



Features

- Up to 24 universal analog inputs
- Up to 16 PID or On/Off control loops with autotuning for each control loop
- Up to 96 digital inputs or outputs
- Up to 16 current outputs (4-20 mA)
- Up to four setpoint programs, up to 50 segments each, with 16 event outputs
- Graphic function block configuration with up to 250 blocks
- Large assortment of algorithms for combining analog and Boolean logic functions
- Extensive alarm and event monitoring
- Carbon potential, dewpoint, and relative humidity control
- Operator panel with a selection of pre-formatted graphic and alphanumeric displays
- Memory capacity to hold up to 70 setpoint profiles, with optional 3.5" floppy drive for profile and recipe storage
- Color LCD operator display
- Convenient offline configuration on your PC
- Configuration records on disk or hard-copy printouts
- CE and CSA approved. UL approval pending.
- Universal power (85 to 264 VAC)

The Universal Multiloop Controller (UMC800) is a modular controller designed to cost-effectively satisfy the analog and digital control requirements of small unit processes. With up to eight analog control loops, four setpoint programmers, and an extensive assortment of analog and digital control algorithms, the UMC800 is an ideal control solution for furnaces, environmental chambers, ovens, reactors, cookers, freeze dryers, extruders, and other processes with similar control requirements.

Three key components make up the UMC800 control solution: a powerful controller with modular I/O, a hardened operator interface

with color display and optional disk drive, and intuitive PC configuration software. The separation of control functions from operator interface functions provides greater installation flexibility and operation security. The LeaderLine® Control Builder configuration software uses graphic objects to represent function blocks, greatly simplifying control strategy development and improving configuration record keeping.

The controller incorporates a card rack capable of supporting up to 16 input and output modules that can be mixed to satisfy the hardware requirements of a specific application. The operator interface uses a color graphic LCD display to provide screen presentations for viewing control loops, setpoint programs, and other analog and digital status.

Loop Control

The UMC800 supports up to 16 control loops with PID or On/Off control action. Control loops can be configured to operate independently or in cascade. Operator-entered setpoints may be limited by independent high and low limit values, and setpoint rate-of-change limits can protect critical products during process changes.

During feedforward operation, a separate feedforward gain adjustment tunes the loop for the appropriate feedforward response. When Ratio control is applied, a ratio and bias adjustment is provided.

In the supplementary loop control blocks, digital inputs can be used to set control mode, select the setpoint source, change control action, and other discrete actions. A status block provides digital outputs to facilitate integrating loop operation with other functions in the controller.

When configured for dual output (heat/cool), each output may be directed to different output types; e.g., current, time-proportioning, etc. Two sets of tuning constants for heating and cooling are also provided.

Honeywell's Accutune II™ automatic tuning algorithm and fuzzy logic overshoot suppression are available for each loop of the controller. Accutune tuning is initiated on command from the operator interface or through a digital input to the loop. This easy-to-operate feature optimizes control performance with a minimum of process disturbance.

PID Control

Each PID control loop offers Accutune™ II autotuning, fuzzy logic overshoot suppression, two tuning constant sets, and an array of advanced interface features to reduce start-up time and optimize performance. Control strategies requiring cascade control, ratio control, feedforward control, duplex outputs, three-position step outputs, and other variations are easily accommodated.

A dedicated algorithm type is also provided for percent carbon control of furnace atmospheres. Operator displays allow supervision of one, two, three, four, or eight control loops per display. A tuning trend display for each loop is always available to monitor performance.

Setpoint Programming

Up to four independent setpoint programming blocks may be configured in the controller. A single program may be up to 50 segments in length. Up to 70 ramp/soak profiles may be stored in controller memory. Any profile may be loaded into any of the four programs. Each segment of the program can be a ramp or a soak except the last step, which must be a soak. In addition to the main ramp and soak output value, a second analog value is available for each step of the program. This output is a fixed soak value that can be used to provide

Universal Multiloop Controller UMC800



New PC-Based UMC800 User Utility Software

- Develop data archiving setup parameters, recipes or setpoint programmer profiles
- Develop maintenance routines for field calibrations and reading controller diagnostics; download configuration files via RS232

a setpoint value for a secondary control loop in the process.

A setpoint guarantee function holds the program if a process variable exceeds a predefined deviation from setpoint. Setpoint guarantee can be active for the entire program, for soak segments only, or for user-specified segments. Up to four process variables may be configured as inputs to the block for setpoint guarantee.

