



Honeywell China Users Group 2008

MasterLogic PLCs

Honeywell

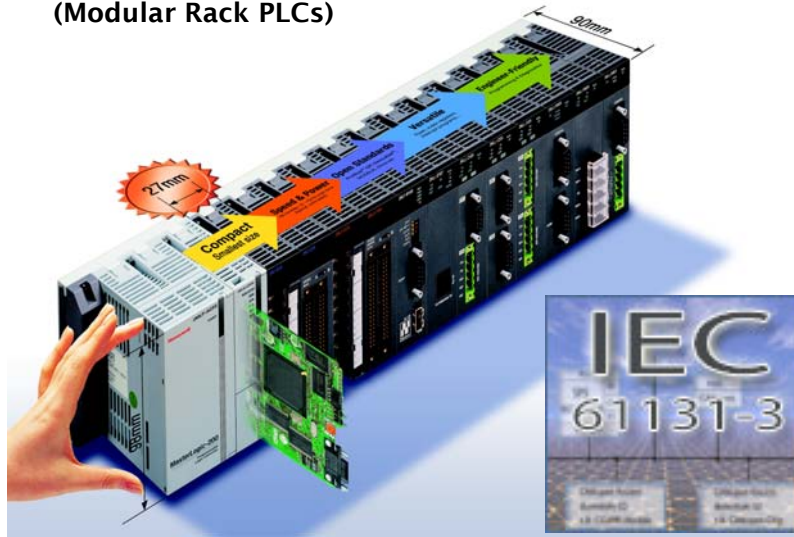
MasterLogic PLCs Honeywell下一代PLC产品

(Local HMI - TouchScreen)



Micro HMI

MasterLogic-200
(Modular Rack PLCs)



MasterLogic-50
(Nano, Micro PLCs)



Range of I/O & communication modules



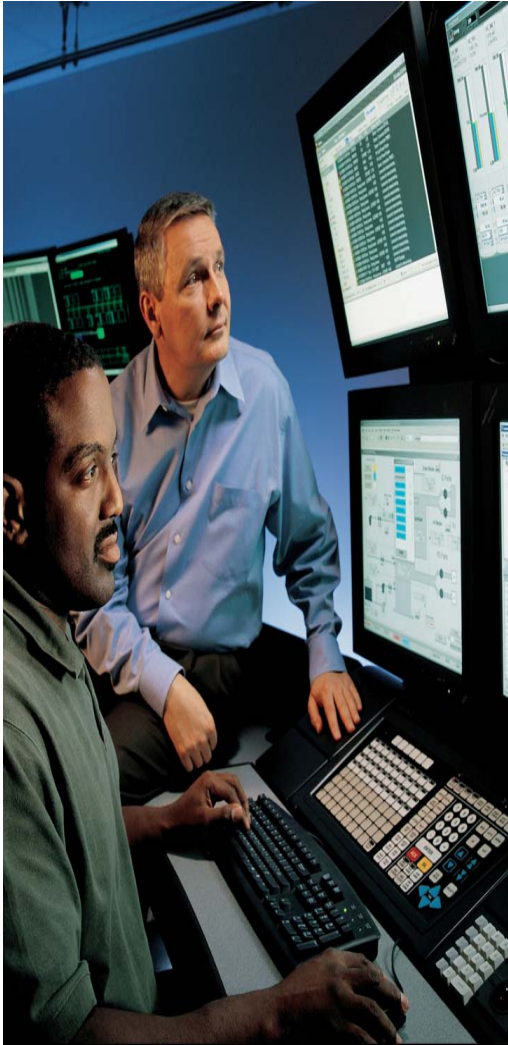
Smart I/Os e.g.
Profibus, DeviceNet,
Modbus



Field
Termination
made easy



议程 – MasterLogic PLCs



系统架构

电源和CPU

紧凑的卡件尺寸

模件选项

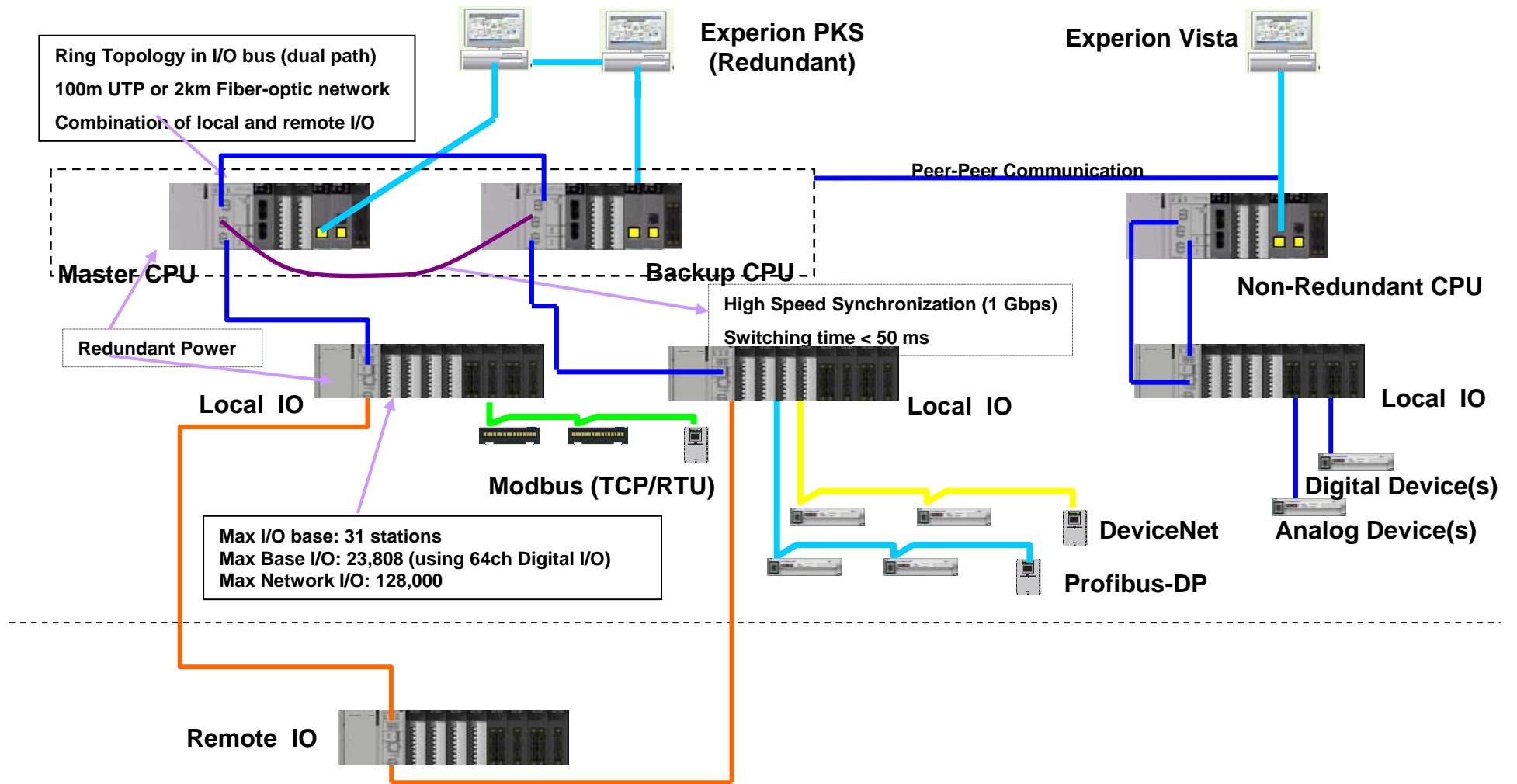
开放的网络

友好的工程组态界面

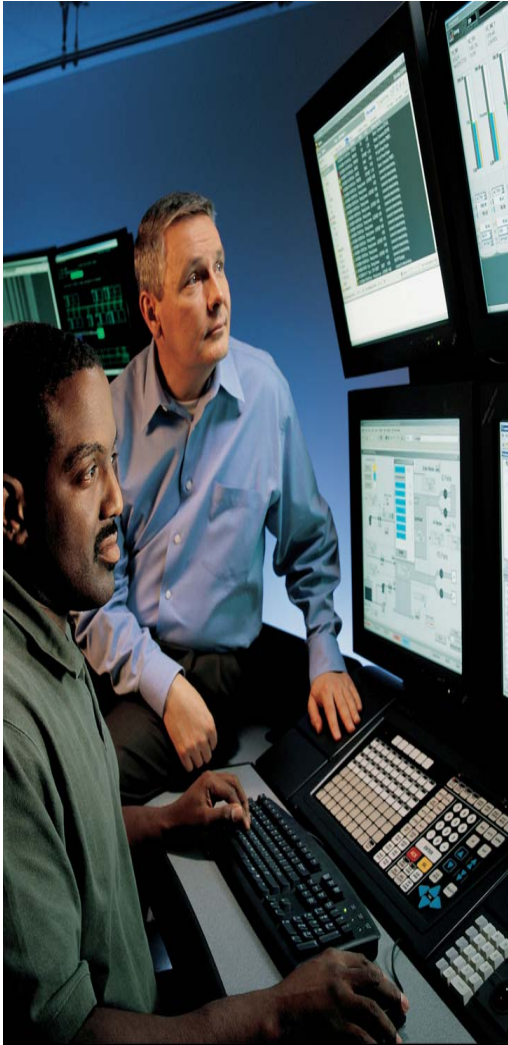
丰富的诊断工具 (系统错误日志, 系统监视, 网络监视)

与Experion PKS 集成 (PLC 报警/事件, 时钟同步, SOE集成)

MasterLogic 200R – 系统架构



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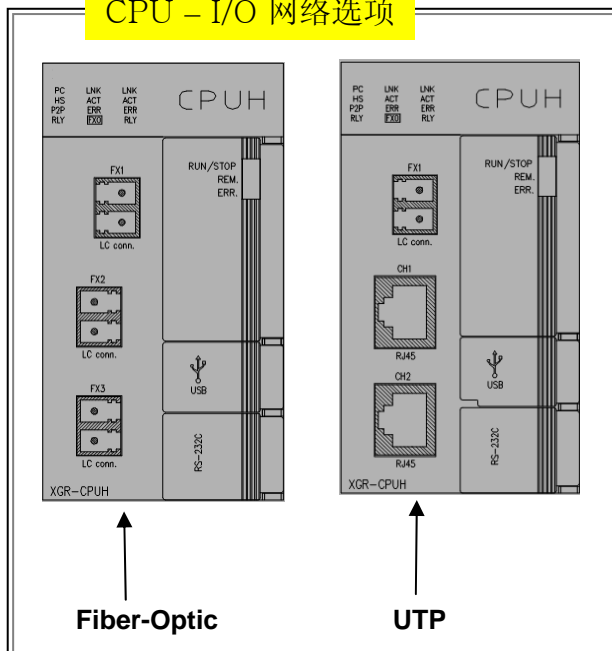
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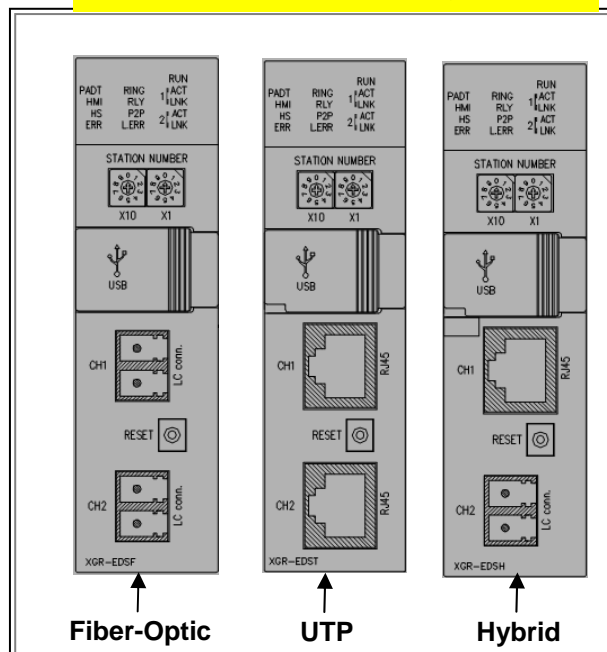
与Experion PKS 集成 (PLC 报警/事件, 时钟同步, SOE集成)

CPU 和 I/O 网络选项

CPU - I/O 网络选项



基于I/O的网络选项



CPU 选项

- 2MLR-CPUH/T – CPU, TP
- 2MLR-CPUH/F – CPU, FO

I/O 网络选项

- 2MLR-DBSF – I/O Ntw, FO
- 2MLR-DBST – I/O Ntw, TP
- 2MLR-DBSH – I/O Ntw, FO/TP

■ CPU与I/O的网络

- 光纤 – 长距离**2公里**, 室外
- **UTP** – 短距离 **500米**, 室内, 成本低

■ 内部混合光纤和UTP网络

- 用于混合的**I/O**主从网络
- 本地和远程的能够用于同一网络

CPU 主要特点及参数 1/2

High Speed CPU	42 nanosec/step – typical 15-20 ms scan time for ~2500 I/O
High Memory	7 MB program, 2 MB Data, 2 MB System, 16 MB Built-in Flash
IEC 61131-3 Std.	LD, IL, SFC, ST, FB programming languages
CPU Restart	Cold or Warm Restart Option
Program Types	Cyclic Scan programs, Interrupt Task Programs, INIT task program
Max I/O capacity	Base I/O: 23,808 (using 64 ch); Using Network I/O: 128,000
Function Blocks	Max 256 PID loops and a large library of function blocks
IEC Data Types	BOOL, BYTE, WORD*, INT*, REAL*, TIME, DATE, STRUCT, ARRAY...
Memory Variables	Direct Variables (Input, Output, Registers), Symbolic Variables (Named)
CPU Modes	RUN / STOP / DEBUG; LOCAL / REMOTE control of mode
Maintenance	Online Editing, Force I/O, Fault Mask, Skip I/O, Hot-swapping
User-Defined	User Defined Function Blocks, Data Types for special applications
Redundancy	CPU / Power / Network Redundancy

CPU主要特点及参数 2/2

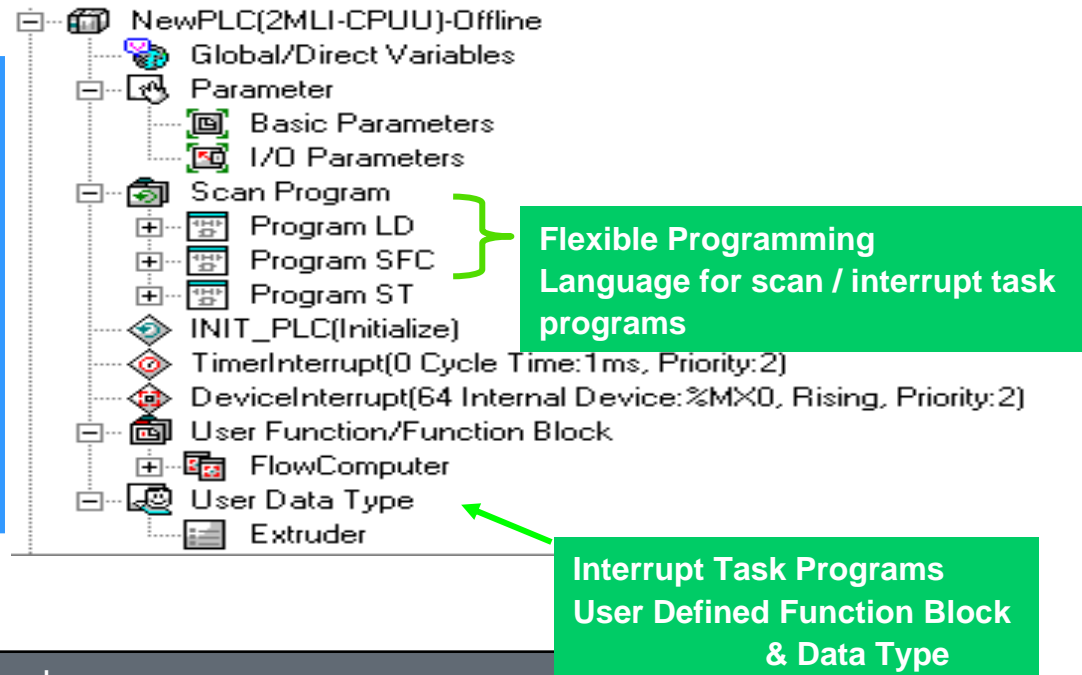
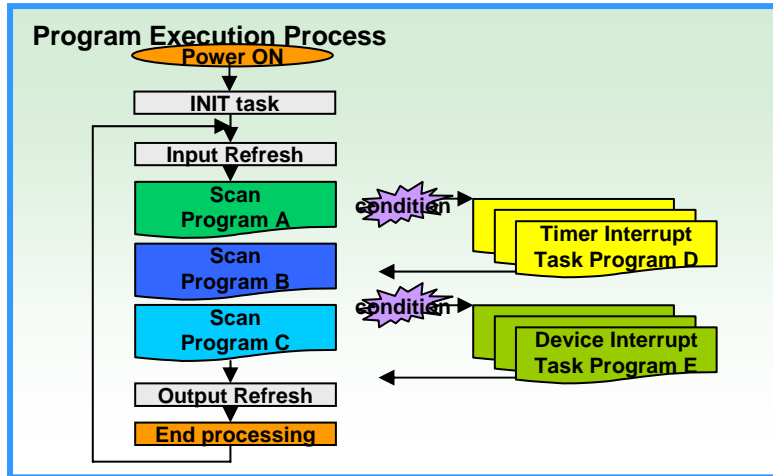
Output Control	Clear / Hold option upon error or mode change conditions		
Direct I/O	Immediate I/O instruction for time-sensitive applications		
Retention Memory	Emulates Flash; Configurable %M address range; clears upon cmd		
Program Ports	CPU Built-in USB@12MBPS / RS232C, via Ethernet Module		
MODBUS slave	Through CPU Built-in RS232C port		
RTC Clock	Read / Write capability via program or with Experion PKS SCADA		
Self-Diagnostics	Battery Failure	Module type mismatch Error	Scan time Watchdog Error
	Module Fuse Error	Module Disconnect Error	Base Power Error etc.....

