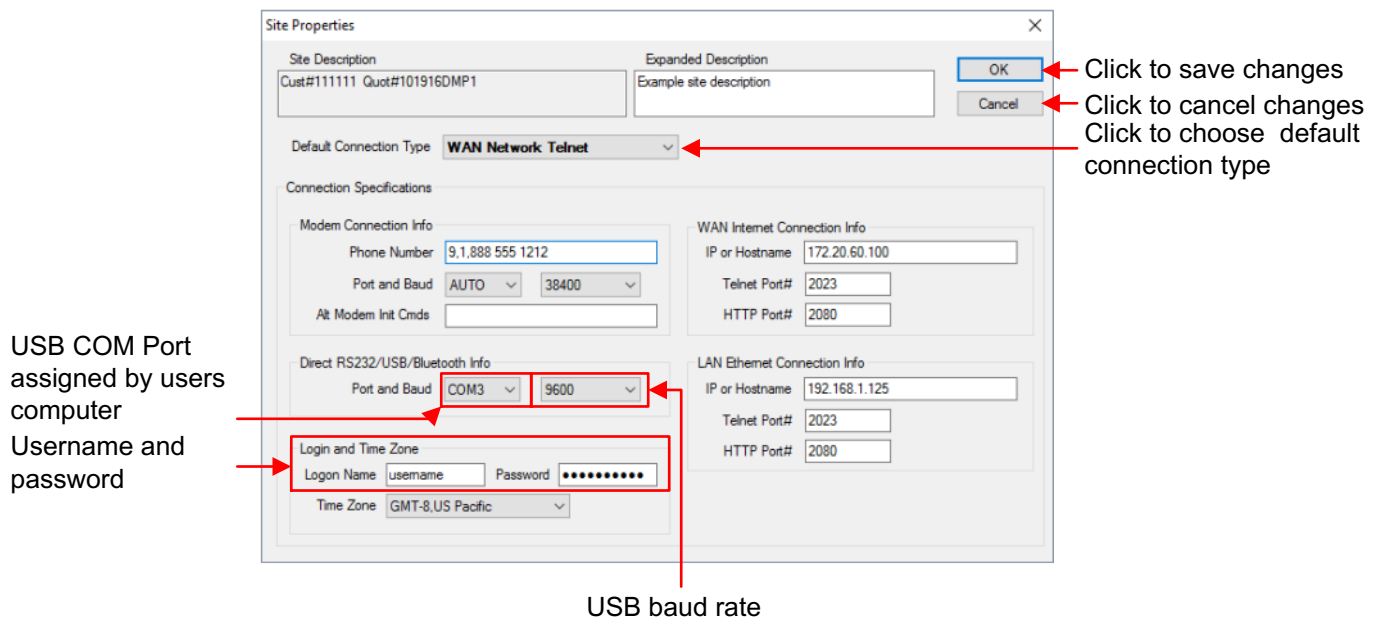


Figure 40: USB Connection Parameters

3.7.3 Configuring Network (WAN/LAN) and Optional Cellular Connections

The user may be co-located or physically remote from the ATRTU-TCOM installation site when using network connections. The network connection can be hardwired using a network cable plugged in to the RJ45 Ethernet connector on the ATRTU-TCOM controller or via an optional wireless cellular module (see Figure 1 on page 7).

The ATRTU-TCOM controller includes one built in Ethernet port which can be assigned a single IP address. This port can be connected to either a "Local Area Network (LAN)" or a "Wide Area Network (WAN)". Typically, corporations have internal networks (LAN) that are isolated from the public internet (WAN). Routers connecting an internal LAN to a public network such as the internet typically remap the internal IP address to a publicly visible IP address.

In addition to the IP address each ATRTU-TCOM controller may be assigned a telnet port number and an HTTP port number. The telnet port is used by the TCOM Viewer software to communicate with the controller. The HTTP port is used to connect a web client to the internal web server. The network administrator determines the IP address, the telnet port number, and the HTTP port number.

If the ATRTU-TCOM system is connected to a local network, any routers connecting the local network to a public network must be configured to enable port forwarding for the telnet and HTTP ports. For more information on configuring ATRTU-TCOM controllers for remote access over the internet, see Orenco Controls document number EIN-CP-TCOM-19.

Support personnel may need to connect to a ATRTU-TCOM controller from the internal LAN while at their office or possibly from a public network if not at their office. If the optional cellular module is installed and connected to a cellular service provider it will be assigned an IP address which will be different than the IP address assigned to the internal Ethernet port. Each device connected to a network must have an assigned IP address.

Therefore, each ATRTU-TCOM controller may be assigned:

- IP address field left blank.
- One IP address which may map to the internal Ethernet port or to an installed cellular module.
- Two IP addresses where one maps to the internal Ethernet port and the other maps to an installed cellular module.

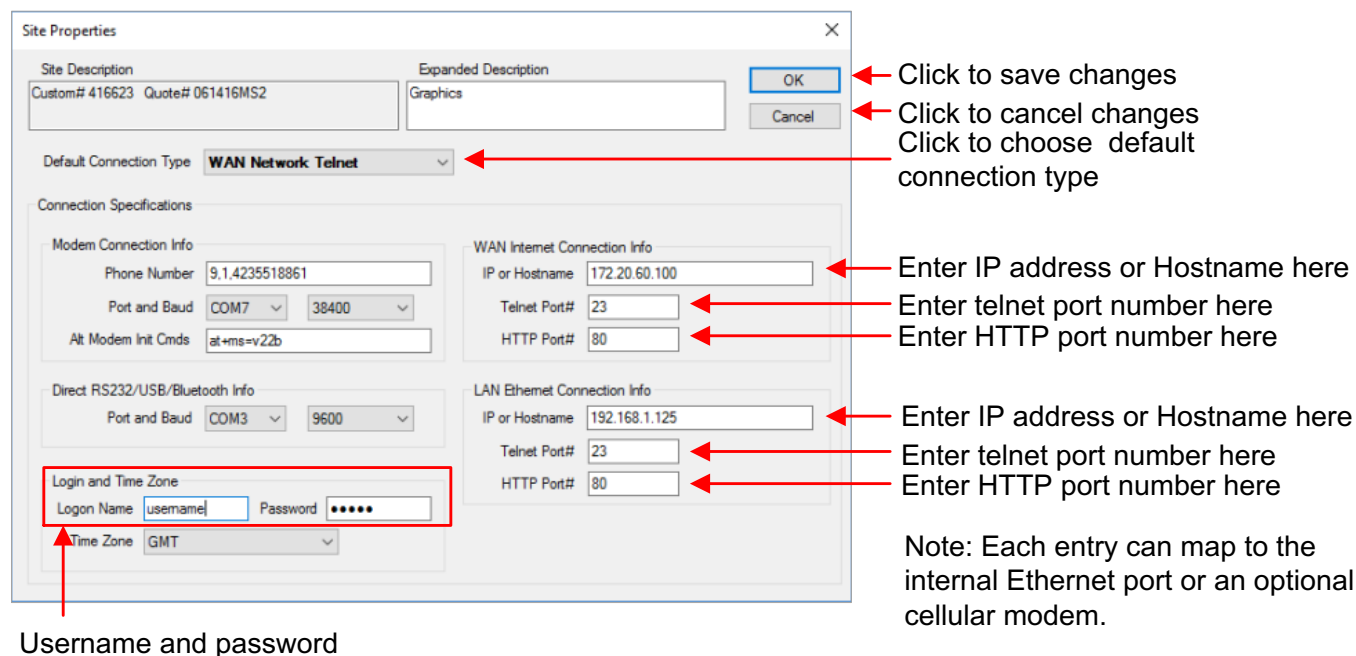
The TCOM Viewer application allows the user to configure a total of two sets of IP address, telnet ports, and HTTP port mappings for each ATRTU-TCOM controller. One configuration is labeled the WAN connection and the other is labeled the LAN connection. Either the WAN or LAN configuration can be used to connect to the internal 10/100 Base-T network or the optional cellular module. The telnet port number and HTTP port number of the selected configuration match the settings in the ATRTU-TCOM controller.

Basic Requirements to Use the Internal Ethernet Port:

- An IPV4 IP address must be assigned to the controller.
- To connect with TCOM Viewer a telnet port number must be assigned to the controller.
- To connect to the web server an HTTP port number must be assigned to the controller.
- The Ethernet port must be connected to a local network.
- The local network may or may not be connected to a public network such as the internet.
- The user must be connected to a network.
- There must be a functioning connection from the network that the user is connected to and the network that the ATRTU-TCOM controller is connected to. Depending on the network topology, this may require a VPN connection and/or specific access permissions configured by the network administrator of the network the ATRTU-TCOM controller is connected to.
- Use of the network subsystem must be enabled within the ATRTU-TCOM controller.
- The user must know the IP address, telnet port number, and HTTP port number of the target controller.

Basic Requirements to Use the Cellular Module

- An IPV4 IP address must be assigned to the module. The IP address is determined by the cellular provider, associated with the phone number of the cellular module, and provided to the cellular module when it connects to the cellular network.
- The cellular module must be within range of a compatible cellular tower.
- The cellular module must be enabled and connected to the cellular network.
- To connect with TCOM Viewer a telnet port number must be assigned to the controller.
- To connect to the web server an HTTP port number must be assigned to the controller.
- The user must know the IP address of the cellular module and the telnet port number and HTTP port number assigned to the ATRTU-TCOM controller.



The screenshot shows the 'Site Properties' dialog box with the following sections and annotations:

- Site Description:** Custom# 416623, Quote# 061416MS2
- Expanded Description:** Graphics
- Default Connection Type:** WAN Network Telnet (Annotation: Click to choose default connection type)
- Connection Specifications:**
 - Modem Connection Info:** Phone Number: 914235518861, Port and Baud: COM7, 38400, Alt Modem Init Cmds: at+ms=v22b
 - WAN Internet Connection Info:** IP or Hostname: 172.20.60.100 (Annotation: Enter IP address or Hostname here), Telnet Port#: 23 (Annotation: Enter telnet port number here), HTTP Port#: 80 (Annotation: Enter HTTP port number here)
 - Direct RS232/USB/Bluetooth Info:** Port and Baud: COM3, 9600
 - LAN Ethernet Connection Info:** IP or Hostname: 192.168.1.125 (Annotation: Enter IP address or Hostname here), Telnet Port#: 23 (Annotation: Enter telnet port number here), HTTP Port#: 80 (Annotation: Enter HTTP port number here)
 - Login and Time Zone:** Logon Name: username (Annotation: Username and password), Password: ***** (Annotation: Username and password), Time Zone: GMT
- Buttons:** OK (Annotation: Click to save changes), Cancel (Annotation: Click to cancel changes)

Note: Each entry can map to the internal Ethernet port or an optional cellular modem.

Figure 41: Network Connection Parameters

3.7.4 Determining IP Addresses, Telnet Port Numbers, and HTTP Port Numbers

There are several approaches to determining the IP address, telnet port number, and HTTP port numbers assigned to the internal Ethernet port and, if installed, the optional cellular modem. Note that the internal Ethernet port and the optional cellular modem will have different IP addresses. The same telnet port number and HTTP port numbers are used for both the internal Ethernet and optional cellular modem interface.

The required information is:

- 1) The IP address assigned to the internal Ethernet port.
- 2) The IP address assigned to optional cellular modem if installed.
- 3) The telnet port number to use.
- 4) The HTTP port number to use.

The recommended sequence is:

- 1) Contact the network administrator for the installation site and ask them for the required information.
- 2) Connect to the target ATRTU-TCOM system using a non-network interface such as a modem or USB connection and use TCOM Viewer and the "Terminal Mode".
- 3) Contact Orenco Controls for Support. Note that Orenco Controls does not control the network configuration but may be able to help the customer determine how the system is configured.

3.7.5 Determining Modem COM Port Numbers on Windows® 7/8/10

When a computer running the Microsoft Windows® operating system detects that a modem has been connected to the computer, Windows® automatically assigns a COM (communication) port number to the modem.

To find the COM port number for your modem, follow the instructions in section 3.7.6 "Determining Assigned USB COM Port Numbers on Windows® 7/8/10" on page 62 and, instead of looking for the "Orenco USB serial Port" instead look for the manufacturer's name and/or model number associated with the modem installed or connected to the user's computer.

3.7.6 Determining Assigned USB COM Port Numbers on Windows® 7/8/10

When a computer running the Microsoft Windows® operating system detects that a USB cable has been connected to an ATRTU-TCOM controller it automatically assigns a COM (communication) port number to the ATRTU_TCOM controller.

The user needs to know the assigned COM port number to successfully establish a connection between TCOM Viewer and the ATRTU-TCOM controller. Refer to the instructions below to find the COM port number.

All Systems

- 1) Ensure power is applied to the ATRTU-TCOM controller.
- 2) Connect a USB cable to the ATRTU-TCOM controller's client USB port (see Figure 1 on page 7).
- 3) Connect the other end of the USB cable to the user's computer.

Windows® 7

- 1) Click on the start menu and right click on "Computer" and select "Properties" from the pop up menu.
- 2) Click on "Device Manager" at the top left of the window.
- 3) Click on the reveal triangle button next to "Ports (COM & LPT)". The COM port should be listed next to "Orenco USB Serial Port".

Windows® 8/8.1/10

- 1) Right click on the Start button and select "Device Manager".
- 2) Click on the reveal triangle button next to "Ports (COM & LPT)". The COM port should be listed next to "Orenco USB Serial Port".

3.8 Operating TCOM Viewer

This section focuses on interactions with TCOM Viewer and assumes all necessary system configuration has been completed.

A typical interaction involves:

- 1) Establishing a connection to the target ATRTU-TCOM controller.
- 2) Interacting with the TCOM Viewer user interface as desired to view or modify system state and settings.

The main screen is presented to the user when TCOM Viewer starts. Major components of the main screen include the main menu bar, the tab menu bar, a list of sites, options to add, edit, and delete site information, buttons to initiate a connection, and connection status. The list of sites displayed will vary from user to user and is determined by which site configurations the user has added to their system. The user can change the site list sort order by clicking on the column headers of the site list.

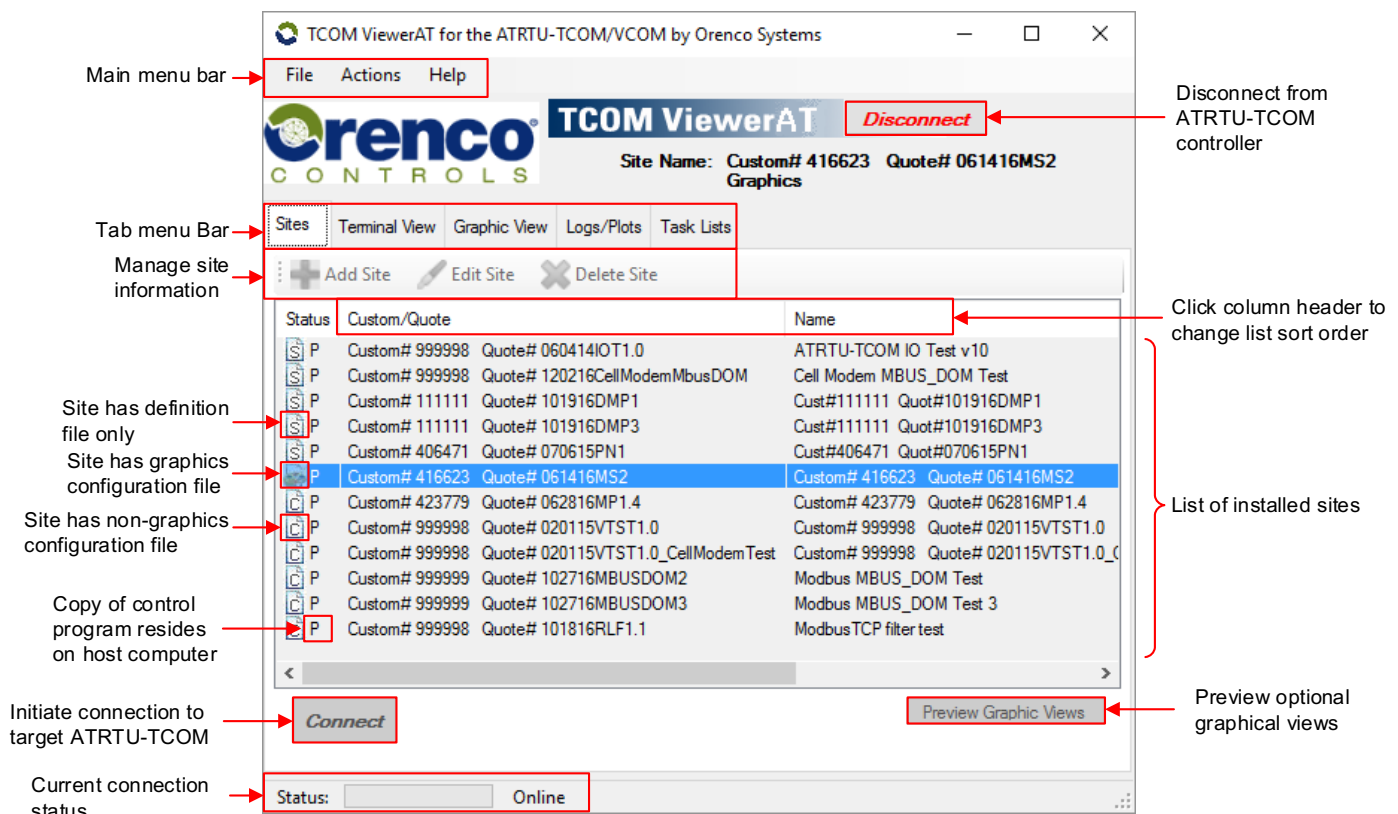





Figure 42: TCOM Viewer Main Screen

Site List Status Icons:

-  This symbol indicates there is a site definition file, but the site does not have a configuration file and does not have a graphics configuration file.
-  This symbol indicates there is a site definition file and a configuration file, which gives the user the names of log files and points.
-  This symbol indicates there is a site definition file and a graphics configuration file which gives the user the names of log files and points plus graphics screens built to show the status of the system.
- P** Indicates a copy of the control program resides on the computer that TCOM Viewer is running on. Note: this is not required and typically used by Orenco for internal use.