Setpoint programs may be started, placed in hold, advanced to a predefined segment or reset from the operator interface or by digital inputs to the block. A jog feature is also available using a digital input. Programs may also be started from a preselected segment number.

A recovery ramp rate value is provided in the event of a power loss while a program is running. The ramp rate value is used to return the process to the last operating setpoint prior to power loss. A power off digital signal from a separate timing block may be used to restart from an analog value, hold or abort the running program if power has been off for more than a specified time period.

A running program may be edited by adjusting the values of any programmed segment. A portion of a program or the entire program may be repeated indefinitely, or up to 100 times as specified in a program recycle count value.

A companion setpoint programmer event block is available to provide up to 16 event outputs based on the step number. This block's outputs may be directed to digital outputs or to internal statuses for logic operations. An event may be turned on or off any number of times in a program based on the segment number.

Two setpoint programs operating on the same time base may be synchronized using the synchronize block. This block automatically starts the second program when the first program is started and maintains synchronization when either program is placed in hold.

Recipes

Recipes let you alter up to 50 variables in the controller with a single action, greatly simplifying product changeover. Recipes may also include ramp/soak profiles. Up to 50 recipes may be stored in the controller, and additional recipes may be stored on floppy disk with the optional 3.5" floppy drive.

Function Block Algorithms

The controller offers up to 66 digital inputs or outputs and uses digital function blocks to perform Boolean logic operations and sequences. Function block algorithms are provided for signal conditioning, signal selection, signal monitoring, and much more. Freeform math blocks and freeform Boolean logic blocks accept up to eight inputs and

combine the operations of several smaller blocks to optimize configuration efficiency.

Boolean function blocks execute on a fixed 100-ms rate or a slower rate determined by the analog sampling rate. And/Or function blocks may offer from two to eight inputs, and each input may be inverted to increase configuration efficiency. Function blocks are provided to implement interlocks, timing and counting, and to interface with control loops, setpoint programs, or other functions.

Analog Measurements

The UMC800's universal analog input circuits eliminate the expense of external signal conditioners. Inputs may be mixed on a card and include thermocouple, RTD, voltage, or millivolt types. Point-to-point isolation simplifies installation and saves the expense of external isolation hardware. High accuracy (0.1% of span) improves process performance and product quality.

Alarms

Extensive alarming features allow annunciation on almost any digital status in the controller. Dedicated alarm functions are available for control loops or for monitoring the status of analog variables.

Alarm flexibility can be expanded using the alarm block, which allows selective setup of alarm hysteresis, deviation alarms, on delay, selective latching, and a disable input to control when the alarm is active. Selected alarm monitoring functions may be set to latch until acknowledged. Global alarm output status is provided for unacknowledged alarms and active alarms.

For secure operation, the operator interface provides alarm indication on every display. A dedicated alarm button allows viewing of up to 10 alarm groups of up to 12 alarms each.

Operator Interface

The UMC800's operator interface provides a wide selection of preformatted displays and direct-access display keys to get you online fast. Analog data and digital status information can be viewed in multiple formats on the color graphic LCD for clear process monitoring.

Displays are available for viewing and supervising control loops, setpoint programs, recipes, alarm groups, trends, and other analog and digital functions. An optional floppy disk drive, located under a gasketed flip-down door, stores and retrieves configuration information, recipes, and setpoint profiles for error-free batch cycles.

Highlights of the operator interface:

- Single and multiple loop displays simplify operation while providing a full view of the process.
- Bargraphs evaluate relationships among groups of measurements.
- Pushbutton display reduces the need for dedicated panel buttons and indicating lights.
- Tabular displays let you see less frequently viewed values.
- Overviews show grouping of similar or related analog or digital data point types for quick review.
- Security codes limit online access.
- NEMA 12 front panel allows mounting in harsh environments.

UMC800 Universal Multiloop Controller

Screen Access

The operator interface has five pushbutton types used to access display screens.

User-defined screen buttons: Each of five user-defined screen buttons supports a sequence of up to ten screens. Screens assigned to these buttons may be Monitor Screens (view data only) or Operate Screens (take actions). The type of screen and the data presented on the screen is defined by the user during configuration.

Menu button: Provides access to the menu items needed to set up, tune, manage, and maintain the system.

