

LISTEN.
THINK.
SOLVE.SM



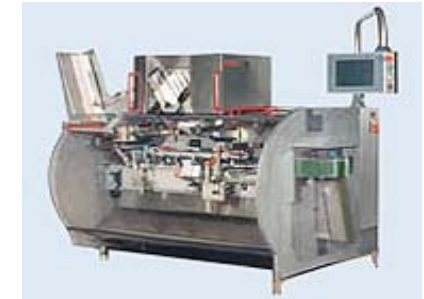
AUTOMATION
UNIVERSITY

Connected Component Solutions Hands On Lab Introduction

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Complex / Component What's the difference?

- Complex OEM – Builds machines that leverage technology. Integrated Architecture helps them differentiate machines. Standard machine design with flexibility. Typically lower volume, expensive (<100 machines per year)



- Component OEM – An OEM who builds simpler machines, in high volume (>100 machines per year). Control Optimization and panel space are critical (do as much as possible with as little as possible).



Commercial Laundry Automated Doors

Vehicles

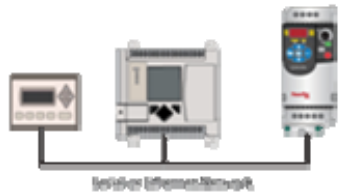
AGV

Rockwell Machine Control Solutions

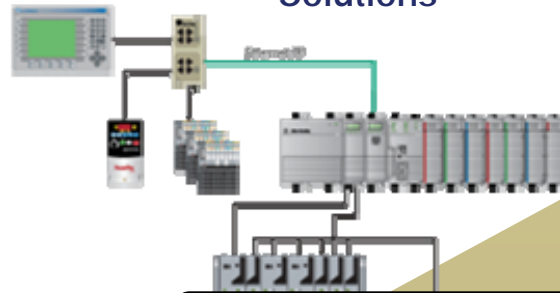
Essential Components

Integrated Architecture

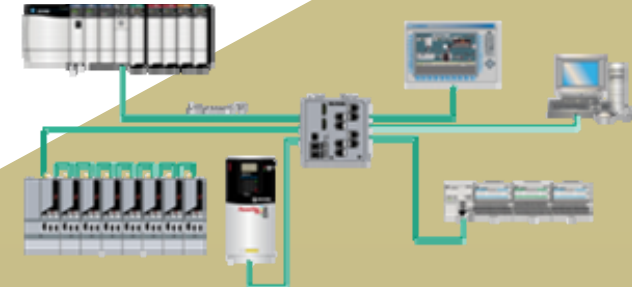
Connected Component Solutions



Compact Machine Solutions



Advanced Machine Solutions



MicroLogix

PanelView Component

PowerFlex 4xx

Low cost

Just right control

CompactLogix

PanelView Plus (CE)

PowerFlex 7xx

Mix of

Kinetix

ControlLogix

PanelView Plus (CE)

