MLC 9000+ Quick Start Guide 59328-3

The MLC 9000+ is a DIN-rail-mounted multiloop 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.

The Loop Modules are independent control

modules managed by the Bus Module. They are connected to the DIN rail via an interconnect 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.

Figure 1 – A Typical MLC 9000+

System

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.
- The Set-up Wizard will guide you through the installation procedure. 2.
- 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.
- Upload System Configuration from a connected device: This option gathers 3 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+ svstem.

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





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.



😳 MLC 9000+ System Ca - | 0 | × | MLC 9000+ system Of the system Module Module Module No Module m230_do --- bm230_dn --- bm240_dp --- bm250_ei --- bm250_mt
 Image: Available L

 21200

 21300

 21301

 23611

 23621

 24610

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 reate new configuration to be saved 09:04

> 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.





All Loop Modules have three common wizards:

1. Loop Configuration: This wizard is for loop parameters in the module.

Z1300, and Z1301) the loop configuration only

Loop Configuration

	Select th same tim	e loops that are to be o e will configure all the l	configured. 9 oops the sar
		Select Loop	✓ Lo ✓ Lo ✓ Lo ✓ Lo ✓ Lo ✓ Lo
Hel	p	Cancel	Back

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.

Loop	Calibratio	'n
Se	ect the Loop and Phase inp te: The mV range needs to I	ut range to be o be calibrated be
	Select Loop Select Phase	Loop 1 mV
Help	Cancel	Back

For modules that have the Heater Current input (Z1301, Z3611, Z3621 and Z3651) there is a separate wizard

- configuration of the most common control
- For single loop controller modules (Z1200, gives you the option to configure a single loop.





🙆 Loon (opfigura	tion		x
Loc	op C	onfigura	tion	
	Select th same tim	e loops that are to be c e will configure all the k	onfigured. Selecting multiple pops the same.	loops at the
		Select Loop	Loop 1	
			Loop 3	
He	ip	Cancel	Back Nex	Finish

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.

Output Configu	ation		
	Output 1 Output Use	Bun Power	
		[Dust own	

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

🤣 Heate	r Current	Configuration		×
Hea	ter	Current C	Configuration	
	This wiz alarms a	and helps you configure the socialed with it. Heater Current Input Range	e heater current input and set up the	
Не	lo	Cancel	Back Fr	nish

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.

MILL 9000+ Data Assemblies		
File View Settings Help		
<u>1668 81670 10</u>		
MLC 9000+ system configuration.	⊡-C bm220_mb Bus Module	E-C bm220_mb Bus Module
E- Loop Module 1 [23611]	- Carl Read Data Assembly	🔄 💼 Write Data Assembly
🖻 🚖 Input		
	- Mord Parameter 001	
W Input Type	Word Parameter 002	- Mord Parameter 002
W Units	- Mord Parameter 003	Word Parameter 003
W Scale Range Maximur	Word Parameter 004	Word Parameter 004
W Scale Range Minimum		
W Process Variable Offs	Word Parameter 006	
W Input Filter Time Con:		
W External Input		
W Process Variable	🞦 Word Parameter 009	Word Parameter 009
- B Under-Range Flag	- 😁 Word Parameter 011	🞦 Word Parameter 011
B Sensor-Break Flag	🔛 Word Parameter 012	Word Parameter 012
🕀 🧰 2	- Mord Parameter 013	🛗 Word Parameter 013
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🕀 🧰 Output	- Mord Parameter 015	🐏 Word Parameter 015
🗈 🦲 SetPoint 🔤	Word Parameter 016	Word Parameter 016
😑 😋 Control	- Mord Parameter 017	🞦 Word Parameter 017
🖹 🕀 🔁 1	- Mord Parameter 018	🐏 Word Parameter 018
- B Manual Control Enabl	- Mord Parameter 019	🞦 Word Parameter 019
	- Mord Parameter 020	🐏 Word Parameter 020
B Self Tune	- 🔛 Word Parameter 021	Word Parameter 021
	- Mord Parameter 022	
-B Output Direction	Word Parameter 023	
-B Control Type	Word Parameter 024	Word Parameter 024
B Loop Alarm Enable	Word Parameter 025	Word Parameter 025
	Word Parameter 026	Word Parameter 026
B Loop Inhibit	Word Parameter 027	
W Primary Output Powe		Word Parameter 028
W Proportional Band 1	Word Parameter 029	Word Parameter 029
	Word Parameter 030	Word Parameter 030
W Reset/Loop Alarm Tin	Word Parameter 031	Word Parameter 031
W Rate 💌	Word Parameter 032	Word Parameter 032
	Word Parameter 033	Vord Parameter 033
Configure the Data Assemblies to be written and	read by PLC.	Communication: Device Offline 09:34
		1 1 10

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.