Retain area config

M Area retain set(R)

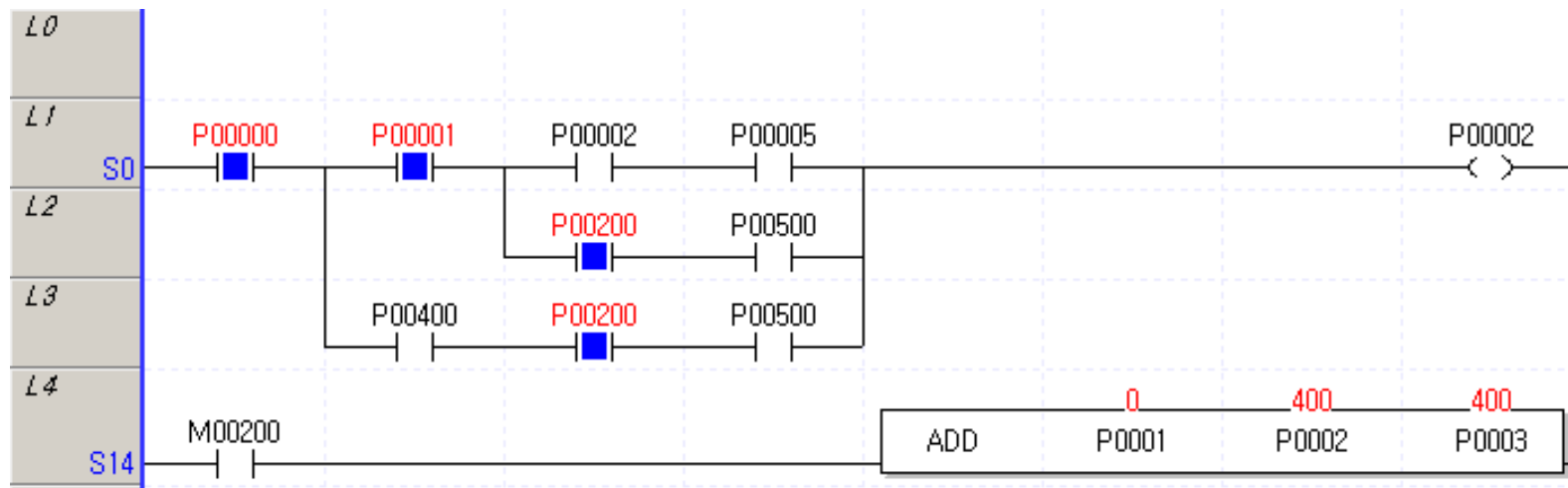
From %MW to %MW

程序的扫描

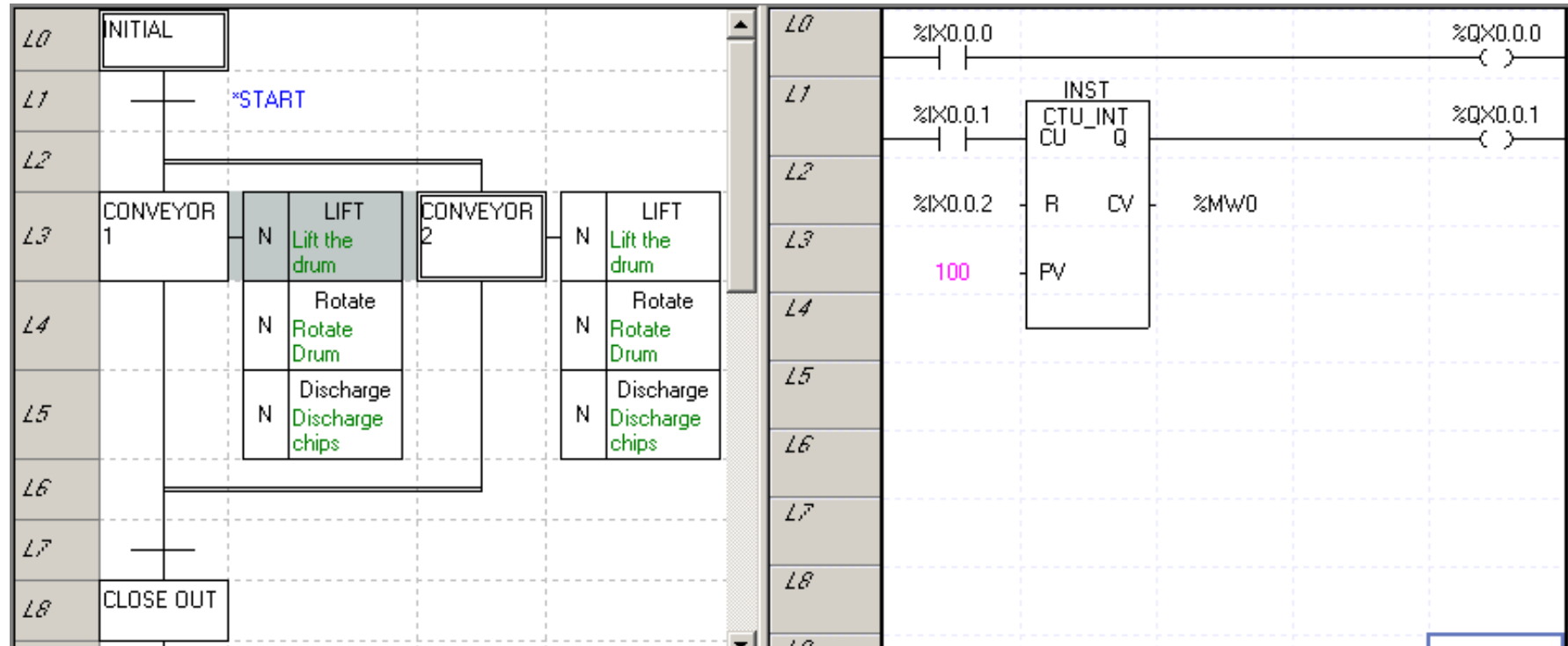


Program Type	Max #	Remarks
INIT Program	1	One time exec at startup
Timer interrupt	32	Time interval @ 1 ms resolution
Device interrupt	32	Internal flag on/off conditions
Scan Programs	Balance	Once every scan
Total	256	

IEC 61131-3 可编程语言 - LD (梯形图)



IEC 61131-3 可编程语言 - SFC (顺序功能表)

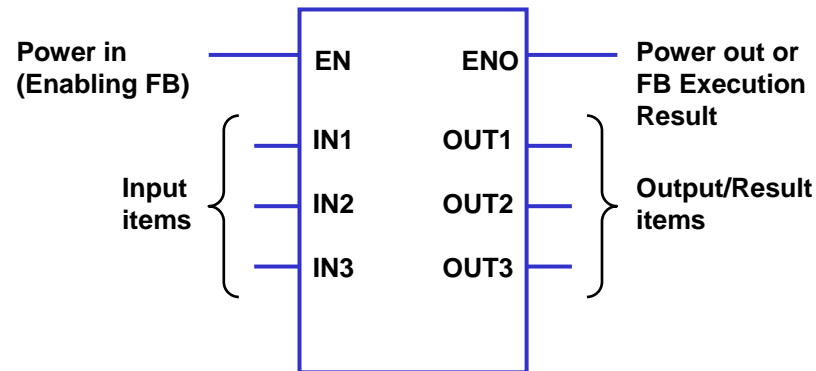


IEC 61131-3可编程语言 - IL (指令表)

1	LOAD		%IX0.0.0
2	OUT		%QX0.1.0
3	LOAD		%IX0.0.1
4	OUT		%QX0.1.1
5	LOAD		%IX0.0.2
6	OUT		%QX0.1.2

功能块

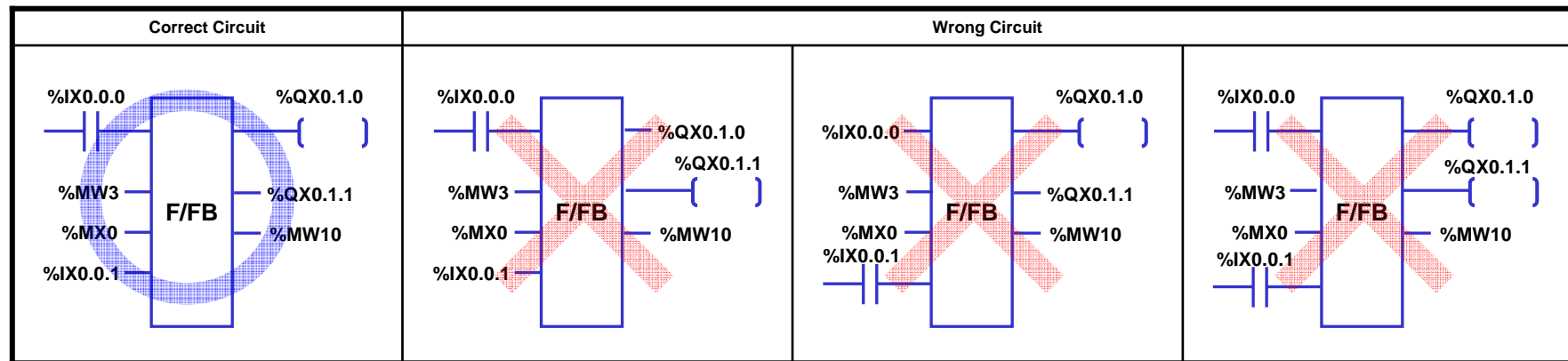
Basic Structure



Function & Function Block

	Function	Function Block
# of INPUT	One or more	One or more
# of OUTPUT	Only One	One or more
Execution	Completed within 1 scan	Completed within 1 or more scan
Instruction	MOV/BCD ADD/SUB/MUL/DIV EQ/GT/GE/LT/LE etc...	TON (On-delay Timer) CTU (Counter) etc...

Correct & Wrong Circuit



功能块示例

Logic Instructions

INPUT CONTACTS, RELAY COILS, SET, RESET, TRANSITION...

ARRAY data functions

MOVE, COMPARE, ROTATE, FILL...

Comparison functions

GT, EQ, GE, LT, LE, NE...

Data type conversion functions

Data MOVE/COPY functions

STACK functions

LIFO_**, FIFO_**

Bit functions

AND, OR, XOR, NOT, SHIFT LEFT, SHIFT RIGHT...

Timer / Counter Functions

STRING Functions

CONCAT, LEFT, RIGHT, MID, INSERT, DELETE, REPLACE...

Mathematical Functions

EXPT, DEG/RAD, ADD/MUL/DIV/SUB, ABS, SIN/COS, SQRT...

Date / Time Functions

ADD, SUB...

SELECT functions

MIN, MAX, LIMIT, MUX...

System Control Functions

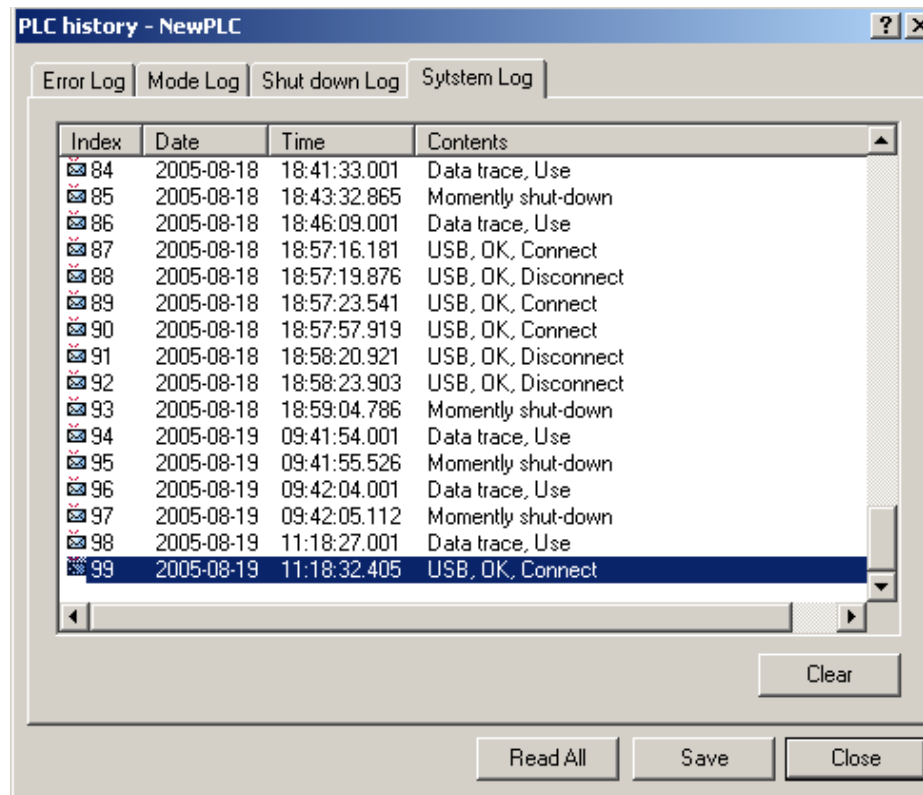
STOP, ESTOP, DIRECT I/O, OUTOFF, MCS, WDT_RST...

Process Control Functions

AVERAGE, LIMIT, PID, DELAY, RATIO, TOTALIZER,
ANALOG_SELECTOR...