3.8.1 Logging On to an ATRTU-TCOM System

To establish a connection to an ATRTU-TCOM system the user must:

- 1) Select the target installation site from the TCOM Viewer main window.
- 2) Click the "Connect" button.
- 3) Select the communication channel to use for the connection.

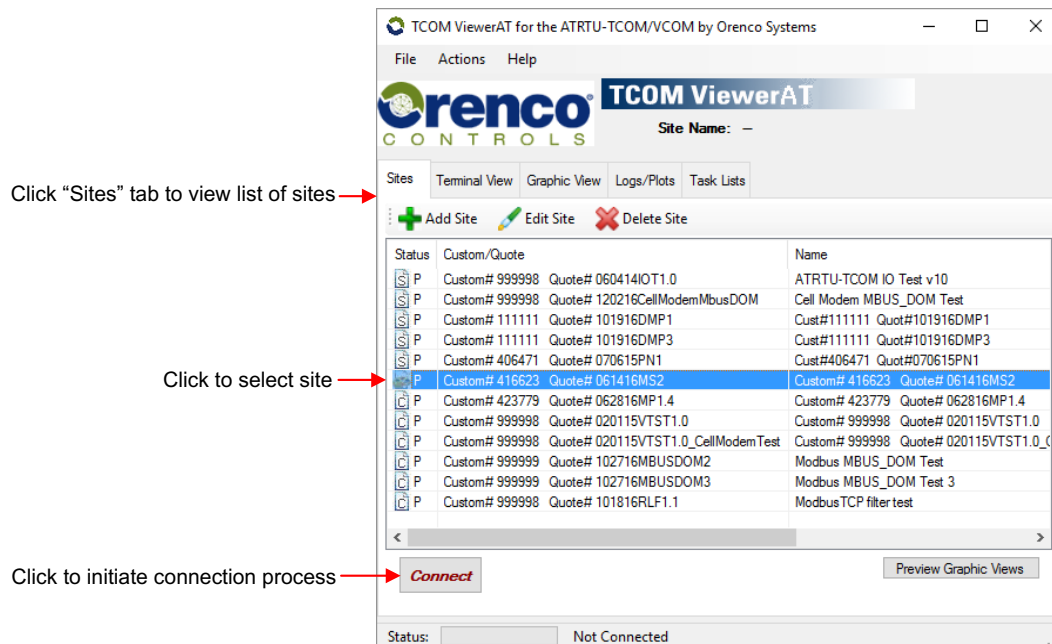


Figure 43: Initiating a Connection Between TCOM Viewer and an ATRTU_TCOM Controller

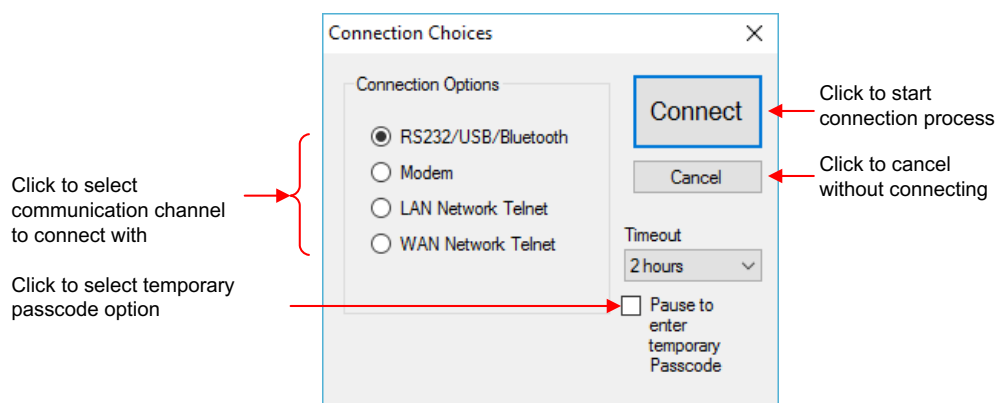


Figure 44: Start Connection Process

The "Connection Choices" dialog box also provides an option to "Pause to enter temporary Passcode during logon". If a valid user name and password is not available or has not been entered into the site configuration settings, connection attempts will fail. To gain temporary access contact Orenco Controls to acquire a temporary pass code.

Enabling this option during a logon attempt will cause the software to pause after connecting to the remote site and show a window that contains a current passkey which is a string of numbers and letters. Using this current passkey, an Orenco Engineer can compute a corresponding passcode which is also a string of number and letters. The user then enters the passcode value into the logon window. This allows the software to complete the authorization phase of the logon and grant the user access to the site. Consult Orenco if the passcode sequence is required.

3.8.2 Connection Status

When TCOM Viewer is attempting to establish a connection to a target ATRTU-TCOM system, the status of the connection process is displayed at the bottom of the Main window along with a sliding bar to indicate that the software is working on the last command.

Typically, the connection status sequence is:

Connecting/Authorizing/Dialing	Indicator depends on the communications method chosen.
Logon 1, 2, 3, 4, 5	Indicates logon states as the connection is established and the proper authorization is submitted.
Online	Indicates the connection has been successfully established.
Disconnecting	After clicking the "Disconnect" button, or the system times out due to inactivity, the status indicator returns to the "Not Connected" state.

If an error occurs, an error code will be displayed and the status indicator will return to the "Not Connected" state.

Once a successful connection has been made, TCOM Viewer will automatically display either the "Graphic View" or the "Terminal View". A preference for the starting view can be set in the TCOM Viewer Setup. If a site does not have a configuration file with graphics it will always start in the terminal view.

When in the "Online" state, operations such as updating real-time data values or retrieving log data will cause the status information to change rapidly. This is normal.

While connected, the user can select any of the tabs for "Terminal View", "Logs/Plots", and "Graphic View" to monitor panel status and download log information.

3.8.3 Logging Off from an ATRTU-TCOM System

To log off, simply click the "Disconnect" button next to the TCOM Viewer logo at the top of the main window (see Figure 42 on page 63). After a few seconds, the status indicator at the bottom of the window will show "Not Connected".

The TCOM Viewer software will automatically log a user off if there is no activity. The user can configure the timeout value using the TCOM Viewer setup window (see section 3.6 "TCOM Viewer Setup" on page 55).

The user must disconnect prior to connecting to any other Site.

3.8.4 Using "One Time Connect" Feature to Establish a Connection

When site specific information is added to TCOM Viewer, it is typically saved for future use. The "One-Time Connect" feature is used for temporary access to a site, requires minimal connection information, and is not saved.

To initiate a "One-Time Connect", click "Actions" from the main menu bar and then click "One-Time Connect" (Actions->One-Time Connect).


The "Site Properties" dialog window will appear. The user only needs to enter parameters for the communication channel used for the connection. See section 3.7 "Configuring TCOM Viewer Connection Parameters" on page 57 for more information.

3.8.5 Terminal View

Terminal mode refers to a menu driven text character based interface that can be accessed from TCOM Viewer by clicking on the "Terminal View" tab. Terminal mode can also be used without TCOM Viewer if the user has a compatible terminal emulation program installed on their computer. See section 4, "Terminal Mode" on page 74 for more information.

3.8.6 Graphic View

The ATRTU-TCOM system includes an optional feature called “Graphic View” that supports graphical display of system status and data plots. The “Graphic View” feature requires one or more graphics configuration files which are provided by Orenco Controls.

A small painters pallet icon () is displayed in the status column of the site list menu for sites that have graphics configuration files (see Figure 42 on page 63). The user can also preview graphical views without being connected.

To enter the graphical view mode the user must first connect to a site that supports graphical views.

Depending on the setting in the TCOM Viewer Setup (see section 3.6 “TCOM Viewer Setup” on page 55) the graphic view may come up by default. If not, and a graphic view is available, the user can enter graphic view by clicking on the “Graphic View” tab. A window will pop up asking permission to switch to “Make Graphics View Active”. Click “Yes” and graphic view will be displayed. The data and animated objects on the graphic view will update their values/appearance approximately every 5 seconds. Standard format views of floats and pumps will change appearance to reflect the current state of those devices.

Graphics views are customized to each installation site and will vary from site to site.

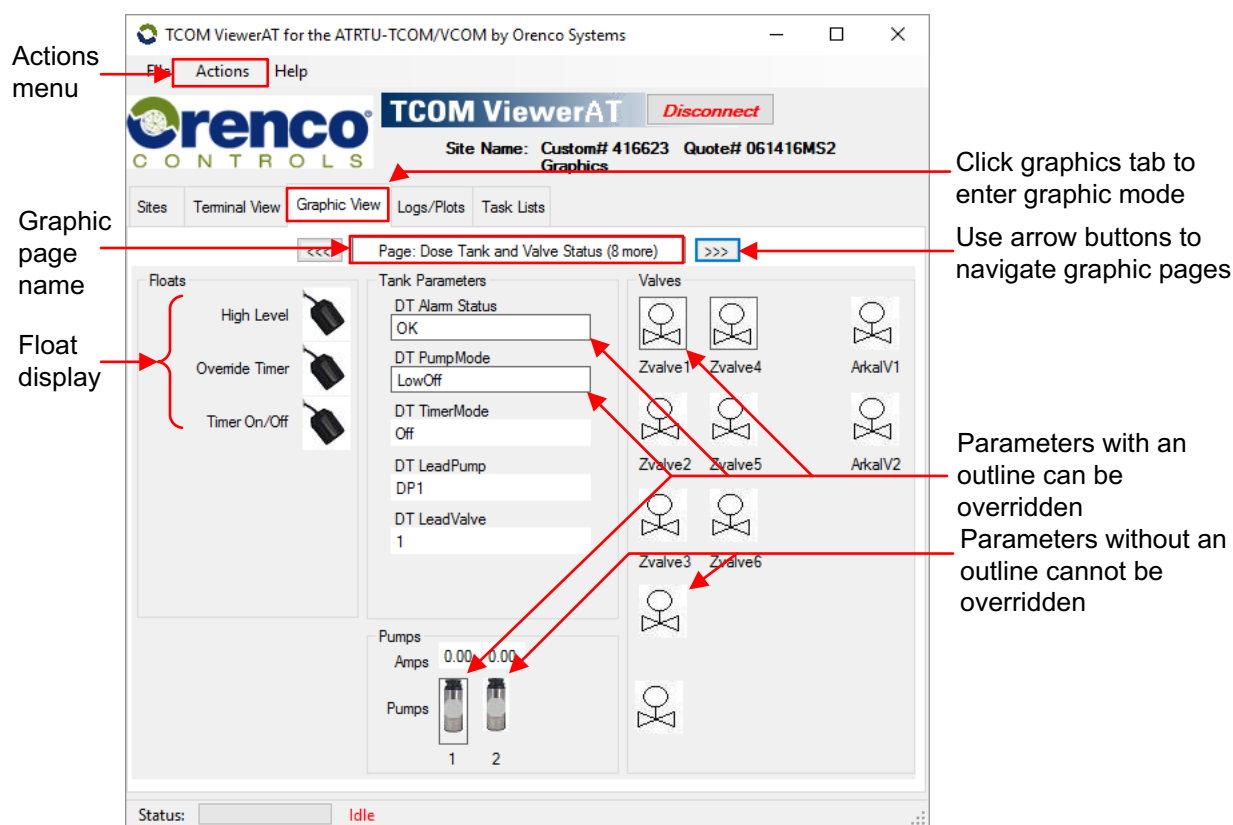


Figure 45: Example Graphic View

If the user is using a network connection, graphic views can also be opened by clicking on the “Action” menu and then selecting “Open Separate Graphics Window”. The user will be prompted to select the network configuration to use and then prompted to select the graphic page to open.

The main TCOM Viewer window will be used for terminal mode monitoring, log retrievals, plotting, and tasks using the telnet connection. The separate graphic window uses an HTTP to display and update the selected graphics page.

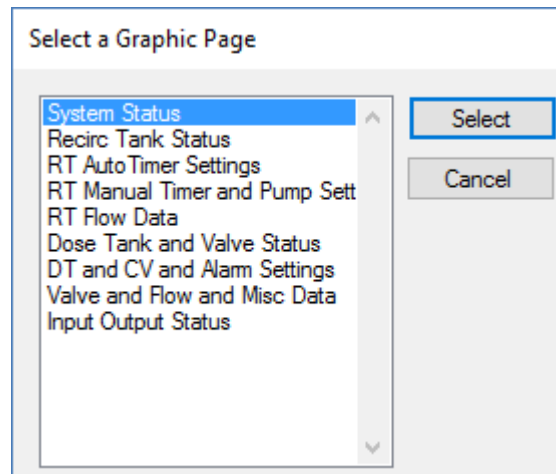


Figure 46: Select a Graphics Page to Open in Separate Window

Values that can be overridden are displayed with outlined borders around them in the graphic view (see Figure 45 on page 66). To apply an override, click within the outlined area of the value to change.

Parameters that permit the user to override them or modify their values will be shown with a black outline around them and will respond to being clicked with the left mouse button. Hovering the mouse cursor over an object will display a description and whether the object is overrideable. Parameters that have been overridden will have the text “OVR” next to them. Devices that have been overridden will have an “O” next to them. When an object that can be overridden is clicked, an Override Dialog window will appear.

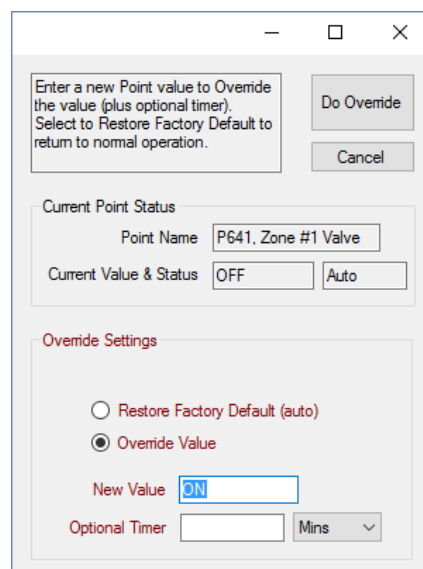


Figure 47: Override Dialog window

The top section of the Override Dialog window shows the current value and override state of the point. The example shown corresponds to point number 641 which is a digital point that is currently OFF, and it is in “Auto” mode meaning there is no override applied.

The “Current Point State” may be any of the following:

Auto The value of a point in automatic mode is determined by the control program logic.

- Const** A point with a constant override applied is set to the applied value and does not change.
- Ovr** Means overridden to ON or OFF. The point value is either ON or OFF and does not change.
- Ovr/Timer** Means timed override. A point with a timed override applied is set to the specified value for the time interval specified. When the remaining time has expired, the point value and override state returns to the previous setting.

The override settings to apply are entered in the "Override Settings" region of the dialog box. Once the desired adjustments have been entered, click "Do Override" to implement the changes or click "Cancel".

- Override Types** Several types of override are possible. "Normal" is a constant/permanent value change that becomes part of the control program. "Touch" is a temporary override that is latched and remembered by the application program logic. "Timed-only" is a temporary override with a programmable time period.
- Restore Factory Default** Used to return the point to the factory default setting, which may result in a specific value being set or returning the Point to automatic status.
- Override Value** Used to specify a new value to be used for overriding the point.
- Optional Timer** Used to specify a time interval to apply the override for. After the time duration elapses, the point value will revert to the previous setting. Depending on the point being adjusted this entry may be required, optional, or not available. When not available, or the timer value is left blank, the new value specified for the point will be permanent.

CAUTION:

Applying an override without specifying a time interval could result in critical devices such as a pump remaining on or off permanently. It is generally safe to set any point using the "Restore Factory Default" option as the control program logic ensures that a reasonable value is applied.

3.8.7 Logs and Plots

To view a log or plot, click on the “Logs/Plots” tab in the main TCOM Viewer window. To select the type of log or plot to view, click on the name of the log or plot. A dialog box pops up allowing the user to choose to clear the log or view the log.

When the view log option is selected, another dialog box pops up prompting the user for more input. For log types that may have multiple logs, such as activity logs the user is prompted to specify which log to view. The user is also prompted to select a time span to view. Click “OK” to start the log download process or “Cancel” to stop the process without downloading a log.

As the log is downloaded the status bar at the bottom of the screen will update the progress until the download has completed. The log download process can be cancelled using the “Abort Current Task” command found under the “Actions” menu.

