The MLC 9000+
compact multi-loop controller...

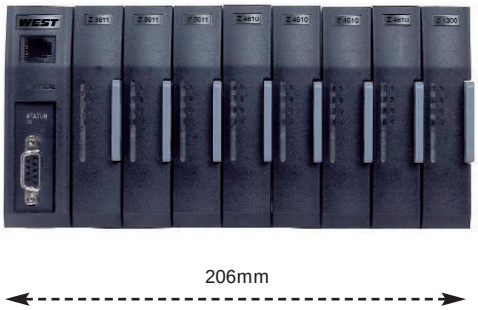
MLC 9000+

...ends the 'control or integration' compromise

WEST
Temperature Control Solutions

Why the MLC 9000+?

Use the MLC 9000+ as a discrete controller mounted behi either as a stand-alone system or in a PLC environment.



Versatile

An MLC 9000+ system comprises a communication module and up to 8 control modules. Communication module options currently include Modbus, DeviceNet, PROFIBUS, CANopen, Ethernet/IP and Modbus/TCP. Control modules are available with 1, 3 and 4 loops. Heater break inputs are available on 1 and 3 loop modules.

Compact

Panel space, or rather the lack of it, is frequently an issue – but not with the MLC 9000+. Even using a full complement of 8 control modules, providing up to 32 loops, the MLC 9000+ still measures only 206mm wide! Operations requiring more than 32 loops can also be accommodated simply by linking multiple systems together.

Less trouble than discrete controllers

Banks of discrete temperature controllers can be chaotic. Switching to one, neat, MLC 9000+ significantly reduces installation time and cost. How? Because the MLC 9000+ involves:

- Less wiring
- Less set-up time
- No need for panel cut-outs

MLC

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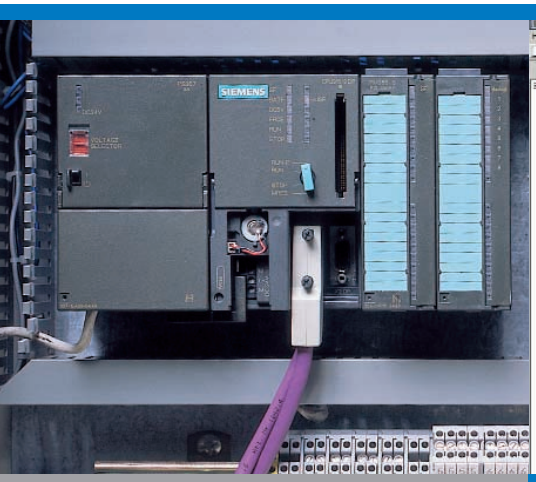
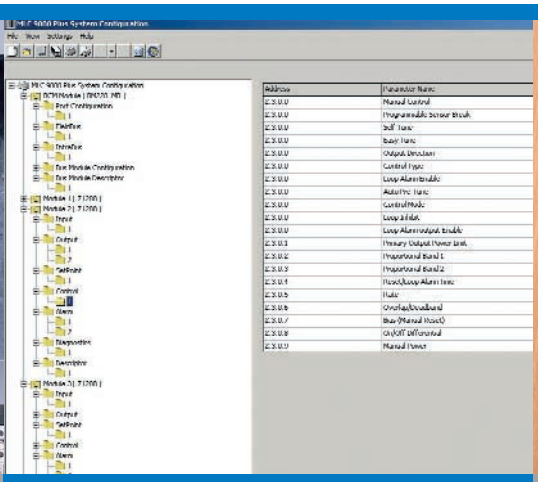
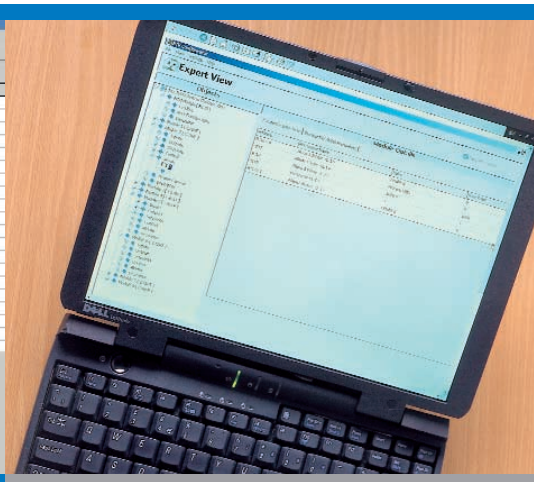






Better temperature control than PLC/PC

Moving temperature control from a PLC/PC to the MLC 9000+ improves performance and cuts installation costs.