PowerFlex 7xx

Kinetix

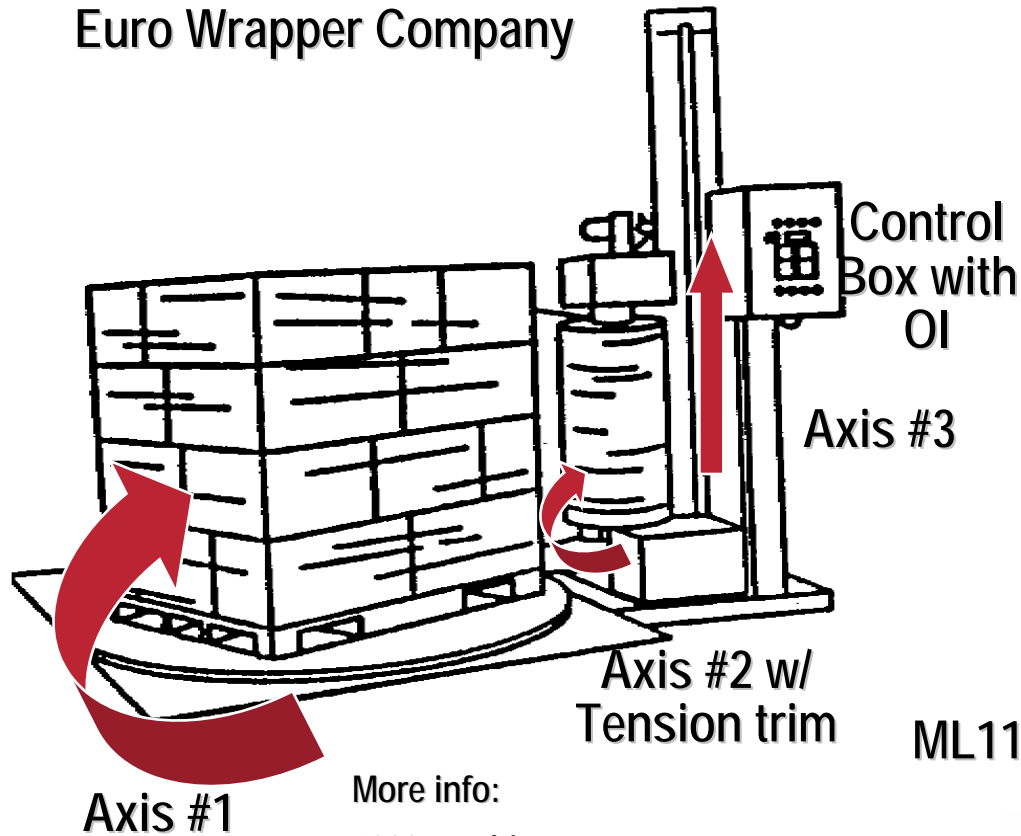
Advanced information capabilities

Integration Continuum

Broadest offering available for Machine Builder (OEM) needs

Example Component OEM Application

Euro Wrapper Company



More info:

1000 machines per year

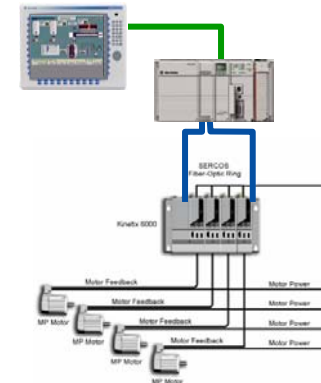
Machine only sells for €20,000.00

Accuracy requirement $\pm 5\text{mm}$

220 Volts AC, 20 amps max

Current: controller and components from several suppliers

2 Possible Control System Options



L4X, PV+, Sercos, Ethernet, K6K

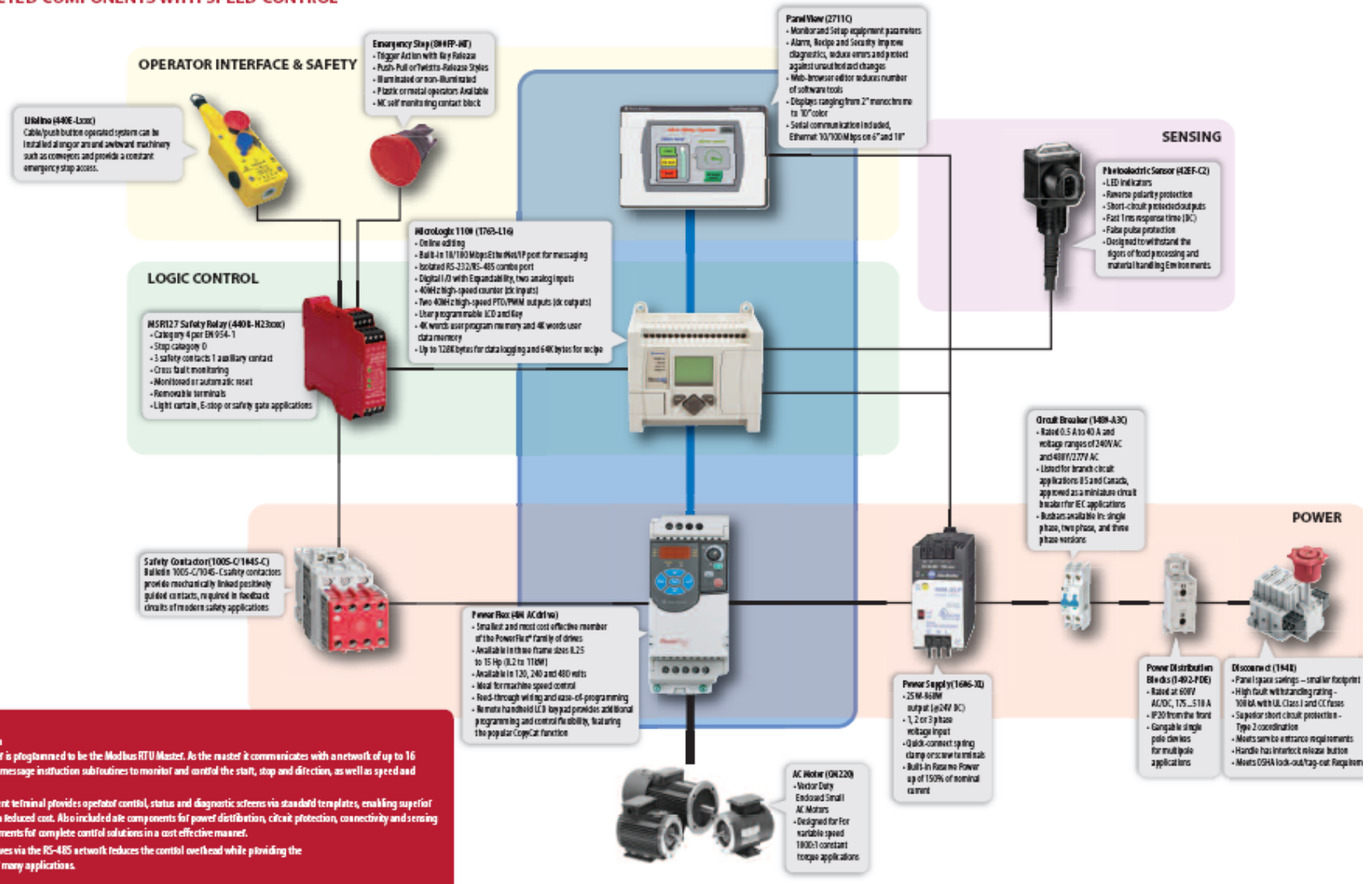
Luxurious Solution!

ML1100, Pvc, Modbus RTU, PF4s, AC motors



Connected Components ???