Pushbutton group: (F1-F4) Provide input to discrete actions.

“?” user-defined help: Provides access to up to ten user text screens. These screens may include user notes, instructions, or other information defined by the user.

Alarm view/acknowledge: Access alarm group screens and acknowledge alarms.

Trend Option

This option allows real-time trending of up to 24 tagged values assigned to four screens of up to six trend points each, analog or digital. Each trend point has its own color and engineering unit range. The time range may be 0.5 hr. to 4 hours per screen. Trend tools include scrolling back in time to extend the time range from 1.5 to 5 times dependent on the number of points per screen, and cursor panning to view actual digital values at a specific point.

Advanced Configuration Tools

Control Builder configuration software allows system configuration using a Windows95- or NT-based PC. The software program uses drag-and-drop placement techniques for graphic icons and soft-wiring connections between function blocks to create custom control strategies. Both analog and digital functions are configured on the same display, creating a common database for truly integrated control.

A dedicated RS232 port makes it easy to upload and download configurations from the PC. The online monitoring feature streamlines configuration debugging and reduces commissioning time. Control Builder software includes:

Online help: Control Builder software provides an extensive support facility of online help. Both menu-selected and context-sensitive help features ensure that you are never more than a keystroke away from the information you need.

Operator interface displays: Select from a library of display formats for the operator interface. Variables may be grouped into specific display types to simplify process supervision.

Hard-copy printouts: Printouts of diagrams and function block properties provide reproducible records for efficient record keeping.

Secure operation: PC-only configuration eliminates accidental entry errors or erroneous modification.

Controller configuration upload capability: Verifies installed controller and operator interface configuration.

Fast setup, duplication: Configuration files on computer disk make installation and duplication quick and easy.

Working Together for Ultimate Control

Leaderline Control Builder Software

- Control strategy configuration
- Operator interface display and function key configuration
- Setpoint profile, recipe configuration
- Configuration upload/download
- Test and debug control strategies



UMC800 Controller

- Integrate 16 loops of control with 96 digital inputs and outputs
- Setpoint programming
- Alarm processing
- PID control, advanced control, and autotuning/fuzzy logic
- Boolean logic via function blocks
- Advanced math computations



UMC800 Operator Interface

- Load, store, run, and edit recipes and profiles
- Monitor and control the process
- Load unit configuration
- Provide organized visual presentation of information



Control Loop Function Blocks

Analog Inputs: Universal (see Input Actuation table); **Filter:** 1st order lag, 0 to 120 seconds; **Bias:** Input value adjust; **Burnout:** Off, upscale, downscale, default value.

Analog Outputs: Regulated analog output current; Input scaling in engineering units; Output scaling within 0 and 20 mA.

Time Proportioning Output: Proportions amount of On time and Off time of a digital output. Input scaling in engineering units; **Cycle time:** 1 to 120 seconds; **On and Off time:** 0 to 15 seconds minimum.

Three Position Step Control Output: Motor position control without position sensing.

PID (16 max.): Algorithms: Accutune II autotuning and fuzzy logic overshoot suppression; PID A or PID B operation; Two sets of PID constants with gain or proportional band entry and integral time or repeats/minute entry; Two setpoint values or one value and one remote setpoint; Two alarm outputs with up to two high, low, or band conditions each; **Inputs:** PV, remote setpoint, feedforward, output track command, ratio, bias, switch block connection, mode switch block connection, and back calculations; **Outputs:** Control output, working setpoint, alarm status, autotune indication, mode status.

On/Off: On/Off control algorithm, 8 maximum, displaces PID.

Loop Switch Inputs: Digital interface to initiate autotuning, change control action, force bumpless transfer, select tuning set #1 and select tuning set #2. Connects to PID and On/Off block switch input.

Loop Mode Selection: Digital interface to control loops to select automatic or manual modes and/or local or remote setpoint. Connects to PID and On/Off mode block input.

Mode Decoder (Mode Flags): Decodes PID mode status into a set of discrete (or Boolean or digital) mode flags.

Carbon Potential and PID: 8 max.; Combined carbon potential calculation and PID algorithm for controlling the carbon potential of furnace atmospheres using a zirconia probe input and temperature input. Local/remote %CO adjustment, probe manufacturer selection, anti-sooting protection, dewpoint calculation output, and furnace factor adjustment supported, probe burnoff configurable.

