PRODUCT PRESENTATION

MASTETLOGIC PLC
HONEYWELL VFD

HONEYWELL PROCESS SOLUTIONS
PROCESS MEASUREMENT AND CONTROL

JINSOO SEO(OFFERING MANAGER)

Jinsoo.seo@honeywell.com
AGENDA

1. MasterLogic PLC
   MasterLogic 200
   MasterLogic 50 : 20 mins

2. HMI, HCiR series : 10 mins

3. Honeywell VFD
   MVS100, MVH100, MVIS7
   New Product line : 15 mins
MASTERLOGIC PLC

1. Optimized and Enhanced Solution
2. Application Oriented
4. Small to Large system
5. Economic to mid-range
6. Wide protocols & interface
7. Easy maintenance
MASTERLOGIC PLC-200 AND 50

Product Description

• MasterLogic’s advanced technology enables higher speed processing and better control in applications of all types, particularly smaller unit operations.

• This compact and modular PLC offers all of the redundancy architecture options needed for most industrial operations—and at a competitive cost.

Applications

• General purpose applications based on discrete logic control like building control systems, process control, etc

• Redundancy requirement (Enet, FO)

• Infrastructure Market and Integrated Design of PLC and HMI – Water treatment, Environmental control (HVAC), Heat treatment, tunnel systems, etc

• Data monitoring and retaining, restoring to client sys

Value Proposition

• Powerful and versatile processors for high-speed

• Improves productivity through ease of use

• Full redundancy for CPU, power and network

• Data management functions that derive from history collection and reporting

• Meets requirements of general purpose
## INSTALLED BASE SUMMARY

<table>
<thead>
<tr>
<th>Market</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>8</td>
</tr>
<tr>
<td>BAS</td>
<td>36</td>
</tr>
<tr>
<td>Chemical</td>
<td>89</td>
</tr>
<tr>
<td>Paper</td>
<td>50</td>
</tr>
<tr>
<td>Distillery</td>
<td>5</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>41</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>53</td>
</tr>
<tr>
<td>Petro Chem</td>
<td>38</td>
</tr>
<tr>
<td>Oil&amp;GAS</td>
<td>174</td>
</tr>
<tr>
<td>Power</td>
<td>186</td>
</tr>
<tr>
<td>WWW</td>
<td>41</td>
</tr>
<tr>
<td>STEEL (MMM)</td>
<td>88</td>
</tr>
<tr>
<td>Others</td>
<td>93</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>902</strong></td>
</tr>
</tbody>
</table>

Summarized on 2021
# TARGET MARKET APPLICATION

## HPS Adjacent Verticals
- Water and wastewater
- Food & beverage
- Pharmaceuticals
- Specialty chem
- Mining and metal
- Infrastructure (Data Center)
- HVAC, buildings
- OEM

Attach to core HPS Verticals where feasible

## Target OEM
- HVAC OEMs
- Water, Wastewater OEMs
- Pharmaceutical OEMs
- Others (Life Sciences, Infrastructure etc)
- Combined MLPLC+VFD

- Need to build the infrastructure (AVL, expert SIs)
- Need to improve the specific applications

## Distributors/ System Integrators
- Partners with HWL solution- Experion sys
- Build competency of existing partners, own business
- Distributor network for better reach, and delivery schedule and repeat, run rate business

- Promotions to expand business scope
- Need extensive training program
COMPETITIVE DISPLACEMENT

Competitive legacy

- Legacy automation system reaching EOL
- Most suppliers do not have upgrade plan
- Need to avoid any downtime and cost increase

Potential - Honeywell

- Huge cases of PLC system, S7-200/300, PLC5, etc
- Keep the integrated devices in field
- Sales potential to migrate install-base

Upgrade?

- Need to keep compatibility with working system
- Spare availability, lost tech knowledge, lack of documentation
- Unplanned downtime, maintenance cost

Non Honeywell Proposition

- Secure system, advanced platform to widely integrate
- Packaged solution from a single vendor
- Standardization, easy-upgrade
- Support-GES, tech support plan, documentation

2022 Call to Action

- Proactive engagement-highlight legacy system vulnerability and Hon advantage, use GES support ecosystem
- Use ALHA too recommendations to assess
- Promote ControlEdge incremental features and upsell Modsys
- Marketing led promotion, collaterals and migration campaign
- Solution Notes and Promotions
MASTERLOGIC PLC

ML200 Redundancy
ML200 Hi-performance
ML50 compact, multi-functional on CPU
## BENEFITS ON RED ML200

<table>
<thead>
<tr>
<th>Fast Discrete Control</th>
<th>MasterLogic PLC is dual separated CPU system, has fast scanning for discrete controls with CPU scanning speed of 42ns per step. It only takes around 15~20ms for 2,500 discrete I/Os</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact in Size</td>
<td>Its small and compact modular size offers cabinet spacing and rack room savings even the shipping costs (I/O size = 55<em>98</em>90 mm)</td>
</tr>
<tr>
<td>Low Cost Solution</td>
<td>The net sell price of MasterLogic PLC is reasonable and cost-competitive in any price sensitive market. Smart IO is used for expanding remote IO.</td>
</tr>
<tr>
<td>Integration with Experion &amp; Expandability</td>
<td>MasterLogic PLC offered in Experion architecture along with other components provides a tighter integration-Ethernet/IP, ModbusTCP with Experion server, saving considerable engineering time – approx 15%, Max 35%</td>
</tr>
</tbody>
</table>
SYSTEM ARCHITECTURE

Redundant I/O bus @ 100 MBPS (dual path)
100m UTP or Fiber-optic network, 2km-MM, 15km-SM
Combination of local and remote I/O

High speed synchronization (1 Gbps)
Switching time < 22 ms (Full Load)

Max I/O base: 31 stations
Max base I/O: 23,808
Max network I/O: 128,000

SINGLE RING
2MLR-DBST, DBSF, SBSH
2MLR-DBSFS, DBSHS

DUAL RING
2MLR-DBDT, DBDF, SBDH
2MLR-DBDFS, DBDHS
**DIGITAL I/O 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
- Diagnostic function, Digital Input and Output

