



Graphical User Interface v1.0.3

Application User Guide



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Getting Started

Introduction

The MCI Graphic user interface (GUI) was designed to allow simple and powerful configuring of your chemical injection system within a user-friendly graphical environment.

The following user guide has been designed to get you up and running quickly. If you have a question concerning use of the graphical user interface, call the MCI Solutions Customer Service Department at 1-888-263-4565.

Customer Service hours are 8:00 AM to 4:30 PM, Mountain Standard Time, Monday through Friday.

Requirements

- Microsoft® Windows® XP, Win 7, Win 8/8.1, Win 10
- USB enabled computer system with available USB port
- 1x USB Cable (USB A to Mini B)

Installation


To install the Software:

1. Do not plug your USB cable into your PC at this time
2. Turn on your PC and allow windows to load.
3. Log in to the computer as an administrative user.
4. Download and Save the installation package ('mci_gui_installer.msi') to a known folder location on your computer. This file is available for download at www.mcisolutions.ca
5. Execute the installation package by double-clicking ("mci_gui_installer.msi")
Note: Administrative rights are recommended to ensure proper installation
6. A window displays ('Welcome to the MCI Pump Interface Setup Wizard'), click "Next" to Continue.
7. A window display prompts user to choose a directory in which to install the GUI. You may accept the default (recommended) directory: (C:\Users\...\AppData\Roaming\Mci_Gui) or create your own path. Click "Next" when done.
8. The ('Confirm Installation') window displays. Click "Next" to begin Installation.
9. If a ('User Account Control') window is displayed prompting user ('if you wish to continue installing the program from an unknown publisher'). Click "Yes" to continue the installation.
10. A window displays ('The installation is complete'). Click "Close" to finish the software installation
11. By Default the installation package installs a GUI "Shortcut" on the desktop as well as a "shortcut" to the root installation folder

To Connect the Pump:

1. To connect the pump to your PC, you need to install the drivers and connect the USB cable.
2. Ensure the pump is powered.
3. Connect one end of the USB cable to the pump (Mini-B) Connector.
4. Connect the other end of the USB cable to your PC or USB hub.
5. Windows® will attempt to install the drivers for you, if a dialog appears (“New Hardware”) “Windows needs to install driver” select “Locate and install driver”. This can take a long time, please allow windows to finish the automated device driver process.
6. If Windows® was unable to install the drivers please see manual driver installation instruction set found below under: Manual Driver Installation.



7. Open the Graphical User Interface by ‘double clicking’ the desktop shortcut icon ().
8. When communications have been established the connectivity status icon



(bottom right of main GUI interface) will display a solid orange check-mark ().

If the GUI is unable to detect a valid COM port please proceed with the manual driver installation instruction set below.

Manual Driver Installation

1. Navigate to the original installation package ‘Save-To’ location.
By default this directory is located in: (C:\Users\...\AppData\Roaming\Mci_Gui).
Tip: A shortcut to the original installation folder location is added to the desktop at time of installation (‘Shortcut to MCI App Folder’)
2. ‘Right Click’ the driver installation file (CDM v2.10.00 WHQL Certified.exe) and ‘Select’ Run as Administrator to execute the file.
3. If (‘User Account Control’) window displays prompting (‘Do you want to allow the following program to make changes to this computer?’). ‘Click’ yes to continue.
4. (‘FTDI CDM Driver’) window appears, Click ‘Execute’ to unpack FTDI’s driver package and launch the installer.
5. A device driver installation window displays. ‘Click’ Next to continue.
6. A window displays (‘The drivers were successfully installed on this computer’). ‘Click’ finish to complete the manual driver installation.
7. When the application drivers are successfully installed repeat the pump connection steps above (‘To Connect the Pump’ at top of page)

Interface Overview

Introduction

To help explain the functionality of the graphical user interface it has been divided into eight sections (Fig 1.0). Each section is then reviewed in detail to help highlight the available options within the GUI application and what effect these changes have on the pumping system.