Click the “Export” button to save the log data currently displayed on the screen to a comma separated value file. The default location for saving the exported file is the site folder but any location can be specified. Comma separated files may be loaded into Microsoft Excel, Microsoft Internet Explorer, and many other commercial applications for further use. To easily locate the folder for the current site (where the CSV files are saved by default), select “Explore Site Files” under the “File” menu.

Click the “Sort” column header to change the order the log data is displayed in. Column widths are adjustable.

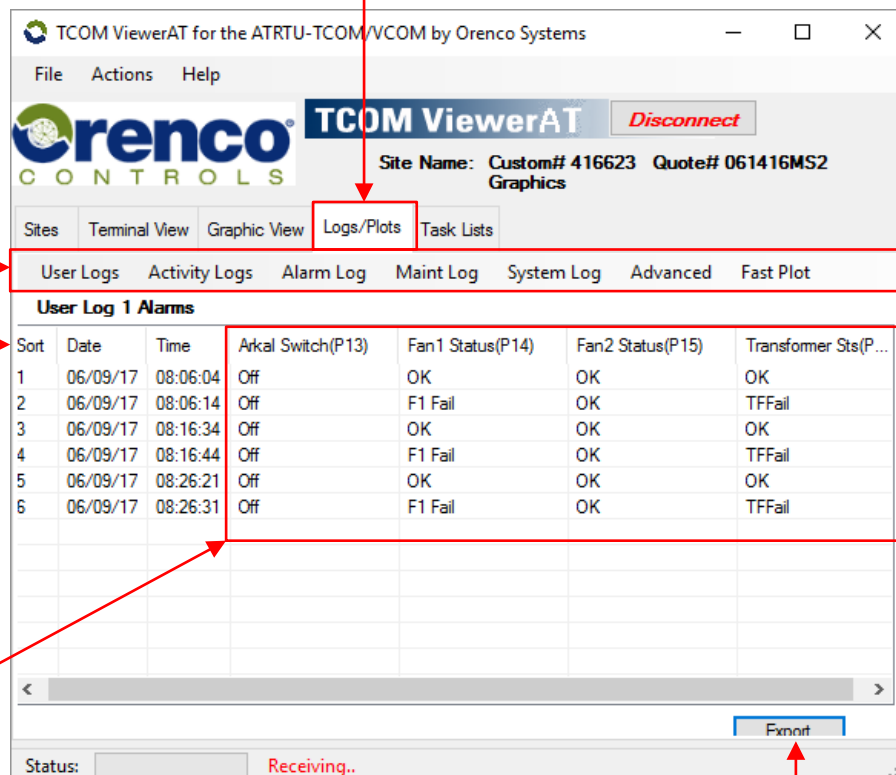
Click to enter Logs/Plots View

Click text to select log or plot

Click to change sort order

Events logged with date and time stamp

Control program determines data logged



Click to save log data

Figure 48: Logs/Plots View

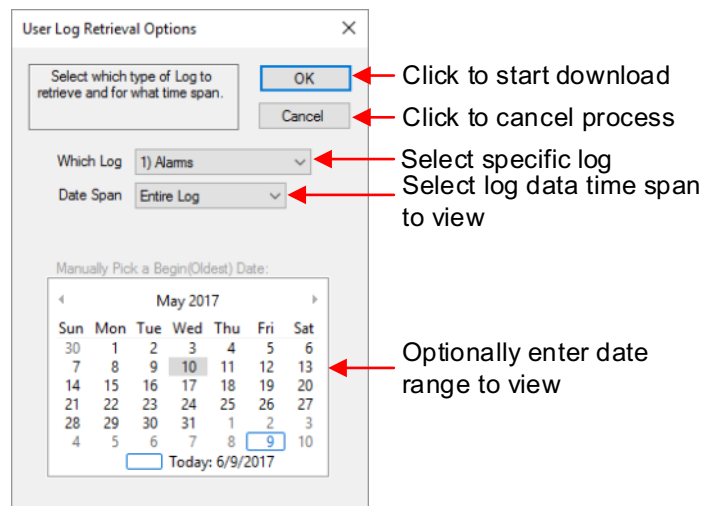


Figure 49: Selecting Log Data Time Span

Fast plotting allows a simple plot to be generated automatically based on the data log currently displayed in the Logs/Plots Tab window. Click the “Fast Plotting...” button to create a plot. If a user log is displayed, the user may select which or all of the data values to be plotted together on a single plot versus time. If an activity log is displayed, the single data item will be plotted with respect to the beginning and ending dates.

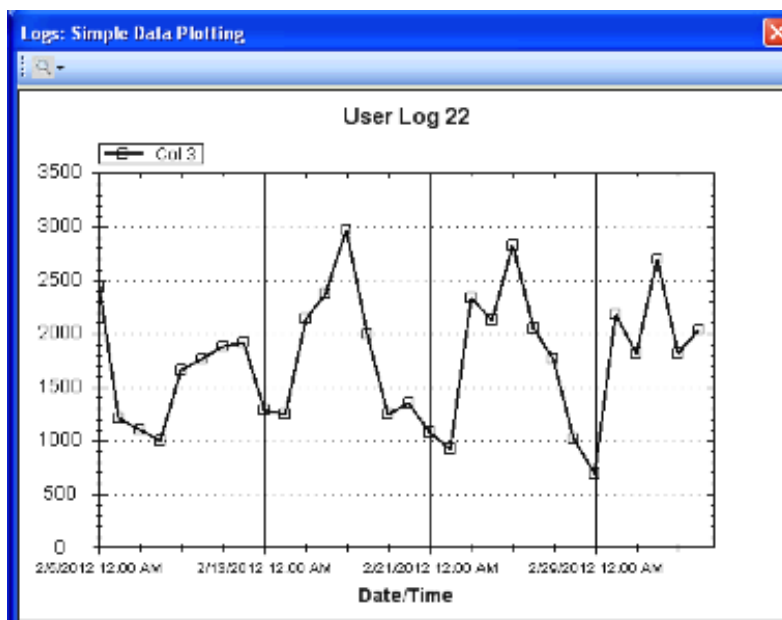


Figure 50: Fast Plot Example

- Zoom** Click, hold, and drag the left mouse button to select a region on the plot to zoom in to.
- Pan** Simultaneously click and hold both the control key (“Ctrl”) and the left mouse button and move the mouse left or right to shift the plot left or right.
- Undo/Print/Save** Click the spyglass icon above the plot to open a submenu that can be used to undo any zoom and print or save the plot as a graphic object for future use.

Enhanced log plots called “defined plotting” allow more complex plots to be pre-defined for analysis of system performance. Up to eight data values can be plotted. This feature requires either a graphics or non-graphics site configuration file that can be obtained from Orenco Controls.

Click on the pull-down on the left to select the desired plot from a list of available plots. The date range, pen color, and style for a defined plot can be modified. After selecting a plot, click the pen icon to open the edit window, make the desired selections, click “Save” to save the changes, or click “Cancel” to exit without saving.

To generate a plot, first select the plot of interest and then click the “Plot it Now” button. TCOM Viewer will download the files required to generate the plot. This may take up to several minutes depending on the data to build the plot. The process can be cancelled at any time by using the “Abort Current Task” command found under the “Actions” menu



Figure 51: Defined Plot Example

Zoom Click, hold, and drag the left mouse button to select a region on the plot to zoom in to.

Pan Simultaneously click and hold both the control key (“Ctrl”) and the left mouse button and move the mouse left or right to shift the plot left or right.

Undo/Print/Save Click the spyglass icon above the plot to open a submenu that can be used to undo any zoom and print or save the plot as a graphic object for future use.

3.8.8 Task Lists

A limited set of routine operations that are performed periodically can be automated using the “Task List” feature which allows a user to define one or more specific tasks and collect them in a list.

When the listed tasks need to be performed, a process called running the task list is initiated. The user must be online, select a task list, and initiate the run process. Once the process is initiated, each task in the selected list is executed automatically.

A valid site configuration file is required to use the task list feature.

Tasks types that can be defined include:

- Retrieve user logs with a user selected format and span.
- Retrieve activity log with a user selected format and span.
- Retrieve alarm logs with a user selected format and span.
- Retrieve the maintenance log with a user selected format and span.
- Retrieve the system log with a user selected format and span.
- Retrieve a point status report in text format.
- Set the ATRTU-TCOM system clock to the current time of the users computer.
- Apply a point override.

The user must be connected to an ATRTU-TCOM control to define or modify a task list. New task lists are added by clicking the “Add Task List” button and entering a new task list name. If the new name duplicates one already defined for the site, a warning message will be shown. When a task list is selected, all of the defined tasks within the list are displayed.

Each task within a list has an “Enabled” check box that can be used to enable or disable selected tasks. The state of this check box is saved whenever the “Save Changes” button is clicked. The “Save Changes” button will change it’s color to red whenever a task or task list has been added or deleted. If the user attempts to “Disconnect” while the “Save Changes” button is red, a warning message is displayed prompting the user to save the changes.

Click on “Run Task List” to perform all of the enabled tasks on the selected list of tasks. When the “Run Task List” sequence begins, the “Status” column of the list of tasks will change to “Queued”. As each task is completed, the “Status” indicator changes to “Done”. The “Last Run” date will be saved for each task when the entire list is completed successfully.

If one of the tasks fails due to communications errors the “Run Task List” sequence will stop running and the TCOM Viewer will log off. The process can be restarted after logging back on. To abort the “Run Task List” sequence, click the “Disconnect” button and log off.

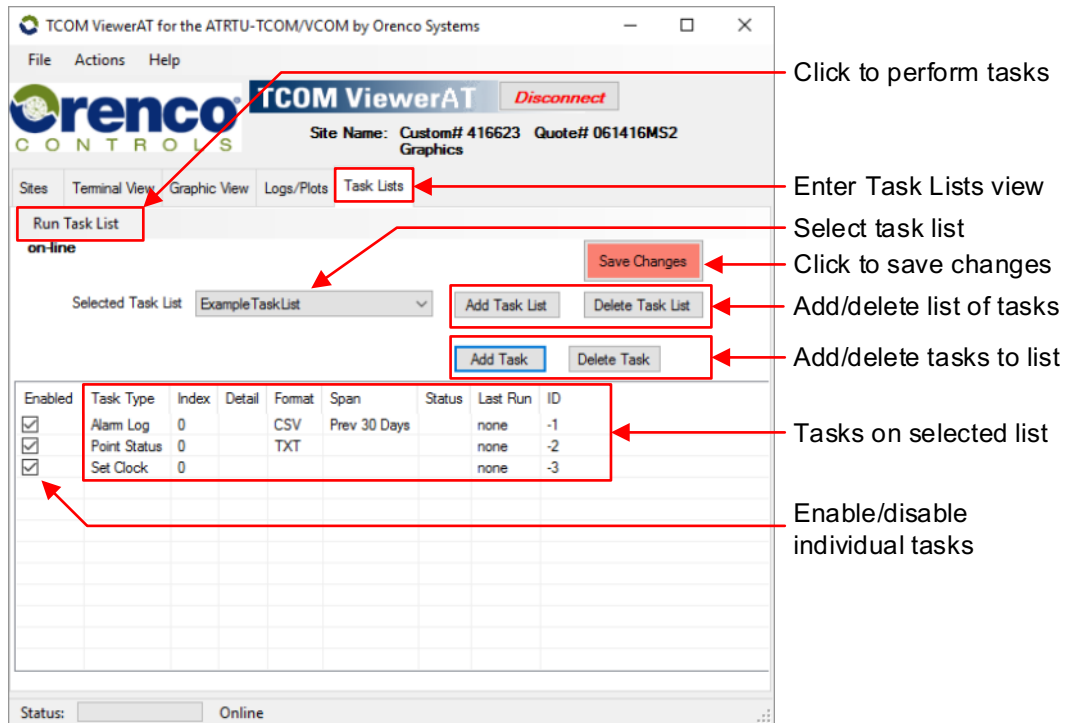


Figure 52: Task List Example

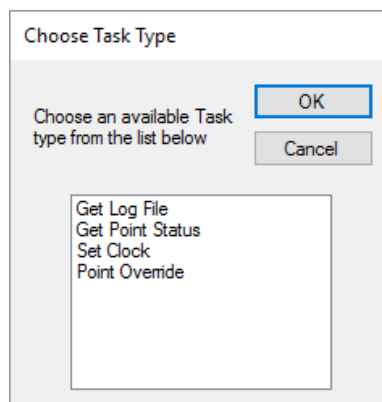


Figure 53: Available Tasks

4 Terminal Mode

The ATRTU-TCOM terminal mode interface is a textual menu driven interface. The ATRTU-TCOM controller generates the menus and processes all keyboard input. Terminal mode can be accessed using the TCOM Viewer “Terminal View” tab or by establishing a connection to the system using common terminal emulation programs such as HyperTerm, TeraTerm, ZTerm, PuTTY, etc. Many terminal emulation programs are available as free downloads and support a wide variety of devices and operating systems.

Due to the wide variety of terminal emulation programs the user is advised to refer to documentation provided by the application vendor to configure their application. Required connection parameters are described in section 3.7 “Configuring TCOM Viewer Connection Parameters” on page 57 of this document.

4.1 Terminal Mode Overview

To use terminal mode the user must be connected to the target ATRTU-TCOM controller and logged on with a valid username and password. TCOM Viewer can be configured to automatically log the user in. If using a terminal emulation program the user will be prompted to enter a username and password.

There are common items on most screens such as the menu name and the permission level of the user currently logged on. Some features may be disabled if the account permission level is not high enough. See section 1.4.4 User Accounts and Permission Levels on page 10 for more information regarding permission levels.

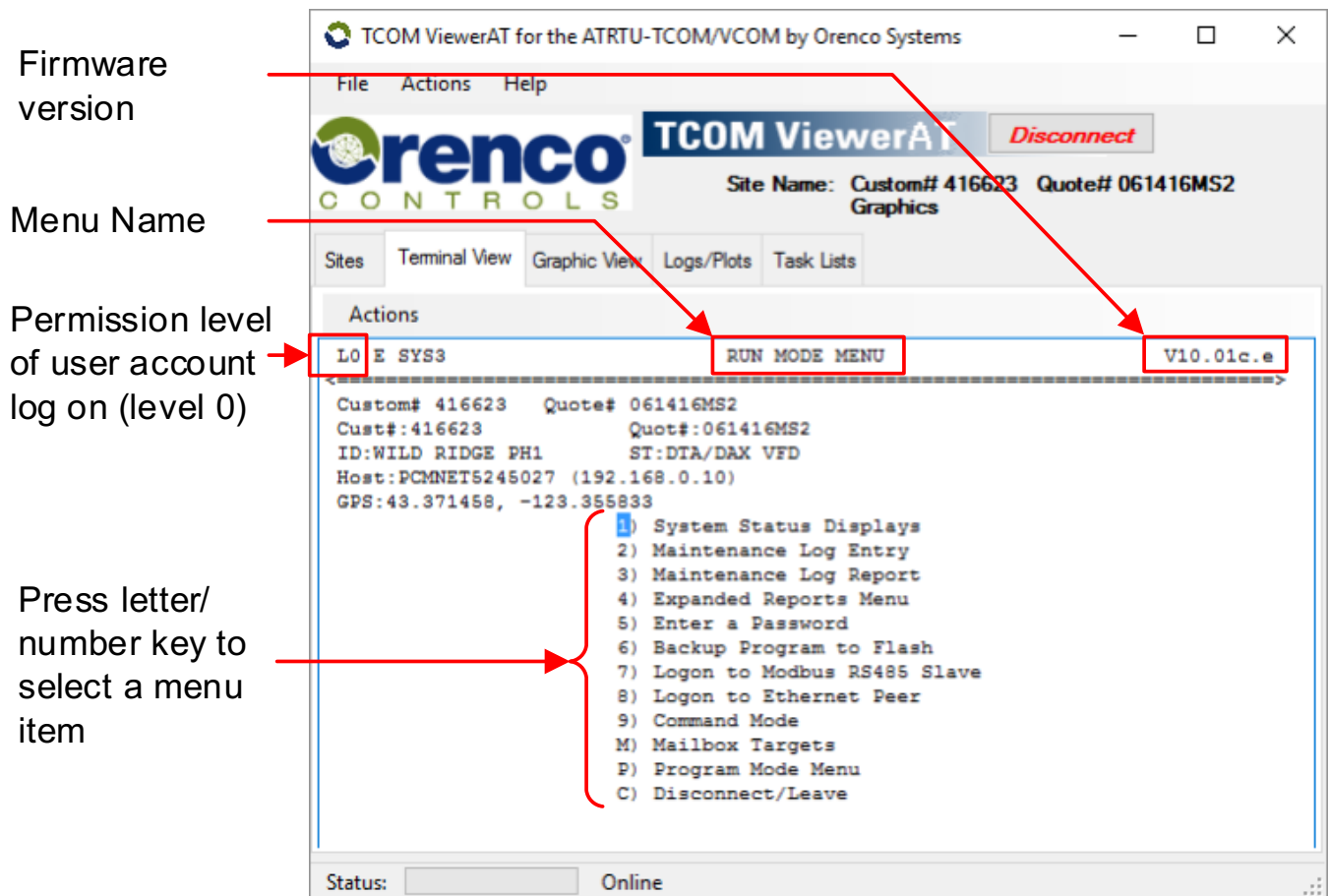


Figure 54: Terminal Mode Main Screen

The “Actions” sub menu can be used to clear the terminal screen on any menu page, select foreground and background colors, and print the current screen.

