

PULSAtrol®

MICROPROCESSOR BASED CONTROLLERS & MONITORS

REFERENCE GUIDE

For Cooling Towers, Boilers and Programmable Timer Applications

- *Product Specifications*
- *Product Selection Charts*



An ISO 9002 System-Certified Company

PULSAFEEDER®
A Unit of IDEX Corporation

IDEX
IDEX CORPORATION



We've Made It Easy To Choose The Right Controller Or Monitor

PULSAtrolF provides solutions to your water control and monitor problems:

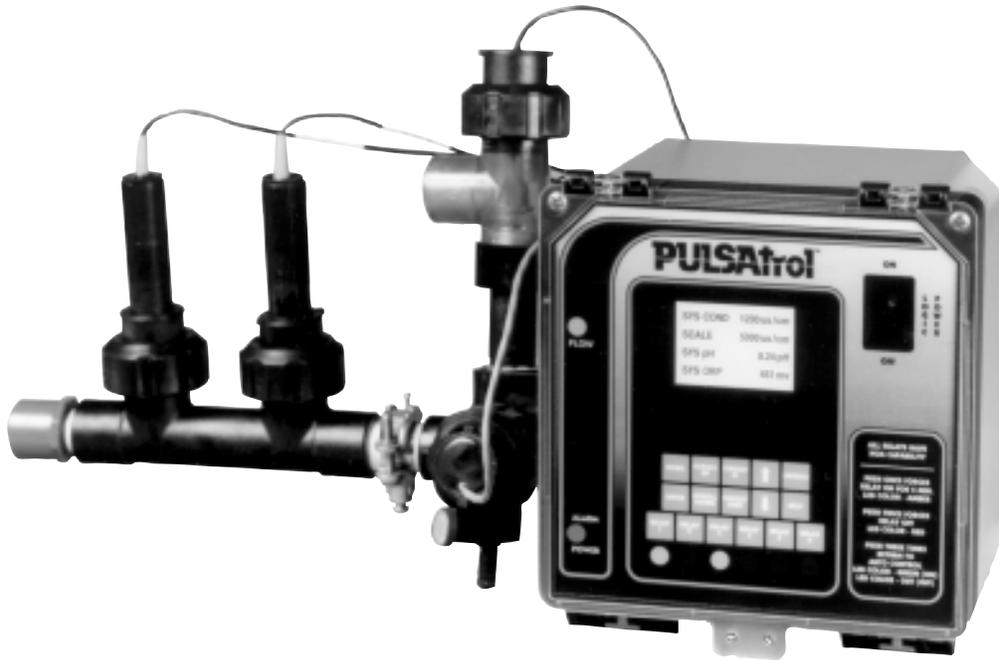
- ***Cooling Towers***
- ***Boilers***
- ***Programmable Timers***

Our PULSAtrolF line of controllers and monitors offer an easy, affordable way to meet your needs for versatile, accurate control of water treatment variables.

Leading edge microprocessor-based design, advanced surface mount component assembly techniques and modular approach to hardware and software provide a wide choice of standard products. Combined with an expanded selection of options, you can custom tailor these instruments to meet your exact requirements.

Unique design flow assembly

The PULSAtrolF flow assembly is modular in design for future expandability. It's constructed of tough, durable glass-filled polypropylene (GFPPPL) and includes threaded fittings and slip adapters for easy installation. The built-in sample port makes sampling more convenient. The double O-ring sealed probes are held in by screw-on GFPPPL nuts that connect quickly without tools.



NOTE: Consult factory for additional selection guide models of controllers and monitors.

