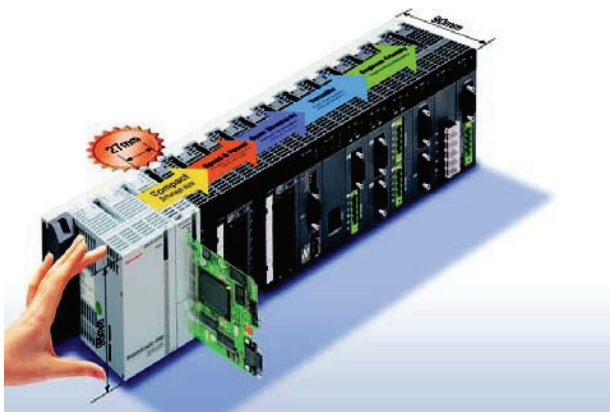


## MasterLogic Programmable Logic Controller



The MasterLogic PLC is a small and compact controller that installs conveniently into a confined space and delivers power and performance for a control application.



### Modular and Scalable

MasterLogic PLCs are modular, scalable and rack-based. The PLC can be either stand-alone or distributed with peer-to-peer connections. The CPUs, power supplies and rack sizes are available in various models to best fit a particular application.

### Compact Size

The module size is as small as 27x98x90 mm (pocket size). This contributes to cost and floor space efficiency in today's world where floor space is a premium resource. Transportation is also made much easier.

### Speed and Power

A reliable processor makes it intrinsically powerful. All program instructions are executed at a high speed of 42 ns/step, unique to Honeywell. Even complex instructions are processed at this fast speed.

A dedicated I/O bus controller supplements the main processor in I/O refresh to achieve high speed scanning (e.g. estimated 15ms for large PLC applications, say, 2500 I/Os and program size of 400 Kbytes).

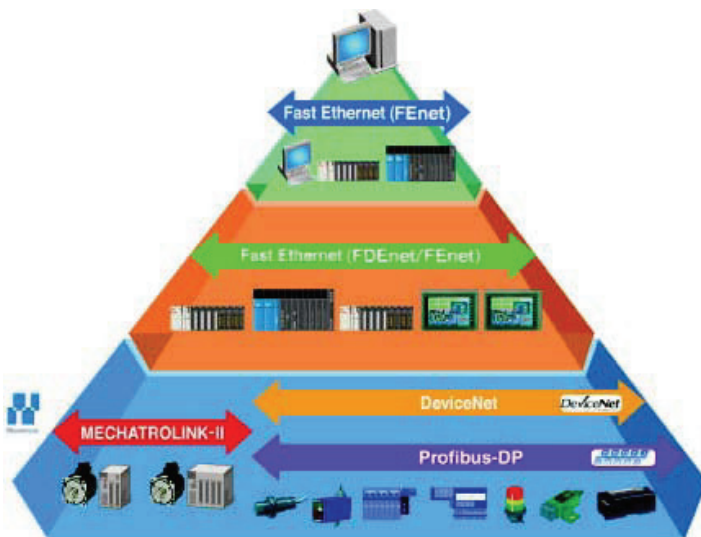
### Key Features

- Powerful and versatile processors – high speed i.e. 42 nanosec/step, 7MB program (including system memory), 4MB system memory, 2MB data memory, 16MB built-in flash memory for program and data backup
- Full redundancy (CPU, power and network) – same CPU can operate in both redundant & non-redundant mode.
- Compact pocket size modules – rack room and cabinet space saver
- IEC61131-3 standard programming – LD/ SFC/ ST/ IL language option
- A vast library of standard function blocks and support for creating new or user-defined function blocks
- Over 50 types of I/O modules – digital/ analog (isolated), HSC, RTD, TC, position/ motion control
- Open network protocols with field devices – Profibus™ DP, DeviceNet™, MODBUS (Ethernet & Serial)
- Open communication with external systems – Ethernet, fiber-optic (100MBPS), serial RS232/RS422
- Peer-to-peer communications between PLCs – Dedicated Ethernet 100 MBPS or Fiber-optic option
- Smart I/O modules (DIN rail) on open protocols – Profibus-DP, DeviceNet, MODBUS expanding I/O capacity, remote I/O applications or as RTUs for other manufacturers' PLC
- Hot swapping, Interrupt programs, user-defined Events (for SOE data in ms)
- Integration with Experion PKS, Experion HS, Experion LS architecture (including system diagnostics and clock synchronization) and SCADA systems
- Self-diagnostics – network diagnostics, system logs, Auto scan, monitoring system
- Engineering software – ease of configuration and trouble-shooting
- Program simulator to test programs offline without PLC/CPU