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2MLI-D21A</td>
<td>8Pts. DC24V Input (Sink/Source Type)</td>
</tr>
<tr>
<td>2MLI-D21D</td>
<td>8Pts. DC24V input, Diagnostics</td>
</tr>
<tr>
<td>2MLI-D22A</td>
<td>16Pts. DC24V Input (Sink/Source Type)</td>
</tr>
<tr>
<td>2MLI-D22B</td>
<td>16Pts. DC24V Input (Source Type)</td>
</tr>
<tr>
<td>2MLI-D24A</td>
<td>32Pts. DC24V Input (Sink/Source Type)</td>
</tr>
<tr>
<td>2MLI-D24B</td>
<td>32Pts. DC24V Input (Source Type)</td>
</tr>
<tr>
<td>2MLI-D28A</td>
<td>64Pts. DC24V Input (Sink/Source Type)</td>
</tr>
<tr>
<td>2MLI-D28B</td>
<td>64Pts. DC24V Input (Source Type)</td>
</tr>
<tr>
<td>2MLI-A12A</td>
<td>16Pts. AC 110V Input</td>
</tr>
<tr>
<td>2MLI-A21A</td>
<td>8Pts. AC 220V Input</td>
</tr>
<tr>
<td>2MLQ-RY1A</td>
<td>8Pts. Relay Output, 2A , 1Pts./COM</td>
</tr>
<tr>
<td>2MLQ-RY1D</td>
<td>8Pts. Relay Output, 2A, Diagnostics</td>
</tr>
<tr>
<td>2MLQ-RY2A</td>
<td>16Pts. Relay Output, 2A</td>
</tr>
<tr>
<td>2MLQ-RY2B</td>
<td>16Pts. Relay Output, 2A, Bui-Varistor</td>
</tr>
<tr>
<td>2MLQ-SS2A</td>
<td>16Pts. Triac Output, 1A</td>
</tr>
<tr>
<td>2MLQ-TR2A</td>
<td>16Pts. TR Output, 0.5A (Sink Type)</td>
</tr>
<tr>
<td>2MLQ-TR4A</td>
<td>32Pts. TR Output, 0.1A (Sink Type)</td>
</tr>
<tr>
<td>2MLQ-TR8A</td>
<td>64Pts. TR Output, 0.1A (Sink Type)</td>
</tr>
<tr>
<td>2MLQ-TR2B</td>
<td>16Pts. TR Output, 0.5A (Source Type)</td>
</tr>
<tr>
<td>2MLQ-TR4B</td>
<td>32Pts. TR Output, 0.1A (Source Type)</td>
</tr>
<tr>
<td>2MLQ-TR8B</td>
<td>64Pts. TR Output, 0.1A (Source Type)</td>
</tr>
</tbody>
</table>
SPECIAL ANALOG MODULES

Analog input and Output
• Voltage module and current module
• High speed A/D conversion & processing (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
• Improve maintenance and overall processing speed
• HART analog input & output

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2MLF-AV8A</td>
<td>Analog Input</td>
<td>Voltage Input, 8channels</td>
</tr>
<tr>
<td>2MLF-AC8A</td>
<td>Analog Input</td>
<td>Current Input, 8channels</td>
</tr>
<tr>
<td>2MLF-AD8A</td>
<td>Analog Input</td>
<td>Voltage/Current Input, 8channels</td>
</tr>
<tr>
<td>2MLF-AD4S</td>
<td>Analog Input</td>
<td>Voltage/Current Input, 4channels, Isolated</td>
</tr>
<tr>
<td>2MLF-AD16A</td>
<td>Analog Input</td>
<td>Voltage/Current Input, 16channels</td>
</tr>
<tr>
<td>2MLF-AC4H</td>
<td>Analog Input</td>
<td>Current input, 4channels, HART</td>
</tr>
<tr>
<td>2MLF-RD4A</td>
<td>RTD Input</td>
<td>RTD Input, 4channels</td>
</tr>
<tr>
<td>2MLF-RD8A</td>
<td>RTD Input</td>
<td>RTD input, 8channels</td>
</tr>
<tr>
<td>2MLF-TC4S</td>
<td>TC Input</td>
<td>Thermocouple Input, 4channels, Isolated</td>
</tr>
<tr>
<td>2MLF-DV4A</td>
<td>Analog Output</td>
<td>Voltage Output, 4channels</td>
</tr>
<tr>
<td>2MLF-DC4A</td>
<td>Analog Output</td>
<td>Current Output, 4channels</td>
</tr>
<tr>
<td>2MLF-DC8A</td>
<td>Analog Output</td>
<td>Current Output, 8channels</td>
</tr>
<tr>
<td>2MLF-DV8A</td>
<td>Analog Output</td>
<td>Voltage Output, 8channels</td>
</tr>
<tr>
<td>2MLF-DC4S</td>
<td>Analog Output</td>
<td>Current Output, 4channels, Isolated</td>
</tr>
<tr>
<td>2MLF-DC4H</td>
<td>Analog Output</td>
<td>Current Output, 4channels, HART</td>
</tr>
</tbody>
</table>

Datalog Module
• Capable to easily save PLC device data without PC
• Capable to save PLC control data without missing any change
• Capable to save a large volume of data file
• Long-term data saving is available since CF card and USB memory with a large volume of up to 16GB can be used(CF2001, Transcend)

Event Input (Sequence-Of-Event, SOE)
• DETECTS the events from the field devices and records the event with a 1ms resolution time tag
• 1ms scanning at modular level
• 300 events per card (max. 3000 events)
• Tight integration with Experion Server
• Time sync with GPS time server internally
## NETWORK - FAST ETHERNET MODULE

* Supports both TCP/IP & UDP/IP protocols, Ver8, SoftMaster V4.3
* Twisted pair and Fiber-optic (MM/SM) media are available

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoftMaster Service</td>
<td>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.</td>
</tr>
<tr>
<td>MLDP Server (ML Dedicated Protocol)</td>
<td>For Experion PKS to communicate with MasterLogic PLCs for process and system alarms &amp; events including SOE information. The PLC clocks can also be synchronized with server clock</td>
</tr>
<tr>
<td>HSL Service Peer-to-Peer</td>
<td>For MasterLogic PLCs to have peer-to-peer communication with few simple configuration steps. Diagnostics available to monitor frames and other communication status</td>
</tr>
<tr>
<td>MODBUS TCP (Slave)</td>
<td>For SCADA HMI or other MODBUS TCP master devices to initiate communication with MasterLogic PLCs on MODBUS TCP protocol</td>
</tr>
<tr>
<td>MODBUS TCP (Master)</td>
<td>For MasterLogic PLCs to act as MODBUS TCP master and initiate communication with other MODBUS TCP slave devices</td>
</tr>
<tr>
<td>User-Defined Communication</td>
<td>To send and receive user-defined TCP-IP communication packets</td>
</tr>
<tr>
<td>HART (Pass-Thru)</td>
<td>For Integration with FDM server (EXPERION), HART is supported</td>
</tr>
<tr>
<td>Ethernet/IP</td>
<td>For integration with devices thru Ethernet/IP, Implicit and Explicit</td>
</tr>
</tbody>
</table>

Functionally, more than one service can run simultaneously on a single FEnet Module

SNTP for Time Synchronization and OPC UA (Server)
NETWORK - REMOTE ADAPTERS (FENET)

- Supports wide protocols, ModbusTCP, EthernetIP, etc
- Twisted pair and Fiber-optic (MM/SM) media are available
- Integrated with ML200 IOMs and ML50 IOMs