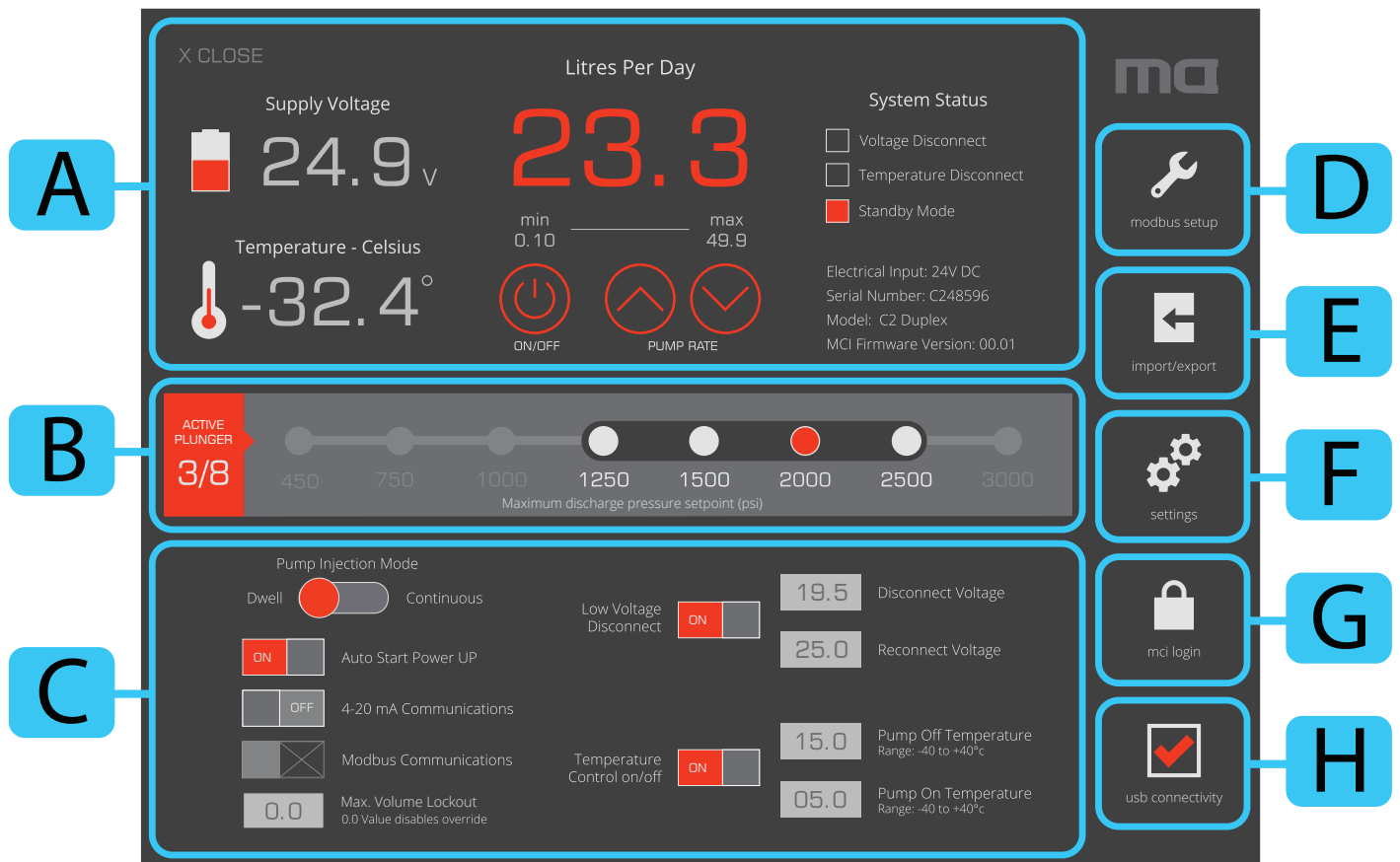


Fig. 1.0

- A. Pump Control / Status Menu
- B. Pressure Setting Menu
- C. Configuration Menu
- D. Modbus Setup Menu
- E. Import / Export Menu
- F. Settings Menu
- G. Mci Login Menu
- H. Connectivity Status