Setpoint Programmer and Recipe Function Blocks

Setpoint Program: 4 max.; Produces a setpoint output on a time-based profile loaded into the block. **Inputs:** Process variables, up to four, to establish setpoint guarantee operation based on deviation band from setpoint, profile number and starting segment. **Digital Inputs:** Set (load program), start, hold, restart, reset, advance, jog, and synchronize hold. **Outputs:** Setpoint value, segment and program number, time remaining/elapsed in segment, program elapsed time. **Digital Outputs:** Status (ready, running, hold, stopped), synchronize hold state, events.

Setpoint Program Events: Up to 16; Provides up to 16 digital status outputs that may be On or Off on a per segment basis. Inputs include program number, segment number, and program state (Ready, Run, Hold, GHold, Stop) from setpoint program block.

Setpoint Program Synchronizer: Syncs operation of two setpoint programs given the run. Hold and reset signals from each program.

Recipe Block: Used to initiate loading of recipe values into a chosen set of controller variables. Inputs include recipe number and load command, allowing remote recipe selection.

Auxiliary Control Function Blocks

Lead Lag Signal Conditioner: Modifies an analog input value to include lead and lag time constants when a digital input is true. **Lead time constant:** 0 to 99 minutes; **Lag time constant:** 0 to 99 minutes.

Function Generator: Generates an output characteristic curve based on up to 11 configurable breakpoints for input and output values.

High/Low Limiter: Limits analog variable between high and low limit values. Provides separate status outputs when limits are exceeded.

Rate (Velocity) Limiter: Limits the rate at which an analog variable can change when a logic input is On. Provides independent increasing and decreasing rate of change limit values. Separate digital status outputs indicate when high or low rate limits are active.

Read/Write Constants: **Read:** Provides a read access to internal static parameters of selected blocks. **Write:** Provides write access to internal static parameters of selected blocks.



Communication Is Key — and the UMC's Got It!

The UMC800 is now available with an RS485 Modbus RTU communications option. Using a RS232 to RS485 converter, you can link your UMC800 controller unit with 30 other controllers to a single host computer!

With Modbus RTU, you can read digital input/output status, analog input/output values, force digital outputs, read and write control loop parameters, read signal tag parameters, write to variable, or read and write setpoint programmer and setpoint scheduler status or segments.

You can also use the RS485 communications option to upload or download configurations written with the Leaderline Control Builder.

See model selection guide for RS232 to RS485 interface converter.

Track and Hold: Allows updating or holding the value of an analog input based on the state of a digital input.

BCD Translator: Accepts up to 8 digital inputs in sequence, interprets On/Off status of the first 4 inputs as a BCD value between 0 and 9, and the second 4 digits as a value between 10 and 90.

Calculation Function Blocks

Compare: Compares one analog variable to another and generates digital outputs to indicate greater than, equal, or less than status.

Absolute Value: Output is absolute value for one analog input.

Square Root: Output is the square root of one analog variable input.

Mass Flow: Calculates the mass flow of gases when measuring flow using an orifice plate. Output = $K_g * \sqrt{(K_x * X + B_x) (K_y * Y + B_y) / (K_z * Z + B_z)}$ with inputs X = differential pressure, Y = pressure, and Z = temperature. A low flow cutoff feature provides a user-specified drop-off value below which the output goes to zero.

Minimum/Maximum/Average/Sum: Accepts inputs from up to six analog variables and outputs; analog variables representing the highest, lowest, and average values, sum, and standard deviation. Removes bad inputs and provides an alarm output for deviations of any variable outside user-specified standard deviations.

Negate: Accepts a single analog variable input and negates the output.

Totalize: Integrates an analog variable using a specified rate in units per minute, hour, or day. A preset indicates when a specific quantity has been accumulated. Separate enable and reset inputs are provided.

Deviation Compare: Compares up to 6 analog variables to deviation limits set around a 7th variable. If any variable is outside the limits, a digital signal is provided.

Relative Humidity: Calculates the relative humidity using wet bulb, dry bulb, and atmospheric pressure inputs. Output may be in °F or °C.

Dewpoint: 12 max.; Dewpoint PV is supplied to a PID function block for dewpoint control. Used to generate more elaborate control strategies than provided by the carbon potential block.

Signal Selector Function Blocks

High Selector/Low Selector: Provides the highest (high select) or lowest (low select) of two analog input variables.