**Configuration**

<table>
<thead>
<tr>
<th>SoftMaster Service</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To integrate with EFMxB (ML PLC), automatically detects the IOs with adapters from SoftMaster.</td>
</tr>
<tr>
<td></td>
<td>- Configure IP address</td>
</tr>
<tr>
<td></td>
<td>- Diagnostics thru SoftMaster</td>
</tr>
<tr>
<td>MODBUS TCP (Slave)</td>
<td>For SCADA HMI or other MODBUS TCP master devices to initiate communication with MasterLogic PLCs on MODBUS TCP protocol</td>
</tr>
<tr>
<td>Ethernet/IP</td>
<td>For integration with devices thru Ethernet/IP, Implicit and Explicit Integrated with ControlEdge PLC, UOC, TYU</td>
</tr>
<tr>
<td>RAPIEnet</td>
<td>Dedicated protocol for ML PLC internally - Supported RING and START topology</td>
</tr>
<tr>
<td>IP Address</td>
<td>Manual config, DHCP from SoftMaster or server</td>
</tr>
</tbody>
</table>

**Item-ML50** | **Item-ML200** | **Description** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL-BSSRT 2MLL-DBDT</td>
<td>100BASE-TX UTP/CAT5</td>
<td></td>
</tr>
<tr>
<td>MEL-BSSRF 2MLL-DBDF</td>
<td>100BASE-FX Multi/Single-mode Fiber-Optic</td>
<td></td>
</tr>
<tr>
<td>MEL-BSSRH 2MLL-DBDH</td>
<td>1) 100BASE-TX UTP/CAT5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) 100BASE-FX Multi/Single-mode Fiber-Optic</td>
<td></td>
</tr>
</tbody>
</table>

Functionally, connecting to various clients and able to attend the networks
# REMOTE ADAPTERS AND SMARTIO

## Stand-alone Smart IO

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL-D24C</td>
<td>24Vdc 32ch of Digital Input</td>
</tr>
<tr>
<td>MEL-DT4C1</td>
<td>24Vdc 16ch Digital Input, 16ch Digital Output</td>
</tr>
<tr>
<td>MEL-TR4C1</td>
<td>32ch Digital Output, SINK</td>
</tr>
<tr>
<td>MEL-RY2C</td>
<td>16ch Relay Output</td>
</tr>
<tr>
<td>MEL-AV8C</td>
<td>8ch Analog input, 1<del>5V/0</del>5V/0<del>10V/-10</del>10V</td>
</tr>
<tr>
<td>MEL-AC8C</td>
<td>8ch Analog input, 4<del>20mA, 0</del>20mA</td>
</tr>
<tr>
<td>MEL-DV4C</td>
<td>4ch Analog output, 1<del>5V/0</del>5V/0<del>10V/-10</del>10V</td>
</tr>
<tr>
<td>MEL-DC4C</td>
<td>4ch Analog output, 4<del>20mA, 0</del>20mA</td>
</tr>
</tbody>
</table>

## Remote Adapter

- with ML50 IOM
- with ML200 IOM
  - S. power/S. Network
  - D. power/S. Network
  - Coming! 2024 Q2
  - with ML200 IOM
  - D. power/D. Network
## SMARTIO WITH BASE AND POWER

### Single Power, 2MLL-DBD#

<table>
<thead>
<tr>
<th>Power</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2MLP-ACF1</td>
</tr>
<tr>
<td></td>
<td>2MLP-ACF1-CC</td>
</tr>
<tr>
<td></td>
<td>2MLP-ACF2</td>
</tr>
<tr>
<td></td>
<td>2MLP-ACF2-CC</td>
</tr>
<tr>
<td></td>
<td>2MLP-AC23</td>
</tr>
<tr>
<td></td>
<td>2MLP-AC23-CC</td>
</tr>
<tr>
<td></td>
<td>2MLP-DC42</td>
</tr>
<tr>
<td></td>
<td>2MLP-DC42-CC</td>
</tr>
</tbody>
</table>

### Main Base

<table>
<thead>
<tr>
<th></th>
<th>2MLB-M04A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2MLB-M04A-CC</td>
</tr>
<tr>
<td></td>
<td>2MLB-M06A</td>
</tr>
<tr>
<td></td>
<td>2MLB-M06A-CC</td>
</tr>
<tr>
<td></td>
<td>2MLB-M08A</td>
</tr>
<tr>
<td></td>
<td>2MLB-M08A-CC</td>
</tr>
<tr>
<td></td>
<td>2MLB-M12A</td>
</tr>
<tr>
<td></td>
<td>2MLB-M12A-CC</td>
</tr>
</tbody>
</table>

### Redundant (Dual) Power, 2MLL-DBD#

<table>
<thead>
<tr>
<th>Power</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2MLR-AC12</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC12-CC</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC13</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC13-CC</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC22</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC22-CC</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC23</td>
</tr>
<tr>
<td></td>
<td>2MLR-AC23-CC</td>
</tr>
<tr>
<td></td>
<td>2MLR-DC42</td>
</tr>
<tr>
<td></td>
<td>2MLR-DC42-CC</td>
</tr>
</tbody>
</table>

### Base

<table>
<thead>
<tr>
<th></th>
<th>2MLR-E08P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2MLR-E08P-CC</td>
</tr>
<tr>
<td></td>
<td>2MLR-E12P</td>
</tr>
<tr>
<td></td>
<td>2MLR-E12P-CC</td>
</tr>
</tbody>
</table>
NETWORK FOR REMOTE IO

- **Smart Ext service** supports Ring topology on FEnet (based on RAPIEnet)
- For more improved performance, Slave replies Master with a group data
- ML200 IOs can be combined and communicated with other master
- Master of ML200 can scan the IOs info via Auto-Scan from SoftMaster

Non-Redundant PLC system

Redundant PLC system
SMART SERVICE on SoftMaster.

- Setup a Smart Remote IO
  Generate a new project, config IOM

- Automatically Scanning with wizards
  Make sure, if connected and RUN
  Wizard#1. Config a new project and EFMTB
  Start ‘Smart service’
  Wizard#2. Set the device count and click ‘Autoscan’
  Wizard#3. Check/set the exchange area
HOW TO CONFIGURE SCAN RATE

• Scan time, min period time for each node
  - Config Min. Scan time on SoftMaster
  - Calculation: \((1 + (\text{Nodes} \times 0.1))\text{ms}\), to be integer

• 12slots * 64ch(DIO), 16chAI, 8ch AO

<table>
<thead>
<tr>
<th>Nodes</th>
<th>Min Control Scan time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ~ 10EA</td>
<td>2ms</td>
</tr>
<tr>
<td>11 ~ 20EA</td>
<td>3ms</td>
</tr>
<tr>
<td>21 ~ 30EA</td>
<td>4ms</td>
</tr>
<tr>
<td>31 ~ 40EA</td>
<td>5ms</td>
</tr>
<tr>
<td>41 ~ 50EA</td>
<td>6ms</td>
</tr>
<tr>
<td>51 ~ 60EA</td>
<td>7ms</td>
</tr>
<tr>
<td>61 ~ 63EA</td>
<td>8ms</td>
</tr>
</tbody>
</table>
SYSTEM ARCH.