Color changes made via the “Actions” sub menu affect the current session only. See 3.6 “TCOM Viewer Setup” on page 55 to permanently set foreground and background colors.

Printed output is in text form and will be printed as black regardless of the terminal screen colors.

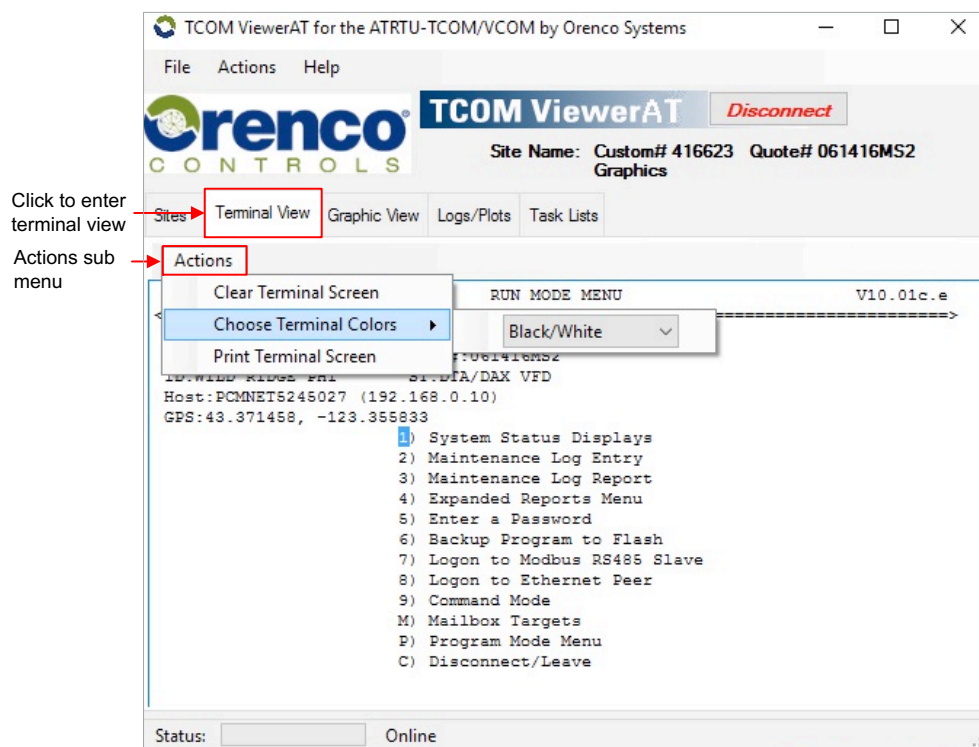


Figure 55: Actions Sub Menu

The keyboard is the primary means to navigate in terminal mode. There is some variation from menu to menu, but in general the following applies:

ESC The escape key is used to cancel an operation or return to the prior menu.

TAB The tab key is used to move from the current data entry field to the next field.

Return/Enter The return or enter key is used to accept a highlighted menu selection or typed in data.

Menu items with single character choices such as as numbers or letters are selected by pressing the corresponding key (i.e., press “2” key to select menu option 2).

Double clicking with the left mouse button on a data entry field will cause the cursor to move to that field. The mouse pointer should be positioned over the first character in the field for this feature to work accurately.

The TCOM Viewer window can be resized by using the mouse to click and drag the corners or edges of the window similar to most other programs. The text size is adjusted when the windows is resized.

The last location in the terminal view menus may be lost when the resizing is done. If the terminal screen does not automatically refresh, try hitting the “ESC” key or use the “Clear Terminal Screen” from the “Actions” menu directly above the terminal area.

4.2 Run Mode Menu

The run mode menu is the top level menu. To select a menu option, press the corresponding letter or number next to the menu name. For example, press the “1” key to select the “System Status Displays” menu.

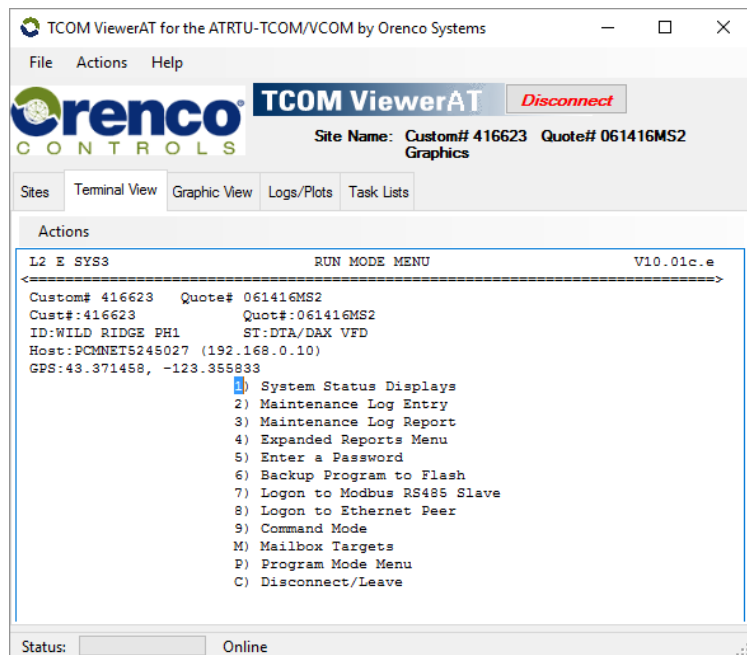


Figure 56: Run Mode Menu

Note

- To select a page, press the corresponding letter next to the desired page (e.g., press the **1** key for the System Status page). When upper and lower case letters are listed, page selection is case sensitive.

System Status Displays (1)

Provides access to a series of menus showing the panel’s current activity. Viewing and adjusting parameters can be done in these screens.

Maintenance Log Entry (2,3)

Allows changes or adjustments to the system to be manually logged for future reference.

Expanded Reports Menu (4)

Provides access for viewing Activity, Alarm, and User Logs. Downloading and saving of log files on the computer can only be done using the options found under the **Logs/Plots** tab, when using TCOM Viewer.

Enter a Password (5)

This logs out of the current session, and allows a new User Name and Password to be entered.

Backup Program to Flash (6)

Allows the program to be backed up to non-volatile memory. Backing up the program is recommended whenever permanent changes to operational set-points have been made.

Logon to Modbus RS485 Slave (7)

This menu allows access to a Modbus slave when multiple controllers are connected via a Modbus network

Logon to Ethernet Peer (8)

When multiple panels are on an Ethernet network, this option allows access to an Ethernet peer.

Enter Command Mode (9)

Allows the user to enter low level commands typically for diagnostic purposes.

Mailbox Targets (M)

Allows user to enter mailbox information.

Program Mode Menu (P)

Allows the user to view and modify configuration settings.


Disconnect/Leave (C)

Disconnects the current session from the controller. Also returns to the main panel if logged on to a networked board.

4.3 Page Select Menu

The page select menu allows the user to select a group of up to 16 sequentially numbered points.

Note

- To select a page of up to 16 points press the letter next to the desired page. Letters are case sensitive.
- Each point page contains up to 16 points.
- Letters with no page names next to them represent blank pages.
- ESC** key exits the current page.
- Tab**  moves cursor in sequence between control fields.
- Enter** key executes desired command.

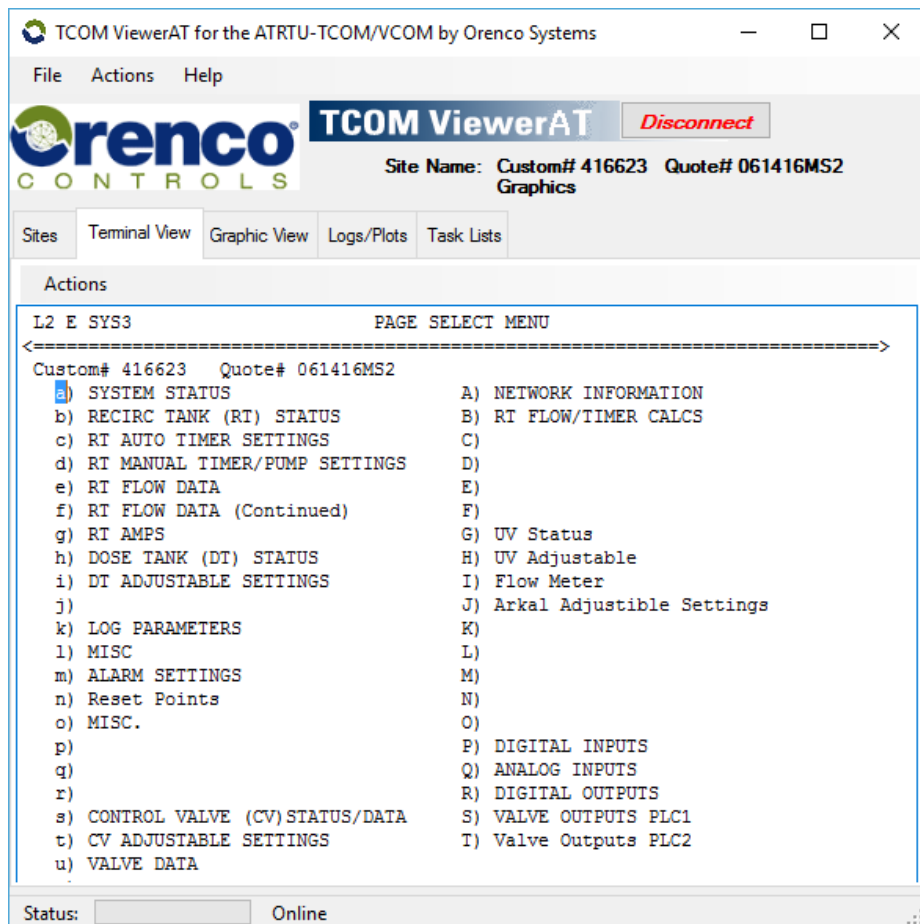


Figure 57: Page Select Menu

System Status Page

The System Status page provides an overview of the the entire system, including current alarm status, pump status, etc.

Individual Status Page(s)

Multiple status pages may be defined for your particular system. Individual status pages provide current information for major system components (e.g., recirc. tanks, dosing tanks, discharge tanks, final disposal, etc.).

Settings

Multiple setting pages may be defined for your particular system. Individual setting pages provide for viewing and adjusting the parameters for each application (e.g., timers, pump flow rate, local alarm delay, pager delays, etc.).

Flow Data Page(s)

Multiple flow data pages may exist for your system. These pages provide detailed flow data (e.g., pump cycles today, pump time today, flow today, etc.).

Log Parameters/Misc.

These pages contain logic involving the user logs and other processes. The points contained on these pages are maintained by Orenco.

Inputs & Outputs

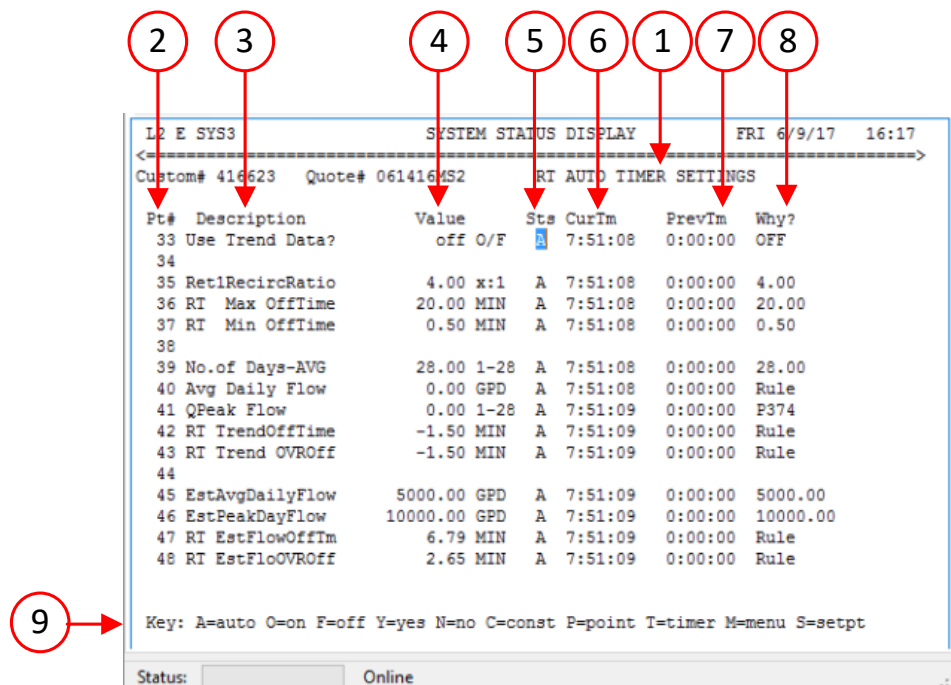
Multiple input and output pages may exist for your system. These pages display the status of digital and/or analog inputs and outputs. Input signals come from devices that are being monitored and would typically include floats. Outputs are devices that are being controlled and would typically include pumps.

4.4 System Status Display (Page Definition and Layout)

All pages under the “System Status Display” menu have the same appearance and contain the fields depicted below.

Note

- To see a specific point press **P** and the **Enter** key.
- The following tips apply to all screens within the TCOM system.
- ESC** key exits the current page.
- Page Up** key scrolls 16 points backward.
- Page Down** key scrolls 16 points forward.
- Tab** moves cursor in sequence between control fields.
- Enter** key executes desired command.



Pt#	Description	Value	Sts	CurTm	PrevTm	Why?
33	Use Trend Data?	off O/F	A	7:51:08	0:00:00	OFF
34						
35	RetlRecircRatio	4.00 x:1	A	7:51:08	0:00:00	4.00
36	RT Max OffTime	20.00 MIN	A	7:51:08	0:00:00	20.00
37	RT Min OffTime	0.50 MIN	A	7:51:08	0:00:00	0.50
38						
39	No.of Days-AVG	28.00 1-28	A	7:51:08	0:00:00	28.00
40	Avg Daily Flow	0.00 GPD	A	7:51:08	0:00:00	Rule
41	QPeak Flow	0.00 1-28	A	7:51:09	0:00:00	P374
42	RT TrendOffTime	-1.50 MIN	A	7:51:09	0:00:00	Rule
43	RT Trend OVROff	-1.50 MIN	A	7:51:09	0:00:00	Rule
44						
45	EstAvgDailyFlow	5000.00 GPD	A	7:51:09	0:00:00	5000.00
46	EstPeakDayFlow	10000.00 GPD	A	7:51:09	0:00:00	10000.00
47	RT EstFlowOffTm	6.79 MIN	A	7:51:09	0:00:00	Rule
48	RT EstFloOVROff	2.65 MIN	A	7:51:09	0:00:00	Rule

Key: A=auto O=on F=off Y=yes N=no C=const P=point T=timer M=menu S=setpt

Status: Online

Figure 58: System Status Display Menu

Page Description (1)

Identifies which page is being viewed (e.g., Recirc. Tank Status).

PT# (2)

Identifies the program point number. Each page includes sixteen programming points.

Description (3)

Describes each program point used.

Value (4)

Displays the current value of the point. This can be displayed as a label (e.g., OK, HiLevel, OFF, OnCycle, etc.), a unit of measurement (e.g., min, gal, amps, etc.), a digital value (e.g., on or off), a date, or time.

Sts (5)

Indicates the operational status of a point (e.g. Automatic or Constant). If this column contains a letter, the point can be adjusted.

CurTm (6)

Indicates the time that has elapsed since the point has been assigned the current value.

PrevTime (7)

Indicates the time that elapsed while the point held a previous value.

Why? (8)

Gives the reason for the value, if available (e.g., rules, inputs, default value, etc.).

Choices (9)

These options can be entered in the Sts column to apply overrides.

4.4.1 Applying Point Overrides

TCOM panels are shipped with default settings. Some parameters may need to be adjusted to make permanent or temporary changes to the operation of a panel. Parameter adjustments are initiated by using the menu Choice Menu located at the bottom of the System Status Display screens.

A parameter can be adjusted if there is a letter listed under the Sts column. Depending of the type of point to be adjusted and some other factors, different choices may apply. The options for adjusting points are described on the following pages. To make sure the proper adjustment option is selected and that permanent changes are properly saved, please see the notes below regarding Program Backup and Special Considerations for TCOM Panels with Touch Screens or those tied to a SCADA system.