View Settings Help		
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💓 MLC 9000+ system configuration.	E- 🙆 bm220_mb Bus Module	🔺 🖃 🛅 bm220_mb Bus Module 🔺
- Loop Module 1 [z3611]	🖻 🚞 Read Data Assembly	😑 🧰 Write Data Assembly
🖻 😋 Input	W Process Variable <loop 1,="" input-1="" module=""></loop>	W Setpoint 1 <loop 1,setpoint-1="" module=""></loop>
🗄 🔄 1		
W Input Type	W Process Variable <loop 1,="" input-3="" module=""></loop>	
W Units	W Process Variable <loop 2,="" input-1="" module=""></loop>	W Setpoint 1 <loop 1,setpoint-2="" module=""></loop>
W Scale Range Minimum		
W Process Variable Offs	W Process Variable <loop 3,="" input-1="" module=""></loop>	
	W Process Variable <loop 3,="" input-2="" module=""></loop>	
	W Process Variable <loop 3,="" input-3="" module=""></loop>	W Setpoint Select <loop 1,setpoint-3="" module=""></loop>
	W Process Variable <loop 4,="" input-1="" module=""></loop>	W Setpoint 1 <loop 2,="" module="" setpoint-1=""></loop>
	W Setpoint 1 <loop 1,setpoint-1="" module=""></loop>	W Setpoint 2 <loop 2,setpoint-1="" module=""></loop>
- B Under-Range Flag	W Setpoint 2 <loop 1,="" module="" setpoint-1=""></loop>	W Setpoint Select <loop 2,="" module="" setpoint-1=""></loop>
B Sensor-Break Flag	W Actual Setpoint <loop 1,setpoint-1="" module=""></loop>	
😟 - 🧰 2	W Setpoint 1 <loop 1,setpoint-2="" module=""></loop>	W Setpoint 2 <loop 2,="" module="" setpoint-2=""></loop>
🕀 🧰 3	W Setpoint 2 <loop 1,setpoint-2="" module=""></loop>	W Setpoint Select <loop 2,="" module="" setpoint-2=""></loop>
😑 😋 Output		
÷- 🗀 1	W Setpoint 1 <loop 1,setpoint-3="" module=""></loop>	W Setpoint 2 <loop 2,="" module="" setpoint-3=""></loop>
😥 🧰 2	W Setpoint 2 <loop 1,setpoint-3="" module=""></loop>	
🐵 🦳 3	W Actual Setpoint <loop 1,setpoint-3="" module=""></loop>	W Setpoint 1 <loop 3,setpoint-1="" module=""></loop>
🔅 🧰 4	W Setpoint 1 <loop 2,="" module="" setpoint-1=""></loop>	W Setpoint 2 <loop 3,="" module="" setpoint-1=""></loop>
😥 🧰 5	W Setpoint 2 <loop 2,setpoint-1="" module=""></loop>	
😟 🛄 6	W Actual Setpoint <loop 2,="" module="" setpoint-1=""></loop>	W Setpoint 1 <loop 3,setpoint-2="" module=""></loop>
😟 🧰 SetPoint 🛛 🗕	W Setpoint 1 <loop 2,="" module="" setpoint-2=""></loop>	W Setpoint 2 <loop 3,="" module="" setpoint-2=""></loop>
😟 🧰 Control	W Setpoint 2 <loop 2,setpoint-2="" module=""></loop>	
😟 🦳 Alarm	W Actual Setpoint <loop 2,="" module="" setpoint-2=""></loop>	W Setpoint 1 <loop 3,="" module="" setpoint-3=""></loop>
😟 🧰 Heater Current	W Setpoint 1 <loop 2,setpoint-3="" module=""></loop>	
Descriptor	W Setpoint 2 <loop 2,="" module="" setpoint-3=""></loop>	──₩ Setpoint Select <loop 3,setpoint-3="" module=""></loop>
😟 🖞 Loop Module 2 [z3611]	W Actual Setpoint <loop 2,="" module="" setpoint-3=""></loop>	W Setpoint 1 <loop 4,="" module="" setpoint-1=""></loop>
🖻 🗗 Loop Module 3 [z3611]	W Setpoint 1 <loop 3,setpoint-1="" module=""></loop>	
😟 🦳 Input	W Setpoint 2 <loop 3,setpoint-1="" module=""></loop>	W Setpoint Select <loop 4,setpoint-1="" module=""></loop>
😟 🧰 Output	W Actual Setpoint <loop 3,setpoint-1="" module=""></loop>	W Alarm 1 Value <loop 4,="" alarm-1="" module=""></loop>
🖲 🧰 SetPoint	──₩ Setpoint 1 <loop 3,setpoint-2="" module=""></loop>	
😟 🧰 Control 📃 👻	W Setpoint 2 <loop 3,setpoint-2="" module=""></loop>	W Alarm 1 Value <loop 3,="" alarm-1="" module=""></loop>
	W Actual Setpoint <loop 3,setpoint-2="" module=""></loop>	W Alarm 2 Value <loop 3,="" alarm-2="" module=""></loop>

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 the tool bar

Data Assembly Summary	×
MLC 9000+ Data Assembly Summary	
Date: 22/04/2004 Time: 09:43:54	
System Configuration	
Bum Module Type : bm230 mb Loop ModuleType : 2561 Loop ModuleType : 2561 Loop ModuleType : 3561 Loop ModuleType : 1300 Loop ModuleType : 1300 Loop ModuleType : No Bodule Loop Module Type : No Bodule Loop Module 0 Type : No Bodule Loop Module 0 Type : No Bodule Loop Module 0 Type : No Bodule Read Data Assembly Fact Address : Decimal : 1536	
Hexadecimal : 0x0600	
Write Data Assembly Length : 34 Write Data Assembly Start Address : Decimal : 1570 Hexadecimal : 0x0622	
Read Parameters	•
	Ext

7. SAVING A SYSTEM CONFIGURATION

Once the system has been configured it can be saved by clicking on the save 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.