Ring topology in IO bus(Dual Path)
100m UTP or 2km FO(MM)/15km FO(SM) network, combination of Local and Remote IO

Primary CPU
Hi-speed Sync, switching<22ms

Secondary CPU

Event Input (Sequence-Of-Event, SOE)
- Detects the events from the field devices and records the event with a 1ms resolution time tag
- 1ms scanning at modular level
- 300 events per card (max. 3000 events)
- Tight integration with Experion Server
- Time sync with GPS time server internally

Datalog Module (2MLF-DL16A)
- Capable to easily save PLC device data without PC
- Capable to save PLC control data without missing any change
- Capable to save a large volume of data file
- Long-term data saving is available since CF card and USB memory with a large volume of up to 16GB can be used(CF2001, Transcend)
- Retrieving the data using USB removable memory

 MAX IO stations=31
 MAX Base IO=23800(including 64ch Dig.IO)
 Max Network IO=128000

USB port
HART AND INTEGRATION WITH FDM

- Tight integration with Experion
- Open protocols for multi-vendors
  - Ethernet TCP/IP, Serial comm
- Improved uptime and easy maintenance due to integrated HART device on FDM/FDT
OPCUA SERVER

Message encryption feature
Authentication via Certificate
User security functions
Variable Monitoring (MonitoredItem) Function through Subscription
Alarm / Event function for variables

- Connect with up to 10 OPC UA clients (Connect 10 Sessions with OPC UA Client).
- Up to 7000 variables can be set for OPC UA.
- Have up to 50 subscription channels, 10 per session.
- Register 1000 and up to 5000 variables (MonitoredItem) per subscription channel.
MLPLC INTEGRATION WITH EXPERION

- MLPLC Integration Solution.

Experion Server
- EPKS/LX/HS
- PKS/HS R410
- LX R110

MasterLogic Dedicated Protocol - MLDP

Network Switch - A

Cross cable

Network Switch - B

SoftMaster
- SM
- PLC Engineering

FTE - A

FTE - B

IP: 164.145.19.85

IP: 164.145.19.84
- Non-FTE

IP: 164.145.19.86

MasterLogic PLC

MasterLogic PLC

MasterLogic PLC
MLPLC INTEGRATION WITH EXPERION

MLPLC Integration Elements.

- **SoftMaster** - Writing ladder logic program and monitor (device monitoring window) the PLC values and/or force values into PLC.
- **Quick Builder** - Configuring MasterLogic Channel, Controller, Analog and Status Point.
- **Experion Station** - Monitoring the online status integration with PKS.
  - Change online status of MLPLC Channel and Controller.
- **MLPLC** - The MasterLogic PLC (ML200).
- **MasterLogic Server** - PLC are integrated to PKS through the ML Server. After a download, it starts communication with PLC and does the following:
  - Reads PLC information and write to PKS Server.
  - Write values from PKS Server to PLC.
  - Transfer System status, I/O information, alarms/events associated with PLC to PKS Server which can be monitored.
- **Experion Server** - Costs effective open control system and provides Plant Wide Control.
  - Address critical manufacturing objectives to facilitate sharing knowledge and managing work flow.
MASTERLOGIC PLC 50

Portfolio of ML50 PLC
Connectivity and Interface
Advanced Tech and updates
PORTFOLIO

Performance, Program memory

Price, Application complexity

Compact, “E”
Compact, “SU”
Compact, “H”
Compact, “U”
Block, “S”
Block “MLU”

ML50 models..

Ultimate Perform. & IoT service
MLI “U”

High Performance
MLC, MLI “H”

Small Package
MLM “S”, MLU

Cost Effective
MLI “SU”, “E”

Compatibility
Over MLDP, Modbus
## PRODUCT INFO

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Supplying Power</th>
<th>Serial Network</th>
<th>Ethernet</th>
<th>IO points</th>
<th>Built-in Func.</th>
<th>Safety cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-IEC</td>
<td>MLM ‘S’</td>
<td>DC24V</td>
<td>RS232C, RS485</td>
<td></td>
<td>DI/DO-TR/Relay 7 modules</td>
<td>○ ○ ○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLC ‘H’</td>
<td>AC100-240V DC24V</td>
<td>RS232C, RS485</td>
<td></td>
<td>DI/DO-TR/Relay 10 modules</td>
<td>○ ○ ○</td>
<td></td>
</tr>
<tr>
<td>IEC61131-3</td>
<td>MLI ‘H’</td>
<td>AC100-240V DC24V</td>
<td>RS232C, RS485</td>
<td></td>
<td>DI/DO-TR/Relay 10 modules</td>
<td>○ ○ ○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLI ‘SU’</td>
<td>AC100-240V</td>
<td>RS232C, RS485</td>
<td></td>
<td>DI/DO-TR/Relay 8 modules(2 opt)</td>
<td>○ ○ ○</td>
<td>D_40SU</td>
</tr>
<tr>
<td></td>
<td>MLI ‘U’</td>
<td>AC100-240V DC24V</td>
<td>RS232C, RS485</td>
<td></td>
<td>On board</td>
<td>○ ○ ○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLI ‘E’</td>
<td>AC100-240V</td>
<td>RS232C or RS485</td>
<td></td>
<td>DI/DO-TR/Relay 2 option module</td>
<td>○ ○ ○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLI U</td>
<td>AC100-240V</td>
<td>RS232C or RS485</td>
<td></td>
<td>DI/DO-TR 7 modules(w motion)</td>
<td>○ ○ ○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLU</td>
<td>DC24V</td>
<td>RS232C, RS485</td>
<td></td>
<td>On board</td>
<td>○ ○ ○</td>
<td></td>
</tr>
</tbody>
</table>

PRODUCT – MLI ‘U’

MLI U sets new standards in Ultimate Performance with its many innovations.

IoT (Internet of Things) realizes smart factories, ‘User-Oriented’ controller, Webserver

All-in-one, analog IO and Ethernet
• Analog Input and output upto 8 channels (optional)
• Basically, built-in Ethernet dual ports
  - Dual ports Ethernet switch, Daisy Chain (without any Enet switch)

Various communication options, serial, Ethernet (TCP)
Wide protocols: Modbus, MLDP
Externally, Ethernet IP, EtherCAT, CANopen, Profibus-DP

Data acquisition with external memory (SD card, upto 16GB)

Value added service, FTP Link, Diagnostics info, e-mailing with attached data log file
PRODUCT – MLU-DN32HP

MLU series is a new standards in **Advanced Performance** with its many innovations.