- Quicker to setpoint and faster reaction to process disturbances
- On-demand and auto-tuning – no need to manually tune loops
- Set-up 32 loops in less than 30 minutes
- Only buy the loops required – no need to buy in multiples of four
- Free up PLC capacity by 'outsourcing' loop control to the MLC 9000+

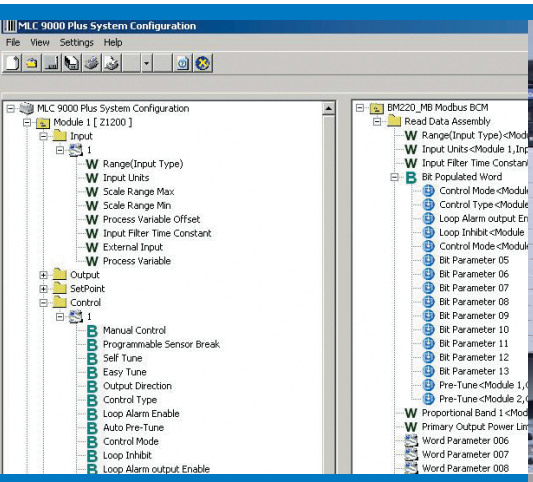
Effective operation, clear information

MLC 9000+ provides simple, complete availability of all parameters to the PLC/PC or HMI as required. It eliminates the need for multiple customer interfaces and incorporates user-specified parameters into the PLC, enabling simple integration into other parts of the machine control scheme for data collection analysis.

Easy to set up

Setting up control loops in the MLC 9000+ is easy with the PC configuration software. A set-up wizard configures the system (input type, setpoint, alarms etc.) and then the configuration can be copy and pasted to other loops in the system. Users can also go straight to specific parameters to make any changes required.

9000+



Easy to integrate into the master device

Setting up communication between the MLC 9000+ and the master device is simplicity itself. A 'drag and drop' feature in the configurator selects the parameters presented to the master device. The configurator then automatically generates a custom file (e.g. a GSD on PROFIBUS or ESD for DeviceNet) that can be imported into the master device.

Maximise up-time

The MLC 9000+ features a true hot-swap facility. A module can be removed, replaced, automatically re-configured and back in service in under 30 seconds! Yet, unlike some systems, there is no need to touch the remaining control modules – allowing them to continue functioning when any of the other modules are removed.

Minimise risk

The MLC 9000+ incorporates an important safety feature to minimise risk of loss or damage. If the fieldbus network goes down (for a user definable time) because, for example, the master device crashes or the fieldbus cable is damaged, the MLC 9000+ can be pre set to inhibit its loops or to continue independently.

The **MLC 9000+** **overcomes** the limitations of PLC temperature control and the **complexities** of multiple discrete controllers.

Technical Data

Loop Control Module Technical Data	
Process Input	One, three or four loops, temperature or DC process input. Type and scale user selectable
Temperature	Thermocouple Types B,N,E,J,R,K,S,L,T; RTD types: 3-wire PT100, NI 120
DC Linear	0-20mA, 4-20mA, 0-50mV, 10-50mV, 0-5V, 1-5V, 0-10V, 2-10V. Scaleable -32000 to +32000
Measuring Accuracy	DC = ±0.1% of span ±1 LSD. RTD = ±0.2% of span, ±0.3°C. Thermocouple = ±0.2% of span, ±1°C for CJC, ±0.3°C for 0.1°C resolution ranges, or 1°C for 1°C resolution ranges.
Input Sample Rate	10Hz (100msec) for all loops
Heater Break Alarm	Optional. Compares actual heater current to nominal. Alarms for High/Low current or S/C output
Heater Current Input	0-50mA, 0-60mA, Sinusoidal rms, from Current Transformer. Scaleable 0.1 to 100A AC
Outputs	
Relay Outputs	Contact Type: Single pole single throw (SPST). Rating: 2A resistive @120/240VAV. Lifetime: >500,00 operations at rated voltage/current
SSR Drive Outputs	Drive Capability: 12VDC nominal (10VDC minimum), at up to 20mA
Linear Output	Optional. Resolution: 8bits in 250msec, (10 bits in 1 second typical) Accuracy +0.25% (mA into 250 ohm load, V into 2kohm load) Degrading linearly to +0.5% for increasing burden to maximum drive capacity (500 ohm)
Output Usage	Any output can be assigned as any control or alarm output for any of the loops in the LCM
Environmental Specifications	
Supply voltage	Powered by the BCM within its operating condition
Temperature & RH	0 to 55C (-20 to 80C storage), 30% to 90% RH non-condensing
Dimensions	Width 22mm, Height 100mm, Depth 120mm. Weight 0.15kg
Mounting	DIN rail mounting via supplied interconnect module, fits DIN standard EN50022, DIN46277-3