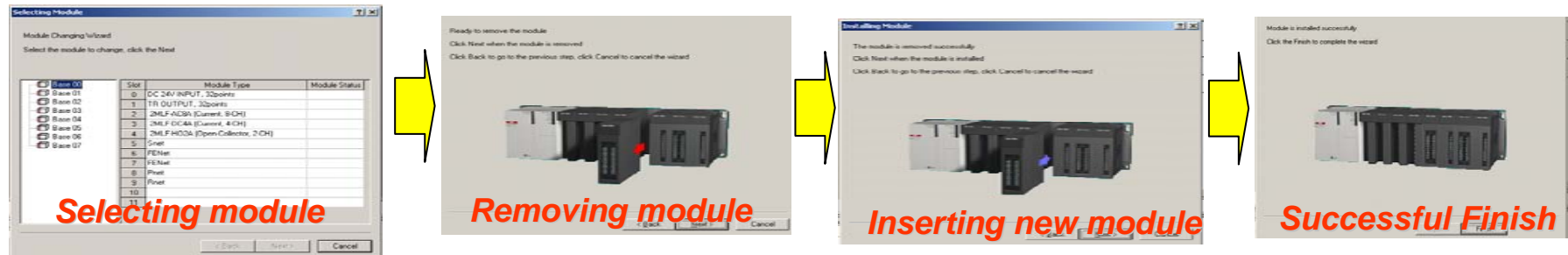
PLC 系统报警和事件历史

Error Log	2048 events	Any error condition in PLC with error code & description
Mode Log	1024 events	Mode change (RUN/STOP/DEBUG)
Power Log	1024 events	Power ON/OFF to system
System Log	2048 events	All key system events



维护和排错 1/2

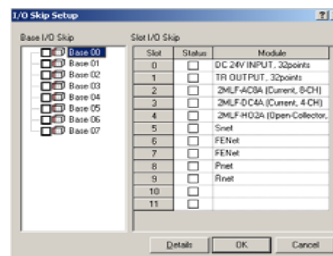
- ❑ 热插拔 - 在线更换I/O底板模块
 - ❑ CPU 更换方法
 - ❑ 软件向导



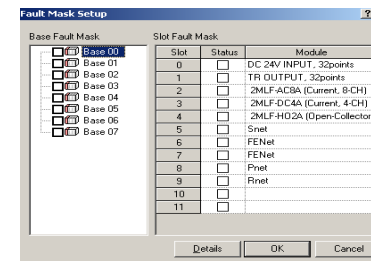
❑ 强制 I/O



❑ 跳过 I/O

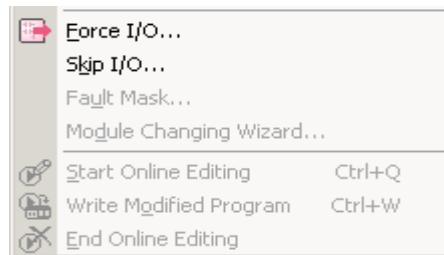


❑ 故障屏蔽



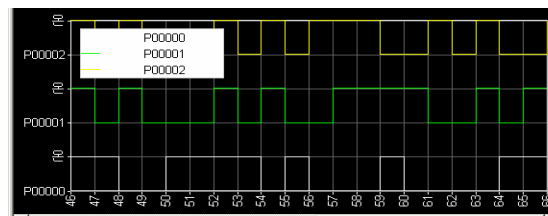
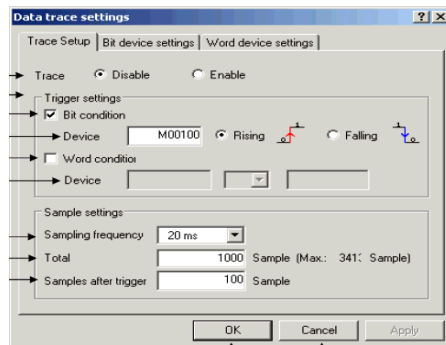
维护和排错 2/2

在线编辑



To modify the program online while CPU is running and download changes

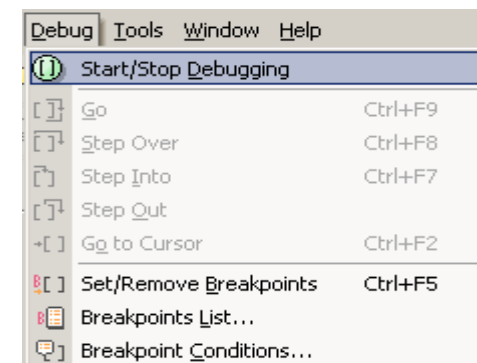
数据跟踪



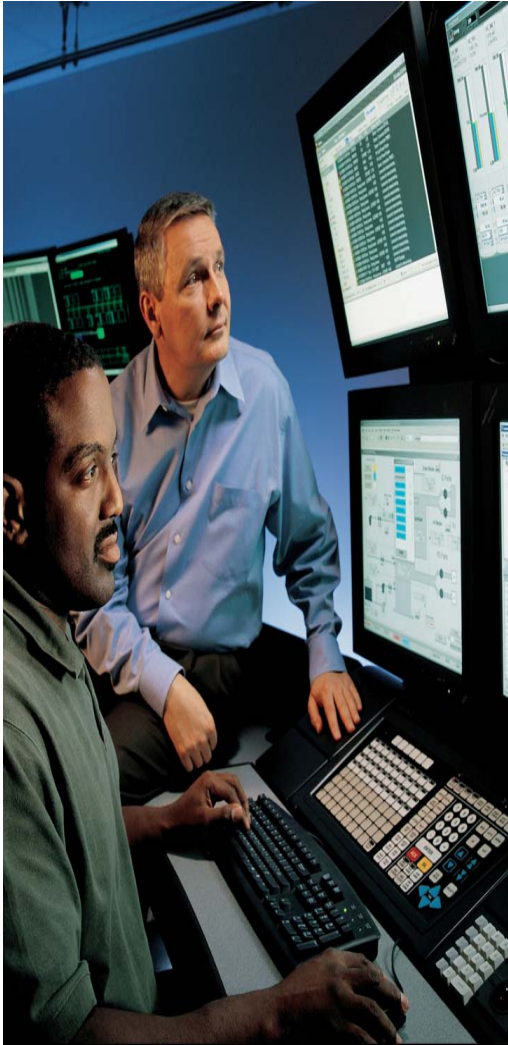
顺序事件

Custom Event					
Event Settings		Event History			
Number	Type	Event ID	Date	Time	Device
1	Information	3	2005-07-22	11:54:17:267	F00094
2	Information	1	2005-07-22	11:54:18:272	F00095
3	Information	3	2005-07-22	11:54:19:272	F00094

DEBUG 模式选择



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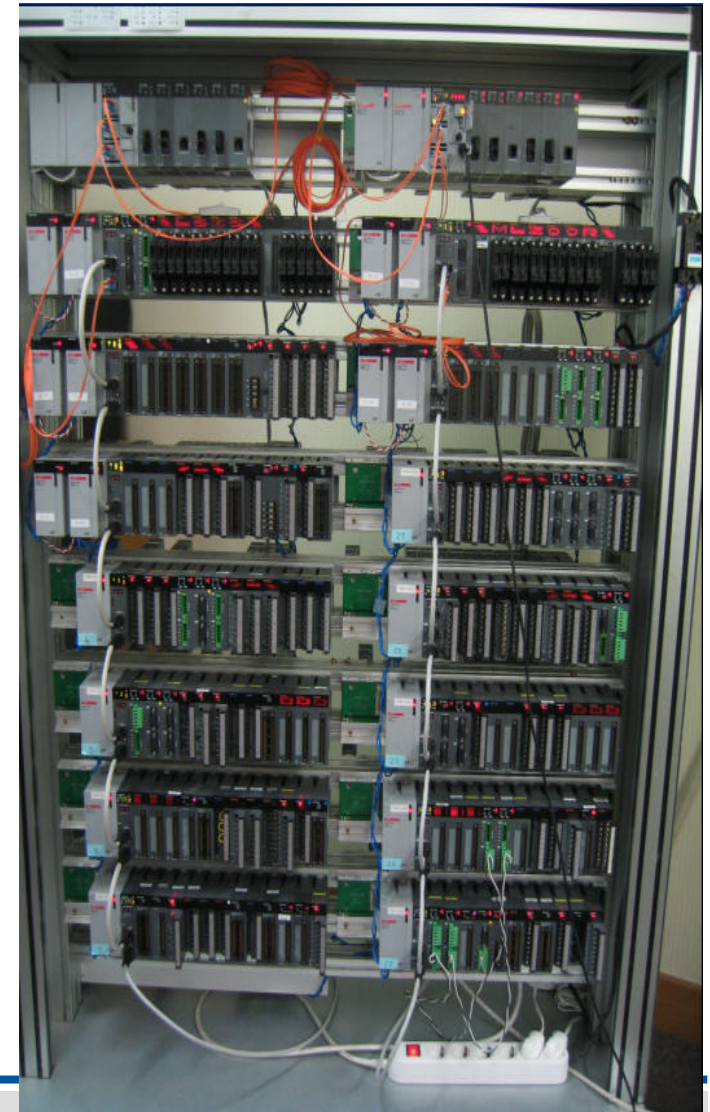
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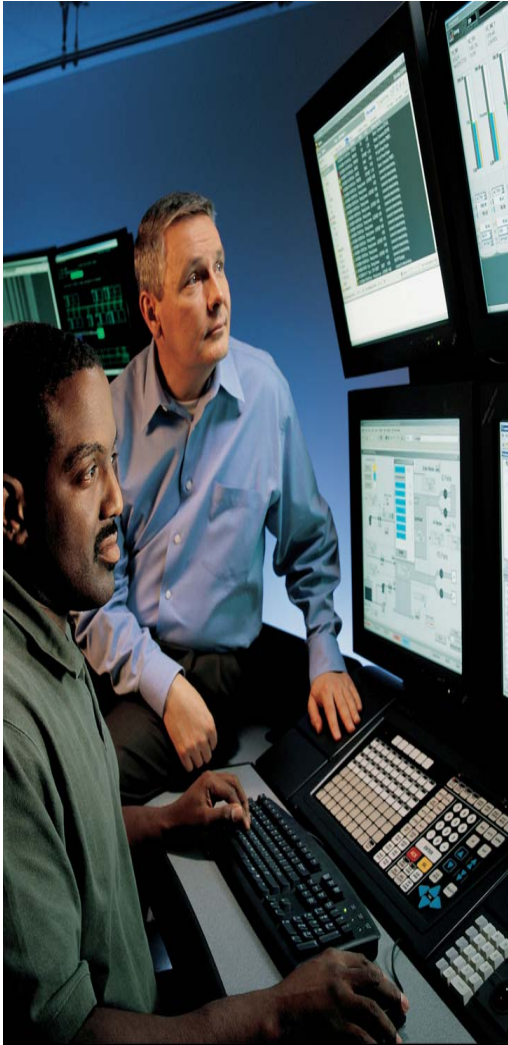
与Experion PKS 集成 (PLC 报警/事件, 时钟同步, SOE集成)

硬件尺寸小巧紧凑

- ❑ CPU模块尺寸 (27*98*90 mm) = (宽*高*深)
- ❑ 节省机柜空间
- ❑ 节省运费和存储空间
- ❑ 主底板可选6槽位底板
支持电源, CPU, 以太网模块
- ❑ 扩展底板可用12槽位底板
支持扩展模块, 通讯模块, I/O卡件



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数字模件



Field Termination made easy for connector type modules

- 24VDC input modules (Sink/source or source only type)
- AC input modules (110V or 220V AC)
- Relay, Triac, transistor output modules (sink or source type)
- 8, 16, 32, 64 points I/O module
- Photo-coupler isolation
- Individual LED for DI/DO status
- Response time is as low as 1ms
- Output hold upon CPU fail/stop or I/O module fail.
- Easy maintenance: Terminal & connector type

数字模件

2MLI-D21A	8Pts. DC24V Input (Sink/Source Type)
2MLI-D22A	16Pts. DC24V Input (Sink/Source Type)
2MLI-D22B	16Pts. DC24V Input (Source Type)
2MLI-D24A	32Pts. DC24V Input (Sink/Source Type)
2MLI-D24B	32Pts. DC24V Input (Source Type)
2MLI-D28A	64Pts. DC24V Input (Sink/Source Type)
2MLI-D28B	64Pts. DC24V Input (Source Type)
2MLI-A12A	16Pts. AC 110V Input
2MLI-A21A	8Pts. AC 220V Input
2MLQ-RY1A	8Pts. Relay Output, 2A , 1Pts./COM
2MLQ-RY2A	16Pts. Relay Output, 2A
2MLQ-RY2B	16Pts. Relay Output, 2A , BuiVaristor
2MLQ-SS2A	16Pts. Triac Output, 1A
2MLQ-TR2A	16Pts. TR Output, 0.5A (Sink Type)
2MLQ-TR4A	32Pts. TR Output, 0.1A (Sink Type)
2MLQ-TR8A	64Pts. TR Output, 0.1A (Sink Type)
2MLQ-TR2B	16Pts. TR Output, 0.5A (Source Type)
2MLQ-TR4B	32Pts. TR Output, 0.1A (Source Type)
2MLQ-TR8B	64Pts. TR Output, 0.1A (Source Type)

Digital Input

Digital Output

模拟量模块



- Voltage module and current module
- High speed A/D conversion & processing i.e. 250µs/channel
- High resolution (16 bit 0 ~ 16,000)
- Easy configuration via SoftMaster and avoid programming
- LED status displays for RUN / ERROR conditions
- Each channel can be individually enabled / disabled.
This helps in maintenance and in improving overall processing speed by disabling all un-used channels.

Analog Input modules	2MLF-AV8A	<ul style="list-style-type: none"> • Voltage Input: 8 channels • DC 1 ~ 5V / 0 ~ 5V / 0 ~ 10V / -10 ~ +10V
	2MLF-AC8A	<ul style="list-style-type: none"> • <u>Current Input: 8 channels</u> • DC 4 ~ 20mA / 0 ~ 20mA
	2MLF-AD8A	<ul style="list-style-type: none"> • Voltage/Current Input: 8 channels
	2MLF-AD4S	<ul style="list-style-type: none"> • Voltage/Current Input: 4 channels • Isolation between channels
Analog Output modules	2MLF-DV4A	<ul style="list-style-type: none"> • Voltage Output: 4 channels • DC 1 ~ 5V / 0 ~ 5V / 0 ~ 10V / -10 ~ +10V
	2MLF-DC4A	<ul style="list-style-type: none"> • <u>Current Output: 4 channels</u> • DC 4 ~ 20mA / 0 ~ 20mA
	2MLF-DC4S	Current Output: 4 channels, Isolation between channels
	2MLF-DV8A	<ul style="list-style-type: none"> • Voltage Output: 8 channels • DC 1 ~ 5V / 0 ~ 5V / 0 ~ 10V / -10 ~ +10V
	2MLF-DC8A	<ul style="list-style-type: none"> • <u>Current Output: 8 channels</u> • DC 4 ~ 20mA / 0 ~ 20mA
Thermocouple Input Module	2MLF-TC4S	<u>Temperature (T/C) Input, 4 channels, Isolation between channels</u>
RTD Input Module	2MLF-RD4A	Temperature (RTD) Input, 4 channels

特殊模件



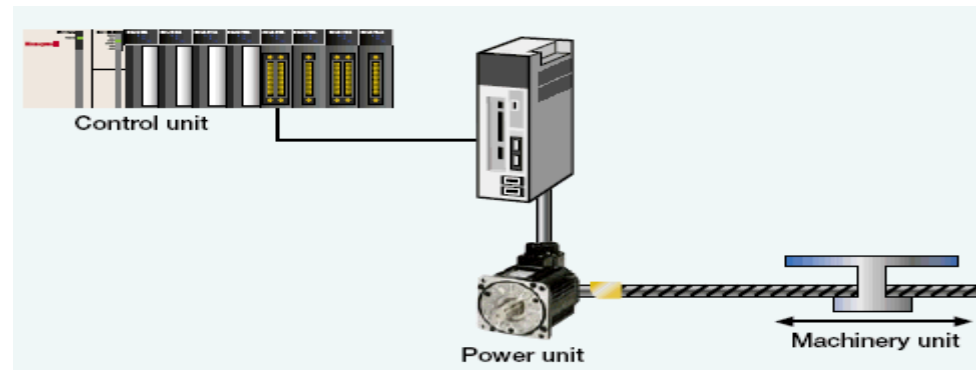
High Speed Counter (pulse input)

- Incremental encoder
- Supporting various pulse input voltages (5V, 12V, 24V)
- Preset / totalizer function. Two built-in transistor outputs
- LED status displays for input, output and module READY condition.