**Slim size and hi-performance**
- DI/DO and position control, EtherCAT modules for motion control
- Basically, built-in Ethernet one port, Modbus TCP
- Data retention: no-data loss even after long term power-off

**Various communication options**, serial, Ethernet(TCP)

**Wide protocols** : Modbus, MLDP
Externally, Ethernet IP, EtherCAT, CANopen, Profibus-DP
EMAIL SERVICE AND SNTP FOR MLI U AND MLU

• SMTP for e-mail service
  ▪ Send email when user-defined conditions happen
  ▪ Send email when mode of PLC changes (RUN, STOP, STOP ERROR, ERROR)
  ▪ Send email with a log file (.csv) when data log event occurs

• SNTP for Time Sync
  ▪ Time synchronization with simple IP setting
  ▪ Easy to build up comprehensive coverage of wide-used open automation network
Features
Services for users
PROGRAMMING – SOFTMASTER V4

- New format and integrated all configuration tool, configurable programs and communication setup on one page
- Easy to build up settings of parameters including communication, Programming and monitoring
- Protection against Cyber attack (Vulnerability)
- No License

- Programming
- Configuration - Network
- Debugging
- Controller simulation
- Monitoring
- Trouble-shooting
- Documentation
- Maintenance etc.

![SoftMaster Interface](image-url)
SOFTMASTER – MONITORING

Ladder Monitor

Variable Monitoring

Force I/O

System Monitoring

Monitoring, @ V4.7x
- User-defined FBs
- Auto-scan VFDs
- Advanced settings on Ethernet/IP

Trend Monitor

Special Module Monitoring

Comm status Monitoring
- Frame monitoring
- Service status and capturing packets
SOFTMASTER - SIMULATOR

Program Simulator
Test and program the controller without the need of a physical machine

- Support all type languages (LD / IL / SFC / ST / FB)
- Program simulation
- Online editing function
- Debugging function
- Module Simulation
- External I/O condition

- A single menu click from SoftMaster: “Start Simulator”
- No need to modify user program just for simulation purposes
- No need to configure I/O module database separately – integrated with SoftMaster configuration
COMPARISONS-MLPLC VS CE PLC

MasterLogic 200

The highlights of MasterLogic-200 PLC system are:
• Powerful & Versatile CPU (32bit high speed / memory, IEC 61131-3
• Compact footprint
• Modular options (power supply, wide I/O modules, interface options)
• Flexibility in module assignment – installable and detectable any IOM.
• Open networks (Fast Ethernet, UTP/FO, serial RS232C /422/485)
• Open protocols (Profibus-DP, MODBUS ASCII/RTU/TCP, DeviceNet, Ethernet/IP, BACnet-IP, OPCUA, EtherCAT, CANopen)
• Peer-to-Peer networks (Dedicated Fast Ethernet on UTP/Fiber-optic)
• Simulation Environment to test control logics.
• Engineer-friendly software (wide connections, easy configuration & trouble-shooting)
• SNTP : Time Synchronization with server on network

ControlEdge PLC

• Auto-mapping of PLC variables into Experion
• Inbuilt PLC System diagnostics displays in Experion, HART device Diagnostics (FDM)
• Cyber Security- ISA EDSA Level 2, OPC UA interface
• Universal IO with HART, Serial interface card & more
• Flexible IO network- Ring, Star, Mixed
• User defined function blocks
• Simulation & Cloud Engineering
• Best-in-class Connectivity: Ethernet/IP, DNP3, PROFINET, MQTT, IEC 60870, Modbus TCP/IP, Serial
• CDA peer to peer with Experion Controllers
## COMPARISONS-MLPLC VS CE PLC

<table>
<thead>
<tr>
<th>Item</th>
<th>MasterLogic PLC</th>
<th>ControlEgde PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name / Rev No</strong></td>
<td>SoftMaster V4.72.x</td>
<td>ControlEdge Builder, R174</td>
</tr>
<tr>
<td><strong>Char. for Tool</strong></td>
<td>Config tool for Masterlogic PLC, 200/50 and Remote IO</td>
<td>ControlEdge PLC, RTU</td>
</tr>
<tr>
<td><strong>Vulnerability</strong></td>
<td>Complied(2022.Oct)</td>
<td>Complied</td>
</tr>
<tr>
<td><strong>Standards</strong></td>
<td>IEC61131-3(LD, ST, IL, SFC)</td>
<td>IEC61131-3(LD, ST, IL, SFC)</td>
</tr>
<tr>
<td><strong>Programming Environment</strong></td>
<td>Function Block with LD(Essential, EN)</td>
<td>Function Block with Instruct. No(Optional, EN)</td>
</tr>
<tr>
<td><strong>Editing/Modifying</strong></td>
<td>Graphically block editing on grid</td>
<td>Graphically editing, Drag-Drop</td>
</tr>
<tr>
<td><strong>Distributing tool</strong></td>
<td>FREE</td>
<td>Need to set License</td>
</tr>
<tr>
<td><strong>System Monitoring</strong></td>
<td>Graphically(same shapes, and modules)</td>
<td>only text</td>
</tr>
<tr>
<td><strong>Accessing module info</strong></td>
<td>OK, all the modules for IO, Interface</td>
<td>OK for configuring, IO and Interface</td>
</tr>
<tr>
<td></td>
<td>-Monitoring data, parameters</td>
<td>-Monitoring operations, data</td>
</tr>
<tr>
<td></td>
<td>-parameterized</td>
<td>-NA</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>Checking parameter, operating condition</td>
<td>Checking parameter, operating condition</td>
</tr>
<tr>
<td></td>
<td>Frame Monitoring, capturing</td>
<td></td>
</tr>
<tr>
<td><strong>Interface and Communication</strong></td>
<td>HART devices and CommDTM(HART pass-thru)</td>
<td>HART device and HART/IP(Fully integrated with FDM)</td>
</tr>
<tr>
<td><strong>Available Interface</strong></td>
<td>Ethernet : Ethernet/IP, ModbusTCP, BACnet/IP, EtherCAT, OPCUA(Server), DNP3(outstation), SNTP, SMTP</td>
<td>Ethernet : Ethernet/IP, ModbusTCP, OPCUA(Master&amp;Server), DNP3, PROFlnet, IEC 60870-5-104</td>
</tr>
<tr>
<td></td>
<td>Serial : Mobus rtu, Proflbus-DP, DeviceNet, CANopen</td>
<td>Serial : Mobus rtu</td>
</tr>
<tr>
<td><strong>Hardware Compatibility</strong></td>
<td>Hardware, fully compatible for all versions</td>
<td>Hardware, not compatible for lower version</td>
</tr>
<tr>
<td></td>
<td>Software, Config data, program logic</td>
<td>Limited to access Software, config data, limited to upgrade program logic</td>
</tr>
<tr>
<td><strong>Hot-Swappable</strong></td>
<td>OK(Wizards on SoftMaster)</td>
<td>OK</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>Available thru SoftMaster</td>
<td>Available thru Builder</td>
</tr>
<tr>
<td><strong>Firmware Upgrade</strong></td>
<td>Interface modules on SoftMaster</td>
<td>CPU, EPM, UIO, serial moudles on CE Builder</td>
</tr>
<tr>
<td></td>
<td>CPU need to us a separated tool</td>
<td></td>
</tr>
</tbody>
</table>
## COMPARISONS-MLPLC VS CE PLC