Special Considerations for TCOM Panels with Touch Screens or those tied to a SCADA system

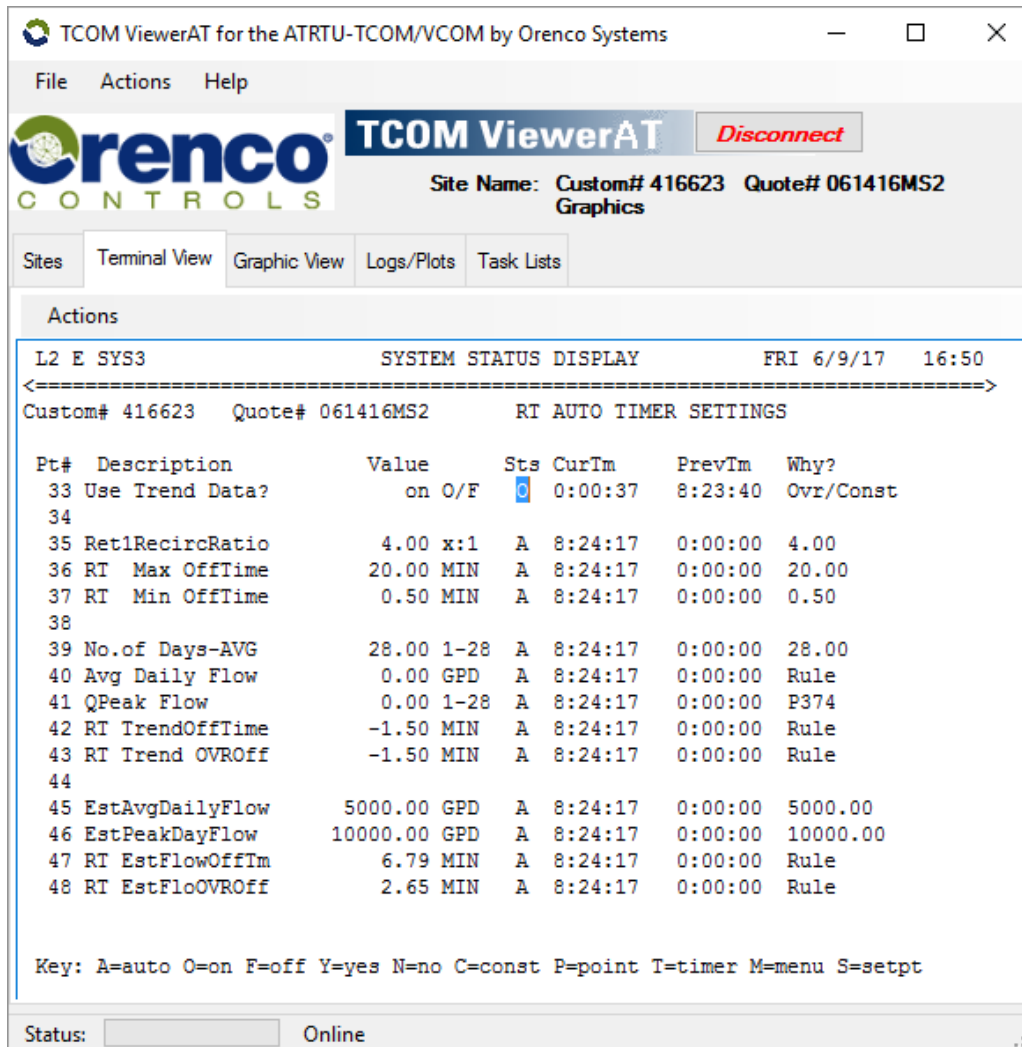
In cases where a TCOM panel includes a touch screen or is part of a SCADA system, care must be taken when making adjustments to the parameters through the terminal view, in order to prevent locking out access to parameter changes through the touch screen or SCADA software.

For these situations, the menu choices of C(Const), O(On), or F(Off) should be avoided as they will be treated with the highest priority and requests for parameter adjustments from elsewhere will be ignored. In most cases, the S(setpt) choice is recommended for adjustments.

The S(setpt) choice will send the requested parameter change for a short duration and then release the point to automatic, so that the touch screen or SCADA can have access to make changes. Some older panels may not have a S(setpt) choice, but the same result can be obtained by using the T(timer) option and specifying 10 seconds for the time duration of the override. In some panels, there may be points that are subject to adjustments from outside sources and some that are not.

If not sure, set the point to automatic first, using the A(auto) choice and observe the value under the "Why?" column. Once the screen updates, if the value found there is a reference to the same point number on the far left, the S(setpt) choice should be used. Otherwise, it should not be used.

4.4.1.1 Applying Override to Digital Point to Force it ON



WARNING ▲

- Changes to parameters must be made between screen updates or they will not be saved. This can be avoided by pressing the **Enter** key immediately after a letter is entered in the **Sts** column.
- Overriding point values can severely affect the operation of your system and will not allow the control program to modify the point value.

Note ◆

- If a mistake is made while changing a parameter, press the **ESC** key.
- To see a specific point, press **P** and the **Enter** key. Then enter the point number and press the **Enter** key.

Figure 59: Overriding a Digital Point On

To force a digital point ON:

- Use the **Tab** key or Arrow keys to move the cursor to the **Sts** column to select the point to be overridden. Type **O** and immediately press **Enter** key.
- In this example, point number 33 "Use Trend Data?" has been manually overridden to ON and will remain ON until another override is applied to this point.

4.4.1.2 Applying Override to Digital Point to Force it OFF

WARNING ▲

- Changes to parameters must be made between screen updates or they will not be saved. This can be avoided by pressing the **Enter** key immediately after a letter is entered in the **Sts** column.
- Overriding point values can severely affect the operation of your system and will not allow the control program logic modify the point value.

Note ◆

- If a mistake is made while changing a parameter, press the **ESC** key..
- To see a specific point, press **P** and the **Enter** key. Then enter the point number and press the **Enter** key.

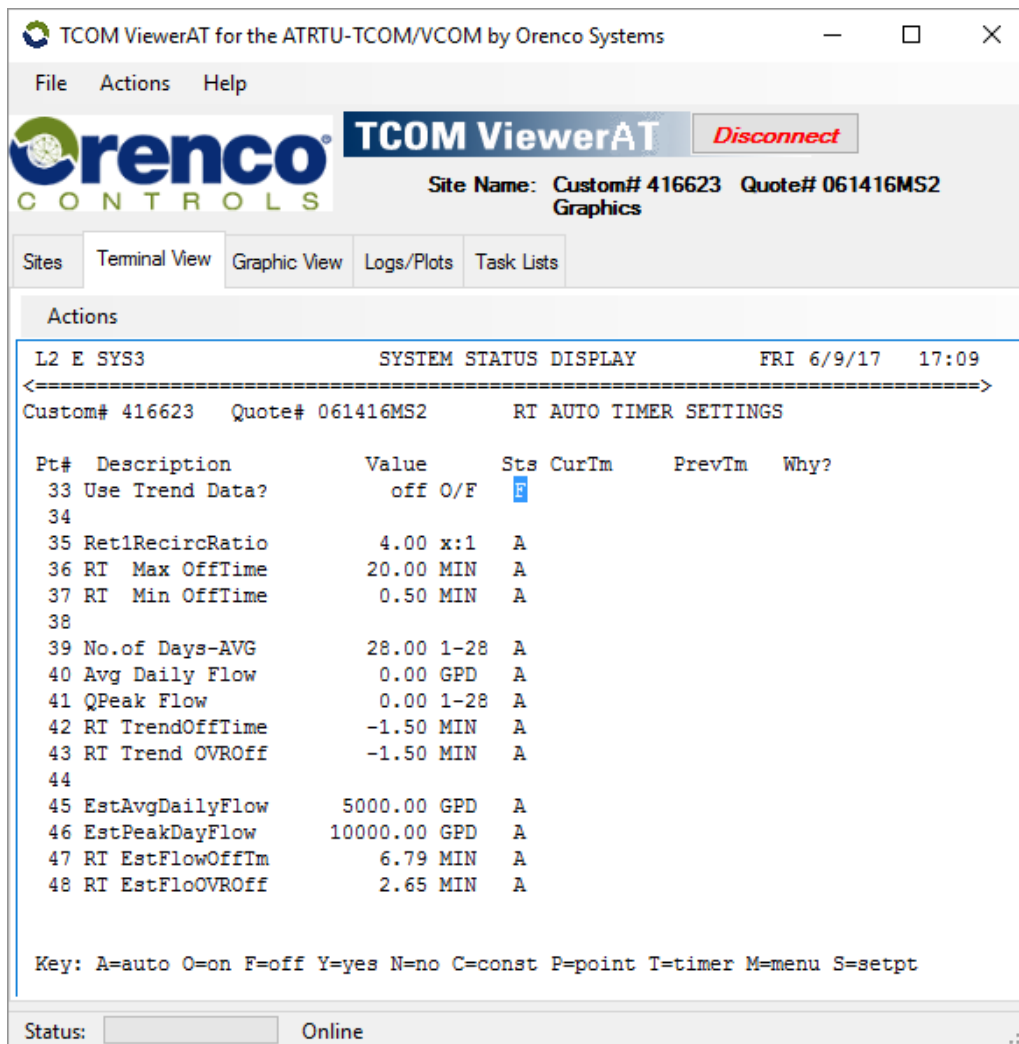
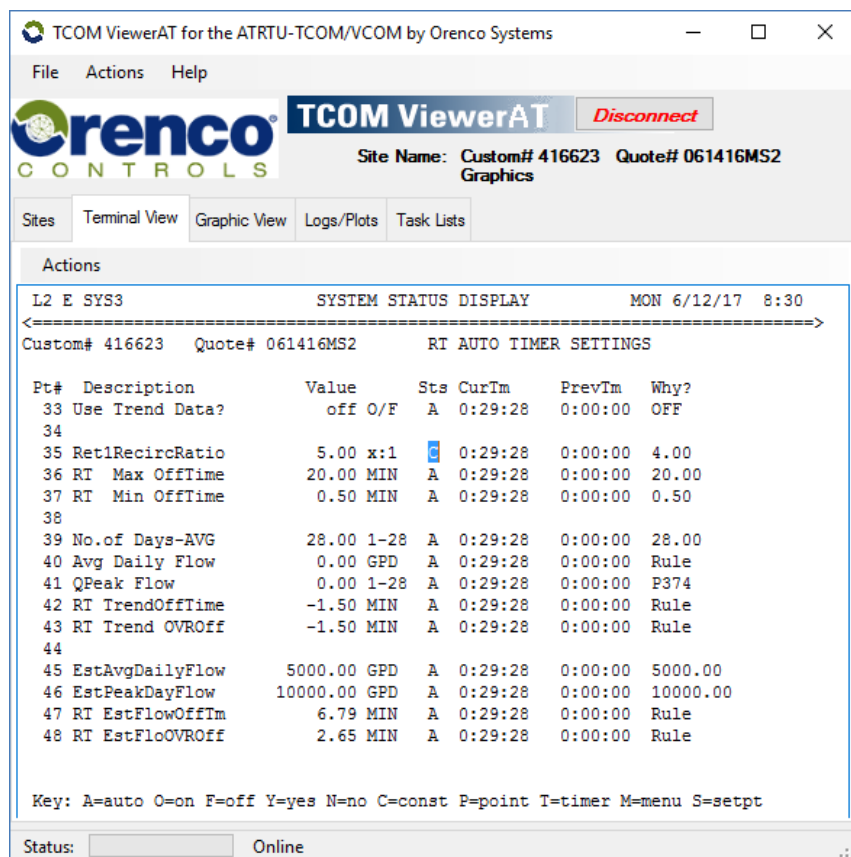


Figure 60: Overriding a Digital Point Off

To force a digital point to OFF:

- 3) Use the **Tab** key or Arrow keys to move the cursor to the **Sts** column to select the point to be overridden. Type **F** and immediately press **Enter** key.
- 4) In this example, point number 33 "Use Trend Data?" has been manually overridden to OFF and will remain OFF until another override is applied to this point.

4.4.1.3 Applying Override to a Numeric Point



WARNING

- Changes to parameters must be made between screen updates or they will not be saved. This can be avoided by pressing the **Enter** key immediately after a letter is entered in the **Sts** column.

Note

- If a mistake is made while changing a parameter, press the **ESC** key.
- To see a specific point, press **P** and the **Enter** key. Then enter the point number and press the **Enter** key.

Figure 61: Applying an Override to a Numeric Point

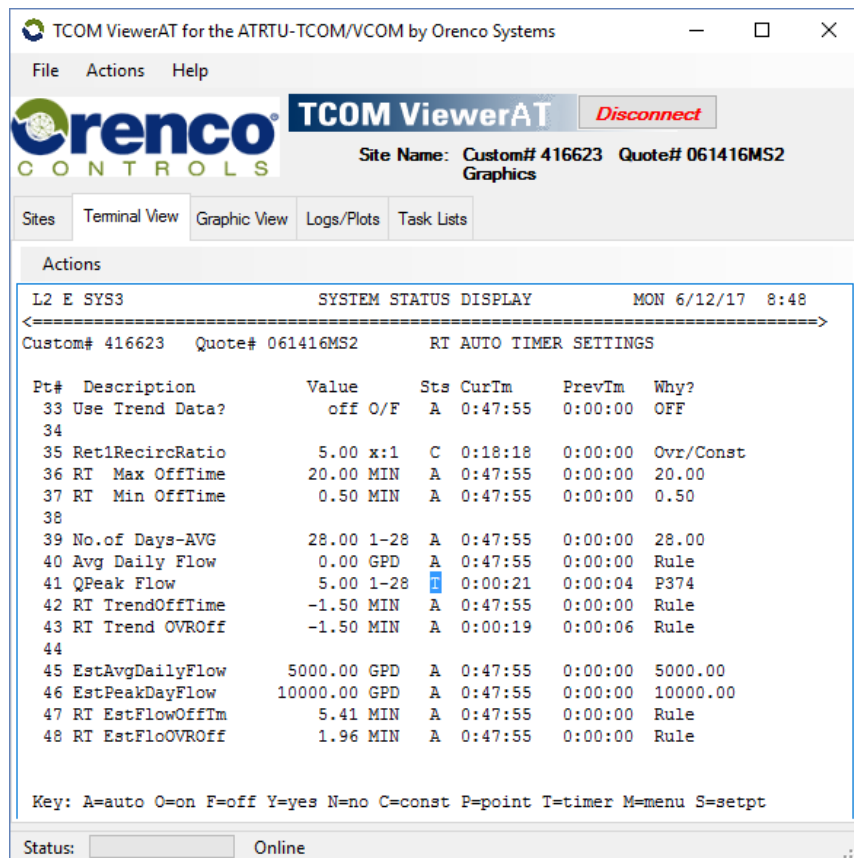
To apply an override to a numeric point:

- 1) Use the **Tab** key to move the cursor in the **Sts** column to select the point to be overridden.
- 2) Press the **C** key and immediately press the **Enter** key.
- 3) Enter the new constant value and press the **Enter** key.

Point number 35 "Ret1RecircRatio" was changed from 4.0 to 5.0 in this example.

4.4.1.4 Applying Override to a Set Point

The **S (setpt)** option is recommended for adjusting points when a panel includes a touch screen or is part of a SCADA system. The Set Point function will change a point for a short interval and then release the point to automatic. Points that are suitable for using the **S(setpt)** option should appear similar to those shown in the example below where the point has a status of “**A**” and the point number is listed under the “**Why?**” column. If the **S(setpt)** option is not available in the choices the **T(timer)** option can be substituted and achieve the same result by specifying a time value of 10 seconds for the duration of the timer.



Pt#	Description	Value	Sts	CurTm	PrevTm	Why?
33	Use Trend Data?	off O/F	A	0:47:55	0:00:00	OFF
34						
35	Ret1RecircRatio	5.00 x:1	C	0:18:18	0:00:00	Ovr/Const
36	RT Max OffTime	20.00 MIN	A	0:47:55	0:00:00	20.00
37	RT Min OffTime	0.50 MIN	A	0:47:55	0:00:00	0.50
38						
39	No.of Days-AVG	28.00 1-28	A	0:47:55	0:00:00	28.00
40	Avg Daily Flow	0.00 GPD	A	0:47:55	0:00:00	Rule
41	QPeak Flow	5.00 1-28	T	0:00:21	0:00:04	P374
42	RT TrendOffTime	-1.50 MIN	A	0:47:55	0:00:00	Rule
43	RT Trend OVROff	-1.50 MIN	A	0:00:19	0:00:06	Rule
44						
45	EstAvgDailyFlow	5000.00 GPD	A	0:47:55	0:00:00	5000.00
46	EstPeakDayFlow	10000.00 GPD	A	0:47:55	0:00:00	10000.00
47	RT EstFlowOffTm	5.41 MIN	A	0:47:55	0:00:00	Rule
48	RT EstFloOVROff	1.96 MIN	A	0:47:55	0:00:00	Rule

Key: A=auto O=on F=off Y=yes N=no C=const P=point T=timer M=menu S=setpt

Status: Online

WARNING

- Changes to parameters must be made between screen updates or they will not be saved. This can be avoided by pressing the **Enter** key immediately after a letter is entered in the **Sts** column.

Note

- If a mistake is made while changing a parameter, press the **ESC** key.
- To see a specific point, press **P** and the **Enter** key. Then enter the point number and press the **Enter** key.

Figure 62: Applying an Override to a Set Point

To apply an override to a set point:

- Using the **Tab** key, move the cursor in the **Sts** column to select the point to be overridden.
- Type **S** and immediately press the **Enter** key.
- Enter the new value and press the **Enter** key.
- The point will show that it has been overridden with a timer for about 10 seconds and will then return to automatic. The new value should hold after the timer expires.

Point 41 “QPeak Flow” was changed to 5.0 in this example.