CONNECTED COMPONENTS WITH SPEED CONTROL



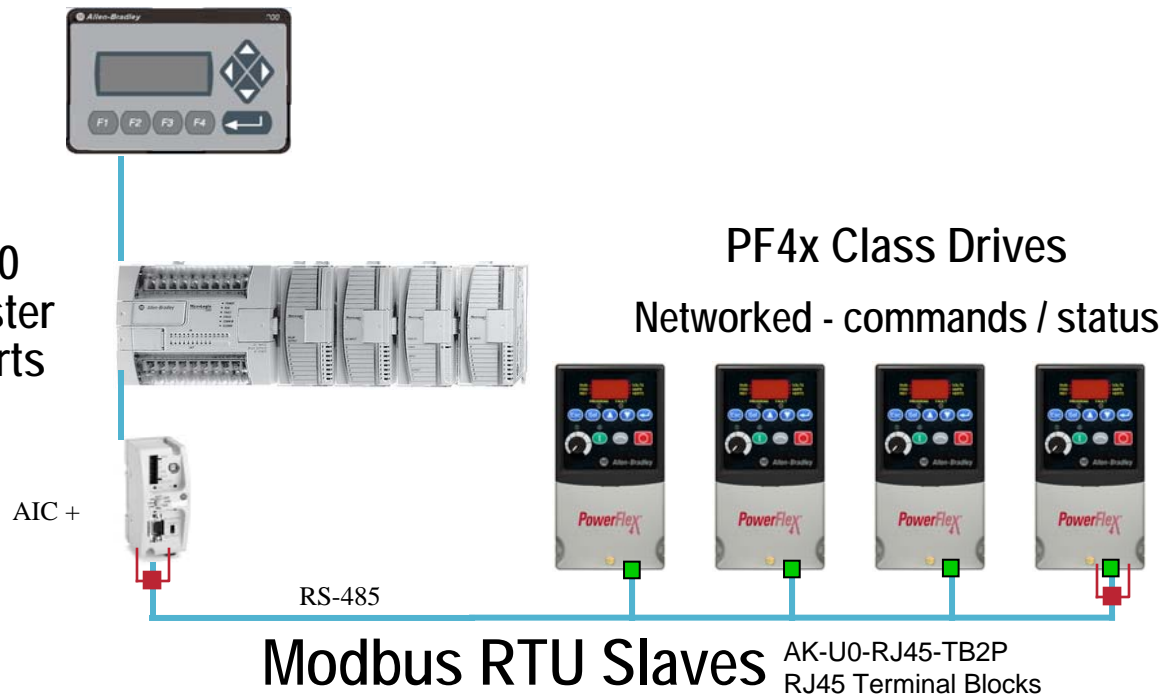
New Applications

- **Upgrades of systems** from standard controls and gauges to graphic operator interface
 - Flexibility in designing systems
 - End-user trends towards graphical displays
 - Design-time is simplified for customers new to operator interface
- **Proprietary systems** and having difficulty maintaining existing products to meet changing certifications, global standards and component obsolescence, or having supply chain issues in manufacturing product
 - Rockwell Automation manages products to meet changing certifications, standards and component obsolescence
 - Companies having difficulty in maintaining a consistent supply chain

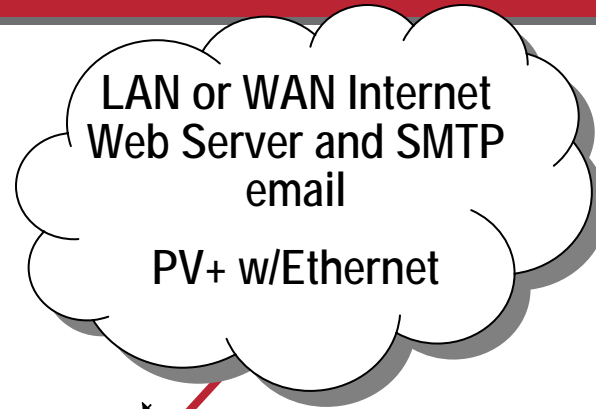
ML1200 Modbus RTU 485 & Pvc

PanelViewC

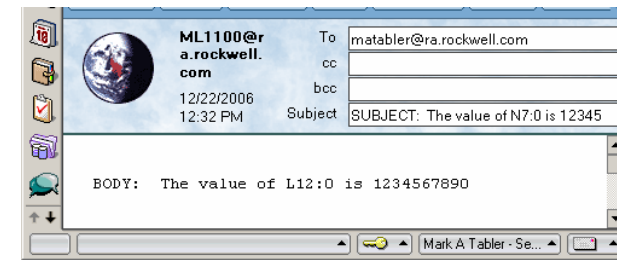
MicroLogix 1200
Modbus RTU Master
with (2) serial ports



Connected Component Solutions (Modbus RTU 485)