Position Control Module

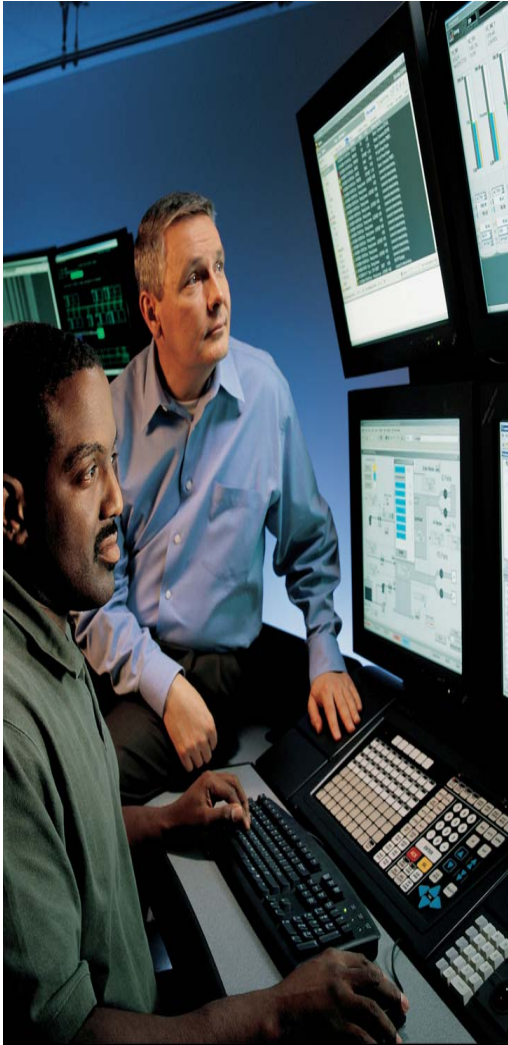
- High speed servo motor control
- Special software for configuration and monitoring



可选电源

Power module (for 2MLR-CPUH/T, 2MLR-CPUH/F)	2MLR-AC13	Power Module, 8.5A, Voltage (110V)
	2MLR-AC23	Power Module, 8.5A, Voltage (220V)
	2MLR-AC12	Power Module, 5.5A, Voltage (110V)
	2MLR-AC22	Power Module, 5.5A, Voltage (220V)

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开放的网络

快速以太网 (FEnet)

可选双绞线或光纤
Experion集成, 点对点通讯, MODBUS TCP, 用户自定义协议

串型通讯 (Snet)

两口RS232C, RS422/485可选
协议选择MODBUS RTU/ASCII, SoftMaster, 用户定义协议

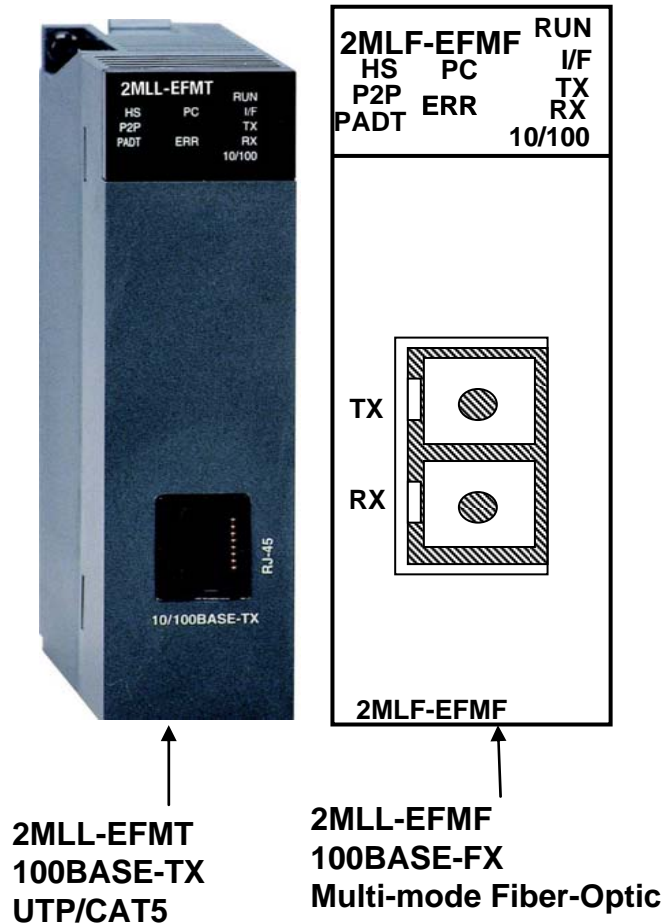
Profibus-DP

RS485 通讯使用 Profibus-DP 设备
Sycon组态

DeviceNet

CAN 总线通讯与DeviceNet设备
Sycon组态

FEnet 模块 (快速以太网) – 应用



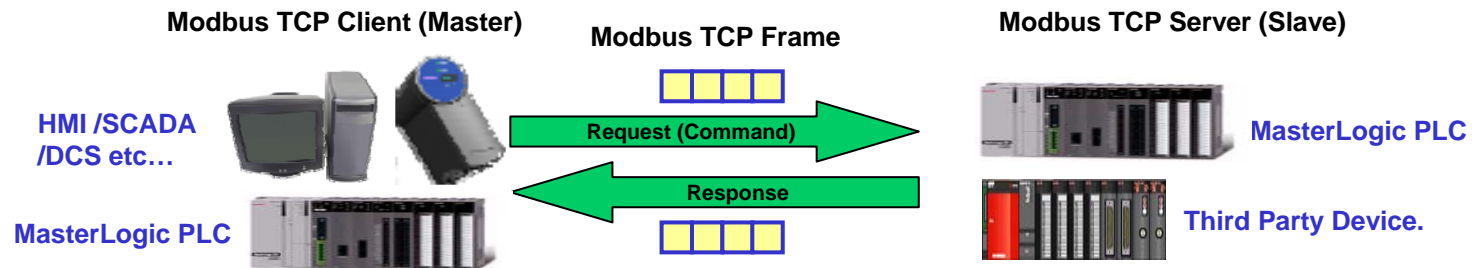
- Supports both TCP/IP and UDP/IP protocols
- Twisted Pair and multi-mode Fiber-optic media are available

Configuration	Application
SoftMaster service	SoftMaster (PADT) service runs automatic by default in FEnet modules and does not require configuration. This means any SoftMaster PADT PC can communicate with any MasterLogic PLC's FEnet module provided they are on the same network.
MLDP Server (MasterLogic Dedicated Protocol)	For Experion PKS to communicate with MasterLogic PLCs for process and system alarms & events including SOE information. The PLC clocks can also be synchronized with server clock
HSL service Peer-to-Peer	For MasterLogic PLCs to have peer-to-peer communication with few simple configuration steps. Diagnostics available to monitor frames and other communication status
MODBUS TCP (Slave)	For SCADA HMI or other MODBUS TCP master devices to initiate communication with MasterLogic PLCs on MODBUS TCP protocol
MODBUS TCP (Master)	For MasterLogic PLCs to act as MODBUS TCP master and initiate communication with other MODBUS TCP slave devices
User-defined Communication Service	To send and receive user-defined TCP-IP communication packets

Functionally, more than one service can run simultaneously on a single FEnet Module e.g. SoftMaster service and MLDP server run together at the same time.

MODBUS TCP Master/Slave

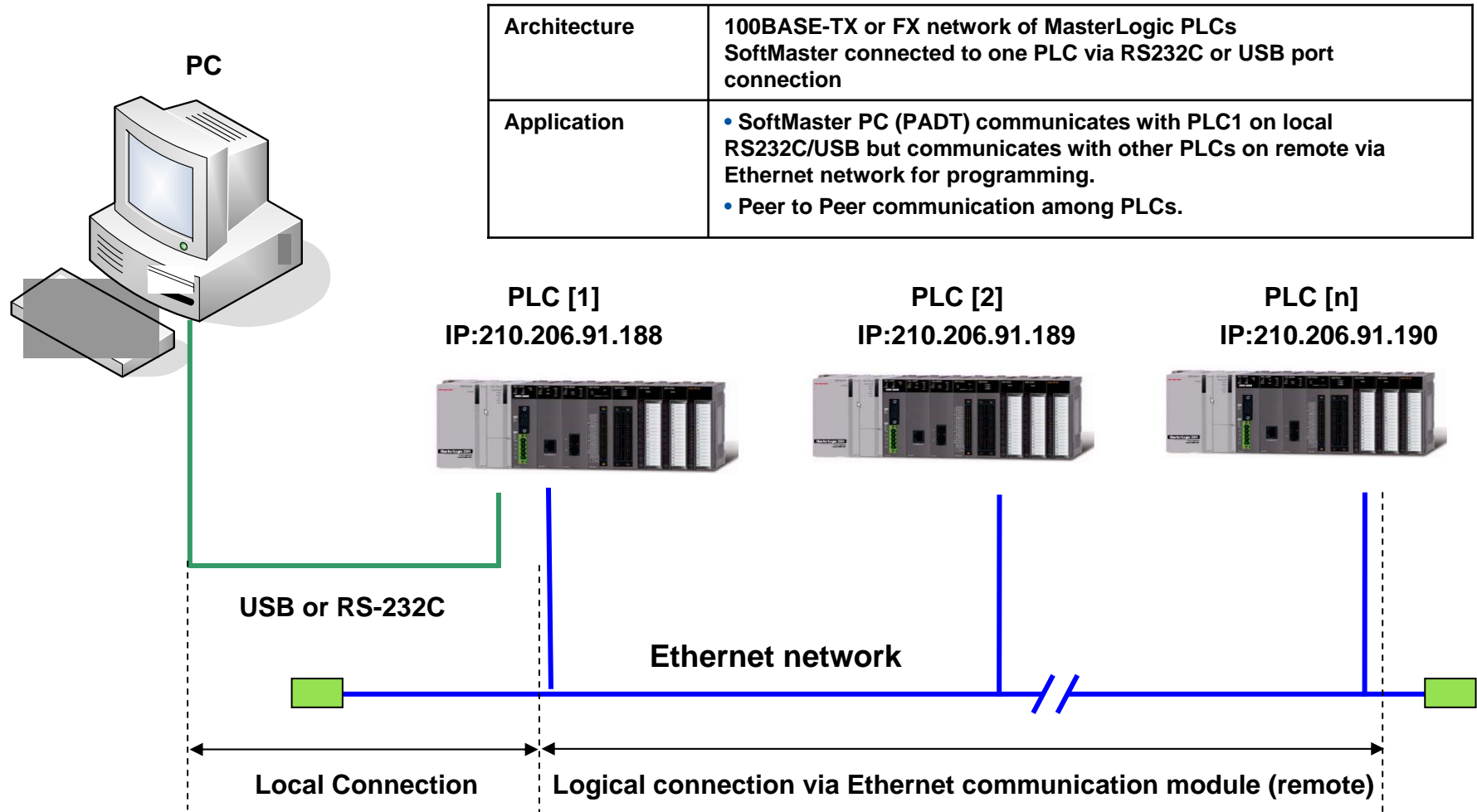
- Modbus TCP is the most widely used open protocol specification based on TCP/IP and UDP/IP.
- MasterLogic PLC provides both Modbus TCP slave (server) or master (client).function
- Commands supported are:
 - Read Coil (Code 1) & Input status (Code 2)
 - Read Holding Register (Code3) & Input Register (Code4)
 - Force Single Coil (Code5) & multiple Coil (Code15)
 - Preset Single Register (Code6) & multiple register (Code16)
- Max. 250 bytes of data can be read or written by a single command.
- Direct Variable (%I, %Q, %M, %R) corresponding to the MODBUS address by parameter.



Mode & Parameter

Network	Service Name	MasterLogic-200 PLC parameters required to be set for MODBUS TCP service					Remarks
		Standard Parameter	HSL Parameter	P2P Parameter			
				P2P Ch.	P2P Block	User Frame	
Ethernet	Modbus Client (Master)	○	X	○	○	X	○: Required X: Not required
	Modbus Server (Slave)	○	X	X	X	X	

FEnet 应用示例



开放的网络

快速以太网 (FEnet)

可选双绞线或光纤
Experion集成, 点对点通讯, MODBUS TCP, 用户自定义协议

串型通讯 (Snet)

两口RS232C, RS422/485可选
协议选择MODBUS RTU/ASCII, SoftMaster, 用户定义协议

Profibus-DP

RS485 通讯使用 Profibus-DP 设备
Sycon组态

DeviceNet

CAN 总线通讯与DeviceNet设备
Sycon组态

Snet 模块 (串行通讯应用)



2MLL-CH2A
Port1: RS232C
Port2: RS422/485

2MLL-C22A
Port1: RS232C
Port2: RS232C

2MLL-C42A
Port1: RS422/485
Port2: RS422/485

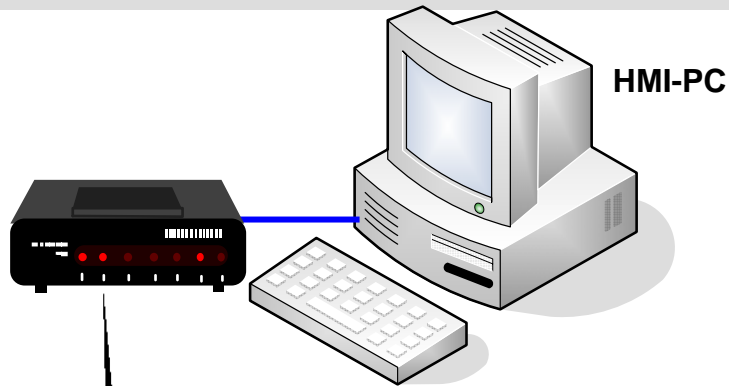
Each Snet module has 2 serial ports. Each port can be configured as:

Configuration	Application
MODBUS Master (ASCII / RTU)	For MasterLogic PLC to communicate with other open 3 rd party devices having MODBUS RTU/ASCII slave protocol and update PLC CPU memory
MODBUS Slave (ASCII/RTU)	For SCADA HMI PC to communicate with MasterLogic PLCs for update HMI database.
SoftMaster-service	For SoftMaster (PADT) to communicate with MasterLogic PLCs on local, remote connections (remote level 1 and remote level 2)

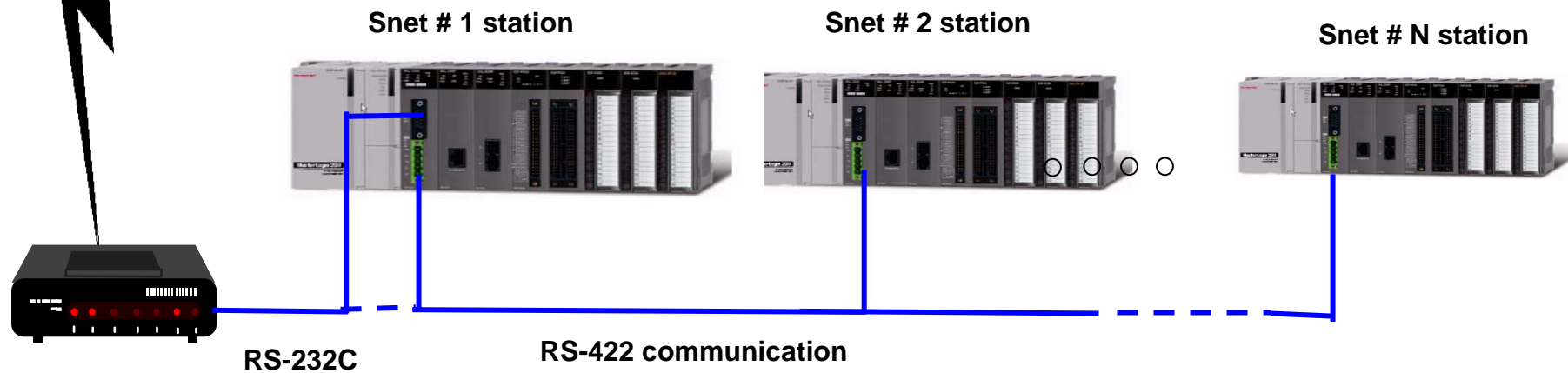
For Proprietary Protocols (e.g. devices not supporting MODBUS)

User-defined protocol communication (Master)	For MasterLogic PLC to communicate with other open 3 rd party devices on proprietary ASCII protocols and update PLC CPU memory
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Snet 模块 – 串行通讯应用