4.4.1.5 Applying a Timed Override

The **T (timer)** option allows an adjustment to a point for a specified time period. Depending on the type of point and logic associated with it, the point may return to a previous value or continue to hold the new value once the timer has expired. The **T (timer)** option is a good choice in many cases as the panel typically will be left in a stable state after the timer expires. This could be an important consideration when dealing with a remote connection that could get interrupted.

WARNING

- Changes to parameters must be made between screen updates or they will not be saved. This can be avoided by pressing the **Enter** key immediately after a letter is entered in the **Sts** column.

Note

- If a mistake is made while changing a parameter, press the **ESC** key.
- To see a specific point, press **P** and the **Enter** key. Then enter the point number and press the **Enter** key.

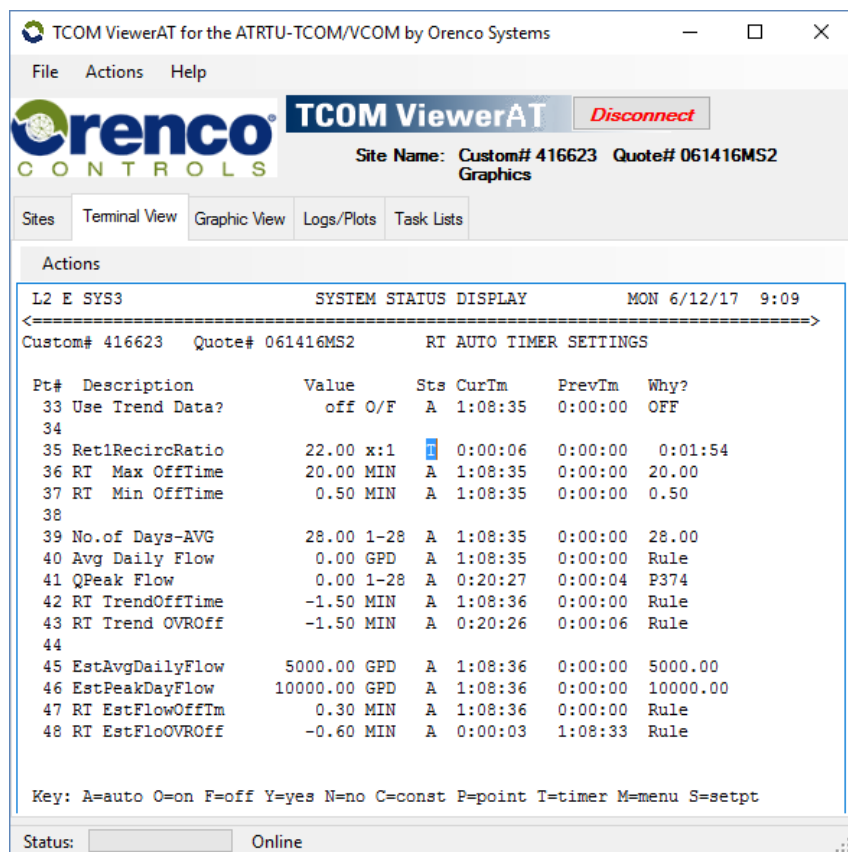


Figure 63: Applying a Timed Override

To apply a timed override:

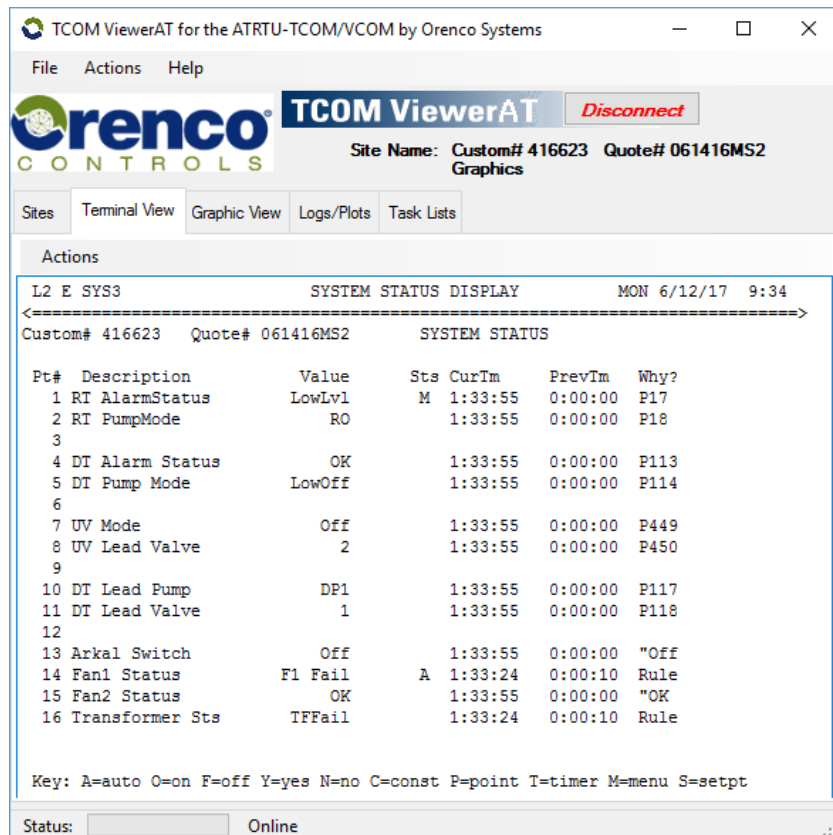
- Using the **Tab** key, move the cursor in the **Sts** column to select the point to be overridden.
- Type **T** and immediately press the **Enter** key.
- Type the new value and press the **Enter** key.
- Enter the length of time to apply the override and press the **Enter** key.

If seconds are needed enter the number of seconds (such as 120). If hours or minutes are needed enter the new value in HH:MM where “HH” represents the number of hours, “MM” represents the number of minutes, and the colon, is a separator between the hours and minutes fields. For example 12:34 specifies a time interface of twelve hours and thirty four minutes.

In this example, point number 35 “Tet1RecircRatio” will be set to the value “22:00” for 120 seconds and will then return to the previous state and value. As the timer counts down the remaining time will be shown under the “Why?” column.

4.4.2 Viewing Additional Point Detail

Additional point information can be evaluated in detail using the “Menu” listed in the key choices list at the bottom of the windows. The type of information presented is useful for various troubleshooting procedures. The cursor must be placed in the **Sts** column of the point for evaluation and then enter **M** to go to the next screen. Common functions are as follows:



TCOM ViewerAT for the ATRTU-TCOM/VCOM by Orenco Systems

File Actions Help

TCOM ViewerAT Disconnect

Site Name: Custom# 416623 Quote# 061416MS2 Graphics

Sites Terminal View Graphic View Logs/Plots Task Lists

Actions

L2 E SYS3 SYSTEM STATUS DISPLAY MON 6/12/17 9:34

Custom# 416623 Quote# 061416MS2 SYSTEM STATUS

Pt#	Description	Value	Sts	CurTm	PrevTm	Why?
1	RT AlarmStatus	LowLvl	M	1:33:55	0:00:00	P17
2	RT PumpMode	RO		1:33:55	0:00:00	P18
3						
4	DT Alarm Status	OK		1:33:55	0:00:00	P113
5	DT Pump Mode	LowOff		1:33:55	0:00:00	P114
6						
7	UV Mode	Off		1:33:55	0:00:00	P449
8	UV Lead Valve	2		1:33:55	0:00:00	P450
9						
10	DT Lead Pump	DP1		1:33:55	0:00:00	P117
11	DT Lead Valve	1		1:33:55	0:00:00	P118
12						
13	Arkal Switch	Off		1:33:55	0:00:00	"Off
14	Fan1 Status	F1 Fail	A	1:33:24	0:00:10	Rule
15	Fan2 Status	OK		1:33:55	0:00:00	"OK
16	Transformer Sts	TFFail		1:33:24	0:00:10	Rule

Key: A=auto O=on F=off Y=yes N=no C=const P=point T=timer M=menu S=setpt

Status: Online

Note

- If a mistake is made while changing a parameter, press the **ESC** key.
- To see a specific point, press **P** and the **Enter** key. Then enter the point number and press the **Enter** key.

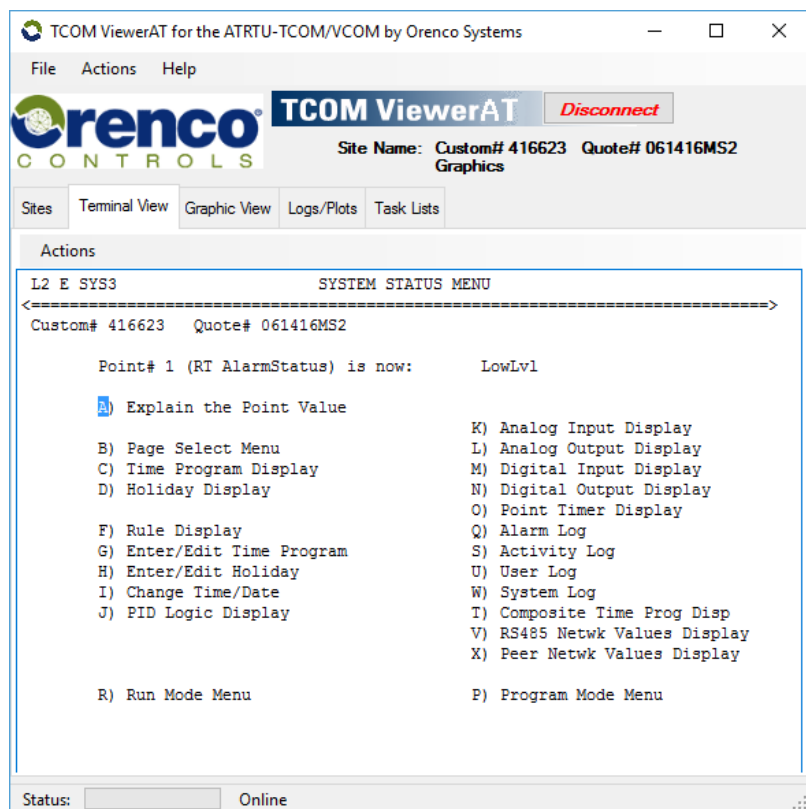
Figure 64: Viewing Additional Point Details

To View Details of a Specific Point:

- 1) Use the **TAB** or **Arrow** keys to move the cursor to the **Sts** column of the desired point.
- 2) Type **M** in the **Sts** column and immediately press the **Enter** key.
- 3) A new screen will be displayed that is specific to the point that was selected.

4.4.2.1 Individual Point Detail

This page allows the operator to focus on a single point and view information about it.



WARNING

- Options shown on this menu but not described are for use by Orenco Controls only.

Note

- If a mistake is made while changing a parameter press the **ESC** key.
- Press the **ESC** key at any time to return to the previous menu.

Figure 65: View Details of a Specific Point

Explain the Point Value (A)

Explains the control program logic currently responsible for the points value.

Rule Display (F)

The rules for the point can be displayed.

Change Time/Date (I)

Supports entering new date and time settings.

Input & Output Displays (K-N)

These pages will display the current values for the analog/digital inputs or outputs.

Logs (Q, S, U, W)

These pages will display the activity log, alarm log, system log, or a user log.

RS485 Network Values Display (V)

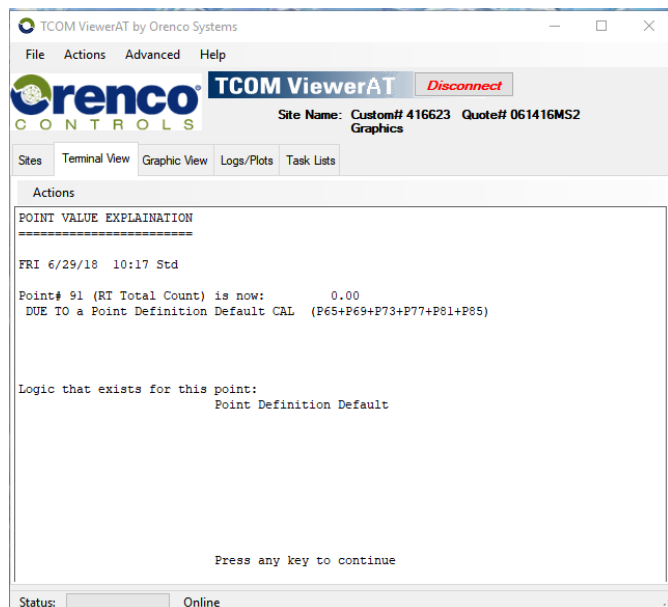
Displays information about other devices connected via a Modbus RS485 network.

Peer Network Values Display (X)

Displays information about other devices connected via a network and defined as peers to this device.

4.4.2.2 Point Value Explanation

The example shows that point number 35 "Ret1RecircRatio" currently has a value of 4.00 due to a point definition default value of 4.00. It also shows that this point can have a default value, or a manual override value applied to it.



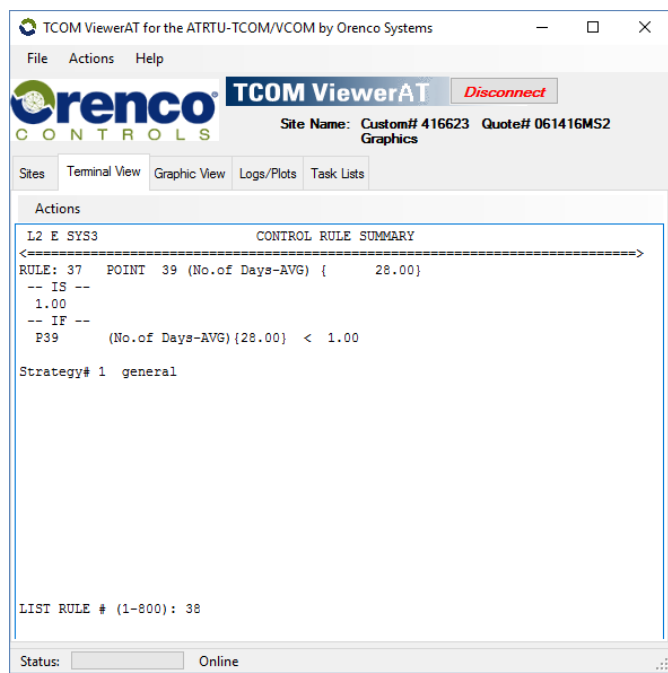
Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 66: Point Value Explanation

4.4.2.3 Rule Display (F)

The point rule display depicts the logic that controls the point and the current state of the rule.



Note

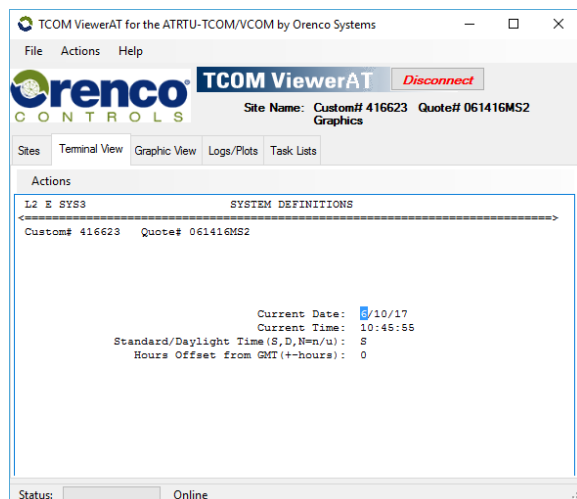
- Pressing the **ESC** key at any time will return to the previous screen.
- Pressing Enter again will display the next rule that is defined for this point. The lowest numbered rule that evaluates to true, will control the point value.

Figure 67: Point Control Rule Display

4.4.2.4 Setting the Date and Time

The user can set the date and time value using the display below. Date information is entered in MM/DD/YYYY format where MM is the month, DD is the day of the month, and YYYY is a year. The year can be entered in format and will be treated as an offset from the year 2000.

Time is entered in HH:MM:SS format where HH represents hours from 0-23, MM represents minutes 0-59, and SS represents seconds 0-59. It is not required to enter seconds.



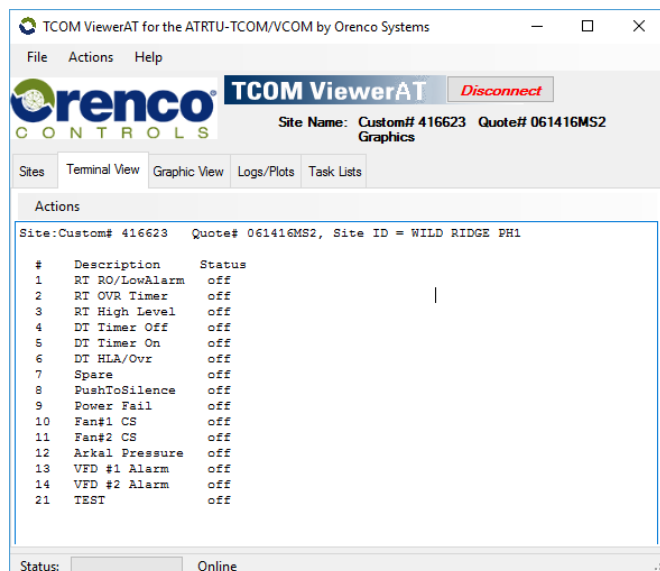
Note

- Pressing the **ESC** key at any time will return to the previous screen.
- Date format: MM/DD/YY or MM/DD/YYYY
- Time format: HH:MM:SS

Figure 68: Entering Date and Time

4.4.2.5 Input and Output Displays (K-N)

The current value of analog and digital inputs and outputs can be viewed using selections K-N.