| CPU Specification                                | Model : 2MLR-CPUH/T<br>2MLR-CPUH/F |
|--|------------------------------------|
| Execution speed                                  | 42 nano sec/step                   |
| Program Memory (inc. System Memory)              | 7MB                                |
| Built-in Flash Memory                            | 16MB                               |
| Data Memory                                      | 2MB                                |
| Max rack I/O                                     | 23,808                             |
| Max I/O using Network                            | 128,000                            |
| Max slots  | 372 slots                          |
| Max expansion                                    | 31 bases                           |
| Scan time (e.g. 2500 I/O, 400 Kbytes of program) | 15 milliseconds                    |

### Open Network Standards

Industrial communication standards have continuously evolved and so has MasterLogic PLC's interface capability with them. In addition to MODBUS (Ethernet and serial), MasterLogic supports other protocols such as Profibus™ DP, DeviceNet™, OPC DA server etc. Open standards network DeviceNet and Profibus devices, such as smart actuators, sensors, intelligent drives and transducers can be easily connected to MasterLogic. Its plug & play features and open standards support make them easily interoperable. On a physical level, Fast Ethernet, Fiber-Optic, RS232/ 422/ 485 communication links are directly supported.



### Versatile CPU

- IEC61131-3 standard programming – LD/ SFC/ ST/ IL language option
- MasterLogic allows for modularizing the entire program into max. 256 easily managed sub-programs, executed once every scan in the order. In addition, several interrupt driven programs are supported:

| Interrupt       | #program (max) | Remarks         |
|-----------------|----------------|-----------------|
| Timer           | 32             |                 |
| Internal Device | 32             | Memory variable |

- Flash memory (16MB) for program and data retention
- Two built-in programming ports (USB@12MBPS and RS232C)
- Built-in MODBUS slave RS232C communication port
- Real Time Clock (RTC)
- RUN/ STOP/ DEBUG mode of operation
- Configurable address range of two latch areas for data retention (non-volatile memory)
- Self-diagnostics for system errors (memory, I/O, battery, power, execution, delays)
- Direct I/O operation - IORF instruction for direct read/ write of I/O modules for time-sensitive applications

### Online Maintenance and Trouble-Shooting

- Hot-swapping of I/O modules through a software wizard or a CPU dip switch
- Force I/O values (bit and word) for maintenance and trouble-shooting
- Skip I/O of a selected I/O module or an entire I/O base
- User-defined Event Recording (SOE) – digital devices can be configured for automatic event recording when falling, rising or COS (change of state) with millisecond, and timestamp for SOE analysis

The PLC system alarm and event history is as follows:

| Type          | Condition         | Size        |
|---------------|-------------------|-------------|
| Error         | Any error         | 2048 events |
| Mode          | RUN/STOP          | 1024 events |
| Power change  | Power ON/OFF      | 1024 events |
| System events | Key system events | 2048 events |

## Digital I/O Modules

MasterLogic has a wide range of digital I/O modules:

- 24V DC input modules (Sink source or source only type)
- AC input modules (110V or 220V AC)
- Relay, Triac, transistor output modules (sink or source)
- 8, 16, 32, 64 points I/O module
- Photo-coupler isolation
- LED for module and input status
- Easy maintenance: Terminal block type, one-touch installation of module



## Analog I/O Modules

- High speed A/D or D/A (250µs/ channel) conversion and processing
- Channel to channel isolation
- High resolution (16 bits)
- Digital value in 4 data formats
- Detection flags for input signal disconnect when analog input range is 1 ~ 5V or 4 ~ 20 mA.
- LED status displays for RUN/ ERROR conditions
- Voltage/ Current switching option
- RTD (2-wire, 3-wire, 4-wire)
- Thermo-couple (K, J, B, T, E, R, S, N, C types)

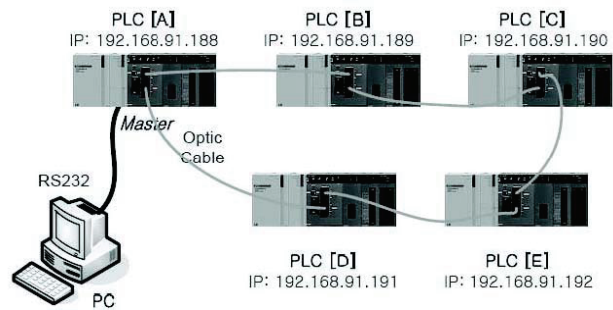
## Special Modules

- 2-channel high speed counter (voltage input or differential voltage incremental encoder, preset function)
- Positioning modules
- Motion control module

If the field I/O signals are located too far away from the MasterLogic CPU the same I/O modules can also be used as remote I/O to reduce wiring costs and associated costs. In addition, it also significantly increases the overall I/O capacity of the MasterLogic PLC e.g. 23,808 to 128,000.