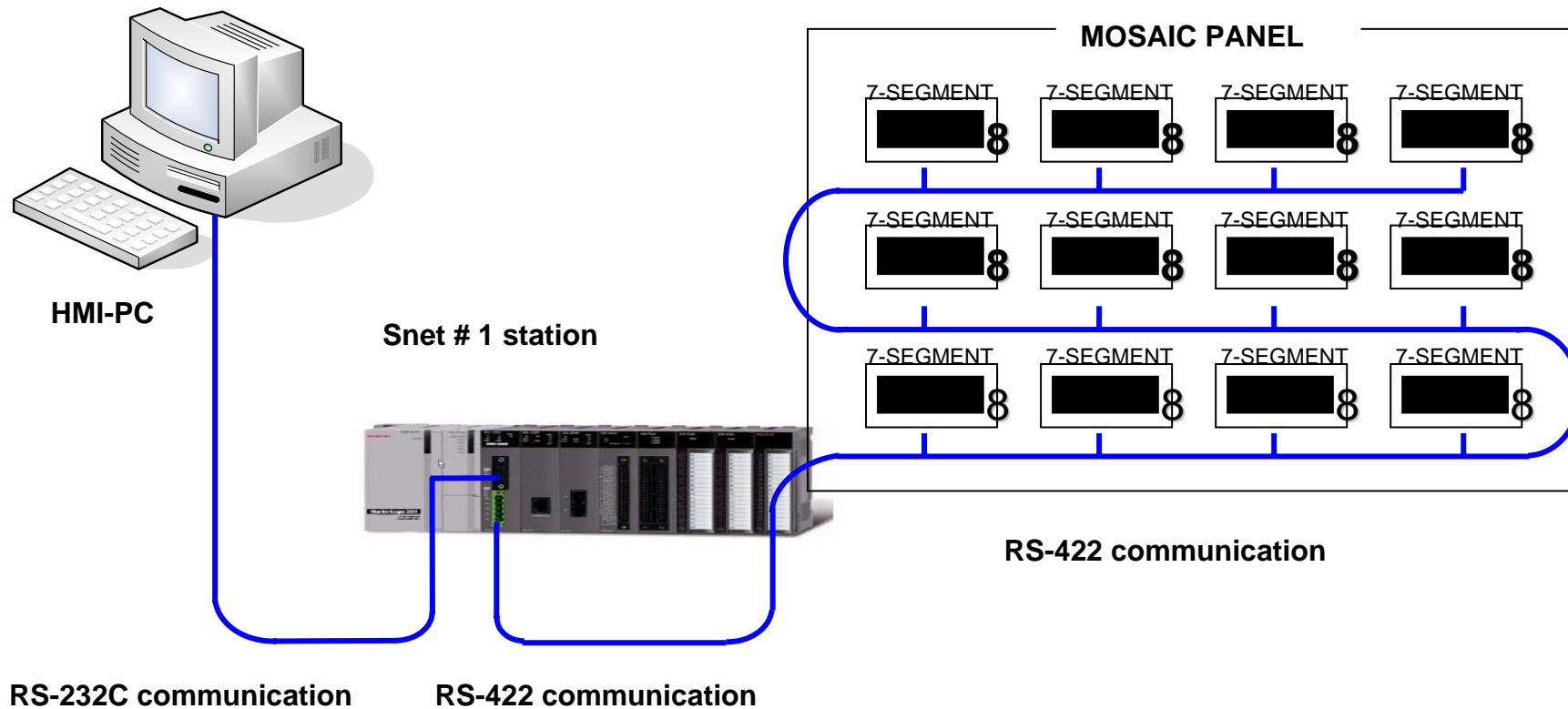


Architecture	Dedicated modem long distance communication between PC & PLCs
Application	<ul style="list-style-type: none">•HMI server acting as MODBUS RTU master communicates with PLCs over RS422 using modem. Each PLC act as a MODBUS RTU slave device with unique station address• SoftMaster PC (PADT) communicates with Station1 on local RS232C but communicates with other PLCs on remote RS422 for programming.



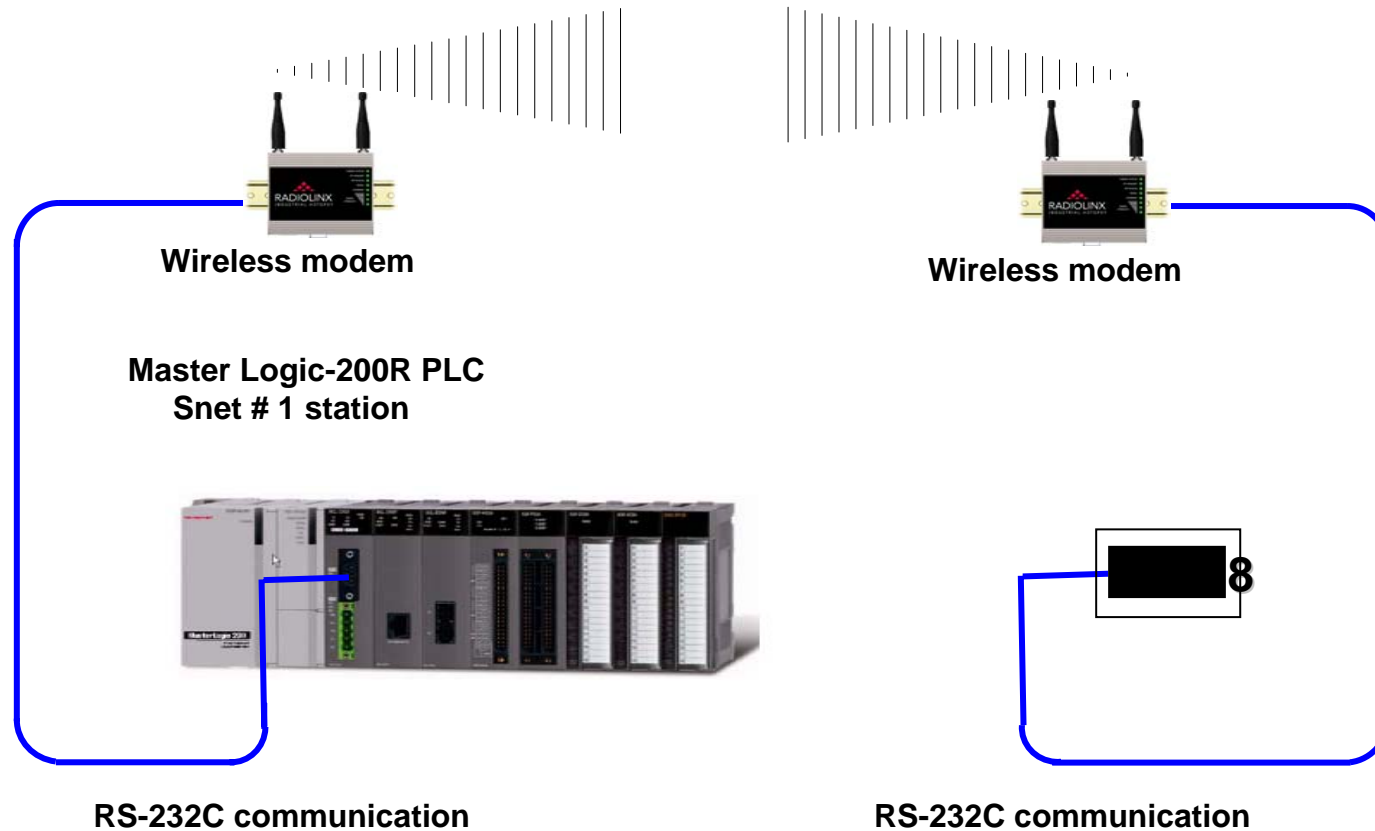
Snet 模块 – 串行通讯应用

Architecture	RS232C and RS422 network communication
Application	<ul style="list-style-type: none"> • RS232C port of Snet Module can be used either SoftMaster interface or MODBUS RTU/ASCII slave device. • RS422 port of Snet module used as MODBUS RTU/ASCII master to communicate with 3rd party MODBUS RTU slave devices e.g. MOSAIC PANEL.



Snet 模件 – 串行通讯应用

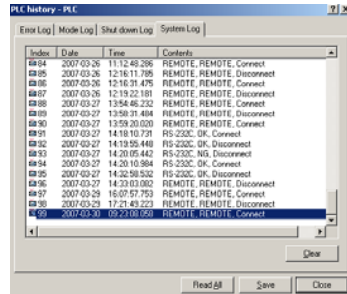
Architecture	RS232C and wireless modem
Application	MasterLogic PLC can act as MODBUS RTU/ASCII Master. The 3 rd party device acts as MODBUS slave on RS232C. Networking is through wireless modem



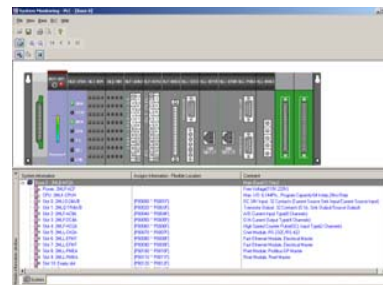
开放的网络汇总

		Fast Ethernet	Serial Comm	Profibus-DP	DeviceNet
Modules		2MLL-EFMT (T.P) 2MLL-EFMF (F.O)	2MLL-CH2A 2MLL-C22A 2MLL-C42A	2MLL-PMEA	2MLL-DMEA
Transmission Speed		10/100 Mbps	300 ~ 11.5kbps	9.6k ~12Mbps	125k/250k /500kbps
Physical Layer		IEEE802.3U - 100baseTx (T.P), 100baseFx (Fiber-Optic)	RS232C / RS422 / 485	RS485	CAN
Distance		100m (Switch/Node , UTP/STP) 2Km (Switch/Node , Fiber Optic)	Max 500m (RS422/485)	Max 1.2Km	100 / 250 / 500m
Max # of nodes		64	32	126 (32/segment)	64 (1 master + 63 slave)
Service / Protocol	HSL	✓ (Peer-to-Peer)	-	✓ (Profibus-DP)	✓ (DeviceNet)
	MLDP	✓ (Experion Interface)	-	-	-
	Modbus slave	✓ (MODBUS TCP slave)	✓ (MODBUS RTU/ASCII slave)	-	-
	P2P	✓ (MODBUS TCP master, User defined Protocol master)	✓ (MODBUS RTU/ASCII master, User defined Protocol master)	-	-
	SoftMaster I/F	✓	✓		
Configuration Software		SoftMaster-NM		SoftMaster-NM & Sycon	
# communication modules per CPU		Max 24 communication modules per CPU (Max 12 HSL services & 8 P2P services per CPU)			
Network Diagnostics		Auto-scan, Ping Test, Frame Monitor, Link Monitor, Loop back (as applicable)			

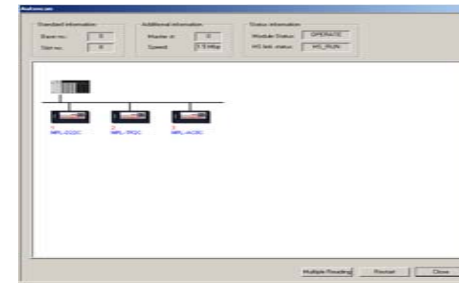
网络诊断和监视



System Log



System Monitor



Network Auto Scan

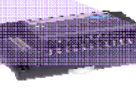
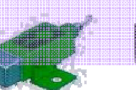


Fast Ethernet (FNet, FENet)

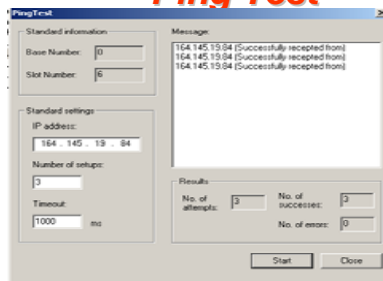
Snet

DeviceNet

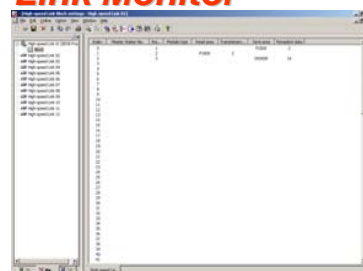
Profibus-DP



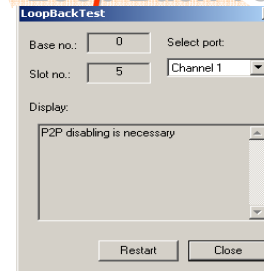
Ping Test



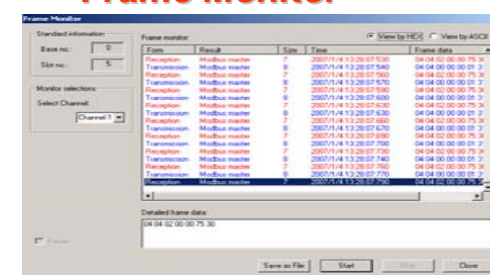
Link Monitor



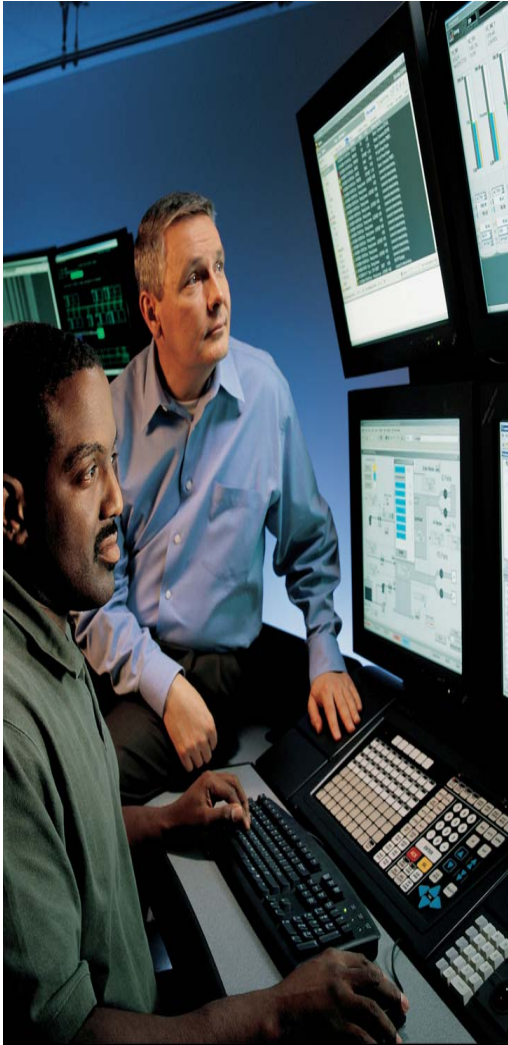
Loop Back Test



Frame Monitor



议程 – MasterLogic PLCs



系统架构

电源和CPU

紧凑的卡件尺寸

模件选项

开放的网络

友好的工程组态界面

丰富的诊断工具 (系统错误日志, 系统监视, 网络监视)

与Experion PKS 集成 (PLC 报警/事件, 时钟同步, SOE集成)

SoftMaster (工程师组态软件)