BCM Technical Data (Comms Module)	
Configuration Port	WEST PC Configuration protocol for connection to the MLC 9000+ configuration software
MODBUS Port	Connects to a MODBUS RTU Fieldbus system
Protocol	MODBUS RTU on a RS485 physical layer
Configuration	Data rate: 4800, 9600, 19200. Parity: none, even or odd. Configured using the MLC 9000+ configuration software
DeviceNet Port	Connects to a DeviceNet Fieldbus system
Protocol	DeviceNet Class 2 Slave Device
Configuration	Data Rate 125kbps, 250kbps or 500kbps. MAC ID 0 – 63 (Defaults 125kbps, ID 63). Configured using the MLC 9000 Configurator software, via the configuration port
PROFIBUS Port	Connects to a PROFIBUS Fieldbus system
Protocol	PROFIBUS DP Slave Device
Configuration	Data Rate automatically detected by BCM from 9.6kbps, 19.2kbps, 45.4kbps, 93.75kbps, 187.5kbps, 500kbps, 1.5Mbps, 3Mbps, 6Mbps and 12Mbps.
Profibus Address	0 – 126 (Default = 126). Configured using the MLC9000+ Configurator software, via the configuration port
Ethernet/IP Port	Connects to a Ethernet/IP Fieldbus system
Protocol	Ethernet/IP Slave Device
Configuration	10/100BaseT, user definable IP address, MAC ID 0 – 63 (Default ID 63) Configured using the MLC9000+ Configurator software, via the configuration port
MODBUS/TCP Port	Connects to a MODBUS/TCP Fieldbus system
Protocol	MODBUS TCP/IP Slave Device
Configuration	10/100BaseT, user definable IP address Configured using the MLC9000+ Configurator software, via the configuration port
CANopen Port	Connects to a CANopen Fieldbus system
Protocol	CANopen Slave Device
Configuration	Data Rate 125kbps, 250kbps, 500kbps or 1024kbps. Node ID 1 – 127 (Defaults 125kbps, Node ID 1). Configured using the MLC 9000 Configurator software, via the configuration port
Operating Environmental	
Temperature & RH	0 to 55C (-20 to 80C storage), 30% to 90% RH non-condensing
Power Supply	18 to 30Vdc (inc ripple), 25W Max
Protection	IEC IP20. Designed for installation in an enclosure which is sealed against dust and moisture
Approvals and Certifications	EMC: Certified to EN61326-1:1997. Safety: Complies with EN61010-1:1993. UL & Ulc (pending) Modbus organisation approval pending, ODVA approval pending, PROFIBUS approval pending, CiA approval pending

Order Codes

Loop Control Module	
MLC 9000-Z1200	One Universal input, two SSR/relay outputs (selectable)
MLC 9000-Z1300	One Universal input, two SSR/relay outputs and one Linear output or three SSR/relay outputs (selectable)
MLC 9000-Z1301	One Universal input, one Heater Break input, two SSR/relay outputs and one Linear or three SSR/relay outputs (selectable)
MLC 9000-Z3611	Three Universal inputs, one Heater Break input, six relay outputs
MLC 9000-Z3621	Three Universal inputs, one Heater Break input, six SSR outputs
MLC 9000-Z4610	Four Universal inputs, six relay outputs
MLC 9000-Z4620	Four Universal inputs, six SSR outputs

BCM Comms Module	
MLC 9000-BM210-NF	Configuration Port Only
MLC 9000-BM220-MB	Configuration Port and MODBUS RTU Fieldbus Port
MLC 9000-BM230-DN	Configuration Port and DeviceNet Fieldbus Port
MLC 9000-BM230-CO	Configuration Port and CANopen Fieldbus Port
MLC 9000-BM240-PB	Configuration Port and PROFIBUS Fieldbus Port
MLC 9000-BM250-EI	Configuration Port and Ethernet/IP Fieldbus Port
MLC 9000-BM250-MT	Configuration Port and MODBUS/TCP Fieldbus Port

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