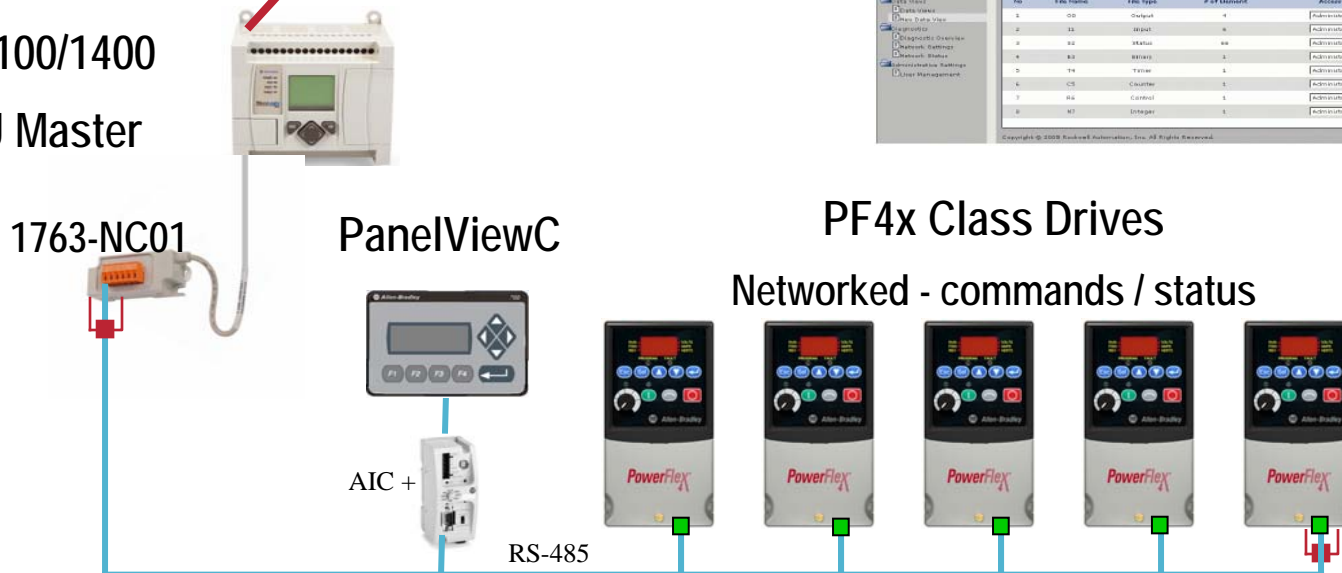
E-mail



Web Server



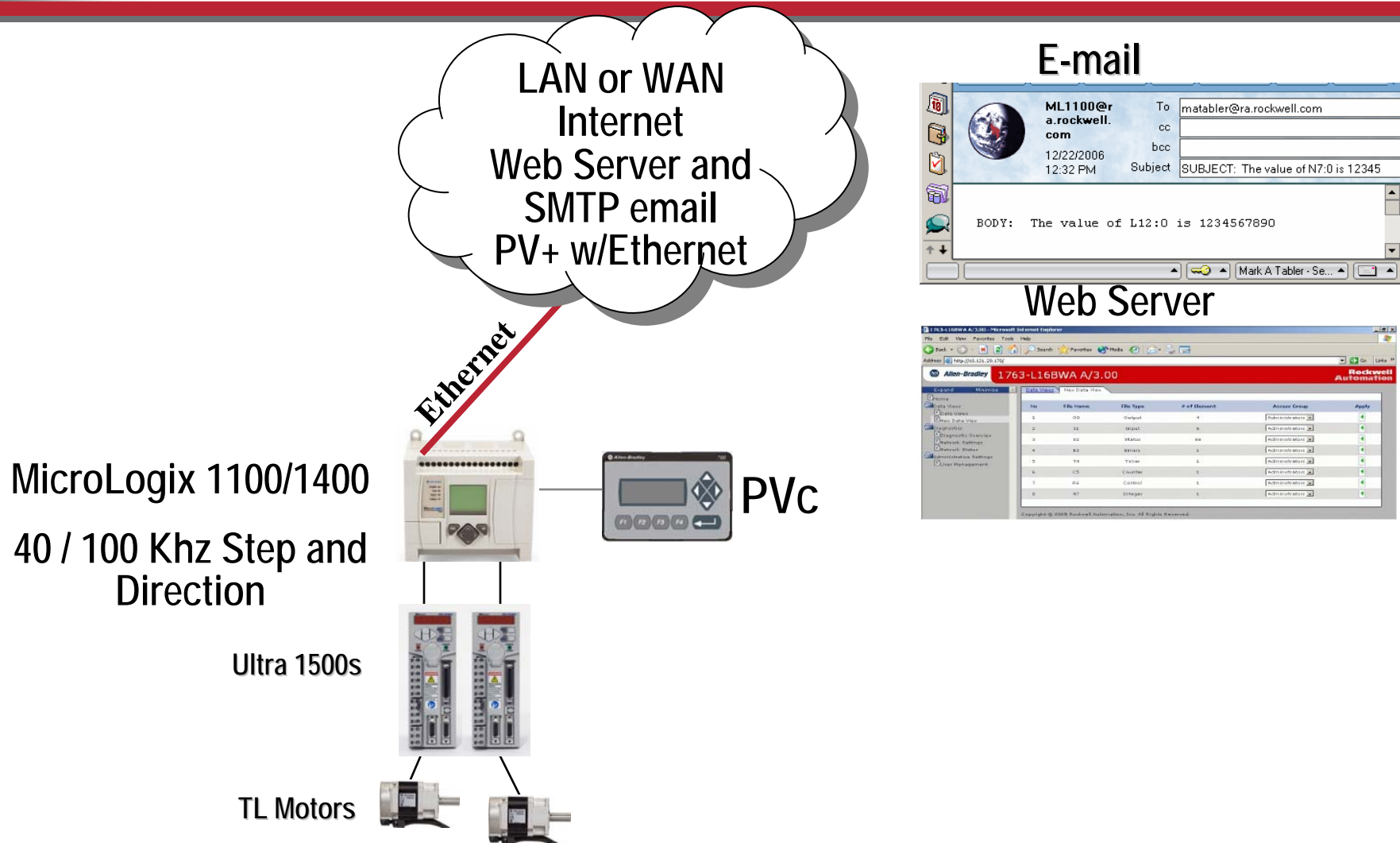
MicroLogix 1100/1400
Modbus RTU Master



Modbus RTU Slaves

AK-U0-RJ45-TB2P
RJ45 Terminal Blocks

2 axis Servo with Step and Direction



Rockwell MicroLogix Controller Portfolio

NEW GENERATION PRODUCTS

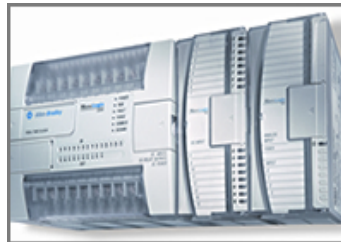
ML1100



ML1400



ML1000



ML1200



ML1500

MicroLogix Controllers "Classic" Products

MicroLogix 1100



Product Overview

- A small micro controller specifically designed for Stand Alone and networking in a distributed control system (multiple connected controllers)
- Intended for applications that require up to 80 I/Os (incl. 2 built-in Analogue Inputs)
- **Superior Communication Capabilities**
 - Supports all MicroLogix 1200/1500 RS-232 Comms
 - Embedded RS-485 for DH-485 and Modbus RTU Master/Slave comms
 - Embedded EtherNet/IP for Peer-to-Peer Messaging
 - Uses CIP which is a standard protocol supported by all RA Ethernet capable devices and many other 3rd parties' controllers/devices
 - Embedded Ethernet Web Server
 - Multiple levels of user configured permission levels for added security
- Embedded multi-functional LCD for Controller and I/O status
- Full Online Editing capability

