MLC 9000+ Quick Start Guide 59328-3

The MLC 9000+ is a DIN-rail-mounted multi-loop PID control system that can be connected to a variety of fieldbus systems. The MLC 9000+ system consists of a single Bus Module and any combination of up to 8 Loop Modules.

The Bus Module is a supervisory module connected directly to the DIN rail. It provides power to the Loop Modules and contains a back-up of the system configuration data. It also manages the communications with external devices.

Figure 1 – A Typical MLC 9000+ System

The Loop Modules are independent control modules managed by the Bus Module. They are connected to the DIN rail via an inter-connect module that provides power and communications from the Bus Module. Any combination of Loop Module types can be connected to the Bus Module, as long as the maximum of eight modules is not exceeded.

1. HARDWARE INSTALLATION

Remove the Bus Module and Loop Modules from there packing and install them as described in their installation manuals. Connect the configuration cable supplied with the MLC 9000+ Workshop software to the RJ11 port of the Bus Module and to the RS 232 port of the PC. The MLC 9000+ is now ready for configuration. (More information on the hardware installation can be found in the MLC 9000+ User Guide)

2. INSTALLING MLC 9000+ WORKSHOP

1. Insert the installation disk into the CD drive on your PC. The Set-up program should start automatically; If it does not, navigate to the appropriate drive using Windows Explorer and double click the Set-up icon.
2. The Set-up Wizard will guide you through the installation procedure.
3. You will be prompted to define a folder into which you want the Configurator installed. You may use the default folder or specify one of your own choice.

3. RUNNING MLC 9000+ WORKSHOP

The first screen displayed on start-up is an options menu. This options menu gives you three choices:
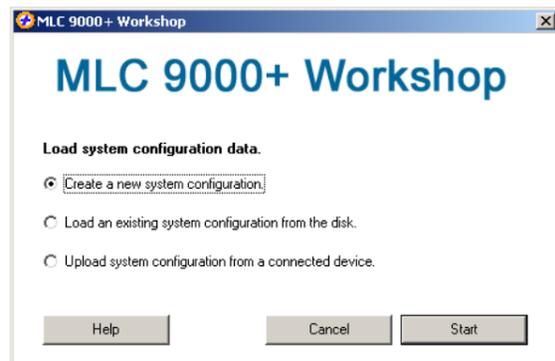
1. **Create a new System Configuration:** This option is for configuration of an MLC 9000+ system without the physical hardware being connected to the PC.
2. **Load an existing System Configuration from the disk:** This option loads a configuration that has already been saved previously.
3. **Upload System Configuration from a connected device:** This option gathers the system configuration information from an MLC 9000+ system that is connected to the RS 232 port of the PC.

To create a new configuration select 'Create a new System Configuration' and press Start, this will then take you to the system configuration screen. If the Bus Module is new and has never been configured this option must be selected as the Bus module will have no configuration.

To navigate through the different configuration screens of the MLC 9000+ Workshop software select View in the menu bar or use the buttons in the task bar.

4. SYSTEM CONFIGURATION

The system configuration screen is used to define which Bus Module and Loop Modules are used in the MLC 9000+ system.