A. Pump Control / Status Menu

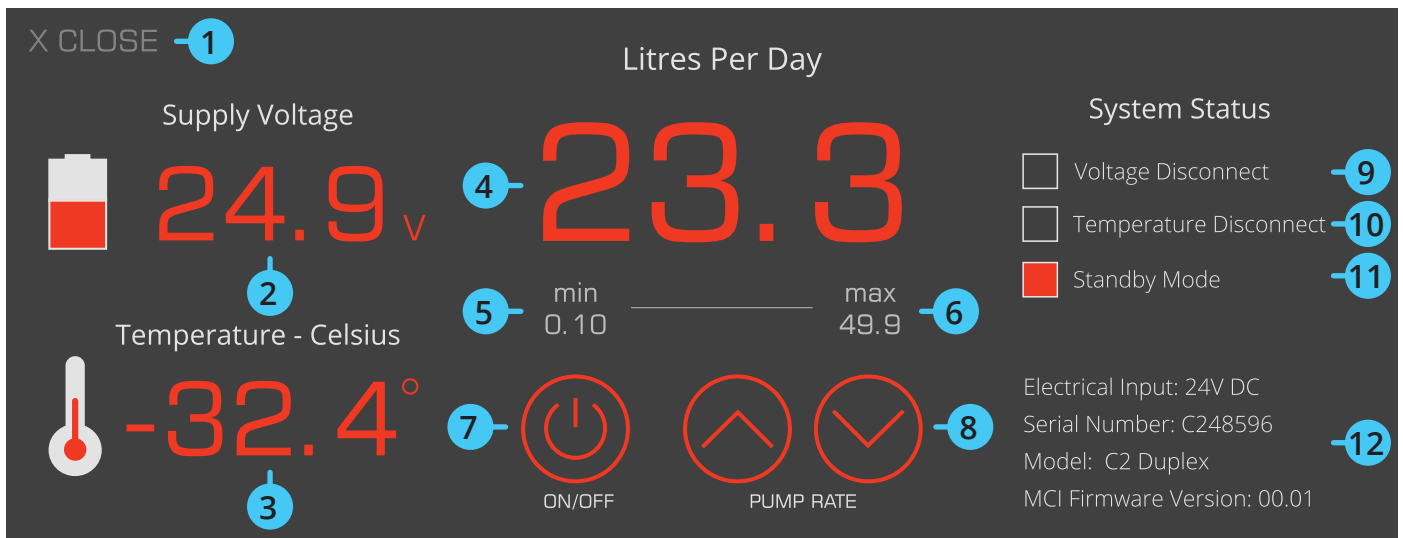


Fig. 1.1

1. **Close Button :**

Single 'clicking' this button will close the GUI interface.

Tip: If you click to the right of the close button anywhere along the top edge of window you can re-position the GUI on screen as required.

2. **Power Supply Voltage:**

Read only Value.

When connected to the GUI this value displays the systems DC power supply voltage.
When the GUI is not connected this value defaults to light grey and will not update.

3. **Pump Temperature (Degrees Celsius):**

Read only Value.

When connected to the GUI this value displays the current temperature reading of the pumps enclosure. When GUI is NOT connected this value defaults to light grey and will not update.

Tip: If the surrounding environment temperature is needed (recommended for temperature based on/off control) MCI recommends placing thermistor in a non-heat generating enclosure (i.e. Battery Enclosure). Please contact MCI directly for more information.

4. **Pump Rate (Liters Per Day):**

When connected to the GUI this value represents the current output setting of the pump in Liters Per Day (LPD).
When GUI is NOT connected this value defaults to grey and will not update.

Tip: The pump rate value is adjustable from within the GUI using the Pump Rate Buttons (Item 8) or with a text entry by single 'clicking' on the displayed rate. This is helpful for large rate changes

5. **Minimum (min.) Pump Rate:**

Read only Value.

It automatically updates relative to the selected system plunger (Item 13). This value is the minimum liter per day output achievable based on current pump configurations and updates automatically based on configuration settings (i.e. Plunger Size, Max Discharge Pressure or Volume Limit override).

6. Maximum (max) Pump Rate:

Read only Value.

It automatically updates relative to the chosen system plunger. This value is the maximum liter per day output achievable based on current pump configurations and updates automatically based on configuration settings (i.e. Plunger Size, Max Discharge Pressure or Volume Limit).

7. On/Off Control:

The on/off button is used to cycle the pump from run (on) to standby (off) mode. When the button is solid orange the pump is in 'Run' mode. When the button is outlined in orange then pump is in 'Standby' mode. Single 'Click' will cycle the pump between these two modes.

8. Up/Down Pump Rate:

The up/down arrow button(s) adjust the pump rate display (See item 4) in 0.1 increments.

Tip: For quick pump rate changes 'click and Hold' either button to initiate a rapid scroll.

9. Voltage Disconnect:

Read only Value.

The voltage disconnect value is considered 'Active' or 'On' when the display box is solid orange.

An 'active' button indicates the pump is forced to 'standby' because the systems voltage has dropped below the disconnect voltage (Item 22) setting. The pump will resume normal operation (Turn on) when the systems voltage value is \geq the reconnect voltage setting (Item 23).

Tip: Cycling power to the pump will allow the pump to resume normal operation assuming the systems voltage is above the disconnect set-point on reset. This eliminates the need to reach the 'reconnect' voltage setting to re-initiate the pump and can be helpful for troubleshooting purposes.

10. Temperature Disconnect:

Read only Value.

The temperature disconnect value is considered Active (On) when the display box is solid orange.

An 'Active' button indicates the pump is forced to 'standby' because the systems temperature OFF value is true. The pump will reconnect when the current temperature satisfies the ON value.

11. Standby Mode:

Read only Value.

The Standby Mode is considered 'Active' or 'On' when the display box is solid orange. An 'Active' button indicates the pump is in Standby mode (not cycling). The pump can be cycled from Standby (off) to Run (on) by single 'clicking' the on/off button (Item 7)

12. Configuration:

Read only Value.