集成LC工程环境

所有功能在同一window中, 如

编程

组态

调试

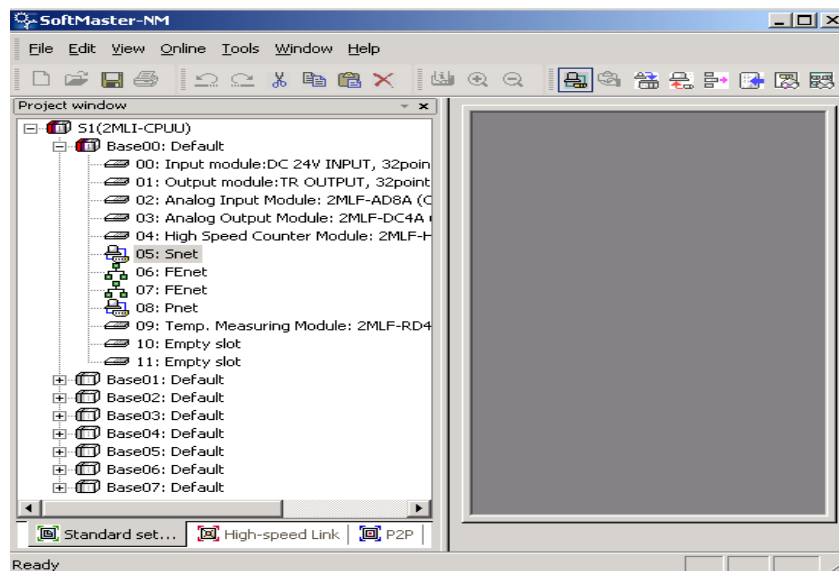
PLC仿真

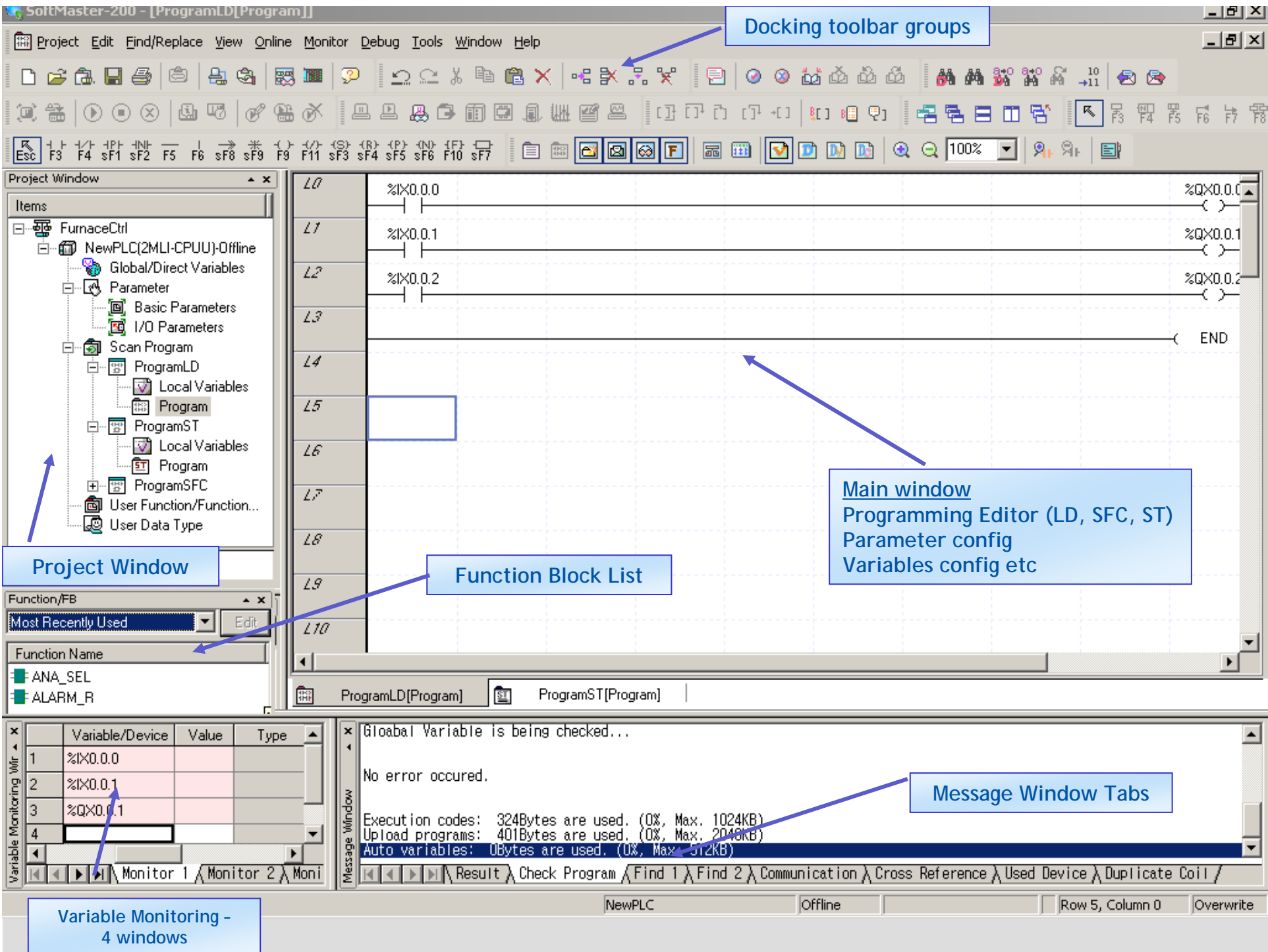
监视

故障检修

文档

维护





Docking toolbar groups

Project Window

Function Block List

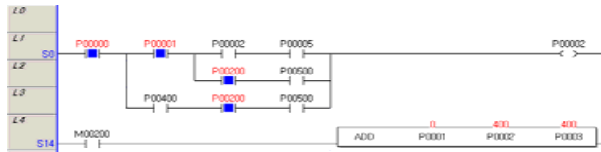
Main window
Programming Editor (LD, SFC, ST)
Parameter config
Variables config etc

Variable Monitoring -
4 windows

Message Window Tabs

SoftMaster

- 监视工具



梯形图监视

PLC	BIT	Type	Device	Value	Variable	Comment
1	PLC	BIT	F0000	<input checked="" type="checkbox"/>	_RUN	RUN
2	PLC	BIT	F0001	<input checked="" type="checkbox"/>	_STOP	STOP
3	PLC	BIT	F0002	<input checked="" type="checkbox"/>	_ERROR	ERROR
4	PLC	BIT	F0003	<input checked="" type="checkbox"/>	_DEBUG	DEBUG
5	PLC	BIT	F0004	<input checked="" type="checkbox"/>	_LOCAL_CON	Local control
6	PLC	BIT	F0005	<input checked="" type="checkbox"/>	_MODEM_CON	Modem mode ON
7	PLC	BIT	F0006	<input checked="" type="checkbox"/>	_REMOTE_CON	Remote mode ON
8	PLC	BIT	F0007	<input checked="" type="checkbox"/>		
9	PLC	BIT	F0008	<input checked="" type="checkbox"/>	_RUN_EDIT_ST	Downloading a program at online editing mode
10	PLC	BIT	F0009	<input checked="" type="checkbox"/>	_RUN_EDIT_CHK	Processing online editing internally
11	PLC	BIT	F000A	<input checked="" type="checkbox"/>	_RUN_EDIT_DONE	Online editing done
12	PLC	BIT	F000B	<input checked="" type="checkbox"/>	_RUN_EDIT_NG	Online editing abnormal termination
13	PLC	BIT	F000C	<input checked="" type="checkbox"/>	_CHMOD_KEY	Change operation mode by the switch
14	PLC	BIT	F000D	<input checked="" type="checkbox"/>	_CHMOD_LPADT	Change operation mode by the local PADT
15	PLC	BIT	F000E	<input checked="" type="checkbox"/>	_CHMOD_RPADT	Change operation mode by the remote PADT
16	PLC	BIT	F000F	<input checked="" type="checkbox"/>	_CHMOD_LINK	Change operation mode by the remote communication module
17	PLC	BIT	F0010	<input checked="" type="checkbox"/>	_FORCE_IN	Force input
18	PLC	BIT	F0011	<input checked="" type="checkbox"/>	_FORCE_OUT	Force output



强制 I/O



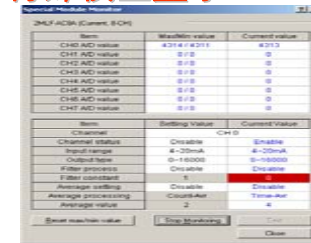
变量显示

系统监视



趋势监视

特殊模型显示

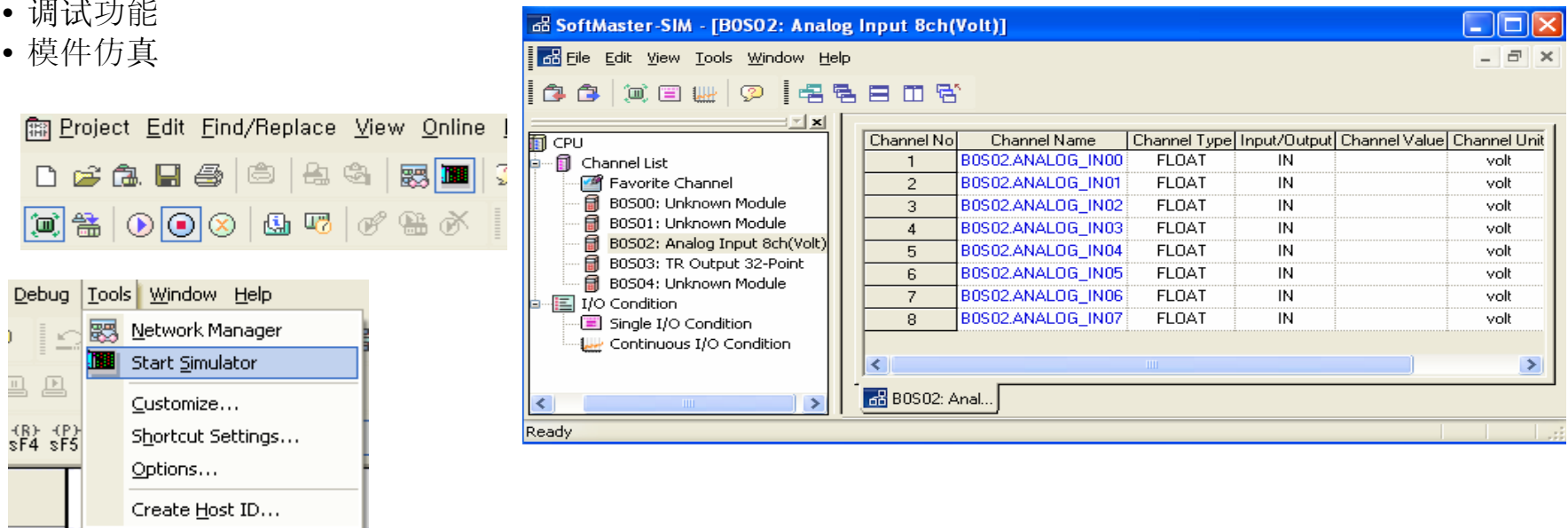


SoftMaster

程序仿真

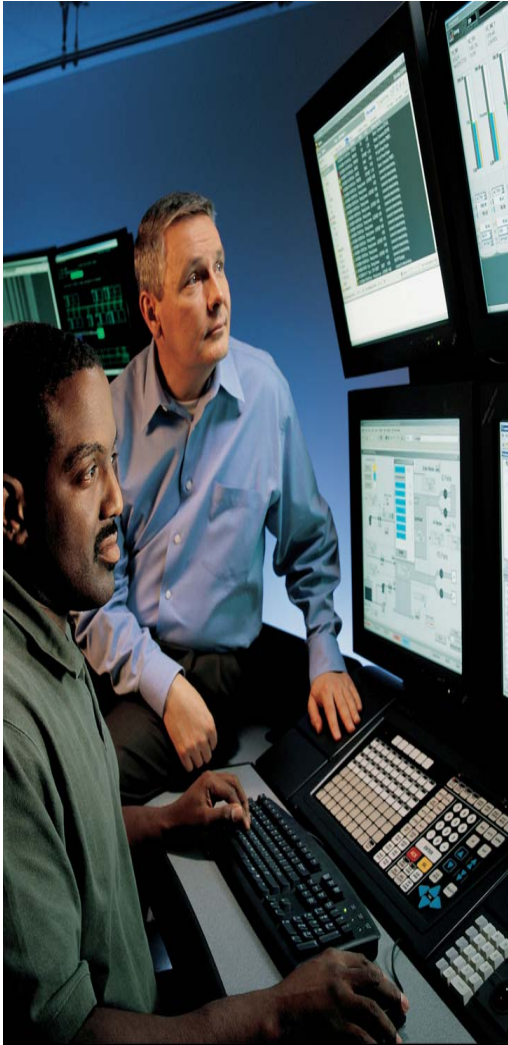
测试和编程PLC不需要物理PLC

- 支持所有语言 (LD/IL/SFC/ST)
- 程序仿真
- 在线功能
- 调试功能
- 模件仿真



Channel No	Channel Name	Channel Type	Input/Output	Channel Value	Channel Unit
1	B0S02.ANALOG_IN00	FLOAT	IN		volt
2	B0S02.ANALOG_IN01	FLOAT	IN		volt
3	B0S02.ANALOG_IN02	FLOAT	IN		volt
4	B0S02.ANALOG_IN03	FLOAT	IN		volt
5	B0S02.ANALOG_IN04	FLOAT	IN		volt
6	B0S02.ANALOG_IN05	FLOAT	IN		volt
7	B0S02.ANALOG_IN06	FLOAT	IN		volt
8	B0S02.ANALOG_IN07	FLOAT	IN		volt