<table>
<thead>
<tr>
<th>Services on Config Tool</th>
<th>MLPLC</th>
<th>CE PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several modules</td>
<td>Several pages</td>
<td></td>
</tr>
<tr>
<td>Programming Logic</td>
<td>Programming Logic</td>
<td></td>
</tr>
<tr>
<td>Parameterizing IOMs</td>
<td>Parameterizing IOMs</td>
<td></td>
</tr>
<tr>
<td>Parameterizing Interface modules</td>
<td>Parameterizing Interface modules</td>
<td></td>
</tr>
<tr>
<td>Config for Profinbus-DP(Master) &amp; DeviceNet</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Smart Remote IO and Adapters+IOM</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>PSRA(Profinbus-DP Slave Remote Adapter) + IOM</td>
<td>Config for Remote IO(Ethernet/IP)</td>
<td></td>
</tr>
<tr>
<td>Motion Control config.</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>System Monitoring</td>
<td>System Monitoring</td>
<td></td>
</tr>
<tr>
<td>Frame monitoring</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Firmware Upgrade</td>
<td>Firmware Upgrade</td>
<td></td>
</tr>
<tr>
<td>Device Monitoring or variable monitorign tab(need to register)</td>
<td>Variable monitoring on Global/Local VAR table</td>
<td></td>
</tr>
</tbody>
</table>
ROADMAP

MasterLogic 200
MasterLogic-50
New function and Modules
Future 2023 and beyond

(Connectivity & Integration)

ML CPU-ML200 ‘Z’ series

Q4 ’20-Q1 ’21

Improvement
• Multiple protocol in Enet OPC UA(Server), Modbus, EthernetIP, MLDP, user-defined on Module : 2MLL-EFM_B
• BACnet-IP : integrate with EBi application for BMS

Q4 ’21

Improvement
• MLIO integration with CE PLC : RemoteIOM on ML PLC, DHCP, Ring, Ethernet/IP
• 2MLL-DBD# with ML200IOM
• MEL-BSSR# with ML50 IOM

Q1 ’23

Improvement
• Snet on Smart adapter
• Smart-IO with ML200 Red. DHCP, Dual-RING
• Advanced integration with VFD
• Implement DNP3 on ML200
• Integration with FDM(non-Red)
• Modbus config and operation

Q4 ’23-Q1 ’24

Improvement
• Dual Ring SmartIO on ML 200 Red.
• New CPU ‘Z’ series

New development
• IEC61850
• New Safety PLC(ML50S)
• Enhanced operating temp.
• Wide protocols
• Cost-Competitive
HCIR SERIES

Portfolio
Features
New product, HCiRB (Processor)
HMI “HCIR” SERIES

**Premium**: HCiRP + HCiRD10/12/15

- Separated display and processor part
- Multi-media, IP cam, HDMI out
- Wide protocol

**General purpose (Hi-perfom.)**: HCiRX05/08/10/12/15

- Hi-performance
- Wide Interface

**Economic (Market-Oriented)**: HCiRW05/07/10

- Good price, better performance
- Wide Interface

All in one solution - Market Oriented
OPCUA CLIENT

- Automatically accessing controller and upload all info/variable groups
- Easy to config and to setup comm table
- Open protocols for multi-vendors
  - Ethernet TCP/IP, Serial comm, over 250+ drivers
- Improved uptime and easy maintenance due to engineering tool, FREE

DCS, Honeywell Experion LX/PlantCruise
**Features**

- Processor part without a display, 24Vdc power supplying
- Minimized form factor to processor from standard platform
- Selectable screen for each purpose, application
- Installable on back-side of Monitor (VESA) or DIN-Rail, wall mounting on panel (cabinet)
- Configurable project on same tool, HDS (HCi Design Studio)
- HDMI-out for choosing a display in user side, FHD(1920x1080)
- USB host, to support Mouse, Keyboard, bar-code reader, printer (PCL)
- Interface, 2xEnet, 2xSnet, and wide protocols for control system
- SD (SDHC) up to 32GB and USB removable memory (FAT32)
- Expandable Monitor over HDMI, Touch interface over USB
HDS(HCI DESIGN STUDIO)

Features

➢ Intuitive menu and reducing configuration time
   Scalable tags&functions on editing, multi-language
➢ State-of-the-Art, improved service for engineering work
➢ Upload and download project over Ethernet, USB, etc
➢ Immediately downloading thru Ethernet
➢ Upload gathering data, Logging, Alarm/event data
➢ Check-up the latest Firmware before transmitting project
➢ Effective error checking and set focus-on the tag
➢ Efficient setup Tag data, uploading variables for user program
   Modbus map for ControlEdge PLC, HC900
➢ Easy & convenient to edit tags for OPCUA
➢ Configurable scripts for each tag for more dynamic operation
➢ Widely open-protocols, Ethernet, DNP3, PROFINet, EtherCAT, Robotics
HCIR SERIES ROADMAP (2023-)

Q4 '22
Improvement
• OPCUA,DNP3 (Mapping)

Q2 '23
Improvement
• Remapping address for HC900
• Editing maps_Modbus

Q4 '23
Improvement
• WEB Browser(access HTML5,XML)
• Interface with SCADA(station)
• Item with Security
• HCi Design Studio V2.x

Q1'24-Q4'25
Improvement
• Protocols : IEC60870
• Implement DNP3,multi-master client & server Class0,1/2/3
• Redundant networking
• Compliance to CL1 DIV2

MasterLogic PLC

- Adding protocols
- RING Topology on network(Ethernet/IP)
- Cyber Security
HONEYWELL VFD

Portfolio
Features
Planning to launch a new product line
PORTFOLIO

Low-end and growing market
• **HAC10**: Mini package, Small to mid power, General app.
• **HAC310**: Standard, mid to hi-power, Logistics

Enhanced and hi-performance
• **MVS100**: Standard, STO, Oil&Gas, Logistics
• **MVH100**: Fan&Pumps, Infra., BMS
• **MVIS7**: Hi-performance with precise control, winding/unwinding, hoist, crane
VARIABLE FREQUENCY DRIVES

VFD Market
- $4.3Bn HPS Potential SAM, 90% in non-O&G
- 45% of market led by packaged automation providers - Controls+ Drives+ FI
- Significant play of OEMs, Partners and distributors
- Used across all HPS served verticals, great fit for OEMs

Focus in 2023
- Build market awareness and execution competency
- Develop a new solutions for low-end to hi-performance, and onboard preferred partners/distributors for drives in every region
- Promote VFDs delivering to projects
- Engage key OEMs, AVL, pilot
- Differentiate through integration, support and service
- Marketing Campaign - App note, success flash, Demokit, roadshows, competitive loaders
- Launching New VFDs, HAC10, HAC310