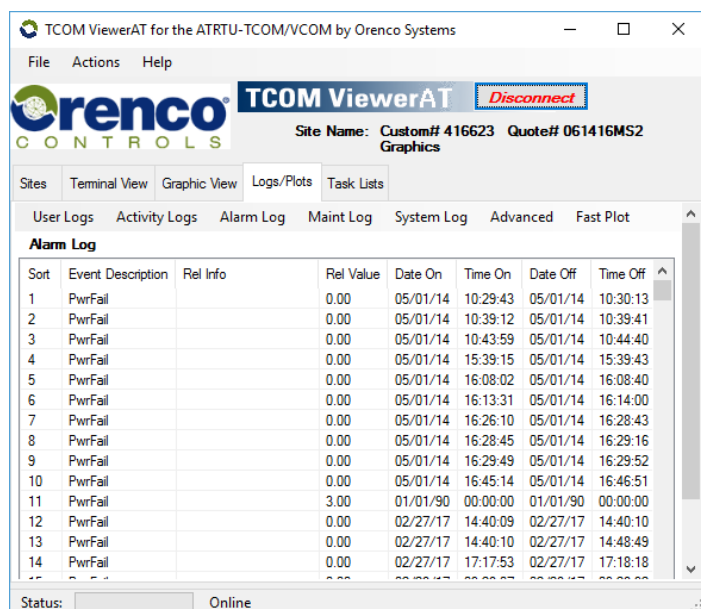
Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 69: Viewing Analog and Digital Inputs and Outputs

4.4.2.6 Logs (Q, S, U, W)

These pages will display the activity log, alarm log, system log, or a user log. See sections 1.4.6 “Logging Information” on page 14 and section 3.8.7 “Logs and Plots” on page 69 for more information.



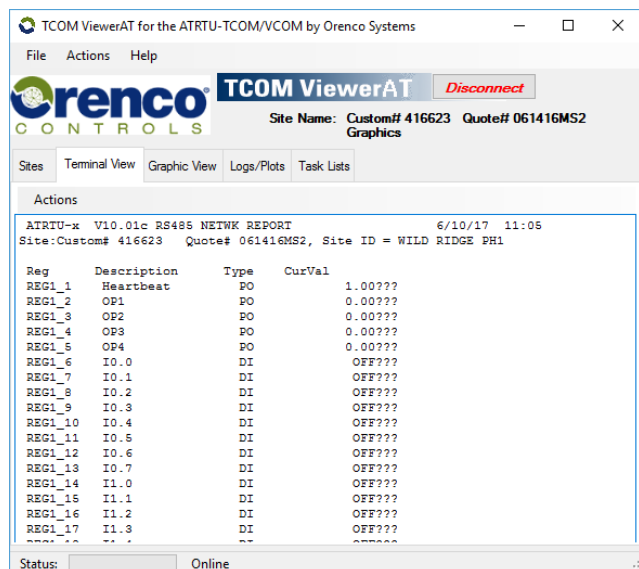
Note

- If no data is available to report from the logs, a message of “No Data to Report” will be displayed.
- Pressing the **ESC** key at any time will return to the previous screen.

Figure 70: Logs

4.4.2.7 RS485 Network Values Display (V)

Displays information about other devices connected via a Modbus RS485 network. Examples include displaying Modbus register values along with information about the register.



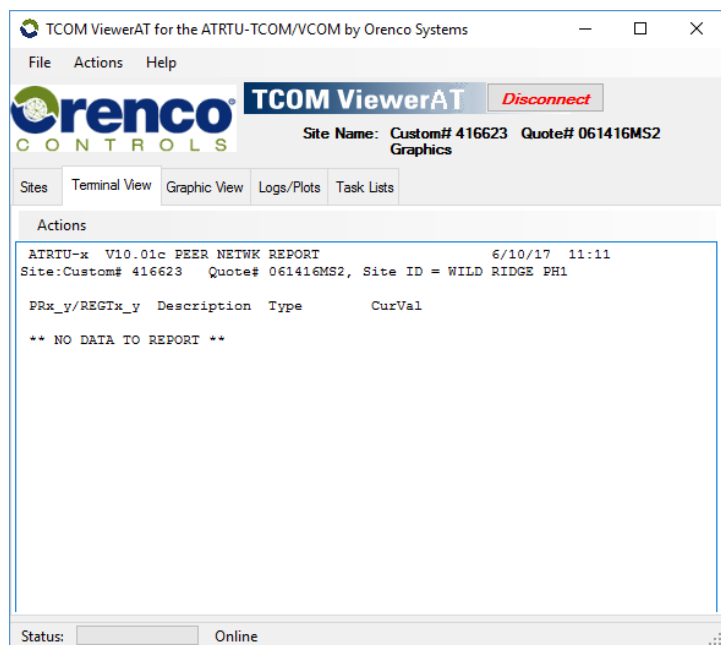
Note

- No registers will be displayed if none are defined.
- Pressing the **ESC** key at any time will return to the previous screen.

Figure 71: RS485 Network Values Display (V)

4.4.2.8 Peer Network Values Display (X)

Displays information about other devices connected via a network and defined as peers to this device



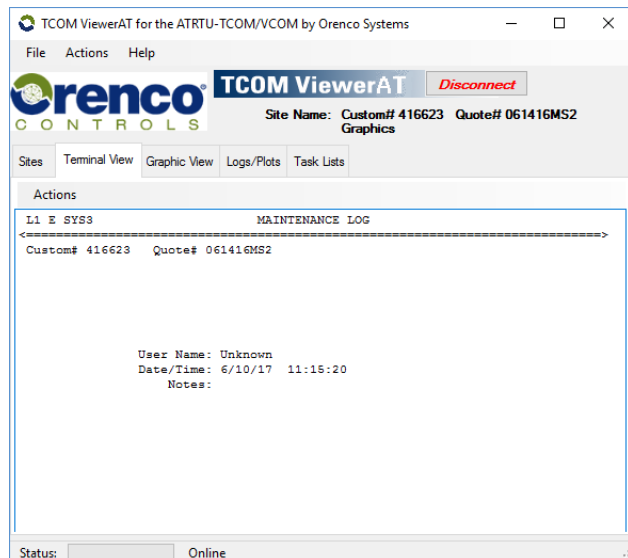
Note

- No peer information will be displayed if no peers are defined.
- Pressing the **ESC** key at any time will return to the previous screen.

Figure 72: Peer Network Values Display (X)

4.5 Maintenance Log Entry

From the top level “Run Mode” menu the user can select number 2 which allows them to record changes made to a site. Example uses include replacing a part, routine service, clearing and alarm condition, etc.



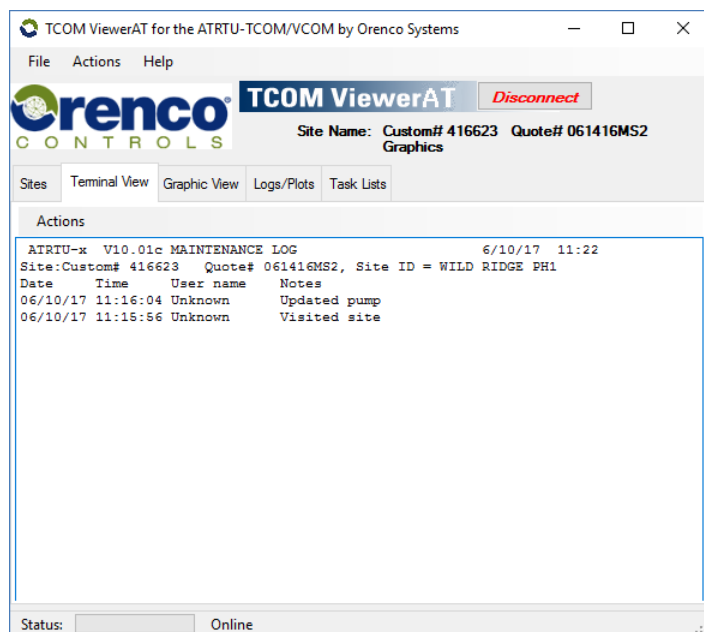
Note

- Up to 50 characters are allowed for notes.
- Pressing the **ESC** key at any time will return to the previous screen.

Figure 73: Maintenance Log Entry

4.6 Maintenance Log Report

From the top level “Run Mode” menu the user can select number 3 which allows them to view maintenance log entries made to a site.



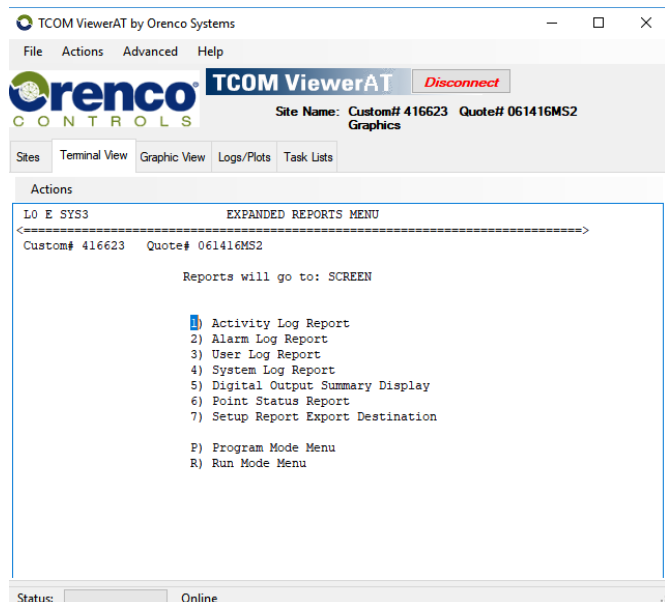
Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 74: View the Maintenance Log Report

4.7 Expanded Reports Menu

From the top level “Run Mode” menu, the user can select number 4 which allows them to view various logs. See section 1.4.6 “Logging Information” on page 14 for more information.



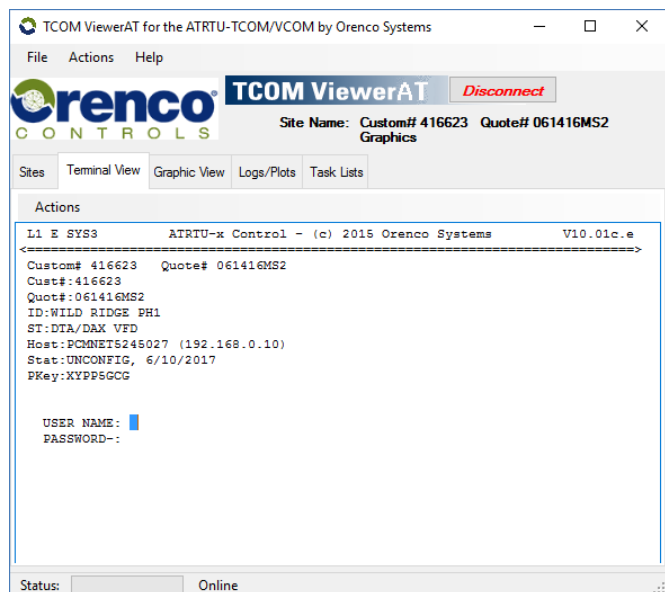
Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 75: Expanded Reports Menu

4.8 Enter a Username and Password

From the top level “Run Mode” menu the user can select number 5 which allows them to enter a user name and password combination. Typically a user is prompted to do this when connecting using a terminal emulation program and is done automatically when using TCOM Viewer. This feature enables the user to enter a new combination that may have higher or lower permissions levels. See section 1.4.4 User Accounts and Permission Levels on page 10 for additional information.



Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 76: Entering a Username and Password

4.9 Backup Program to Flash

The original factory control program is stored in non-volatile flash memory prior to shipment of the panel. During operation a copy of the control program is stored in a volatile RAM memory that is maintained through transient power interruptions. The volatile memory contents will be lost during long power outages. When power is re-applied, the system detects that that control program in the volatile memory is no longer valid and copies the program from the non-volatile flash memory into the volatile RAM memory.

When changes are made to the control programming they affect only the copy in the volatile RAM memory. The user must explicitly initiate the backup programming process to save the changes permanently in the non-volatile flash memory.

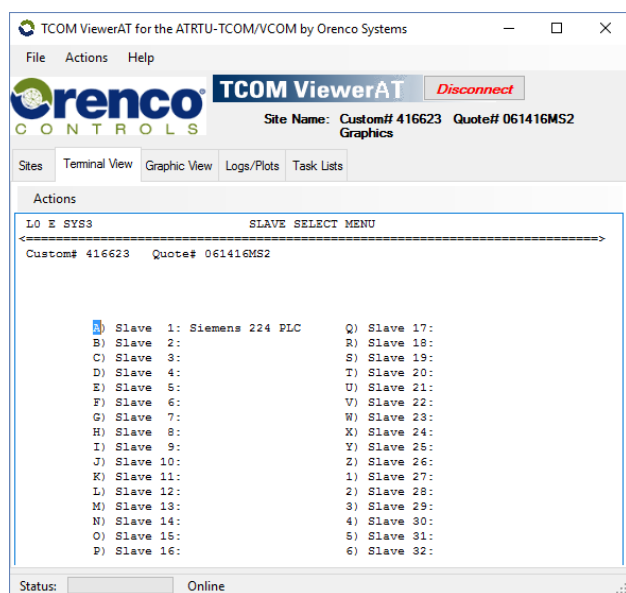
Select number 6 from the top level “Run Mode” menu to store changes in the volatile memory to the non-volatile flash memory.

It is recommended that the panel be in a stable condition (i.e. free of alarms) prior to using the “Backup Programming” command. The “Backup Programming” process saves all changes made to the control program. It is not necessary to save each individual change.

If an error message is received after selecting “Backup Programming”, please contact Orenco for assistance.

4.10 Logon to Modbus RS485 Slave

From the top level “Run Mode” menu the user can select number 7 to logon on to Modbus RS485 slave. This feature is only available at installation sites with multiple ATRTU-TCOM controllers connected with an RS485 Modbus network. If present, a user interacting with the Modbus master system and an adequate permission level can log into slave devices on the network.



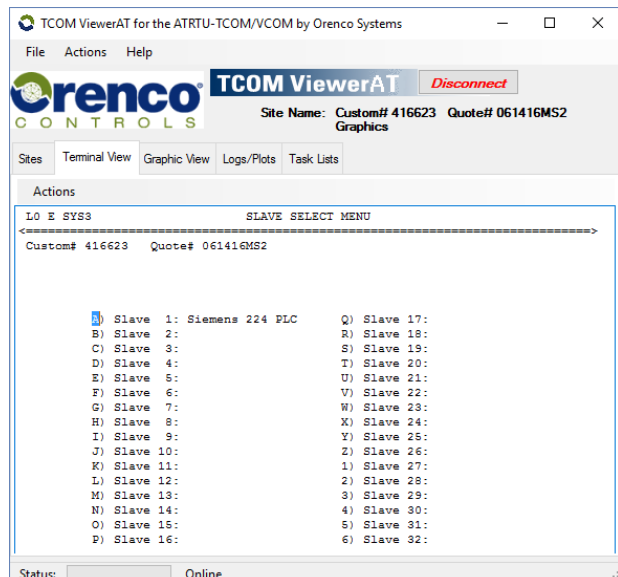
Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 77: Logon to Modbus RS485 Slave

4.11 Logon to Ethernet Peer

From the top level “Run Mode” menu the user can select number 8 to logon on to other ATRTU-TCOM controllers on the network. A limited set of device types is supported. Use of this feature requires additional configuration steps. Contact Orenco Controls for more information.



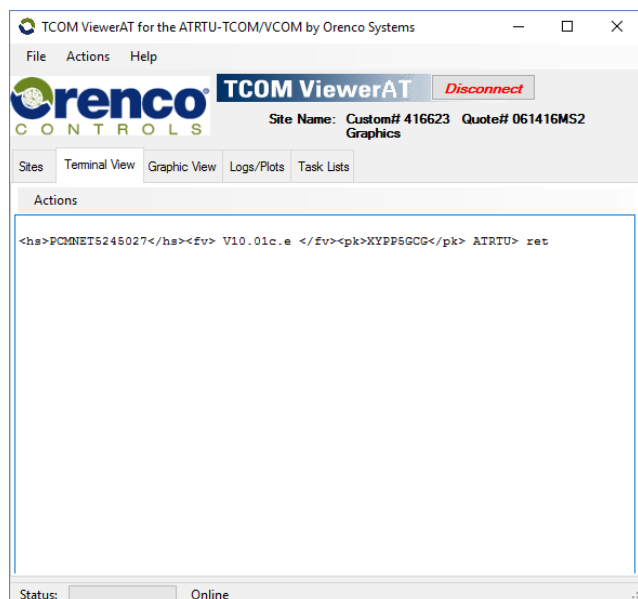
Note

- Pressing the **ESC** key at any time will return to the previous screen.

Figure 78: Logon to Ethernet Peer

4.12 Command Mode

Command mode is intended for internal use by Orenco Controls. The user is advised not to enter command mode. However, if command mode is entered accidentally, the user can exit it and return to the run mode menu by entering “ret” and pressing the **Enter** key, or by entering “menu” and pressing the **Enter** key.