议程 – MasterLogic PLCs



系统架构

电源和CPU

紧凑的卡件尺寸

模件选项

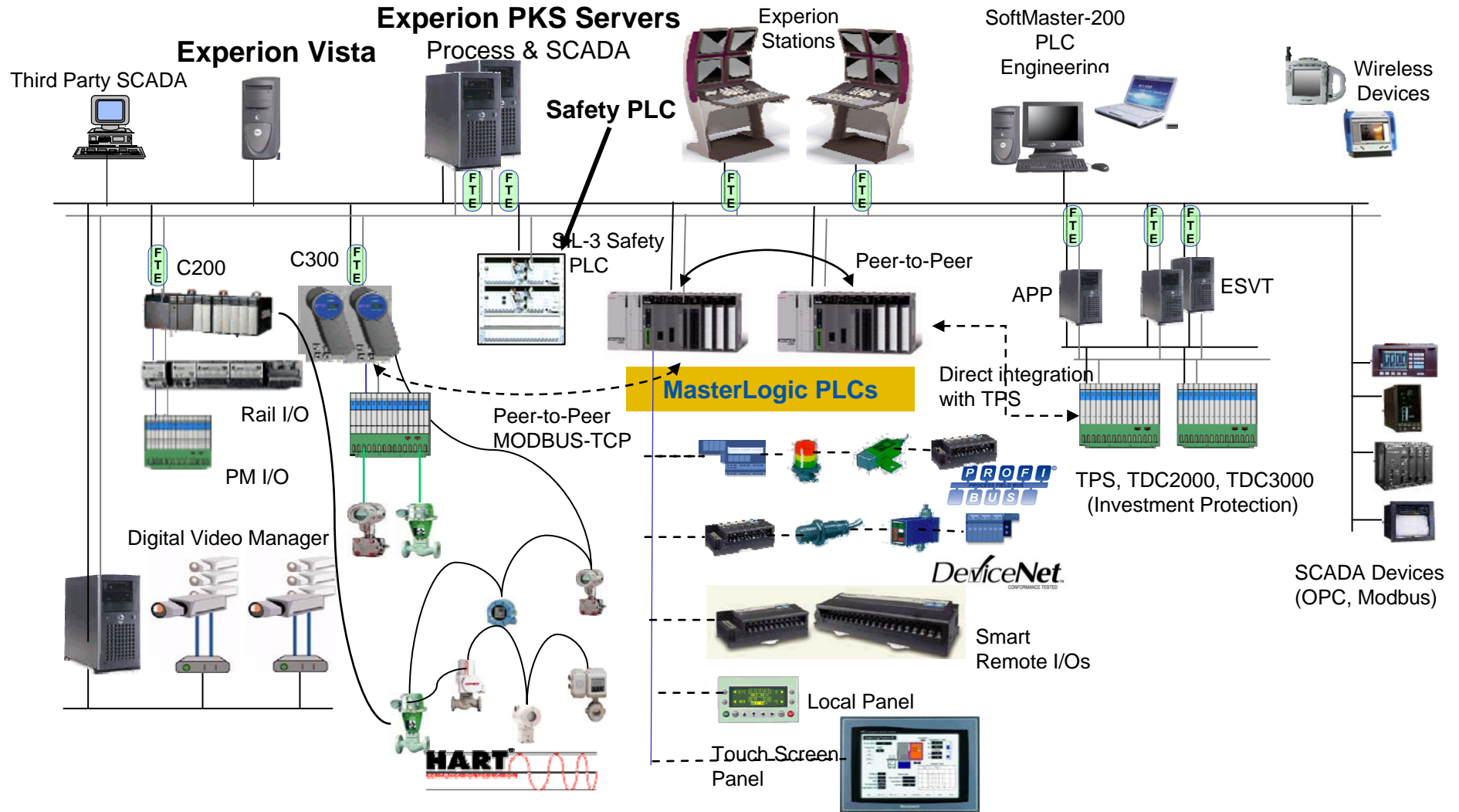
开放的网络

友好的工程组态界面

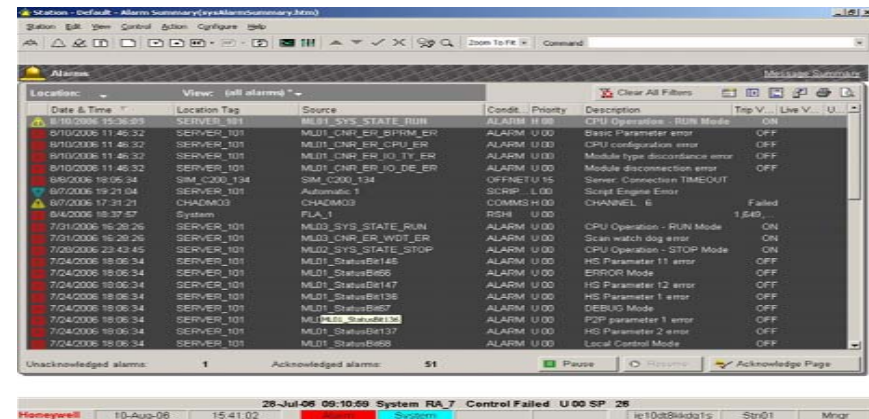
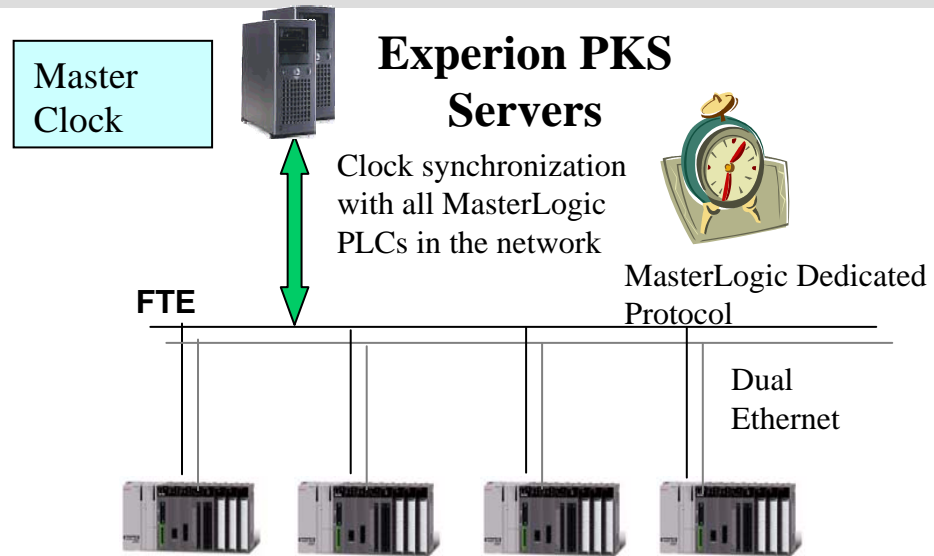
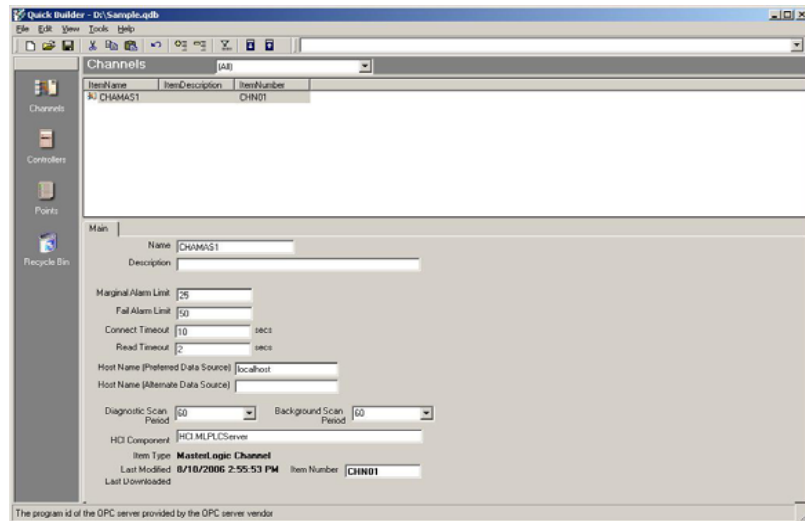
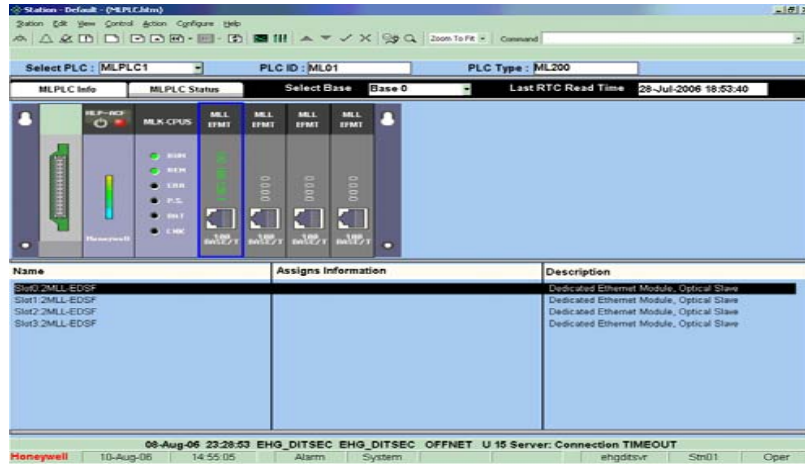
丰富的诊断工具 (系统错误日志, 系统监视, 网络监视)

与Experion PKS 集成 (PLC 报警/事件, 时钟同步, SOE集成)

MasterLogic PLC 与 Experion集成



Experion PKS 集成



PLC System Alarms/ Events, SOE Integration

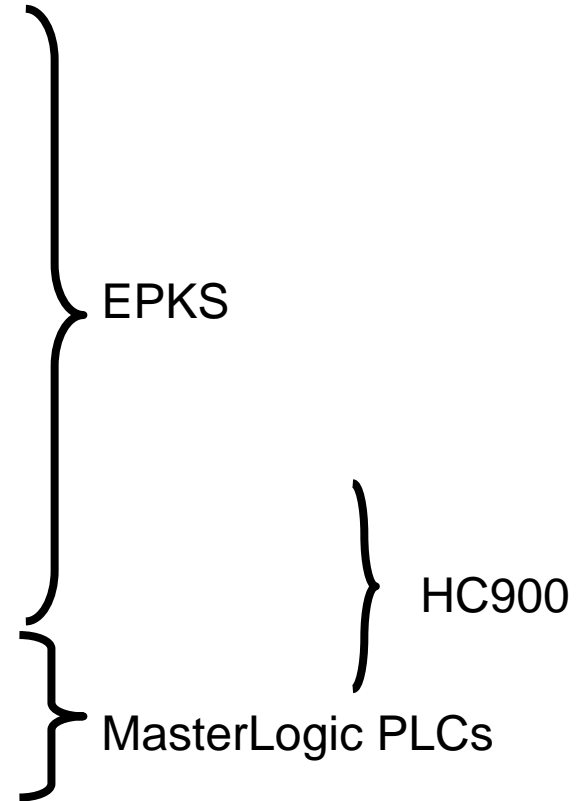
产品定位



Regulatory
(Critical control is regulatory)

Hybrid
(Sequential, Regulatory & Discrete)

Discrete
(Critical control is discrete, Ladder)



- ❑ Niche to cover : Low Cost per digital I/O , Full redundancy , Ladder, Profibus and DeviceNet capabilities.
- ❑ Minimum overlapping with HC900 and Experion

CPU 参数说明 (1/3)

No.	Item		2MLI-CPUU Non-redundant	2MLR-CPUH/# Redundant or Non-redundant	Related Standards
1	Program Execution methods		Cyclic scan, Time-driven interrupts, Internal Memory interrupts		
2	I/O control method		Scan synchronous batch processing I/O (refresh method), Direct I/O method by program instruction		
3	Program language		Ladder Diagram, Sequential Function Chart, Structured Text, Instruction List (view only)		
4	Number of instructions	Operator	18		
		Basic functions	136 + real number operation function	130 + real number operation function	
		Basic function block	43	41	
		Dedicated function block	Dedicated communication function blocks (P2P)		
5	Processing speed (Basic instruction)	LD	0.028 μ s/Step	0.042 μ s/Step	
		MOV	0.084 μ s/Step	0.126 μ s/Step	
		Real number operation	\pm : 0.392 μ s (S), 0.924 μ s (D) \div : 0.924 μ s (S), 2.254 μ s (D) x: 0.896 μ s (S), 2.240 μ s (D)	\pm : 0.602 μ s (S), 1.078 μ s (D) \div : 1.134 μ s (S), 2.66 μ s (D) x: 1.106 μ s (S), 2.394 μ s (D)	S: Single real number D: Double real number
6	Program memory capacity		10 MB		
7	Max # I/O bases		8 (main + 7 extension)	31	
8	Max # slots		96	372	
9	Max base I/O	Using 64 ch DI/DO module	6,144 (64ch * 96 slots)	23,808 (64ch*372 slots)	

CPU 参数说明(2/3)

		Using 32 ch DI/DO module	3,072 (32ch * 96 slots)	11,904 (32ch*372 slots)		
10	Max I/O extension distance		15m (proprietary cable)	100m (UTP cable) 2km (Fiber-optic cable)	*open standards	
11	Network / Remote I/O (Max I/O memory)		128,000	128,000	Using Smart I/O modules	
12	Flash Memory		16 MB			
13	Data Memory Capacity	Symbolic Variable Area (A)	512 KB (Maximum, 256 KB retain settable)			
		Timer	No point limit Time Range: 0.001 ~ 4,294,967.295 seconds (1,193hours)			Occupying 20 bytes of symbolic variable area per point
		Counter	No point limit Coefficient Range : -32,768 ~ +32,767			Occupying 8 bytes of symbolic variable area per point
		Direct Variable	M	256 KB (Maximum, 128 KB retain settable) (%MW0~%MW131071)	Fixed Area Variable	
			R	64 KB * 2 (%RW0~%RW32767)	File Register	
			I	16 KB (%IW0.0.0~%IW127.15.3)	Input Image Area	
			Q	16 KB (%QW0.0.0~%QW127.15.3)	Output Image Area	
			W	128 KB (%WW0~%WW65535)		
		Flag Variables	F	4 KB	System Flag	
			K	16 KB	PID Flag	
L	22 KB		High Speed Link Flag			
N	42 KB		P2P Flag			

CPU 参数说明(3/3)

			U	8 KB	Analog Refresh Flag as VAR_GLOBAL
14	Program Type Allocation	INIT task	1 max		
		Timer Interrupt tasks	32 max		
		Internal Device Interrupt tasks	32 max		
		Scan program	Balance: 256 minus sum of above		
		Total	256 max		
15	CPU operation mode	RUN, STOP, DEBUG			
16	CPU restart mode	Cold or warm restart			
17	Self-diagnosis	Watchdog timer, memory error, I/O error, battery error, power error, communication error etc.			
18	Built-in Program port	RS-232C(1CH)			Modbus slave supported via RS-232C port
		USB (1CH) @ 12MBPS			
		Note: Additional program connections via Ethernet & serial communication module (locate or remote)			
19	Data storage method at power off	Retain area configuration via Basic parameters			
20	Internal consumption current	960mA			
21	Weight	0.12kg			
22	Switchover Time	NA	Less than 50 ms		

MasterLogic-50



Master Logic 50

- CPU速度 : 0.16 μ S / step
- 最大 480 I/O
- 通讯 : RS422/RS485/RS232










Main Performance	SIEMENS	ROCKWELL	MITSUBISHI	NAIS	Schneider	OMRON	Keyence	Honeywell	
	S7-200(224XP)	Micro Logix 1500(LRP)	FX3UC	FPΣ	TWIDO	CPM2C	KV Series	K120S	ML50
Max. I/O point	168	256	256	128	256	362	152	120	480
Processing speed	0.22 μ S	0.7 μ S	0.065 μ S	0.4 μ S	0.14 μ S	0.64 μ S	0.7 μ S	0.1 μ S	0.16 μ S
Program capacity	16K steps	14K words	64K steps	12K steps	3,000 steps	4K steps	4,000 steps	10K steps	10K steps
Data capacity	10KByte	24K word	9K word	12K word	3,000 word	3000 word	4,560 word	5,000 word	5K word
Floating-point arithmetic	Available	Available	Available	N/A	Available	N/A	N/A	N/A	Available

紧缩尺寸PLC控制器

主CPU: 30(宽) * 90(高) * 60(深) mm

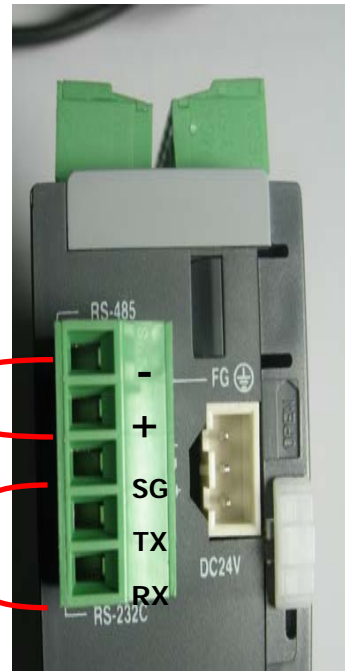
扩展 模件: 20(宽) * 90(高) * 60(深) mm

Maker	MITSUBISHI	OMRON	SCHNEIDER	NAIS	IDEC	MOELLER	Honeywell
Type	FX3UC	CPM2A	TWIDO	FP SIGMA	FC4A	SC100 Series	ML50
Appearance							
Size	32 points (55x90x87)	32 points(33x90x65)	40 points(47.5x90x70)	32 points (30x90x78)	40 points(47.5x90x70)	14 points(60x100x100)	32 points(30x90x60)
Comparison	265%	119%	185%	124%	185%	370%	100%

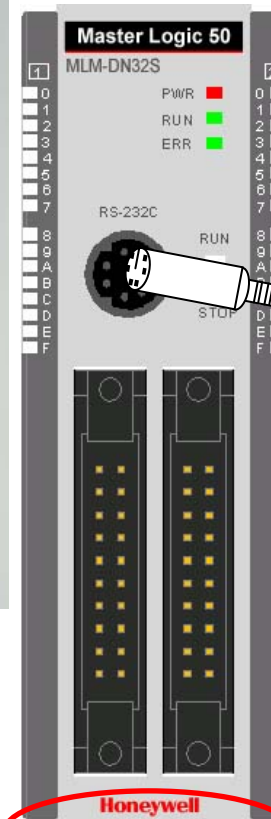
ML50接口

CPU 模件 : RS-232C, RS485

RS485 2 Pins (+, -)
Modbus RTU/ASCII Client/Server
Dedicated Client/Server Protocol
Communication
User Defined Client Communication



RS-232C
3 Pins (TX, RX, SG)
Modbus RTU/ASCII Client/Server
Dedicated Client/Server Communication
User Defined Client Communication



SoftMaster,
SoftMaster-NM



Loader Communication
RS-232 Configuration port
(6-pin female connector)

紧缩尺寸PLC

RUN/STOP
Exchange Switch

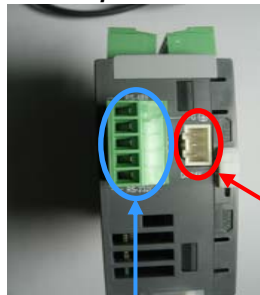
CPU Module Size :
Height 90 mm / 3.54"
Width 30 mm / 1.18"
Depth 60 mm / 2.36"

Each Expansion Module Size:
Height 90 mm / 3.54"
Width 20 mm / 0.79"
Depth 60 mm / 2.36"

I/O module
Status Display

Loader connector
Connected to SoftMaster

MLM-DR16S :
8 DI, 8 DO (Relay)
MLM-DN16S :
8 DI, 8 DO
MLM-DN32S :
16 DI, 16DO



24VDC

Serial Ports (RS-232C and RS485)