The left-hand column is a list of all the Bus Module and Loop Module drivers available. The right-hand column is a blank system. To insert a module into the system, drag from the available modules in the left hand column and drop in an available slot in the right hand column. The first module to add is the Bus Module. Select a Bus Module type and drag and drop it into the Bus Module slot. The Loop Modules can then be added in any order. When adding modules ensure that the physical hardware is installed in the same configuration. For example, if the physical MLC 9000+ system is a BM230-DN Bus Module and three Z3611 Loop Modules the system configuration entered must be the same.
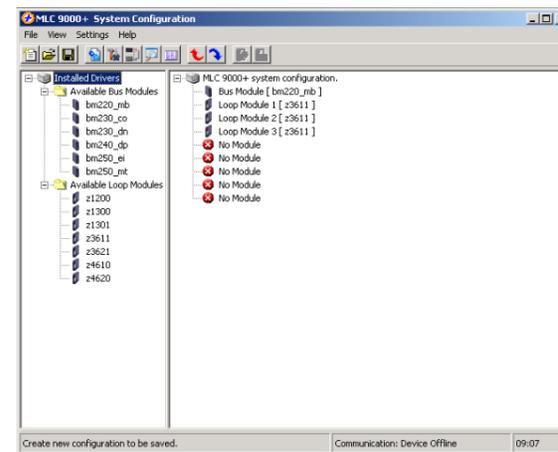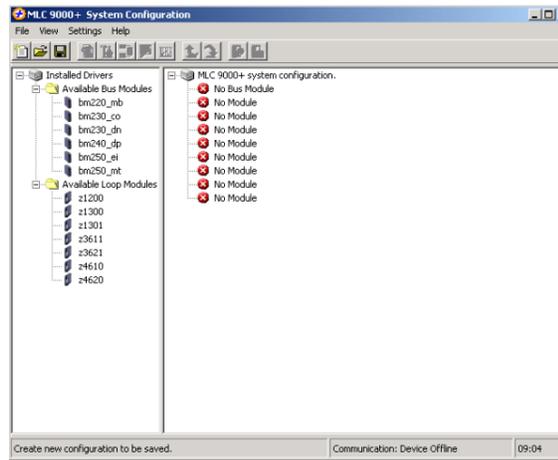
Once System Configuration is complete proceed to the Configuration Wizard using the View | Configuration wizards menu option or by pressing the wizard button.

5. CONFIGURATION WIZARDS

The configuration wizard screen is used to configure the control characteristics of the Loop Modules and the standard communication parameters of the Bus Module. In the left hand column are all the modules that were added during System Configuration.

Click on the + sign next to the module. A list of the available configuration wizards is then displayed. To activate a wizard double click on the wizard name.
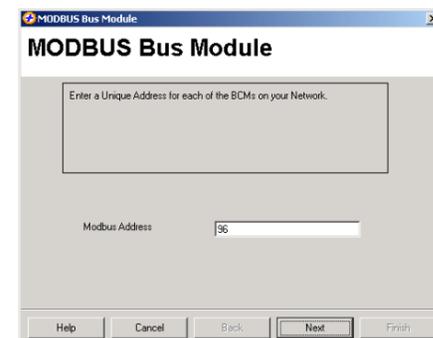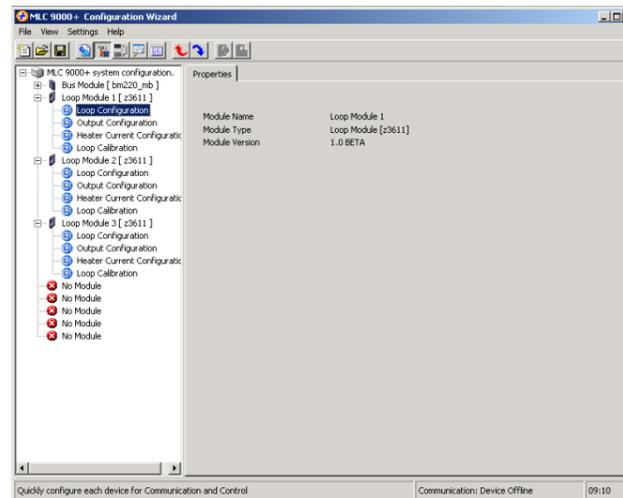
Each Bus Module type has a wizard that can be used to configure the communication parameters required for successful communication.

All Loop Modules have three common wizards:

1. **Loop Configuration:** This wizard is for configuration of the most common control loop parameters in the module.

For single loop controller modules (Z1200, Z1300, and Z1301) the loop configuration only gives you the option to configure a single loop.

For multi-loop controller modules (Z3611, Z3621, Z3651, Z4610, Z4620and Z4660) the loop configuration gives you the option to configure multiple loops with the same configuration at the same time. This then reduces the time required to configure multiple loops.

2. **Output Configuration:** This wizard is used to allocate the outputs to specific tasks and in the case of the multi-loop Loop Modules which loop they will work with.