PULSAtrolF Specifications

FEATURES/CONTROLLERS	SERIES 100	SERIES 200	SERIES 300
Enclosure	Nema 4X - High Impact Resistant PVC	Nema 4X - High Impact Resistant Polystyrene	Nema 4X - High Impact Resistant Polystyrene
Power Requirements	90 - 250 VAC @ 50/60 Hz, 100 VA	90 - 250 VAC @ 50/60 Hz, 100 VA	90 - 250 VAC @ 50/60 Hz, 100 VA
Control Output	Line Voltage @ 600 VA Per Relay (5 amps @ 120 VAC)	Line Voltage @ 600 VA Per Relay (5 amps @ 120 VAC)	Line Voltage @ 600 VA Per Relay (5 amps @ 120 VAC)
Display	1 X 8 Alpha Numeric, Lighted Display	2 X 16 Alpha Numeric, Back Lit Display	64 X 128 Pixels Dot Matrix, Back Lit Graphics Display
Recessed Front Panel Power Switch	N/A	Standard	Standard
Lockable Viewing Window	N/A	Standard	Standard
Hi/Lo Alarm Indicator	Standard	Standard	Standard
10 Bit A/D resolution	Standard	Standard	Standard
Standard pH Scale	0 - 14 pH	0 - 14 pH	0 - 14 pH
Standard Conductivity Scale	0-500, 0-2,000, 0-5,000, 0-10,000 and 0-20,000 μ S/cm	0-500, 0-2,000, 0-5,000, 0-10,000 and 0-20,000 μ S/cm	0-500, 0-2,000, 0-5,000, 0-10,000 and 0-20,000 μ S/cm
Standard ORP Scale	0-1000 mV	0-1000 mV	0-1000 mV
Front Panel H/O/A Control	Standard	Standard	Standard
Analog Inputs	One	Two	Four
Digital Inputs	Two	Three	Four
Analog Outputs	One	Two	Two
Alarm Dry Contacts	One	One	One
Relay Outputs	Three	Four	Six
Timers	Programmable	Programmable	Programmable
Security Code	N/A	Standard	Standard
Accuracy - At point of measure excluding sensor	+/- 1%	+/- 1%	+/- 1%
Maximum Pressure of Standard Flow Assembly	200 PSI @ 70° F 125 PSI @ 125° F 8.62 Bars @ 52° C	200 PSI @ 70° F 125 PSI @ 125° F 8.62 Bars @ 52° C	200 PSI @ 70° F 125 PSI @ 125° F 8.62 Bars @ 52° C
Differential	Programmable	Programmable	Programmable
Standard Plumbing	Glass Filled Polypropylene (GFPPPL) Slip or Threaded	Glass Filled Polypropylene (GFPPPL) Slip or Threaded	Glass Filled Polypropylene (GFPPPL) Slip or Threaded
Electronic Environment	0 - 125° F -17.8 - 52° C 100% Humidity	0 - 125° F -17.8 - 52° C 100% Humidity	0 - 125° F -17.8 - 52° C 100% Humidity
Controller Weight	6 lbs (2.5 kgs)	8 lbs (3.7 kgs)	8 lbs (3.7 kgs)
Shipping Weight	8 lbs (3.7 kgs)	10 lbs (4.6 kgs)	10 lbs (4.6 kgs)

How To Select The Right Controller Or Monitor For Your Application

1 Choose the type of controller you require for your application:

- × **MCT** model controllers for Cooling Towers
- × **MBC** model Controllers for Boilers
- × **MPT** model for Programmable Timer applications

- × **200-Series** units are medium-capability models and have a wider range of standard features, more available options and a greater number of inputs and outputs.
- × **300-Series** units are the top of the line and offer the widest selection of features, a greater choice of options, and the largest number of inputs and outputs.

3 Choose the options you require:

- × The options available for a given unit depend on the number and type of inputs and outputs available for that unit's configuration.
- × Multiple options can be added up to the total number of inputs available.

2 Choose the level of sophistication you need:

- × **100-Series** units provide a basic design. These are ideal for applications that require only a few standard features and inputs and outputs.

OPTION SELECTION EXAMPLE

(See below and facing page for the charts being used.)

Model Selected: MCT-230. The MCT-200 Series product chart shows that this unit has the following number and type of inputs/outputs available.

AVAILABLE FOR OPTIONS						
analog in	digital in	analog out	dry contact	relay out	serial comm	
0	1	2	1	1	1	

Options can be added in any combination that does not exceed the number of available ports, as this example shows.