MicroLogix 1400

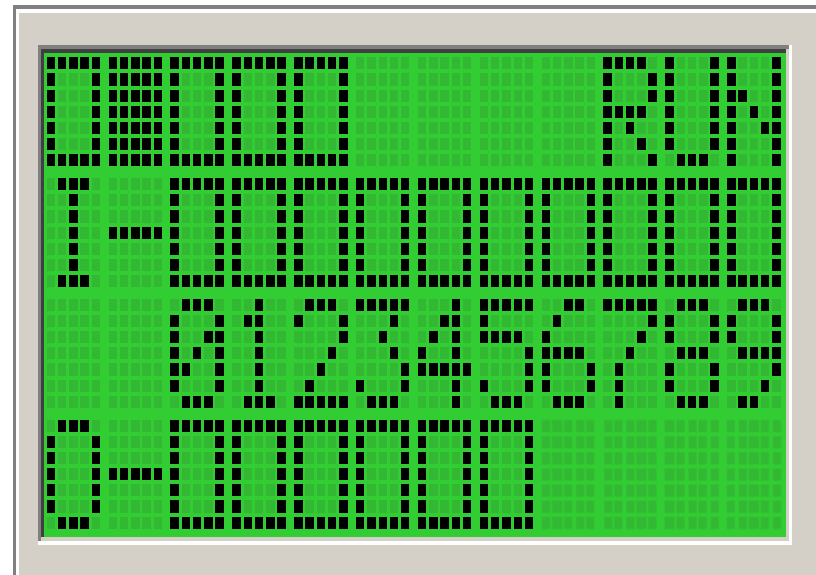


Micrologix1400 Summary

- Highlights
 - ML1400 has all ML1100 advanced features plus further enhancements and supports more I/O points
 - ML1400 supports 7 additional 1762 I/O expansion modules (up to 144 I/Os)
 - Analogue I/O capability (embedded & expansion I/Os)
 - Up to 6 embedded high-speed counters – 100KHz (dc input controller models)
 - Superior Connectivity
 - 2 Serial ports with DF1/DH485/Modbus RTU/DNP3/ASCII protocol support
 - Embedded EtherNet Port with web server, email, messaging, capability
 - Built-in LCD allows you to view controller and I/O status, and provides a simple interface for messages, bit / integer, custom strings.

Product Overview - Monitoring, using the Embedded LCD Screen

- Monitor Controller and I/O Status using 4 X 12 text only display
 - Display Custom Text
 - LCD provides bit indicators for:
 - Embedded digital I/O (10 inputs and 6 outputs)
 - Communication activity on RS-232 / RS-485 Combo port & Ethernet port
 - Communication setting (Factory Default or User Configured Communications)
 - Battery Low (indicator & status bit give the operator sufficient time to replace)
Long life replaceable battery provides power for user program and user data back-up and for the real time clock.



Networking Products

Panel Mount Devices for all MicroLogix controllers



1761-NET-AIC
DH-485



1761-NET-DNI
DeviceNet

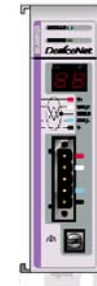


1761-NET-ENI
Ethernet



1761-NET-ENIW
Ethernet w/
Web Server
100 Base-T Port

Backplane Modules for MicroLogix 1500 and CompactLogix



1769-SDN DNet Scanner
Series B w/ ADR

Where to find more info: <http://www.ab.com/plclogic/micrologix/1000/communication.html>