The configuration text strings serve to assist in asset tracking and for pump setup verification.

B. Pressure Setting Menu

The pressure setting menu allows the pump to be configured to a custom maximum discharge pressure setpoint. MCI pump systems use stepper motor drive technology which has an inverse relationship with respect to torque and velocity. The custom setting menu allows users to define maximum discharge pressures relative to the systems plunger to optimize the performance of the pumping system without affecting the systems overall power draw. Increasing the systems max. discharge pressure setpoint will automatically limit the pumps maximum output volume (Item 6) and conversely decreasing the systems max. pressure will increase the pumps maximum output volume (Item 6)

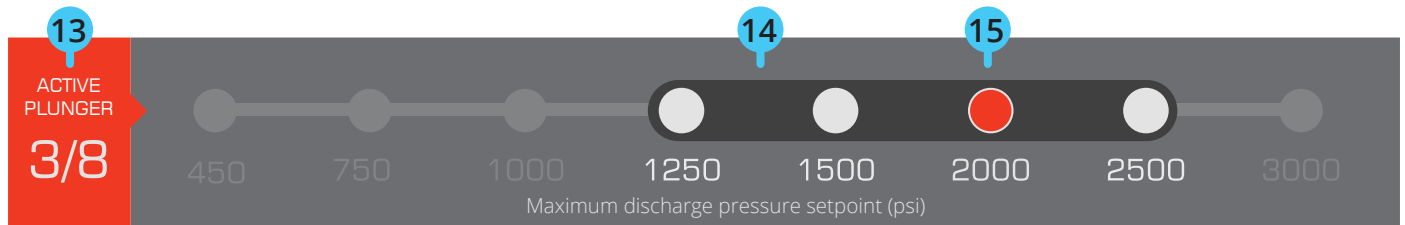


Fig. 2.1

13. **Active Plunger:**

Read only Value.

This value indicates what diameter of plunger (inch) is currently selected as the active plunger size. Available plunger options include 1/4", 3/8", 1/2" and 11/16".

14. **Available Selections:**

The dark grey graphic is used to indicate what selection(s) are available for the systems active plunger. Only the pressure selections within this graphical band area are available for selection.

15. **Pressure Selection:**

Pressure selection circles contained within the available selection graphic area (Item 14) can be selected with a single 'click'. The active selection will be filled solid orange. Changing the pressure selection will automatically adjust the pumps configurations to ensure the drive stays within safe operating limits for MCI's standard solar power supply.

Increasing the systems discharge pressure will automatically limit the pumps maximum output volume (Item 6) and conversely decreasing the system pressure will increase the pumps maximum output volume (Item 6).

Tip: To select a new pressure value the pump must be in the standby (off) mode (See Item 11)

C. Configuration Menu

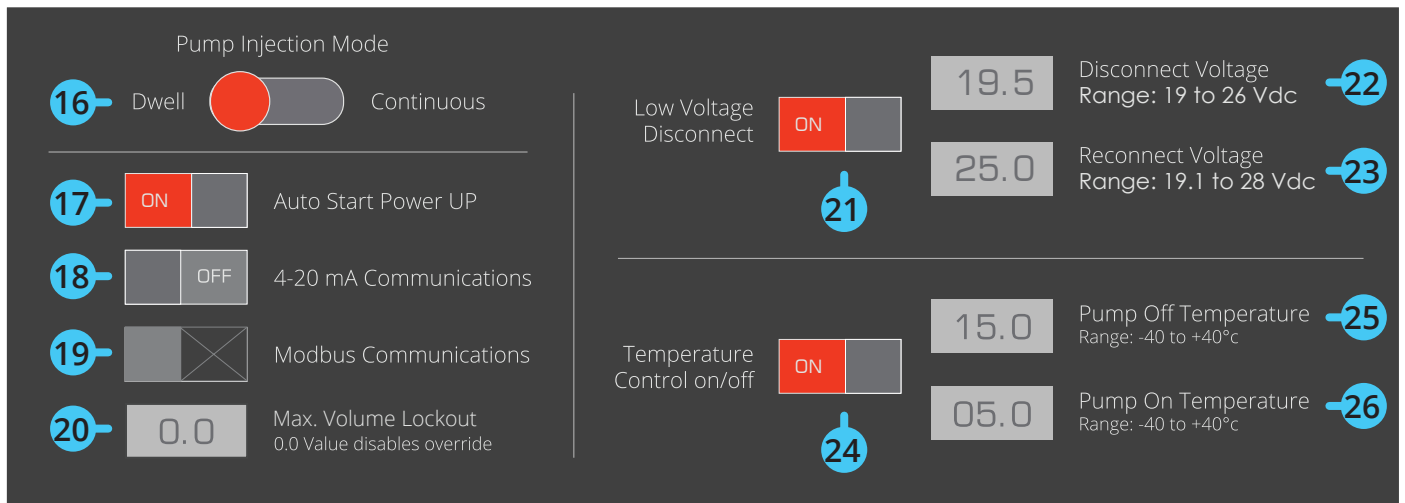


Fig. 3.1

16. **Pump Injection Mode:**

Pump injection mode changes the pumps injection cycle. A single 'Click' will toggle the slider switch button from dwell to continuous mode.