EXAMPLES OF INPUTS AND OUTPUTS

Analog Input	Conductivity	pH	ORP	Make Up Water Conductivity	Add On Boiler Control		
Digital Input	Water Meter		Flow Sensor				
Analog Output			4-20 mA Isolated Proportional				
Dry Contact	Alarm Dry Contact						
Relay Output	Pumps	Percent Limit, Pulse Timers	ORP		Second Boiler Control	Biocide Timers	Solenoid Valve

OPTIONS WANTED:	REQUIRES:	CAN BE ADDED?
E 28-Day Single Biocide w/Bleed Lock-Out and Pre-Bleed	1 Relay Outputs	Yes. Because there is one relay output available, but can't be added in combination with any other option requiring Relay Outputs.
G 28-Day Tripple Biocide w/Bleed Lock-Out and Pre-Bleed	3 Relay Outputs	No. Requires more Relay Outputs than are available on this model.

MCT 100 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
110	Conductivity control with Hi/Lo Alarm Indicator	0	1	1	1	1	0
120	pH Control with Hi/Lo Alarm Indicator	0	1	1	1	1	0
130	ORP Control with Hi/Lo Alarm Indicator and Limit Timer	0	1	1	1	1	0

MCT 200 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
210	Conductivity control with Hi/Lo Alarm Indicator	1	2	2	1	3	1
220	pH Control with Hi/Lo Alarm Indicator, Limit Timer & Flow Assembly	1	2	2	1	3	1
230	Conductivity and pH Control with Flow Assembly Conductivity - Hi/Lo Alarm Indicator and Selectable Timer pH - Hi/Lo Alarm Indicator and Limit Timer	0	1	2	1	1	1

MCT - Cooling Tower Series

MCT 300 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
310	Conductivity control w/ Hi/Lo Alarm Indicator, Alarm Relay & Selectable Timer	3	2	2	1	4	1
320	pH Control with Hi/Lo Alarm, Alarm Relay, Limit Timer & Flow Assembly	3	3	2	1	5	1
330	Conductivity & pH Control with Flow Assembly Conductivity - Hi/Lo Alarm Indicator, Alarm Relay and Selectable Timer pH - Hi/Lo Alarm Indicator, Alarm Relay and Limit Timer	2	2	2	1	3	1

MCT - OPTIONS

		SERIES	REQUIRED FOR OPTIONS					
			analog in	digital in	analog out	dry contact	relay out	serial comm
A	Conduit (Required for 220 V)	100/200/300						
B	Mounted flow assembly (not req'd on prefab's)	100/200/300						
B0	No flow assembly	200/300						
B1	High pressure flow assy for cond., 250 psi Max.	100/200/300						
B2	High pressure flow assy for pH, 250 psi Max.	100/200/300						
B3	High pressure flow assy for pH/cond., 250 psi Max.	200/300						
B4	High pressure flow assy for orp, 250 psi Max.	100						
B6	High pressure flow assy for pH/orp, 250 psi Max.	200/300						
B7	High pressure flow assy for pH/orp/cond., 250 psi Max.	200/300						
C	Selectable timer: percent, limit, pulse w/ accumulator	100/200/300		1			1	
D	Alarm output relay (100 Series requires relay out)	100/200						
E	28 day single biocide w/ bleed lockout & pre-bleed	100/200/300					1	
F	28 day dual biocide w/ bleed lockout & pre-bleed	200/300					2	
G	28 day triple biocide w/ bleed lockout & pre-bleed	200/300					3	
H	Make-up water cond. isolated (requires cond. Control)	200/300	1					
I	ORP isolated (requires pH)	200/300	1				1	
K	Alarm dry contact (100 Series requires relay out)	100/200/300				1		
L1	Serial line communication, with Pulsaworks (Windows) software	200/300						1
L2	Serial line communication & modem (120v), with Pulsaworks (Windows) software	200/300						1
L3 ⁽³⁾	Alarm call out	200/300						
L4 ⁽³⁾	No Serial Line Communication Software	200/300						
M3	One 4-20 mA isolated proportional programmable output	100/200/300			1			
P	220 VAC, 50/60Hz power service (option A required)	100						
Q3 ⁽⁴⁾	36 DPAC - 3' tank mount assembly & probe	100/200/300						
Q5 ⁽⁴⁾	60 DPAC - 5' tank mount assembly & probe	100/200/300						
Q9 ⁽⁴⁾	120 DPAC - 10' tank mount assembly & probe	100/200/300						
R	CSA/NRTL approved (not available with 220V)	100/200/300						
R1	CE Mark (Not avail. w/ "T" or "T1") (option A req'd)	100/200/300						
T ^(1,2,5)	pH remote preamplifier w/ power supply (w/ 50 ft. power cord)	100/200/300						
T1 ^(1,2,5)	pH remote preamplifier with battery pack	100/200/300						
W	Private Label	100/200/300						