Switch: Output switches between two analog input values based on the status of a digital input.

Bumpless Analog Transfer: Output switches between two analog input values based on the status of a digital input. When switched, output ramps to the new value at a specified rate.

Rotary Switch: Single output is selected from up to 8 analog values based on the value of a select input (1 to 8).

Math Function Blocks

Scale/Bias: Output = $(K * X) + b$ with single analog variable input X.

Two and Four Input Math: Executes +, - or * on two or four analog variable inputs, ÷ on two inputs.

Free Form Math: Calculates the result of a user-specified equation. The block accepts up to 8 analog input signals. **Operators:** +, -, *, ÷, ^, and parentheses. **Functions:** absolute value, exp, ln, Log, neg, sqrt.

Logic Function Blocks

Digital Input: Provides the digital status of a digital input point. The output status may be inverted.

Digital Output: Directs a digital status to a physical logic output. Output status may be inverted.

Pushbutton: Provides a one-shot output based on Off to On change of an interface key action. Supports four pushbuttons per block.

And, Or, XOr (2 inputs): Provides a digital status output based on the digital status of two digital inputs for logic And, Or, or XOr (exclusive Or) operations. Each input's status may be inverted.

And, Or (4 and 8 inputs): Provides a digital status output based on the digital status of four or eight digital inputs for logic And or Or operations. Input status of each input may be inverted.

Not (Complement): Inverts a logic input status.

Latch: Provides a digital output that turns on when a digital input turns on and remains latched until an unlatch input turns on.

Edge Detection Element: One-shot, trigger. Provides output On state for one controller scan when a digital input goes from Off to On.

Up/Down Counter: Counts the number of raising edge logic transitions on the input to the block up to a preset value. When the preset value is reached a logic output is enabled. A reset input resets the block. Value may be set to increase to the preset value or decrease from the preset value (1-99999).

Free Form Logic: Reads eight digital inputs and calculates the output based on specified Boolean logic functions (e.g., And, Or, Not, etc.) and multiple levels of parentheses.

On-Delay Timer: An Off to On change of the digital input is delayed on the block output by a user-specified time (0.1 to 999.9 seconds).

Off-Delay Timer: An On to Off change of the digital input is delayed on the block output by a user-specified time (0.1 to 999.9 seconds).

Toggle: Provides On state output when a digital input goes from Off to On and the previous output state was Off, and vice versa. Reset input holds the output Off when the digital input is On or active high.

Condensed Specifications

Controller

Analog Inputs: 4 to 24 (groups of 4) universal analog inputs (mV, V, mA, T/C, RTD, ohms)

Input Accuracy: $\pm 0.1\%$ span (field calibration to $\pm 0.05\%$ span)

Analog Outputs: 4 to 16, in groups of 4; user-specified span from 0 to 20 mA max.

PID or On/Off Control Loops: Up to 8; cascade, ration, %C, RH, dewpoint, three position step control

Control Outputs: Current, time-proportioning, three-position step

Setpoint Programmers: Up to 4, 50 segments each, 70 profiles

Digital Inputs/Outputs: Up to 96, 6 per module

Alarm Outputs: Up to 6 per module, SPST normally closed, individually configurable to normally open via jumper; rated 2A/250 VAC resistive

Power Supply: 100 to 240 VAC/VDC 50/60 Hz standard; Optional 24 VAC/VDC, 50/60 Hz

Operating Temperature: Rated 32° to 131°F

Humidity: 10 to 90% RH, non-condensing

Periodic Timer: Provides an On state output for one controller scan cycle based on a specified time period. Periods may be monthly, weekly, daily, or time period in a day.

Alarm and Signal Monitoring Blocks

High Monitor: Accepts two analog values and provides a digital status output if the first input is higher than the second input. A hysteresis adjustment is provided to prevent output cycling.

Low Monitor: Accepts two analog values and provides a digital status output if the first input is lower than the second input. A hysteresis adjustment is provided to prevent output cycling.

Analog Alarm: Accepts an analog signal as a process variable and compares it to a user-entered limit to determine an alarm condition. Setpoint may also be another analog signal in the controller. Alarm actions may be high, low or high deviation, low deviation or band deviation. Inverted alarm output creates normally active digital output. Includes user selection for latching until acknowledged or automatically reset, and user-specified hysteresis value in engineering units of the process variable. On-delay time value up to 240 seconds prevents momentary alarm actions. A digital reset input disables alarm actions.