Honeywell VFD
- LV Drives designed for various process applications: 1ph/3ph, 0.4 to 500/1100KW;
- Compact design and versatile connectivity for brownfield
- Seamless integration with Experion DCS and ControlEdge with cyber secure communication
- Option to supply complete packaged power solutions - panels, switchgears, bypass, up to full MCC

Delivers improved asset performance, significant energy savings, increased in production uptime and profitability

Attach with ModSys, Drive awareness and develop ecosystem
**HONEYWELL VFD OVERVIEW**

**Delivering High performance and stable control**

<table>
<thead>
<tr>
<th>FLEXIBLE VOLTAGE OPTIONS</th>
<th>LOW TO MID-RANGE</th>
<th>ENCLOSURE</th>
<th>NOISE REDUCTION</th>
<th>ENERGY SAVING</th>
<th>REDUCED THD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ph/3ph</td>
<td>0.4 to 500kW</td>
<td>IP 66(NEMA4x)</td>
<td>C2/C3</td>
<td>30-40%</td>
<td>Reactor</td>
</tr>
<tr>
<td></td>
<td>0.4 to 1100kW</td>
<td>IP54</td>
<td>Compliant with international standards</td>
<td>Improved P.F. Precise control - PID</td>
<td>Filtering harmonics</td>
</tr>
</tbody>
</table>

**Seamless integration with Experion & ControlEdge with TotalCare**

- Noise filtering harmonics, DC reactor, Soft Start
- Multi-copier, Hand-held configurator, multi-lingual display
- Enclosure protection IP66/NEMA 4X, SIL2, 3C2, Marine Certs
- Enclosure protection IP54/NEMA 3S, 3C2, Certs, CIP

**Improved system performance and support assurance**

- Environment and asset protection, up to 40% Energy savings*
- Faster startup time, efficient operations and decision workflows
- Designed for harsh environment use, with safety and compliance
- Designed for protection, compliance to industrial requirement

**Enclosure protection IP66/NEMA 4X, SIL2, 3C2, Marine Certs**

**Enclosure protection IP54/NEMA 3S, 3C2, Certs, CIP**

**MVS100 / MVH100 / MVIS7**
HONEYWELL VFD’S TOP FEATURES

- Payback Counter
- KEB (Kinetic Energy Buffering-MV)
- Pipe Broken
- Multi-Motor Control
- Interface option & Protocols
- RTC for Scheduling
- Option: By-Pass
- Pump Clean
- Fire Mode
- Auto Restart
- Auto Tuning
- User Sequence (MV)
- Built-in PIDs (max 4) (*Feedback)
- Built-in MACROS (MVIS7)
- Lubrication Control
- Motor Pre-Heat
- Component Life Estimation
- Sleep & Wake-up PID Function
- Damper Control
- Dry Pump Detection (MVH100)
- Config tools Free
- Flow Compensation
- Multi-lingual Key pad
- Built-in MACROS (MVIS7)
- USB Port (Option)
- Tight integration with Experion
- Payback Counter
- RTC for Scheduling
- Component Life Estimation
- Option: By-Pass
- Pump Clean
Seamless and cyber secure integration with Experion systems

Flexible mounting option-Flange kits, installed side by side

Fault history, Maintenance mode indication and diagnosis data

Faster delivery time-shorter lead time

Advanced functionality Sequence programming, Macros 3sets, 7group

Graphical configurator, with multi-language

Extendable additional IO (option), Communication interface options

Smart Copier, Flash drop, setting drive parameters without power

Built-in EMC noise filter C2/C3, DC Reactors (with some variants)
HONEYWELL VFD INTEGRATION

With Honeywell Systems

- High-speed bus based seamless integration with Experion DCS and ControlEdge PLC
  - ControlEdge supports Flexible network topology - Star, DLR, Linear
- Built-in library EIP based in Control Builder and ControlEdge builder
- Native drives alarm, event and diagnostics

With Third party Controllers

<table>
<thead>
<tr>
<th>Serial Comm Protocol</th>
<th>Ethernet-based Protocol</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modbus RTU</td>
<td>Modbus/TCP</td>
<td>Honeywell, Modicon</td>
</tr>
<tr>
<td>Profibus DP</td>
<td>PROFINET</td>
<td>Siemens</td>
</tr>
<tr>
<td>DeviceNet</td>
<td>EtherNet/IP</td>
<td>Rockwell</td>
</tr>
<tr>
<td>BACnet MS/TP</td>
<td>BACnet/IP</td>
<td>For HVAC</td>
</tr>
<tr>
<td>Metasys N2</td>
<td></td>
<td>Johnson Controls for HVAC</td>
</tr>
<tr>
<td>CANopen</td>
<td>EtherCAT</td>
<td>Backhoff</td>
</tr>
<tr>
<td></td>
<td>POWERLINK</td>
<td>B&amp;R</td>
</tr>
<tr>
<td>CC-Link</td>
<td>CC-Link IE TSN</td>
<td>Mitsubishi</td>
</tr>
</tbody>
</table>
VFD BUILDER SOFTWARE TOOL

- Software user for configuring VFDs (Variable Frequency Drive)
- Comes bundled with the drives package (no extra price, or part number required)
- Allows users to parameterize, copy and transfer Config, monitor performance, remotely control and generate reports.
- Also various drives analytics such as maintenance mode indication, diagnostics
- Ethernet ports or serial (via converter) can be used to connect the VFD to the computer

Videos on Use of VFD Builder Software Tool - https://www.youtube.com/watch?v=F7-PVfaxsHs
VALUE PROPOSITION

For

Industrial automation users

Who need

Energy efficient plant operations, with improved asset life and performance

Honeywell’s

Variable Frequency Drives (VFD) solution

Provides

Improved asset performance, energy savings & increase in production uptime and profitability

Unlike

Control packages using DOL or Soft Starter with motors or legacy VFDs that are loosely integrated with the controller

We do this by

Offering integrated control package with VFDs, with advanced diagnostics, application function blocks and necessary safety standards

As proven by

Total cost of ownership and lifecycle advantages offered by Honeywell control system worldwide across various industrial applications
# SUCCESS STORY

## Food & Beverage -
- Leading specialist manufacturers of high quality cold pressed oils, Food & Beverage (F&B)
- Needed a control package for their greenfield food oils processing plant
- Solution: Experion LX+ UOC+ VFDs (38)+ Experion Batch+ Virtualization Ethernet/IP, integrated with Experion LX
  - Drives for entire plant - product movement, leveling (pump, motors)
  - Led by Australia based channel partner with strong Experion knowhow and integration experience. Who engaged early with tech consultancy and control package selection
  - Potential play for loading, unloading, Tank farm and more

**Benefits**
- Experion batch for better traceability
- Single and integrated package with native integration with Honeywell drives

## Metal & Mining -
- Leading specialist manufacturers of steels, rods and wires
- Needed a package for their new steel plant
- Solution: VFDs (23)
  - Drives for entire plant - product movement, Kiln, Feeder, Fan.
  - Led by channel partner who engaged early with End customer and control package selection