Select the Proc	duct Type you ar	e using now	
Product	Name	MLC 2002 Phys	
		IMEC 5002 Plus	

9. DOWNLOADING THE CONFIGURATION TO THE MLC 9000+

To download the configuration to the MLC 9000+ click on the NLC icon in the tool bar, this will activate the download wizard which will guide you through the download process.

Г	Use current communi	ication settings.	
	Comm Port	1	
	Baud Rate	57600	
	Parity	None	
	Address	96	

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.

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 all the parameters that c be viewed, organised by module and class. To monitor a variable doubl click the parameter nam It will then appear in the right hand column.

software:

Windows 2000

minimum required:* 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

minimum required:* 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.

- M C 9000+ system configuration	Address	Parameter Name	Value	Davameter Links
🗄 🍓 Bus Module [bm230_dn]	1.3.0.0	Manual Control Enable	Off	Paralitecer onics
🖻 - 👂 Loop Module 1 [23611]	1.3.0.0	Programmable Sensor Break	Off	
Input	1300	Self Tune	Off	
	1.3.0.0	Auto Fasy Tune	Off	
	1.3.0.0	Output Direction	Reverse	
- 🗀 3	1300	Control Type	Heat Only	
	1.3.0.0	Loop Alarm Epable	Disabled	
6	1.3.0.0	Auto Pre-Tune	Disabled	
🕀 🧰 SetPoint	1.3.0.0	Loop Inhibit	Loop Not Inhibited	
E Control	1.3.0.1	Primary Output Power Limit	100	Percept
	1.3.0.2	Proportional Band 1	10.0	Percent
1 1 1 3	1.3.0.3	Proportional Band 2	10.0	Percent
🕀 🧰 Alarm	1.3.0.4	Reset/Loop Alarm Time	300	Seconds
Heater Current	1.3.0.5	Rate	75	Seconds
E Descriptor	1.3.0.6	Overlap/Dead Band	0	Percent
E Doprisode 2 [10011]	1.3.0.7	Bias (Manual Reset)	25	Percent
🕖 🧰 Output	1.3.0.8	On/Off Differential	0.5	Percent
SetPoint	1.3.0.9	Manual Power	0	Percent
E diam	1.3.0.10	Preset Power Output	0	Percent
Heater Current	1.3.0.11	Soft Start Setpoint	-240.1	
🗄 🦳 Descriptor	1.3.0.12	Soft Start Time	0	Minutes
E-D Loop Module 3 [23611]	1.3.0.13	Soft Start Primary Output Power	100	Percent
H Input	1.3.0.26	Easy-Tune	Disabled	
🗄 🧰 Output	1.3.0.26	Pre-Tune	Disabled	
Control Control Alarm Descriptor		·		

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

	MLC 9000+ Monitor Parameters			
	File View Settings Help			
	120 .			
are can y le ne.	Coole system configuration Coole system configuration for the coupled Startant Control Co	B Coll di Nacida Eu Mudié Cop Madié 1 - Struct-3 - Process Variable [Critine] Cop Madié 1 - Struct-3 - Process Variable [Critine] Cop Madié 1 - Struct-3 - Process Variable [Critine] Cop Madié 1 - Struct-3 - Process Variable [Critine] Cop Madié 2 - Struct-1 - Process Variable [Critine] Cop Madié 2 - Struct-1 - Process Variable [Critine] Cop Madié 2 - Struct-1 - Process Variable [Critine] Cop Madié 2 - Struct-1 - Process Variable [Critine] Cop Madié 2 - Struct-1 - Process Variable [Critine] Cop Madié 1 - Struct-3 - Secondary Output Power [Critine] Cop Madié 1 - Stott-3 - Struct-3 - Secondary Output Power [Critine] Cop Madié 1 - Stott-3 - Strendary Output Power [Critine] Loop Madié 1 - Stott-3 - Strendary Output Power [Critine] Loop Madié 1 - Stott-3 - Steendary Output Powe	o] fife] e] e] fife] fife] Comunication: Device Offine	10:02

11. MLC 9000+ WORKSHOP SYSTEM REQUIREMENTS

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

PC with 400 megahertz (MHz) or higher processor clock speed recommended; 133-MHz

128 megabytes (MB) of RAM or higher recommended (64 MB minimum supported)

PC with 800 megahertz (MHz) or higher processor clock speed recommended; 233-MHz

256 megabytes (MB) of RAM or higher recommended (64 MB minimum supported)