System Monitor Block: Provides system and start-up status outputs including program scan cycle time; restart pulse (to activate a custom control action on power-up after power loss); time off (the time that power has been off previous to restart); two common alarm outputs (Active unacknowledged, Active alarms) for assignment to digital outputs; low battery; hardware OK, high temperature; communications fail; bad block; test mode.

Other Diagram Items

Analog or Digital Variable: Connects to a function block's inputs and can be changed from the operator interface.

Soft Wire: Connects function blocks and objects together.

Signal Tag: Allows a name to be assigned to a wire and accessed by the operator interface.

Numeric Constant: A user-specified constant value that can be connected to function block inputs.

Communications: Two ports. RS232 CONFIG port for connecting controller to PC running Control Builder software. RS232 HMI port for connection to operator interface. Optional RS485 Modbus RTU serial communications; 2 shielded twisted pair, half duplex. 2,000 ft. max. distance, 31 units max. 9600, 19.2K or 38.4K baud rate.

Operator Interface

Display: Color, passive matrix LCD

Distance from Controller: Up to 50 ft.

Power Supply: Supplied by controller, 24 VDC

Operating Temperature: Rated 32° to 122°F

Humidity: 10 to 90% RH, non-condensing

Leaderline Control Builder Software

Configuration: Offline; Online monitoring to test developed program

Computer: 486/66 MHz PC with 16 MB RAM min., VGA or greater screen;

Operating Environment: Microsoft® Windows95 or NT

Cable Connection: 9-pin RS232 null modem cable

For complete specifications, call Lesman.

Universal Multiloop Controller UMC800

Ordering Instructions

Make one selection from each table section below. To get the total price, add the base unit price to the prices for your selected options. A completed controller model number looks like this:

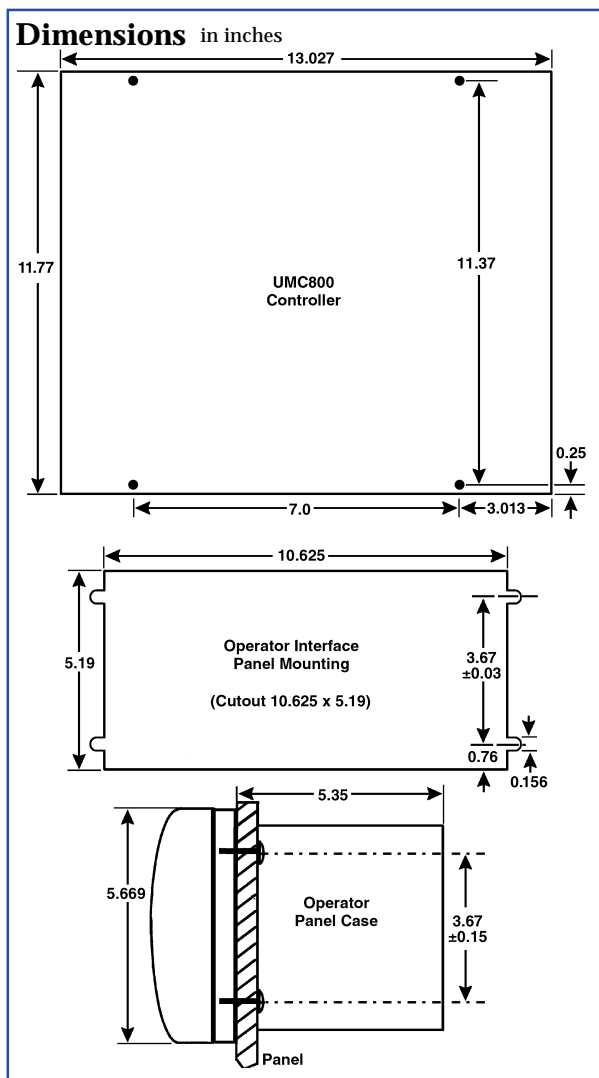
Controller: 80__000-0E-__a thru h__-__j thru q__-__-3-0
 Operator Interface: 8002-0__-__-__-3-0

One copy of Control Builder software comes with UMC800 controller.
 For additional installations, order separately.