Note: The System must be in standby (off) mode to allow pump injection mode changes.

Dwell Mode: The pumps injection cycle and retract cycle runs at a constant (max) speed and pauses between strokes.

Continuous Mode: During the pumps injection cycle (extend portion) the system uses a variable velocity and retracts with a constant (max) speed allowing for a continuous injection cycle (no pause in cycle)

Tip: If a continuous injection cycle is not beneficial for your application a considerable power savings (up to 80%) can be achieved by running the system in Dwell Mode.

17. **Auto Start Power Up:**

Auto start power up changes how the pump starts when a power cycle is performed. A single 'Click' will toggle the slider switch state (On/Off).

Auto Start On: The pump will automatically begin cycling after a power interrupt.

Auto Start Off: The pump will not begin cycling after a power interrupt until the On/Off button is pressed (Item 7).

18. **4-20 mA Communications (Optional Upgrade):**

This button enables/disables 4-20 mA communications. A single 'Click' will toggle the slider switch state (On/Off)

Switched On: When a valid 4-20 mA signal is sensed the pump will be forced to run in Analogue mode.

Switched Off: The system will ignore (disable) all 4-20 mA input signals and force the pump to manual control.



Note: If the button is in the disabled state () activation is required. Contact MCI for activation Key (See Item 41) for activation overview.

19. **Modbus Communications (Optional Upgrade):**

This button enables/disables Modbus communications. A single 'Click' will toggle the slider switch state (On/Off).

Switched On: When a Modbus command is provided the pump will read the instruction.

Switched Off: When a Modbus command is received it is ignored.



Note: If the button is in the disabled state () activation is required. Contact MCI for activation Key (See Item 41) for activation overview.

20. **Max. Volume Lockout:**

The Max. volume lockout feature is designed to allow the ability to limit the pumps maximum available LPD setting at the local front panel controller interface. To enter a value 'click' on the text box and enter a value.

Note: Setting the value to 0.0 disables the max. volume lockout.

21. **Low Voltage disconnect:**

This button turns the low voltage disconnect on/off.
By default this button is locked to the 'On' position.

22. Disconnect Voltage:

When the systems supply voltage drops below the disconnect voltage setting, the pump is forced to standby (Off). To enter a new value 'click' on the text box and enter a value that is within the allowable range displayed on main GUI interface.

Note: The Disconnect voltage set-point must be at least 0.1V below the reconnect set-point.

23. Reconnect Voltage:

When the system has been forced to standby (Off) due to low voltage the pump will only reconnect when the reconnect voltage value is reached (true). This feature allows DC battery banks time to re-charge before the load is reconnected. To enter a new value 'click' on the text box and enter a value that is within the allowable range displayed on main GUI interface.

Note: The Reconnect voltage set-point must be at least 0.1V above the disconnect set-point.

24. Temperature Control On/Off:

Temperature control is designed to command the pump 'On' or 'Off' relative to temperature. A single 'Click' will toggle the slider switch state (On/Off).

Warning: A minimum separation of 3 degrees between the 'ON' and 'OFF' temperature setpoints is required

Note: MCI provides long lead thermistors (3m [9.8] leads) that can be extended beyond the pumps enclosure. By default the thermistor is installed within the main enclosure. If the temperature control On/Off control is used MCI highly recommends to extend the thermistor to an enclosure that is not heat generating (i.e. Battery enclosure on solar applications). This will provide a more accurate ambient temperature reading.

25. Pump Off Temperature:

When the systems 'Off' temperature setting is reached (true) and the temperature control feature (Item 24) is set to 'On', the pump is forced to standby (Off). To enter a new temperature Off value 'click' on the text box and enter a new value. (Valid Range -40C to +40C)

26. Pump On Temperature:

When the systems 'On' temperature setting is reached (true) and the temperature control feature (Item 24) is set to 'On', the pump is forced to Run (On). To enter a new value 'click' on the text box and enter a new value. (Valid Range -40C to +40C)

Pump ON/OFF Temperature Control Examples:

Example 1

Pump ON temperature (Item 26) = +10C and Pump OFF temperature (Item 25) = -10C

In this scenario when the pumps temperature reading (Item 3) is above +10C the pump will run normally until -10C is reached, at -10C the pump will be forced OFF 'Standby' (AL.2 will display on screen)