## Peer-to-Peer Communications

Peer-to-peer communication between PLCs is an important requirement in large inter-related control applications. A high speed Ethernet module at 100Mbps or optional fiber-optic module ensures fast and reliable integration between MasterLogic PLCs. Installation involves just a few simple configuration steps i.e. basic parameter, HS link item settings, etc.



## Integrated PLC Engineering Environment

SoftMaster provides the engineer with an integrated PLC engineering environment – all-in-one window such as ladder programming, configuration/ setup of CPU or other special/communication modules, debugging, monitoring, troubleshooting, documentation and maintenance, etc.

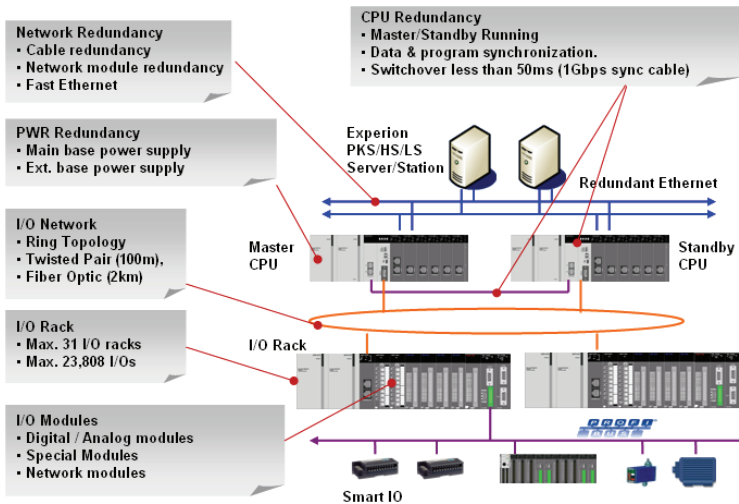
## Project File

SoftMaster helps manage multiple PLCs through a single window. One project file can include multiple PLCs from the site as central storage of all PLC details.

## MasterLogic Redundancy

For critical applications, eliminating all single points of failure in the system architecture ensures high availability. Redundancy features include:

- CPU redundancy— Seamless switchover to standby CPU within 50ms when master fails without interrupting operations
- Power supply redundancy for both CPU and I/O racks
- Network redundancy — ring topology providing dual communication paths to I/O racks
- High speed synchronization of program and data between primary and backup CPU via dedicated fiber optic line
- Built-in twisted pair or fiber-optic networks for local (100m) and remote I/O (2km) racks on ring topology
- Base type remote I/O functionality
- Base I/O capacity enhanced to 23,808 (372 slots in 31 bases)



## Interface with Experion PKS, Experion HS, Experion LS

MasterLogic PLCs are tightly integrated with the Experion architecture. They directly reside on the FTE or Ethernet network of Experion PKS and the Ethernet network of Experion HS and Experion LS, eliminating the need for any intermediate gateway equipment.

- The interface supports configuring MasterLogic PLC channels, controllers and points just like any other SCADA interface
- For efficient communication optimization, the integration supports both synchronous (timer based subscription of real time data) and asynchronous (change of state, report by exception) communication methods
- All PLC clocks are synchronized with the Experion PKS server clock
- PLC system alarms and events (e.g. battery fail, CPU STOP, RESET, ERROR) automatically cascade to Experion summary page with acknowledgment, return to normal function etc
- PLC system status (graphical display) monitoring from all Experion Stations

## Applications

- Process Industries: oil and gas, steel, cement, power generation, chemicals, petrochemicals
- Automobile industries
- Food and Beverage
- Healthcare and Pharmaceuticals
- Textiles
- Material handling
- Water Treatment
- Semi-conductors
- Printers and Publishers
- Paints and Plastics
- OEM – partnerships with packaged equipment manufacturers and machine builders

## More Information

For more information on MasterLogic PLC, visit [www.honeywell.com/ps](http://www.honeywell.com/ps) or contact your Honeywell account manager.

## Automation & Control Solutions

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