- Notes:**
- (1) "T" and "T1" requires a coaxial extension cable (coaxial cable, Rg-174 type, 26 AWG (7 x 34) tinned copper conductor).
 - (2) Limited to any combination of two (T & T1).
 - (3) Only available with option "L1" and "L2".
 - (4) Options "Q3", "Q5" and "Q9" require option "B0" when ordering an MCT Series 200 and 300 controller that includes a flow assembly.
 - (5) Not available with "R1" option.

MBC - Boiler Series

MBC 100 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
110	Cond. control w/ selectable sample mode, 1 line display (continuous or timed)	0	1	1	1	2	0

MBC 200 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
210	Cond. control w/ selectable sample mode, 2 line display (continuous or timed)	1	3	2	1	3	1

MBC 300 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
310	Cond. control w/ selectable sample mode, 8 line display (continuous or timed)	3	4	2	1	5	1

MBC - OPTIONS

		SERIES	REQUIRED FOR OPTIONS					
			analog in	digital in	analog out	dry contact	relay out	serial comm
A	Conductivity: In-line type Max. Press. 250 psi, Max. Temp. 400° F, Stainless steel temp. comp.	100/200/300						
C	Selectable timer: percent, limit, pulse w/ accumulator	100/200/300		1			1	
D	Alarm output relay (Series 100 requires relay out)	100/200/300						
E	Additional Boiler Controller	200/300	1				1	
K	Alarm dry contact (100 Series requires relay out)	100/200/300				1		
L1	Serial line communication, with Pulsaworks (Windows) software	200/300						1
L2	Serial line communication & modem (120v), with Pulsaworks (Windows) software	200/300						1
L3	Alarm call out (requires a modem, L2 option)	200/300						
L4 ⁽¹⁾	No Serial Line Communication Software	200/300						
M3	4-20 mA isolated proportional programmable output	100/200/300			1			
R	CSA/NRTL approved (not available with 220V)	100/200/300						
R1	CE Mark Approved	100/200/300						
W	Private Label	100/200/300						

Notes: (1) Only available with option "L1" and "L2".

OPTION SELECTION EXAMPLE (See above for the charts being used.)

Model Selected: MBC-110. The MBC-100 Series product chart shows that this unit has the following number and type of i outputs available.

AVAILABLE FOR OPTIONS						
analog in	digital in	analog out	dry contact	relay out	serial comm	
0	2	1	1	2	0	

OPTIONS WANTED:	REQUIRES:	CAN BE ADDED?
E Additional Boiler Controller	1 Analog Input 1 Relay Output	No. There is no analog input available on this model. If this option is required, MBC-200 or MBC-300 controllers can accommodate it.

Options can be added in any combination that does not exceed the number of available ports, as this example shows.

MPT 100 SERIES

MPT - Programmable Timer Series

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
110	28 day biocide timer with 24 hour bleed lockout	0	1	0	1	1	0
120	28 day dual biocide timer with 24 hour bleed lockout	0	1	0	1	0	0
150	Single selectable: Percent, limit, pulse with accumulator	0	0	0	1	1	0

MPT 200 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
210	28 day biocide timer with 24 hour bleed lockout	0	2	0	1	2	1
220	28 day dual biocide timer with 24 hour bleed lockout	0	2	0	1	1	1
250	Dual selectable: Percent, limit, pulse with accumulator	0	0	0	1	2	1

MPT 300 SERIES

MODEL STANDARD FEATURES		AVAILABLE FOR OPTIONS					
		analog in	digital in	analog out	dry contact	relay out	serial comm
320	28 day dual biocide timer with 24 hour bleed lockout	0	3	0	1	3	1
350	Triple selectable: Percent, limit, pulse with accumulator	0	0	0	1	3	1