Any of the outputs in a single loop module can be assigned any task. For multiple loop modules each control loop needs to be assigned an output.
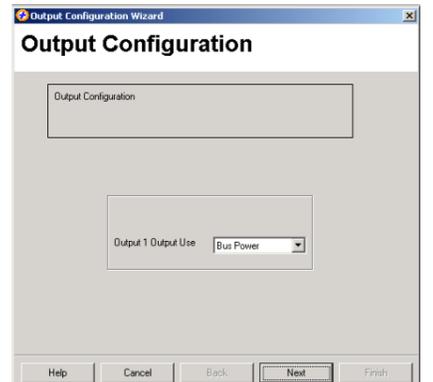
3. **Loop Calibration:** This wizard is for calibration of the inputs. It should only be used if you are sure that the input is out of calibration.

WARNING: Incorrect calibration will cause the MLC 9000+ to malfunction

For modules that have the Heater Current input (Z1301, Z3611, Z3621 and Z3651) there is a separate wizard
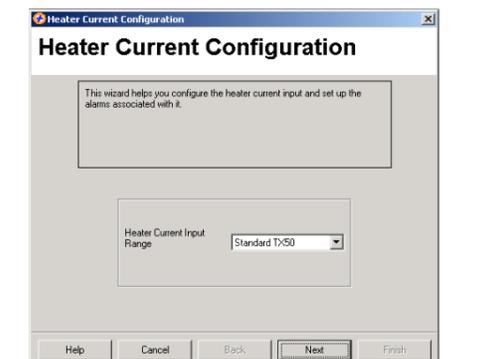
6. CONFIGURING THE FIELDBUS COMMUNICATIONS (DATA ASSEMBLIES)

Select the Data Assemblies screen using View | Data Assemblies or the Data Assemblies button. A Data Assembly is a user-defined collection of parameters that the Bus Module collects from its Loop Modules so that the master device (PLC, SCADA or HMI) can collect the required parameter data in one message transaction.
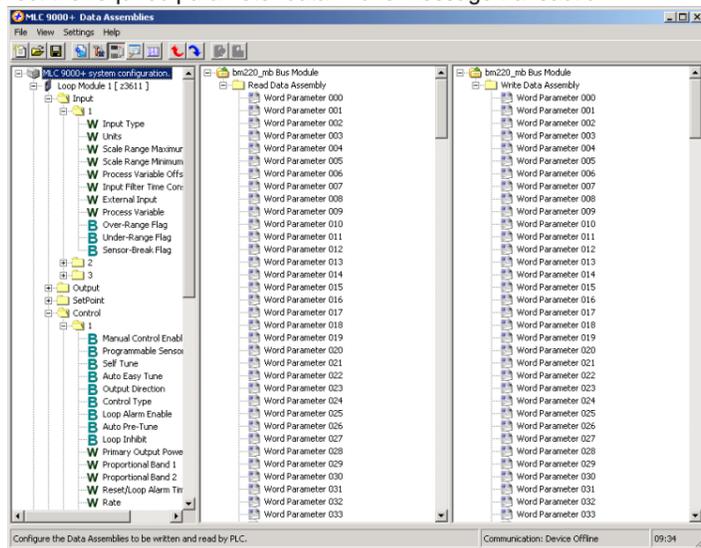
There are two user definable data assemblies. These are 1) **Read** - *parameters that are to be transferred from the MLC 9000+ to the supervisory system* and 2) **Write** - *parameters that are to be transferred from the supervisory system to the MLC 9000+.*
In the left-hand column are all the parameters that can be mapped to the data assemblies for transfer to or from the supervisory system and on the right are the two data assemblies. To populate the data assemblies, select a parameter from the list then drag and drop it into the read or write tables. MLC 9000+ will not allow read only parameters to be placed into the write data assembly.
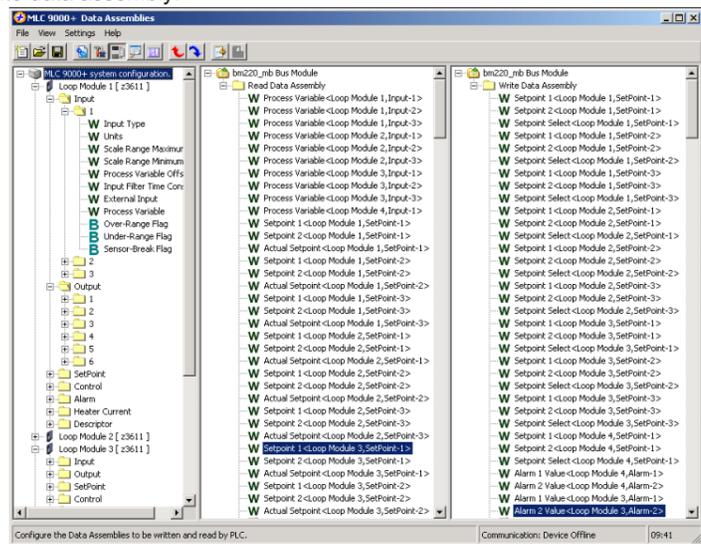
Word parameters are shown with a **W** and bit parameters are shown with a **B**. If a bit parameter is dragged onto a word register the register is converted into 16 bits. The full 16 bits can then be filled with any combination of bit parameters. If a word parameter is placed into that bit register then it is then converted back to a word register and the bit configuration is lost.