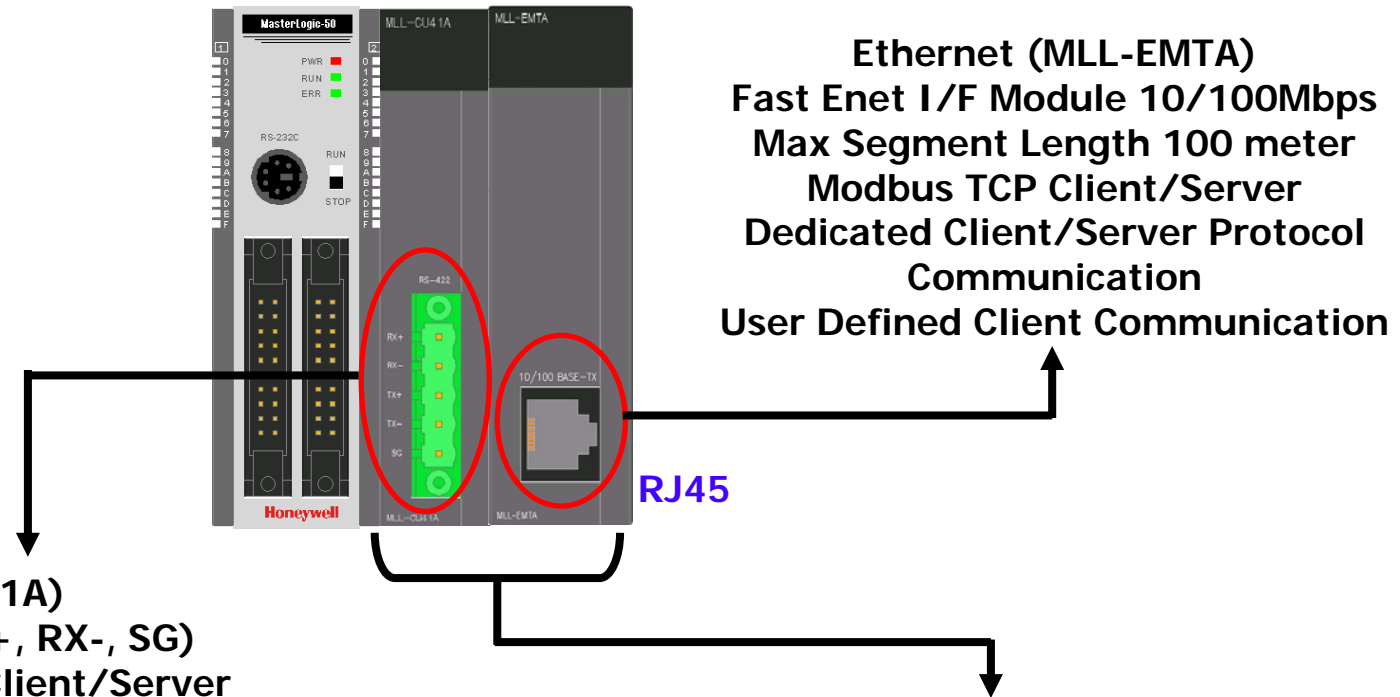


Up to 7 expansion modules
are connectable

Extension cable and Terminal
are needed (SLT-CT151-XBE,
SLT-CT301-XBE, SLP-T40P)

RS422/485 Module : MLL-CU41A, RS422/485 communication

Ethernet Module : MLL-EMTA, Ethernet communication



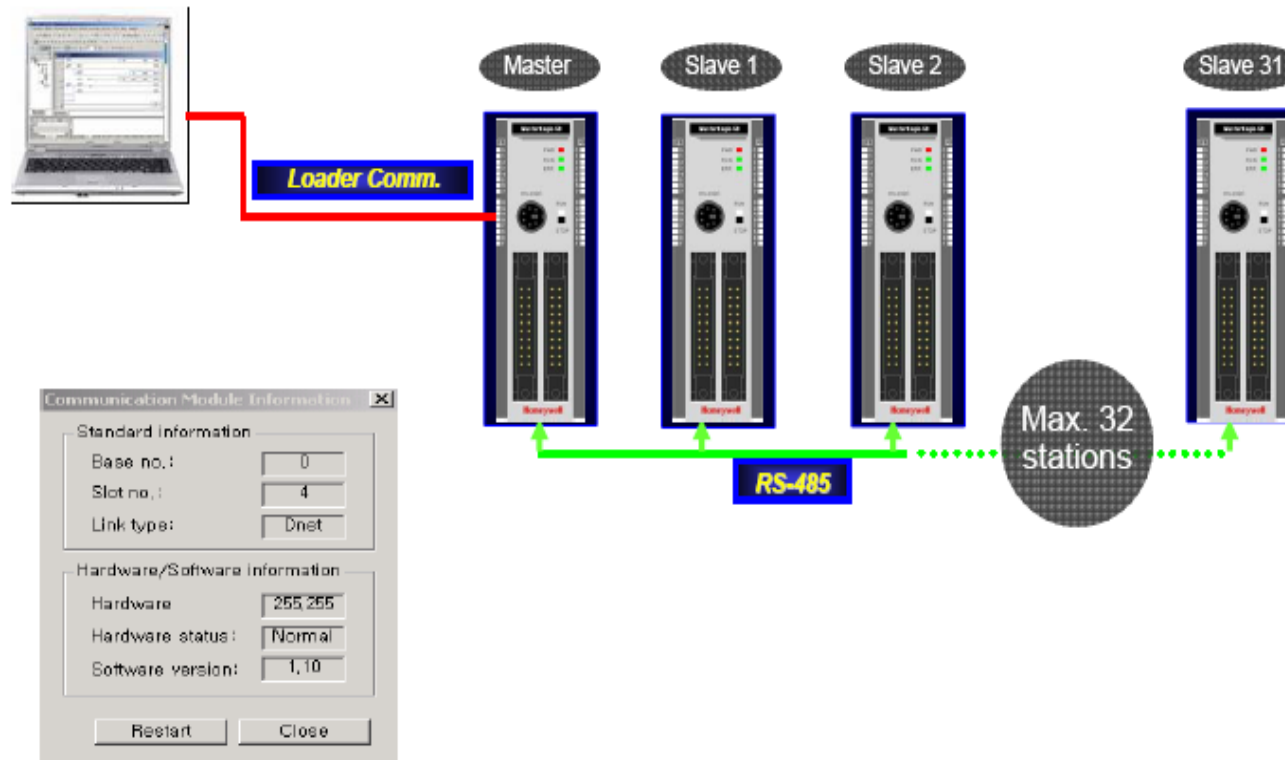
RS422/485(MLL-CU41A)
5 Pins (TX+, TX-, RX+, RX-, SG)
Modbus RTU/ASCII Client/Server
Dedicated Client/Server Protocol Communication
User Defined Client Communication
Max 32 station Multi-Drop System can be configured.

Ethernet (MLL-EMTA)
Fast Enet I/F Module 10/100Mbps
Max Segment Length 100 meter
Modbus TCP Client/Server
Dedicated Client/Server Protocol
Communication
User Defined Client Communication

Communication module
can be connected up to 2

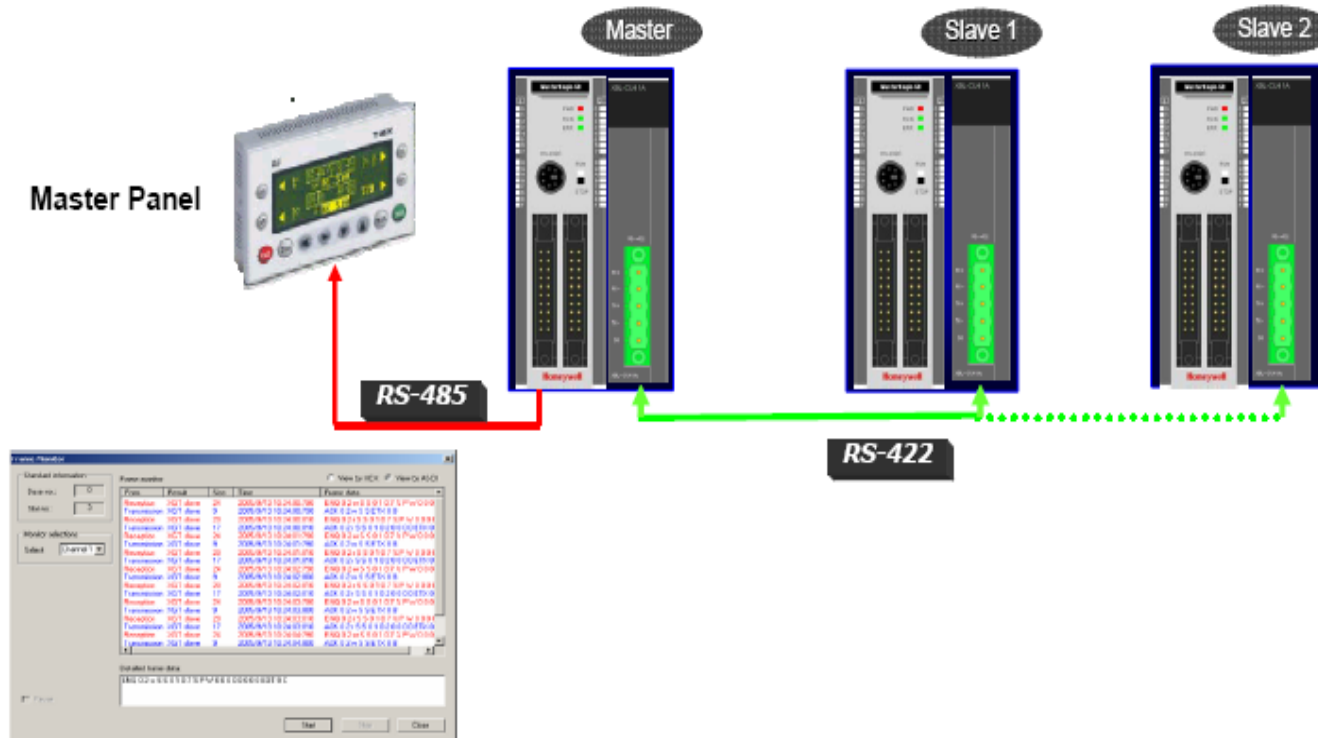
– RS-485 Multi Drop

- With MasterLogic-50's built-in RS-485, Max. 32-station multi-drop system can be configured. Communication parameters of each station can be easily set with SoftMaster-PD.



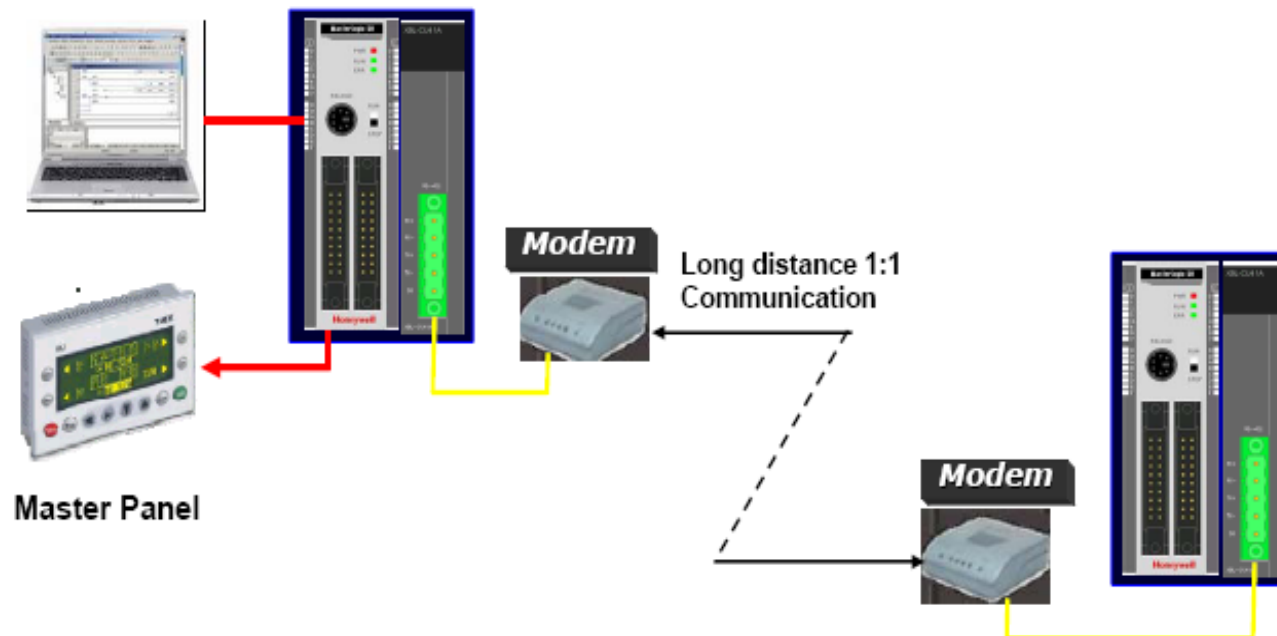
通讯 – RS-422 多路通讯

- With MasterLogic-50's expansion RS-422 module, Max. 32-station multi-drop system can be configured. Communication parameters of each station can be easily set with SoftMaster-PD.



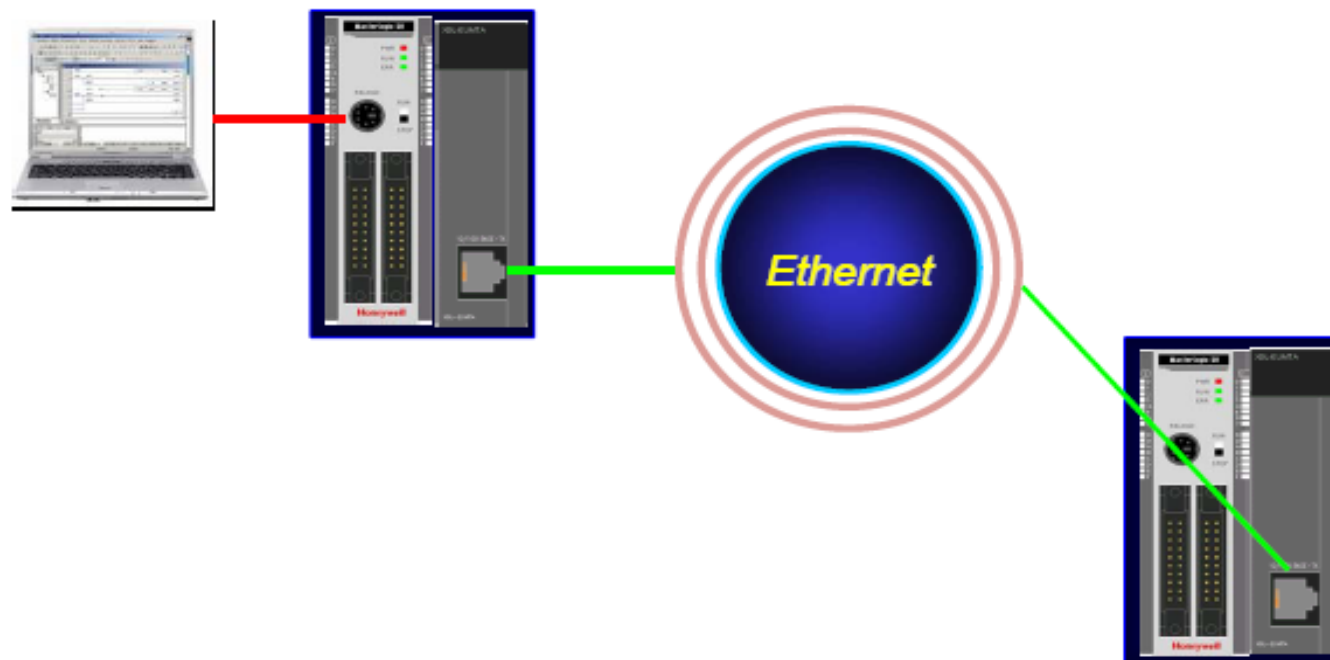
通讯- 扩展通讯RS-232

- Long-distance communication is possible through connection between MasterLogic-50's expansion RS-232C module and dedicated modem.



通讯 - Ethernet

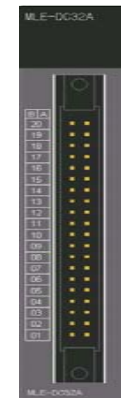
- MasterLogic-50 can transmit and receive the TCP/IP data with its expansion Ethernet I/F module.
- *Ethernet module will be released April 2007



I/O 模块

I/O Modules

- RTD Analog In 4 pt
- Linear Analog In 4 pt
- Analog out 4 pt
- 24 vdc DI 8 pt
- 24 vdc DI 16 pt
- 24 vdc DI 32 pt
- Relay DO 8 pt
- Relay DO 16 pt
- TR DO 8 pt
- TR DO 16 pt
- TR DO 32 pt
- 24 vdc DI/Relay DO 8 pt / 8 pt



Analog module can be connected up to 7

Digital module can be connected up to 7