When the pumps temperature is below -10C the pump will be forced OFF 'Standby' until +10C is reached, at +10C the pump will be turned ON 'Normal Operation' (AL.2 will clear)

Example 2

Pump ON temperature (Item 26) = -5C and Pump OFF temperature (Item 25) = +3C

In this scenario when the pumps temperature reading (Item 3) is below -5C the pump will run normally until +3C is reached, at +3C the pump will be forced OFF 'Standby' (AL.2 will display on screen)

When the pumps temperature is above +3C the pump will be forced OFF 'Standby' until -5C is reached, at -5C the pump will be turned ON 'Normal Operation' (AL.2 will clear)

D. Modbus Setup Menu

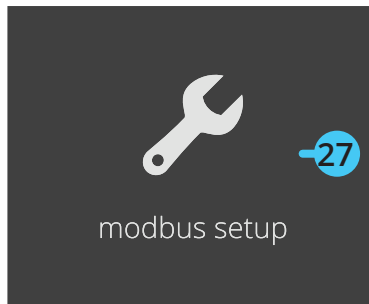


Fig. 4.1

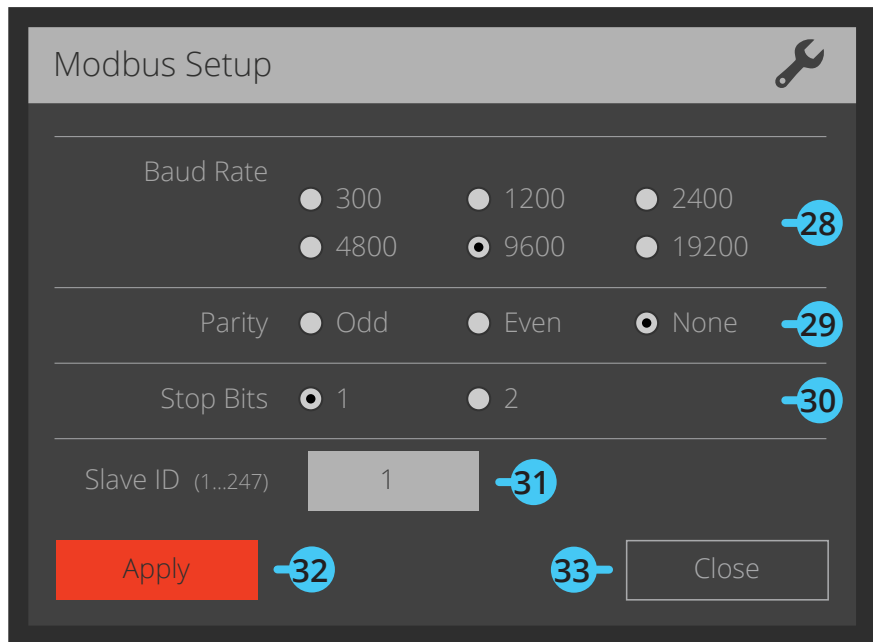


Fig. 4.2 (SUB MENU)

- 27. **Modbus setup:**
Single 'Clicking' on the Modbus Setup button (Fig 4.1) opens the Modbus setup sub-menu (Fig 4.2)
- 28. **Baud Rate:**
Allows configuration of serial port Baud Rate settings. To select a new setting single 'click' on available radio button. The active selection will be populated with a solid black dot ●.
(Default Baud Rate Setting = 9600)
- 29. **Parity:**
Allows configuration of serial port Parity settings. To select a new setting single 'click' on available radio button. The active selection will be populated with a solid black dot ●.
(Default Parity Setting = None)
- 30. **Stop bits:**
Allows configuration of serial port Stop Bit settings. To select a new setting single 'click' on available radio button. The active selection will be populated with a solid black dot ●.
(Default Stop Bits Setting = 1)
- 31. **Slave ID:**
Allows configuration of Slave ID settings. To enter a value 'click' on the grey text box and enter value. Valid Range: 1...247 (Default Slave ID = 1)
- 32. **Apply:**
A Single 'Click' on the Apply button will apply current settings and closes the dialog menu (Fig 4.2)
- 33. **Close:**
Single 'Clicking' this button closes the Modbus Setup Screen without applying changes.

E. Import/Export Menu

The import/export sub menu allows users to:

- Install software (.mci) and firmware (.hex) update files that have been released by MCI
- Export configuration files. The configuration files provide a complete 'snapshot' of all parameter settings to assist MCI's support process.