PanelView Component Products



4-function key



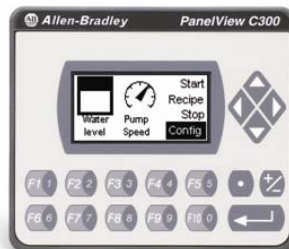
Touch



Monochrome



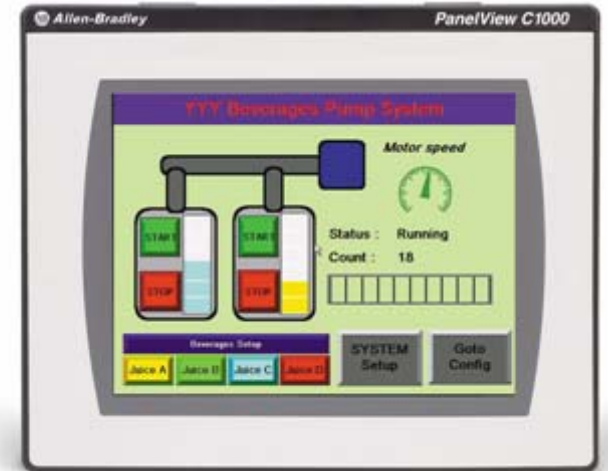
Function/numeric



Function/numeric



STN color



10" TFT color
640x480 resolution
Touch
Serial & Ethernet

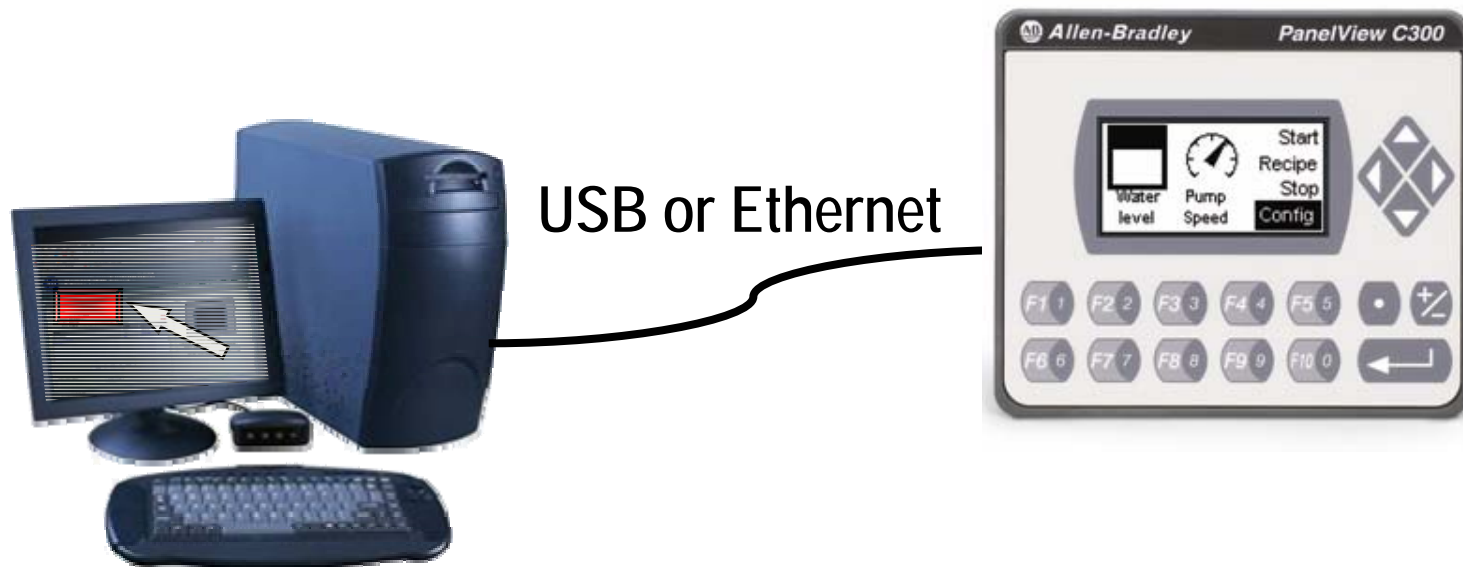
2" mono graphic
122x32 resolution
Serial

3" mono graphic
128x64 resolution
Serial

6" graphic
320x240 resolution
Touch
Serial & Ethernet

Summary: PanelView Component Features

- Design time on PanelView Component
 - No software to install – Web browser based programming
 - Automatically matching revisions
- Security to protect application from unauthorized personnel
- Language Switching Capabilities
- Recipes
- Global Objects
- Trending
- Usb & Eth ports - file transfer & programming



Connected Components “Building Blocks”



- Provide a set of Connected Components Building Blocks for common Component OEM machine tasks. Examples will include
 - **Simple Speed Control,**
 - **Simple Position Control**
 - **Simple Temperature Control**
 - Simple Safety (2nd Phase)
- Connected Components Building Blocks include Best Practice Based information to provide the Just-Right solution for price centric OEMs
- CD available for order (free) via website
 - Free download via website
 - Foreign languages available: French, Italian, German, Spanish, Portuguese, Polish and Czech