Note

- Type ret and press the **Enter** key to exit command mode.

Figure 79: Exiting Command Mode

4.13 Mailbox Targets

The ATRTU-TCOM system supports event notification to a variety of external systems referred to as “mailboxes”. As described in section 1.4.7 “Event Notification Using Mailboxes” on page 15, multiple interacting subsystems are required for successful event notification using mailboxes.

User's with a high enough permission level can select the letter M from the top level “Run Mode” menu to view and interact with mailbox settings. To configure a mailbox the user must enter information that is valid for the destination device and mailbox type.

For a pager, phone, or modem the user must enter the pager or phone number to call. No message information is required, and no message will be left. The notification is via caller ID. The phone number must be entered as it would be from the site location. This includes an area code or any other prefix numbers that are required by the phone system the panel is connected to. Five commas must be appended to the end of the phone number.

For example: “1800554444,,,,,”.

For an email, the user must enter the destination email address and a message. In some configurations, it may be possible to send an email to a wireless cellular network and have it converted into an SMS text message.

For a direct cellular SMS text, the user must enter the phone number and a limited message.

4.14 Program Mode Menu

From the top level “Run Mode” menu user's with a high enough permissions level can select the letter P to enter program mode.

The program mode is typically reserved for internal use by Orenco Controls.

4.15 Changing Your Password

Orenco Systems ships each panel with a unique username and password that can be modified through the terminal mode interface. The initial username and password given by Orenco Systems can be modified and has the permissions to add more users. After more users have been added, the initial username has the capability to see all usernames and passwords, change their passwords, assign level permissions and give permission to other users to add more users. Each user added will only be able to see other user passwords of equal permission level, if permission is granted. User levels are arranged from 0-3, 0 being the highest-level permission.

To change your username and/or password:

- 1) Log in to TCOM viewer with the temporary Username and Password provided by Orenco Systems.
- 2) Once logged in, select the option “**P**) Program Mode Menu”.

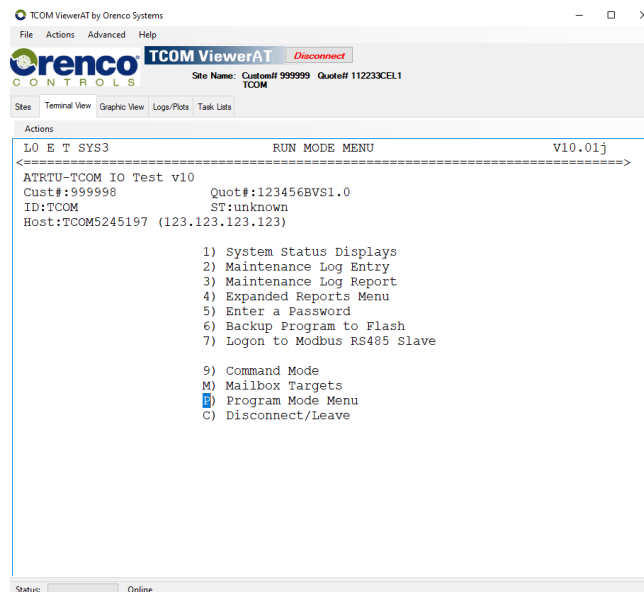


Figure 80: Program Mode Menu

- 3) In the program mode menu, select the option “**U**) Username Maintenance”.

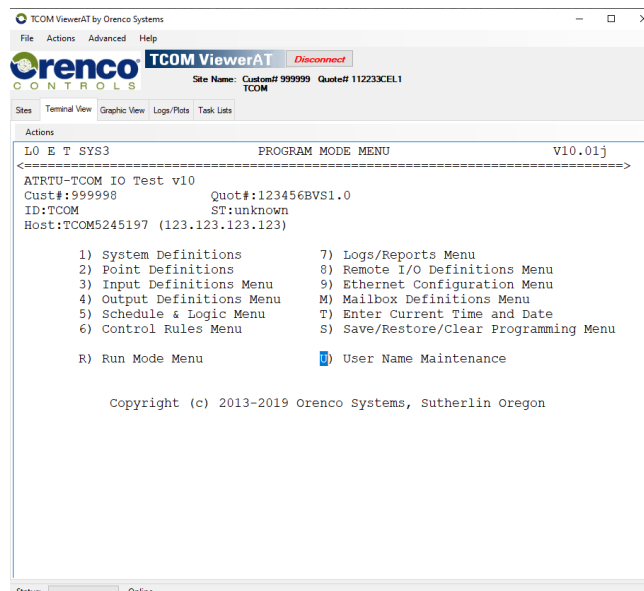


Figure 81: Username Maintenance

- 4) Move the cursor to the desired Username and Password to be changed.

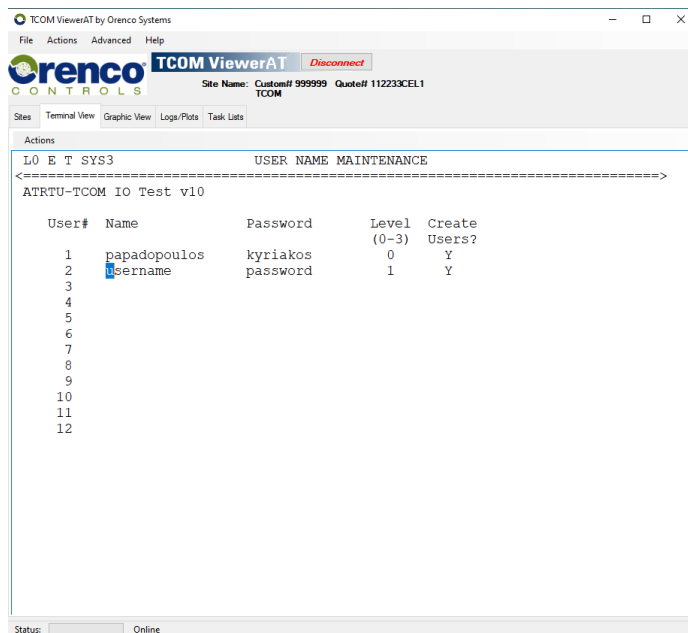


Figure 82: Current Username and Password

- 5) Enter the desired Username and Password. Username and Password are limited to 15 characters.

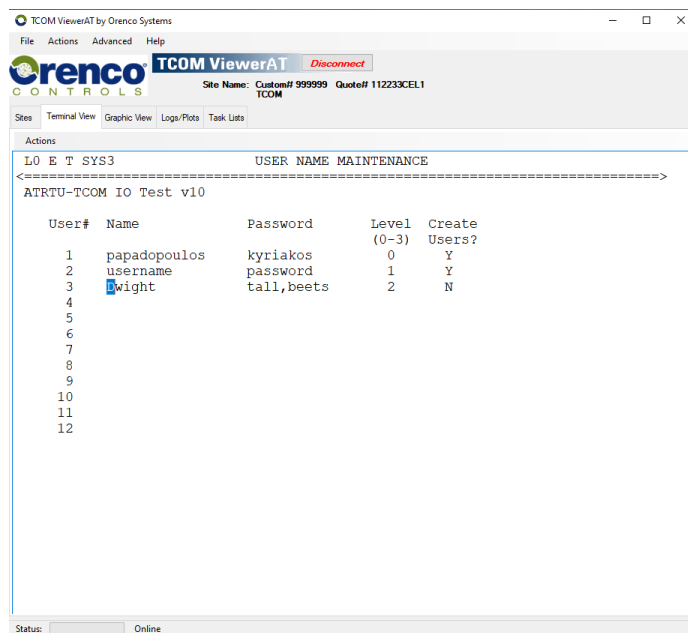


Figure 83: Entering New Username and Password

- 6) After changing the Username and Password press **Enter** and you will be returned to the previous window.

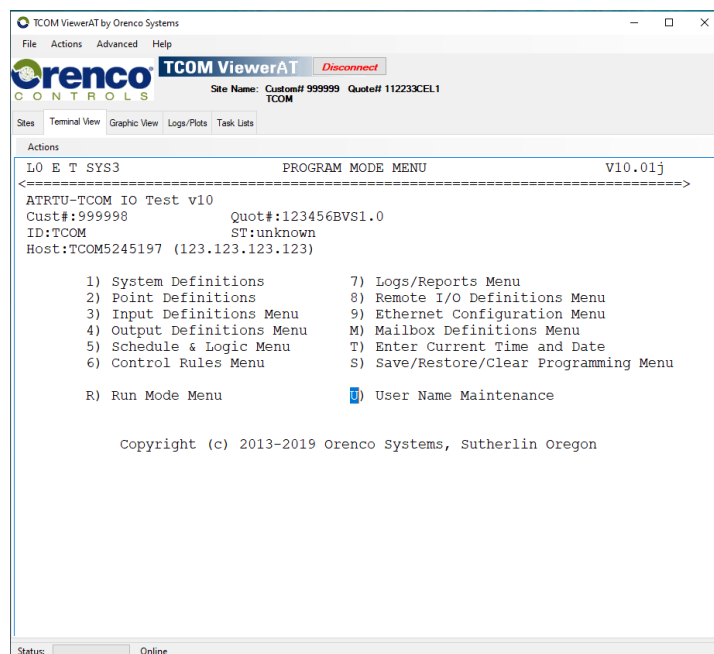


Figure 84: Return to Program Mode Menu

- 7) Return to “(R) Run Mode Menu” (the last two steps are very important. If not followed properly, the new Username and Password will not be saved).

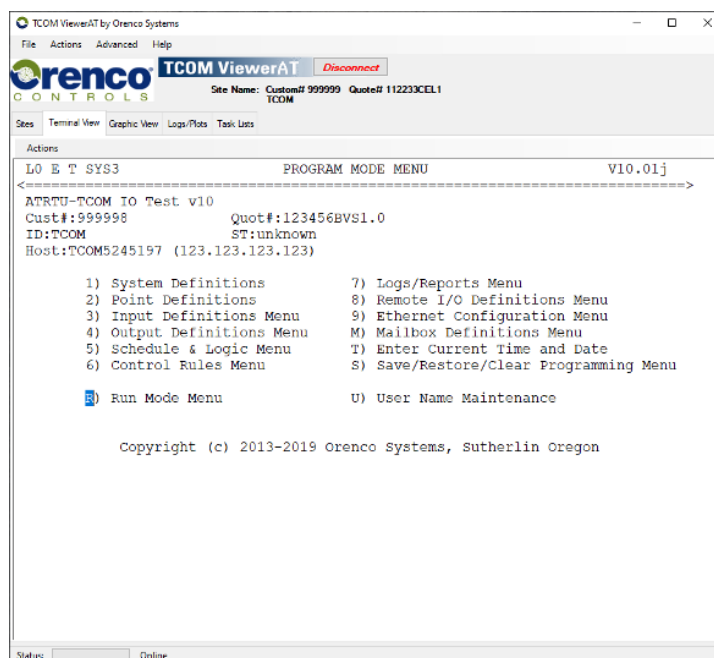


Figure 85: Run Mode Menu

- 8) In the RUN MODE MENU Select option “**6) Backup Program to Flash**” to save the changed new Username and Password. A message will be displayed at the bottom of the screen indicating that the program has been saved.

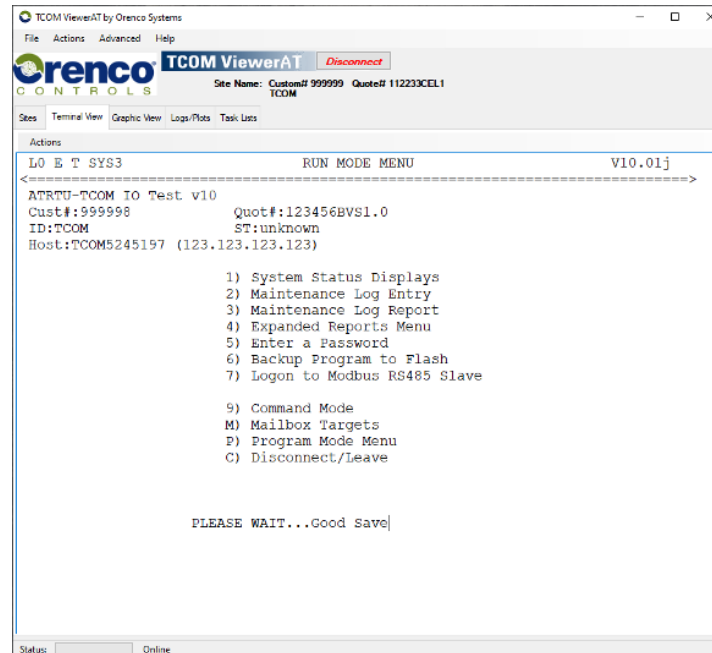


Figure 86: Backup Program to Flash

- 9) You have successfully changed the Username and Password.

4.16 Disconnect/Leave

From the top level “Run Mode” menu user’s can initiate a disconnect program by pressing the letter **C**.

5 LED's and Switches

There are several LED's and switches located on the ATRTU-TCOM main control board. Some of these are reserved for internal use by Orenco Controls. This section describes LED's and switches which can be used for limited system diagnosis.

5.1 LED's

The LED's provide limited visibility into the system state. If no LED's are lit or flashing, this typically indicates that there is no power applied to the board.

Name	Color	Component Silkscreen	Description
OK	Green	D2	When blinking at a rate of ~1 second, indicates the application firmware is running. When blinking rapidly in bursts of 2, 3, or 4 it indicates the application firmware is being reprogrammed. DO NOT REMOVE POWER.
PCI	Green	D5	When off, indicates no cellular modem is installed. When blinking at a rate of 1 second it indicates cellular modem is online.
Data	Green	D1	When flashing it indicates there's traffic on the optional cellular modem port.
Ethernet	Green	J2	When flashing it indicates there's traffic on the Ethernet port.

Table 6: LED Indicators

5.2 Switch Operation

Name	Silkscreen	Description
TEST	SW1	This switch is reserved for internal use by Orenco Controls.
RESET	SW2	When pressed and released, forces the core microprocessor to execute a reset sequence.

Table 7: Switch Operation

Warning

The TEST switch is not intended for use in the field. Improperly manipulating this switch can result in incorrect system behavior and require a reset to recover.

6 Support Information

For additional support, contact Orenco Controls.

Phone: 541-459-4449

Toll Free: 800-348-9843

Fax: 541-459-6781

Internet: www.OrencoControls.com

7 Glossary

Base Template	A TCOM Viewer or Web server page that graphic views are based on with a predefined set of objects that can be visible or hidden and mapped to internal ATRTU-TCOM resources.
BSP	Board Support Package.
Control Program	Refers to a set of logical operations used to monitor and operate ATRTU-TCOM control systems developed by Orenco Controls. Conceptually, it is a customized scripting language that is interpreted by another computer system and executed.
Firmware	A computer program that can be interpreted and executed directly by a microprocessor. Typically refers to a program tightly coupled to underlying hardware.
Graphics View	An optional feature that can be added to TCOM Viewer and/or the web server that provides a configurable set of user interface pages that graphically depict the current state of the target system and are refreshed periodically.
Hardware	Physical electronic devices. Typically comprised of a printed circuit board with integrated circuit devices soldered to it. May also refer to cables, switches, LED's, resistors, inductors, capacitors.
HTTP	Hyper Text Transfer Protocol. A set of rules for transferring files such as text, graphic images, and other multimedia files on the world wide web.
IP	Internet Protocol.
IP Address	Internet Protocol Address. Sequence of numbers identifying a device on a local network or a wide area network such as the internet.
IPV4	Internet Protocol Version 4 address. The fourth revision of the Internet Protocol (IP) used to identify devices on a network through an addressing system.
IPV6	Internet Protocol Version 6 address. The sixth revision of the Internet Protocol (IP) used to identify devices on a network through an addressing system.
LAN	Local Area Network. Private network either completely isolated or sometimes separated from public networks by a firewall and router.
LED	Light Emitting Diode. A semiconductor device that converts electrical energy into optical energy visible to humans.
NA	Not Applicable.
OSI	Orenco Systems Incorporated.
Override	Refers to changing or overriding the value of a specific point.
Override Type	Refers to the type of override applied to a specific point. The options depend on the type of point and whether the control program allows overrides. Possible options include "automatic", "permanent", and "timed". An automatic override basically means the point value is determined by the control program logic. A permanent override means the point is assigned a value that will not change until the override type is changed or the permanent value is changed. A timed override exists for a specified duration of time. When the time elapses, the point override value type returns to what it was before the timed override was applied.
Point	Refers to a control point in the control program monitoring and operating an Orenco Controls ATRTU-TCOM control system. Points can also be viewed as program variables, constants, or references to other points in the system.
Point Page	A group of points with a starting number that's an integer multiple of 16 and an ending number equal to the starting number plus 16. Basically a group of 16 points.
RTOS	Real Time Operating System. Typically multi-threaded.

Site	Reference to a geographic location where a ATRTU-TCOM controller is installed.
Software	A computer program that can be interpreted and executed directly by a microprocessor. Typically refers to an application that is abstracted and independent of the underlying hardware.
URL	Uniform Reference Locator. The address of a specific webpage or file on a computer on a network.
WAN	Wide Area Network. Public network, typically the internet.