A summary of the data assembly information can be created by selecting the 'summary' icon in the tool bar
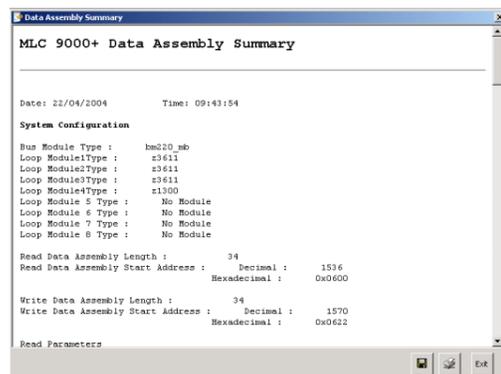
7. SAVING A SYSTEM CONFIGURATION

Once the system has been configured it can be saved by clicking on the save icon in the tool bar or navigate to File | Save as.
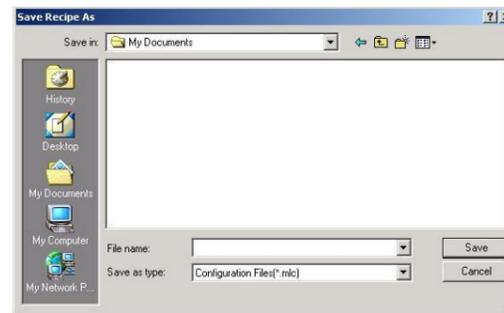
8. GENERATING THE GSD/EDS FILE

Some Fieldbus protocols require a GSD/EDS file for configuration of the master device. MLC 9000+ Workshop generates this file once the data assemblies have been populated.

Click on the create GSD/EDS icon in the tool bar this will activate the create GSD/EDS wizard that will guide you through the creation of the GSD/EDS file.
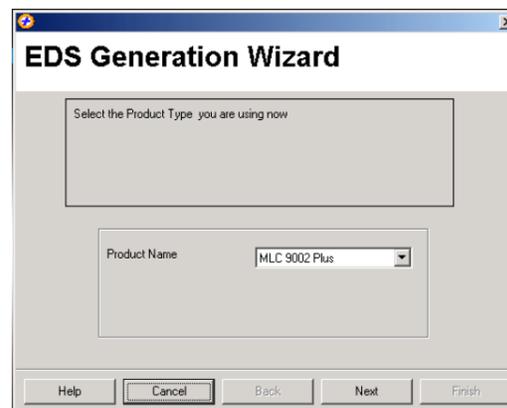
9. DOWNLOADING THE CONFIGURATION TO THE MLC 9000+

To download the configuration to the MLC 9000+ click on the icon in the tool bar, this will activate the download wizard which will guide you through the download process.
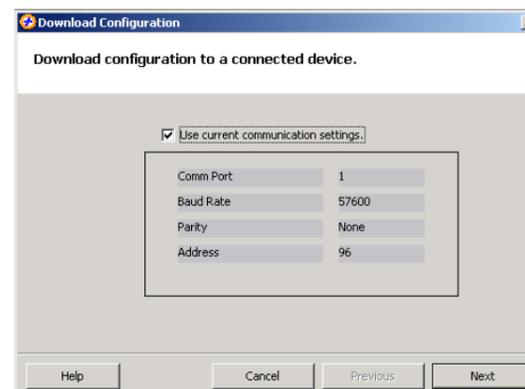
10. ADJUSTING AND MONITORING A LIVE SYSTEM

The MLC 9000+ system can be adjusted using the expert view and monitored using the Monitoring view.