Fig. 5.1

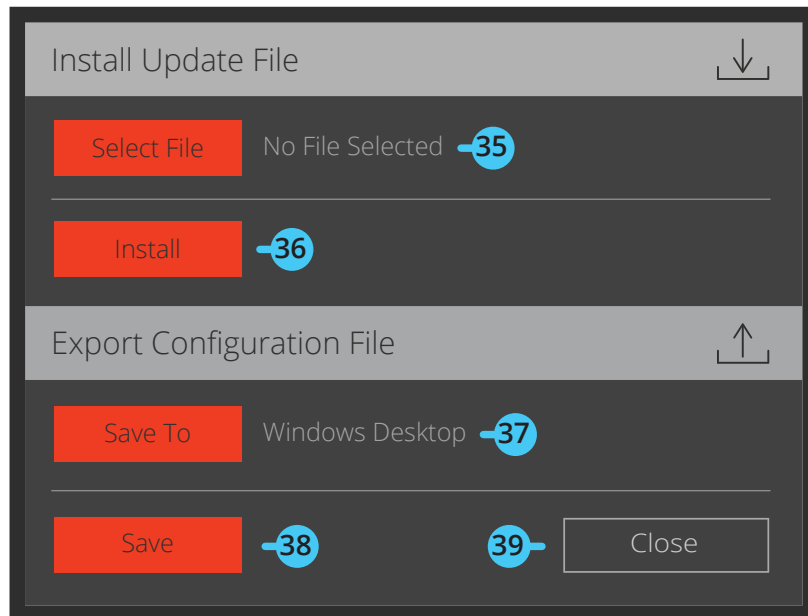


Fig. 5.2 (SUB MENU)

34. File Import/export:

Single 'Clicking' on the import/export button (Fig 5.1) opens the file Import/export sub-menu (Fig 5.2)

35. Select File:

The Select File button allows users to select a file from specific directory locations. Available file extension types include .mci (Software) and .hex (firmware). Single 'clicking' this button will display a file selection window. When target file is located and selected either 'double click' the button or select 'Open'

Note: The default file selection filter is set to open .mci (Software) file types. If .hex (firmware) files are required select (.hex) from file selection filter in bottom right of file selection window.

36. Install:

The Install button loads the file that was selected in (Item 35) with a single 'click' of the button. An upload status window appears during this process to update status of upload. The when this upload is completed the system will re-start automatically.

37. Save To:

The Save to button allows the save to file location so be selected. The default 'Save To' location is the Windows® Desktop. Single 'clicking' this button will display a file selection window so a target location can be selected. When the target 'Save To' file location is selected 'click' open to select this location.

38. Save:

Single 'Clicking' the Save button will save a copy of the export configuration file to the specified 'Save to' location (Item 37)

39. Close:

A Single 'Click' on this button will close the Import/Export Screen.

F. Settings Menu

The settings menu allows users to access the full 'User Guide' from within the GUI environment and to apply an option key that is required to activate the remote pump control interface option (4-20mA and Modbus over RS485). If you are interested in activating the remote communications package please call the MCI Solutions Customer Service Department at 1-888-263-4565 for instructions.

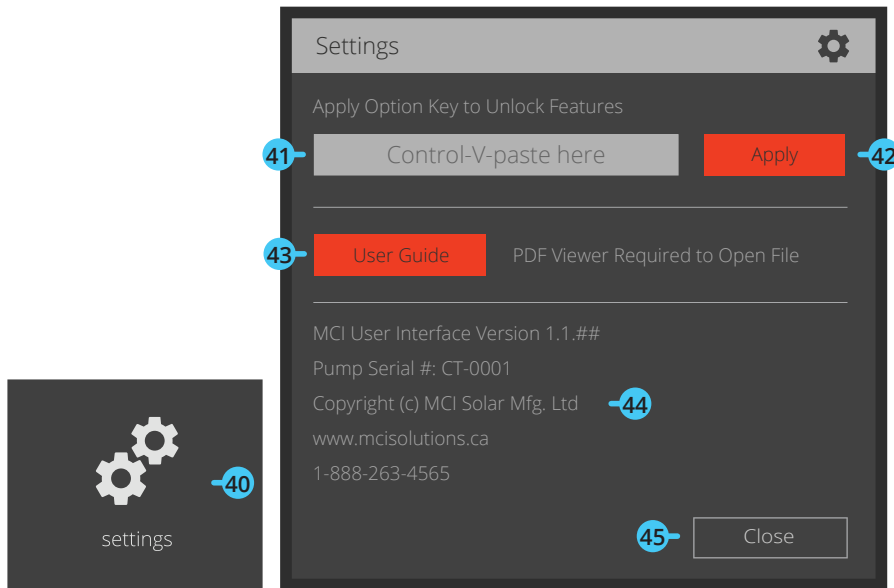


Fig. 6.1

Fig. 6.2 (SUB MENU)

40. Settings:

Single 'Clicking' on the Settings button (Fig 6.1) opens the Settings sub-menu (Fig 6.2)

41. Option Key Text Entry:

The option key paste bar ("Control-V-Paste here") is used to deploy an option key provided by MCI to activate (enable) remote communications (Item 18/19). When a key is actively deployed the window will display ("Key Applied") by default.