Model Selection Guide

Description		Catalog Number	Availability	Price
UMC800 Controller Rack with Single License Control Builder Software				
Instrument Power	120/240 VAC	8001-	↓	\$1,325.00
	24 VAC/DC	8011-	↓	1,360.00
Control Loops	8 Control Loops (Standard)	0__-	• •	0.00
	Up to 16 Control Loops	F__-	• •	400.00
Communications	None	_0_-	• •	0.00
	RS485 Modbus RTU	_M_-	• •	350.00
Approvals	CE Certified (Standard)	__0-	• •	0.00
	CE Certified and CSA Approved	__B-	• •	0.00
Cables	None	0_-	• •	0.00
	6 Ft. Null Modem Cable: Configuration	1_-	• •	25.00
Manuals	English Operation/Instruction Manual	_E_-	• •	0.00
<i>(Requires a 250Ω resistor per mA input. Order separately.) Specify Card Number for Each Module Location [a b c d e f g h] (e.g., a=Slot 1, b=Slot 2, etc.) Price per Slot.</i>				
Input/Output Options	None	0	• •	0.00
	Analog Inputs (4)	1	d d	220.00
	Analog Outputs (4)	2	c c	425.00
	Digital Inputs, Contact Closure (6)	3	• •	160.00
	Digital Inputs, 24 VDC (6)	4	• •	160.00
Slots 1 to 8	Digital Inputs, 120/240 VAC (6)	5	• •	160.00
	Digital Outputs, Relay (6)	6	e e	160.00
	Digital Outputs, 24 VDC (6)	7	• •	160.00
	Digital Outputs, 120/240 VAC Triac (6)	8	• •	160.00
<i>(Requires a 250Ω resistor per mA input. Order separately.) Specify Card Number for Each Module Location [j k l m n o p q] (e.g., j=Slot 9, q=Slot 16, etc.) Price per Slot.</i>				
Input/Output Options	None	0	• •	0.00
	Analog Outputs (4)	2	c c	425.00
	Digital Inputs, Contact Closure (6)	3	• •	160.00
	Digital Inputs, 24 VDC (6)	4	• •	160.00
	Digital Inputs, 120/240 VAC (6)	5	• •	160.00
	Digital Outputs, Relay (6)	6	• •	160.00
	Digital Outputs, 24 VDC (6)	7	• •	160.00
	Digital Outputs, 120/240 VAC Triac (6)	8	• •	160.00
Slots 9 to 16	Digital Outputs, 120/240 VAC (2, 2A, 4, .5A)	A	• •	175.00
	None	0-3-0	• •	0.00
Tagging	Customer ID Tag (1 line, 30 characters)	T-3-0	• •	35.00
250Ω Resistors (1/input for mA on universal input cards)		250 Ohm	• •	1.50 each

Description		Catalog Number	Availability	Price
Operator Interface: Color Display with Trending		8002-0-	↓	\$1,200.00
Disk Storage	None	0_-	•	0.00
	3.5" Floppy Disk Drive (File Transfer)	D_-	•	210.00
	3.5" Floppy Disk Drive, Data Archiving	A_-	•	420.00
Cable Length	10 Feet	_0-	•	0.00
	50 Feet	_5-	•	105.00
Approvals	CE Certified (Standard)	0__-	•	0.00
	CE Certified and CSA Approved	B__-	•	0.00
Manuals	English Documentation/Instructions	_E_-	•	0.00
Tagging	None	__0-	•	0.00
	Customer ID Tag (1 line, 30 char.)	__T-	•	35.00
Auxiliary	None	000-3	a	0.00
	SDA Data Analysis Software	100-3	a	250.00



One copy of Control Builder included with each UMC controller unit.	Catalog Number	Price
Leaderline Control Builder Software For configuration development and testing English instruction manual included.	8003-E-0-3	\$395.00
UMC800 User Utility Software For data archive setup, recipes, and setpoint profiles. English manual included.	8004-E-0-3	125.00

Restrictions

- a Available only on Interface model with data archiving option (8002-0-A-...).
- c Limit of 4 maximum per controller rack (Input Slots 1-16).
- d Not available in slots 7, 8, 15, or 16 (positions g, h, p, q).
- e Available only in slots 7 and 8 (positions g, h).

Use Your PC for RS485 Communication, Configuration, and Control

RS232 to RS485 Interface Converter
 IC109A-R2 \$308.95