Adjusting Parameters in Expert view
The expert view contains all the parameters that can be edited in a full system.

In the left hand column are the modules as configured in the system configuration, by clicking on the + sign next to the module the tree view is expanded and all the parameter classes are displayed.
When a class is selected all the parameters for that class are displayed on the right. Clicking on the value of a parameter enables that parameter to be edited. When all required parameter changes have been made the configuration can be download to the MLC 9000+ by clicking on the Download configuration icon.

To work online select Settings | Work Online. This will then make the expert view live so that any changes made will be downloaded to the MLC 9000+ **immediately**.
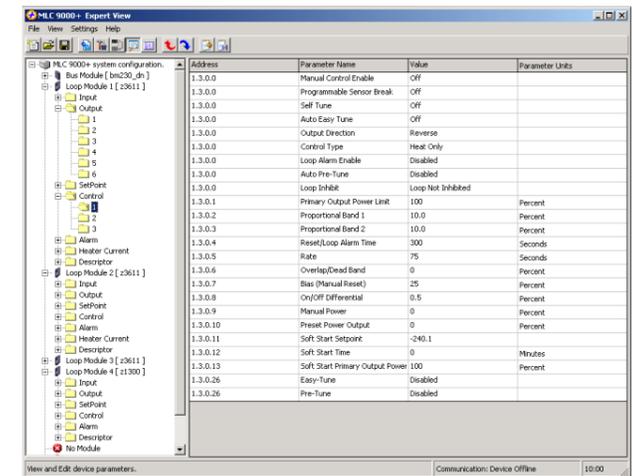
WARNING: Care must be taken when working online as changing certain parameters may cause others to change automatically (i.e. when the input range is changed the scaling is defaulted)

CAUTION: When working online it is advised that steps are taken to ensure damaging conditions can not be caused.

Monitoring View
In the left hand column are all the parameters that can be viewed, organised by module and class. To monitor a variable double click the parameter name. It will then appear in the right hand column.

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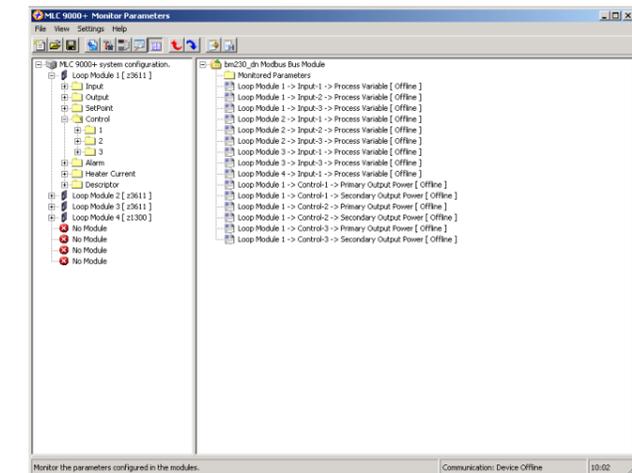
11. MLC 9000+ WORKSHOP SYSTEM REQUIREMENTS

Your PC should meet the following minimum requirements for satisfactory operation of the software:

Windows 2000

PC with 400 megahertz (MHz) or higher processor clock speed recommended; 133-MHz minimum required;*
128 megabytes (MB) of RAM or higher recommended (64 MB minimum supported)
64 megabytes (MB) of available hard disk space.*
Super VGA (800 × 600) or higher resolution video adapter and monitor
CD-ROM or DVD drive
Keyboard and Mouse or compatible pointing device

Windows XP

PC with 800 megahertz (MHz) or higher processor clock speed recommended; 233-MHz minimum required;*
256 megabytes (MB) of RAM or higher recommended (64 MB minimum supported)
64 megabytes (MB) of available hard disk space.*
Super VGA (800 × 600) or higher resolution video adapter and monitor
CD-ROM or DVD drive
Keyboard and Mouse or compatible pointing device

* Actual requirements will vary based on your system configuration and the applications and features you choose to install. Additional available hard disk space may be required if you are installing over a network.