*Note: As the name suggests this text bar accepts 'Control+ V' paste commands.
To enter option key :*

1- Select (highlight) entire option key provided by MCI and copy the text to the clipboard (press and hold 'CTRL' + C).

2- Single 'Click' on Apply option key' text box (Item 41) and paste the option key (press and hold 'CTRL' + V).

42. Apply:

Single 'Clicking' the button will apply the entered option key to unlock remote communications feature(s).

Tip: To confirm the options key was successfully applied confirm the 4-20 mA and Modbus communications buttons (Item 18/19) are in the enabled state . Alternatively, open the settings menu (Item 40) and confirm the option key text (Item 41) displays 'Key Applied'.

43. **User Guide:**

Single 'Clicking' the User Guide button will open the systems GUI User Guide in .PDF format.

44. **About Menu:**

The following text strings are read only and serve to assist in Version tracking and for pump setup verification.

45. **Close:**

Single 'Clicking' this button closes the Settings Screen.

G. MCI Login Menu

The MCI login menu allows custom firmware/software updates and is reserved for MCI access ONLY.

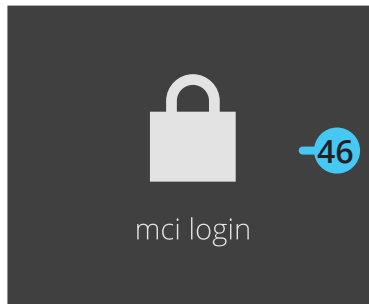


Fig. 7.1

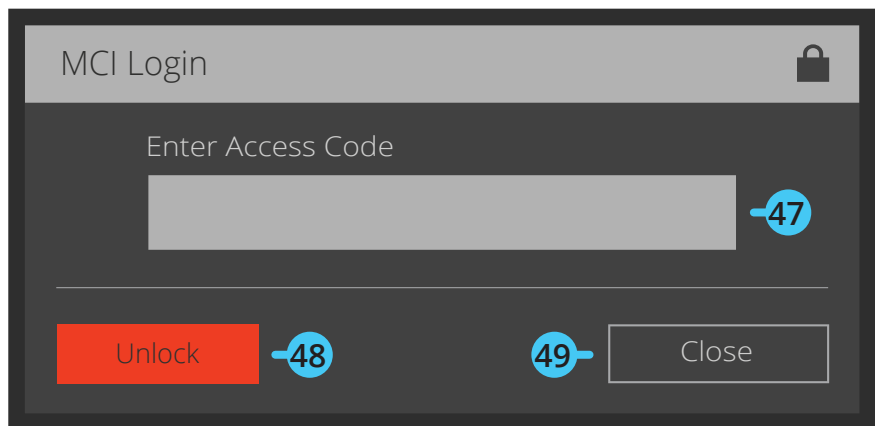


Fig. 7.2 (SUB MENU)

46. **MCI Login:**

Single 'Clicking' on the Mci Login button opens the Mci Login sub-menu (See Fig 7.2)

47. **Access Code Text Entry :**

Reserved for MCI access Only.

48. **Unlock:**

Reserved for MCI access Only

49. **Close:**

Single 'Clicking' this button closes the MCI Login Screen.

H. Connectivity Status

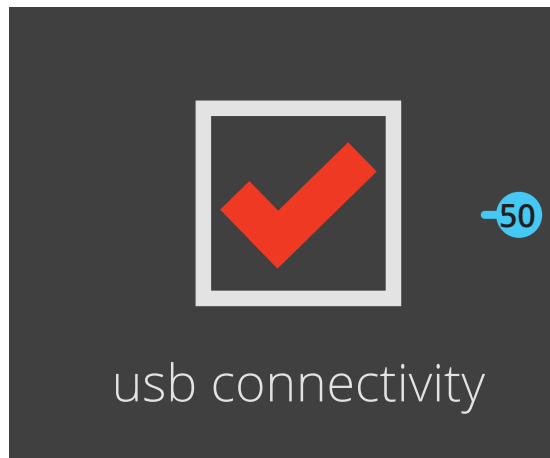


Fig. 8.1

50. USB Connectivity:

When the GUI has successfully connected to the pump system a solid orange check-mark will display (Fig 8.1)



Otherwise a grey 'X' will display indicating the GUI is NOT currently connected ().

Tip: 'Right Clicking' the USB connectivity button (Item 50) at anytime will reset communications by forcing an immediate re-connect command.

How to Reach Us

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