MPT OPTIONS

		SERIES	REQUIRED FOR OPTIONS					
			analog in	digital in	analog out	dry contact	relay out	serial comm
A	Conduit (Required for 220 V)	100/200/300						
B	Mounted flow assembly (not req'd on prefab's)	100/200/300						
C	Selectable timer: percent, limit, pulse w/ accumulator	100/200/300		1			1	
D	Alarm output relay (Series 100 requires relay out)	100/200/300						
H	28 day program timer	100/200/300					1	
K	Alarm dry contact (100 Series requires relay out)	100/200/300				1		
L1	Serial line communication, with Pulsaworks (Windows) software	200/300						1
L2	Serial line communication & modem (120v), with Pulsaworks (Windows) software	200/300						1
L3	Alarm call out (requires a modem, L2 option)	200/300						
L4 ⁽¹⁾	No Serial Line Communication Software	200/300						
R	CSA/NRTL approved (not available with 220V)	100/200/300						
R1	CE Mark (option A req'd)	100/200/300						
W	Private Label	100/200/300						

Notes: (1) Only available with option "L1" and "L2".

OPTION SELECTION EXAMPLE (See above for the charts being used.)

Model Selected: MPT-220. The MPT-200 Series product chart shows that this unit has the following number and type of inputs/outputs available.

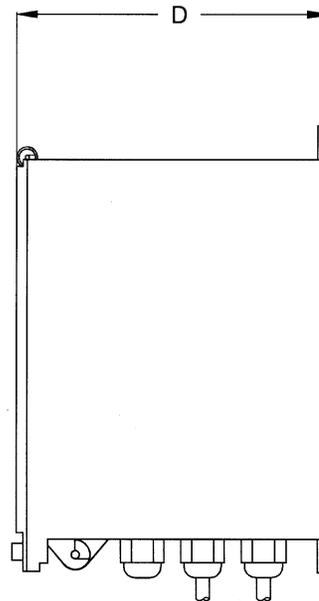
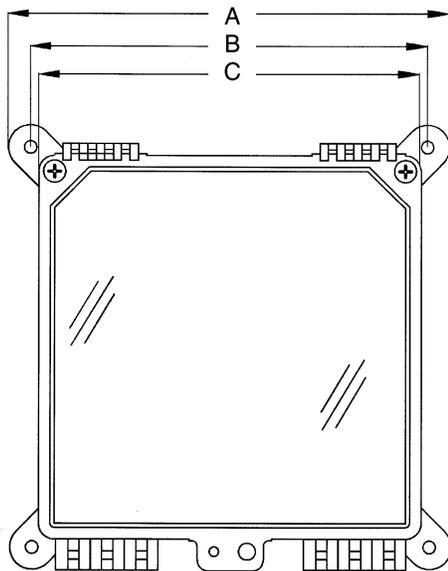
AVAILABLE FOR OPTIONS						
analog in	digital in	analog out	dry contact	relay out	serial comm	
0	2	0	1	1	1	

Options can be added in any combination that does not exceed the number of available ports, as this example shows.

OPTIONS WANTED:	REQUIRES:	CAN BE ADDED?
D Alarm Output Relay	1 Relay Output	Yes. There is only Relay Output available on this model.
C Selectable Timer: Percent, Limit or Pulse with Accumulator	1 Digital Input 1 Relay Output	Yes. But this option uses the one available Relay Output, so any other option that required a Relay Output could not be added.

Dimensions

DIMENSION	SERIES 100	SERIES 200	SERIES 300
A	7.00 in. (sq.) 17.78 cm	10.00 in. (sq.) 25.40 cm	10.00 in. (sq.) 25.40 cm
B	6.00 in. (sq.) 15.24 cm	8.99 in. (sq.) 22.83 cm	8.99 in. (sq.) 22.00 cm
C	5.75 in. (sq.) 14.60 cm	8.66 in. (sq.) 22.00 cm	8.66 in. (sq.) 22.00 cm
D	6.50 in. 16.51 cm	7.08 in. 17.98 cm	7.08 in. 17.98 cm
Controller Weight	6 lbs. 2.5 kgs	8 lbs. 3.7 kgs	8 lbs. 3.7 kgs
Shipping Weight	8 lbs. 3.7 kgs	10 lbs. 4.6 kgs	10 lbs. 4.6 kgs



Patent #5,398,711

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