**Benefits**
- Single and integrated package with native integration with Honeywell drives
HONEYWELL VFD ROADMAP

Launch
- Honeywell VFD
- MVS100, MVIS7, MVH100 Models
- Introduction & Training
- Emails & Videos

Enhancements
- VFD Config tool for operation
- Certificates: CE, UL
- Fieldbus: Profinet, BACnet, Lonworks

Marcom
- Bulletin Board Page
- Product image
- Drawings
- Technical Spec document

Engage across LOBs

Q3 '21

Q4 '21 Enhancements
- Drives Configuration tool
- Certificate: UL, RoHS,
- Interfaces – Ethernet IP, Modbus RTU

Marcom
- Internal Sales Webinar
- Product webpage on new HPS.com
- Partner Communication - Sales Kit
- Social Media Campaign

Q2 '22 Integration
- ControlEdge R17x integration testing and EIP based FB

Marcom
- HUG Tech Talks session
- Infographic, Flyers
- Application specific solution note
- Webinar Videos
- PR activities (need basis)

Q4 '22 Enhancement
- Update of Builder tools
- Certificate: Marine

Marcom
- Drives Micro Sites
- Ebooks
- App Notes
- Yammer announcement
- Application specific solution note

1Q '24 Expand scope
- Contract with new supplier for low-end market
- Alternate VFD offering
- Low-end VFDs (Focused on highly competitive market)
- Seamless integration of Low-end VFDs
- EthernetIP, Profinet
- Experion R520.x integration (C300, EIM)

Marcom
- Paid media campaign

Promotion & Demo
- Current promotion for rest of the year (running)
- MVIS7 Demo Kit released from April 2022
SUCCESSS STORY & ROADMAP

New Interface and wide Connectivity
ML200
ML50
SUCCESS STORY

Company and Project Overview
GAIL() for Petrochemical plant.
While there are currently no automated fire-fighting measures in Singapore road tunnels, fire extinguishers and fire hoses are located every 50m within the tunnels, which are also equipped with heat detectors, air-monitoring sensors and ventilation fans.

Solution Offered – USD 150K
ML200R with HART AI and HART AO

Customer Needs and How to win
(a) Available HART AI and HART AO on ML200 Redundancy, and wide interface option with Honeywell Experion sys, secured the complete Turn-key project.
(b) Better solution for integrating with FDM over Ethernet, CommDTM
(c) User will be in advantage position for securing for a long time, if they propose HON solution.

Customer Benefits
• Fully integration ML200 Redundancy with FDM on the Network architecture.
• Reliable product and installation track record and brand.
SUCCESS STORY

Company and Project Overview
Land Transport Authority Singapore tender for Water-mist systems for Singapore Tunnels as concerns rise over vehicle fires. While there are currently no automated fire-fighting measures in Singapore road tunnels, fire extinguishers and fire hoses are located every 50m within the tunnels, which are also equipped with heat detectors, air-monitoring sensors and ventilation fans.

Customer Needs and How to win
(a) User experienced in delivering and implementing infrastructure projects with LTA Singapore, using Mitsubishi and Hon MLPLC, secured the complete Turn-key project.
(b) ML200 and ML50 was a perfect solution to compete against Mitsubishi.
(c) User will be in advantage position for securing 10 years Maintenance contract bid, if they propose HON solution.

Solution Offered – USD 577K
ML200R and ML50 – 662 sets

Customer Benefits
- On par solution against Mitsubishi with ML50 and ML200 Network architecture.
- Reliable product and installation track record and brand.
SUCCESS STORY..  
DUBAI METRO RTA 2020 (HBT)

Overview: Roads & Transport Authority (RTA) is Government body of Dubai, UAE. The Dubai Metro is a rapid transit rail network spanning 49 stations and covering a total length of 75 kms.

As part of their Expo Event in 2020 they are expanding existing Metro Network to 2020 Exhibition Venue. Total 7 stations are getting added (15km). Honeywell Building Solutions (HBS) were invited to bid for SIL2 and general purpose PLC for Environmental Control System (ECS) and Tunnel Ventilation System (TVCS).

Customer Need:
- Railway/Metro domain knowledge
- Redundant SIL2 for TVCS and ML200 Red. PLC for ECS
- Experienced supplier in HVAC, Fire Alarm, RAIL, Tunnels & Bldg application
- Execution capability in large projects & financially stable company
- A good after service team to maintain assets post handover

Solution Offered:
- ControlEdge HC900 SIL2 for TVCS and Life Safety Systems
- MasterLogic PLC ML200 for ECS

Customer Benefits:
- Great Technology delivered by reputed supplier
- Minimum inventory required with SIL UIO modules
- System Integrator with very wide experience in delivering Metro Projects
Next Generation of new CPU

Overview
• **Simple connectivity** over dual Ethernet ports on CPU
• Networking for interface, Ethernet, Serial comm
• Applicable for industrial requirements(DNP3, Ethernet/IP)
  Water-treatment, Pharma., Food&Beverage, BMS, etc
• **IoT Ready-Webserver**

Feature
• Hi-speed discrete control and hi-performance, displaying data
  Upgraded and advanced functions comparing with current sys
• Ethernet ports on board(CPU), bottom side
• Operability and control functions(Process control, PID, HART, etc)
• Optimized for Motion Control(EtherCAT), Servo Control, etc
• Connectivity-Ethernet/IP, Modbus, OPCUA, RAPIEnet+(Dedicated)
• Special conn. with SNTP, SMTP
• Extended USB Host – conn. to WiFi
• Micro-SD card on board
• **Cyber Security**, Compliant to ISA/IEC62443-4(will be done 2024)
• Webserver with encrypted data
Proposed - Water Treatment with DNP3

Expanding the Remote IO racks on non-Redundant CPU over DNP3
- Main PLC : ML200 CPU(non-Redundant) with Ethernet
- FDM integration over TCP/IP

Key info
- ML200, 2MLI-CPUZ(new ‘Z’) via Ethernet
- 100k events, SD card

Accessing HART device, **FDM Integration** on CPUZ
Interface to UPLINK over **DNP3** with data backfill on EFMTB
MRS ENET SWITCH

MLPLC series
2MOL-ES4T Enet Switch Multi 4 Ports Stand-alone MRS Module Network

It can be configured with 64 stations including the maximum master module.
- Supporting ring and line topologies enables network configuration suitable for the site
- Module can be set simply by setting station no. Without separate s / w setting
- Module information can be checked over auto-scan(SoftMaster on MLPLC)

Channel
- ch1, ch2 100base-TX 100Mbps
- ch3, ch4 100/1000base-TX 100Mbps/1Gbps
- Transmission method : Base Band
- Maximum extension distance between nodes : 100m
- Maximum number of nodes : 64
- Maximum protocol size : 1516Byte
- Communication right access method : CSMA/CD
- Frame error check method : CRC 32
- Station number setting : switch setting
THANK YOU