PULSAFEEDER®
An IDEX Water & Wastewater Business

pulsafeeder.com

Product List

Effective 01/16/12

Process Control Instrumentation

TABLE OF CONTENTS

IMPORTANT INFORMATION

WHEN PLACING AN ORDER

1) Fax, mail or telephone orders directly to the Customer Service Department:

Pulsafeeder Incorporated—A Unit of IDEX Corporation
Standard Product Operations Main Office & Manufacturing Facility
27101 Airport Road, Punta Gorda, Florida, USA 33982-2462 E-Mail: pulsaspo.cs@idexcorp.com
Telephone: 800-333-6677 or 941-575-3800 Fax: 800-456-4085 or 941-575-4085
www.pulsatron.com

2) Please have the following information available when placing an order:

Account Name	Special Tags or Marks (if needed)
Billing Zip Code	Item(s) Being Ordered
Purchase Order Number	Quantity of Each Item
Ship To Address	

3) Orders are immediately entered into the computer upon receipt. Our ability to change in house orders is limited. Please be certain your orders are complete when placed.

4) For assistance or to order a “special” pump model not available in the price schedule, please contact our Technical Support Department.

5) Orders are assigned standard lead times based on the size of the order and the time required to manufacture the particular products. Requests to expedite orders may be routed through our Customer Service Department.

6) Repairs and returns are coordinated through our Customer Service Department. All orders returned must have factory authorization and are subject to a 25% restocking charge for standard product.

7) Other Locations:

PULSAFEEDER (Knight UK Limited)
15 Brunel Centre Newton Road
Crawley, West Sussex, England, RH10 9YU
Tel: +44 80022102210
Fax: +44 80044104410

Latin America (Office Only)
Hegel 153-602, Colonia Polanco,
11560 Mexico, D.F., Mexico
Tel: 52-555-255-1357
Fax: 52-555-255-1356

Far East (Office Only)
Room 3403, South Tower, Hong Kong Plaza
No 283 Huai Hai Zhong Road
Shanghai 200021, China
Tel: 86-2163906367
Fax: 86-2163863338

IDEX India Private Ltd.
202 Matharu Arcade
32, Subhash Road, Vile Parie (East),
Mumbai-400 057, India
Tel: 91-22-66976631
Fax: 91-22-66976633

- Prices are subject to change without notice and are effective when order is accepted and acknowledged at point of shipment.
- When ordering, specify your P.O. number, model number, quantity, price, shipping and/or billing address and order date.
- **Standard terms are NET 30 days from date of invoice for approved accounts on open account.**
- **WE ACCEPT VISA AND MASTERCARD.**
- **ONE PERCENT DISCOUNT AVAILABLE FOR PAYMENT WITHIN 10 DAYS OF INVOICE DATE FOR ACCOUNTS THAT ARE CURRENT.**
- **PAYMENT BY CREDIT CARD WILL NOT RECEIVE AN ADDITIONAL DISCOUNT.**
- All prices are F.O.B. Punta Gorda, FL or factory warehouse location.
- Custom product sales are final.
- Charges for export documentation apply.
- Expediting fees may apply.
- Fees for changes to or cancellation of orders may apply.
- **Minimum factory order of $50.**
- Possession of price schedule does not guarantee right to purchase direct from factory.

DUE TO CONTINUOUS IMPROVEMENT OF OUR PRODUCTS, WE RESERVE THE RIGHT TO UPDATE THE INFORMATION CONTAINED IN THIS CATALOG WITHOUT NOTICE..

PULSAblue™

The PULSAblue Series controllers offer a wide variety of input and output capabilities including conductivity, pH and ORP control, and even ION specific sensors and multiple boiler control. Optional communications packages offer comprehensive system monitoring and data logging at an exceptional value. From simple single parameter systems to multiple parameter control, PULSAblue has you covered.

PULSAblue Series Product Selection Matrix

Primary Market	Conductivity Control		pH	ORP	Conductivity & pH	Conductivity & ORP	Conductivity, pH & ORP	Multiple Conductivity
Cooling Tower	C3205	C3210	C3212	C3213	C3222	C3223		
	C3310		C3312	C3313	C3322	C3323		
	C3410				C3422	C3423	C3435	
Boiler	B3210		B3212					
	B3310							
								B3410

PULSAlink Total Communications Solutions

The PULSAlink comprehensive communications options give you the data you need, when you need it. The PULSAlink communication package has a variety of options to suit your specific needs. Data logging and PULSAlink Alerts give you important information about your system via detailed graphing, e-mail and text messages as well as the ability to connect to your PULSAblue system anywhere in the world over the internet. Relax, you're covered with PULSAblue regardless of your communication and data acquisition requirements.

PULSAlink RS-232 Direct Connection

Connect directly to your PC via a standard DB9 serial port connector up to 50 feet away. The RS-232 option offers fast and easy local collection to system information including graphical data, and you can even make system changes from your computer. We also have an optional USB adapter for easy connection to any computer up to 15 feet away.

PULSAlink Ethernet Based WebNode

Connect your PULSAblue controller to your LAN (Local Area Network) with its own static IP address and access it from your office, or from anywhere in the world on your existing ISP connection. The PULSAblue multilayered firmware ensures network security. E-Mail and text alerts can be sent free of charge over our PULSAblue remote secured e-mail server, or we can configure the PULSAlink WebNode specifically for the SMTP e-mail server of your choice.

PULSAlink Wireless Internet

No local network to plug into? Our totally secure wireless internet access option operates on the Verizon 3G network. Simple Plug and Play installation; just mount the hub within 50 feet of the controller, plug it in and you have instant access. This option does require an annual service fee for the wireless service, but there is no connection to your network, or added cost of running communications cables.

PULSAlink Software

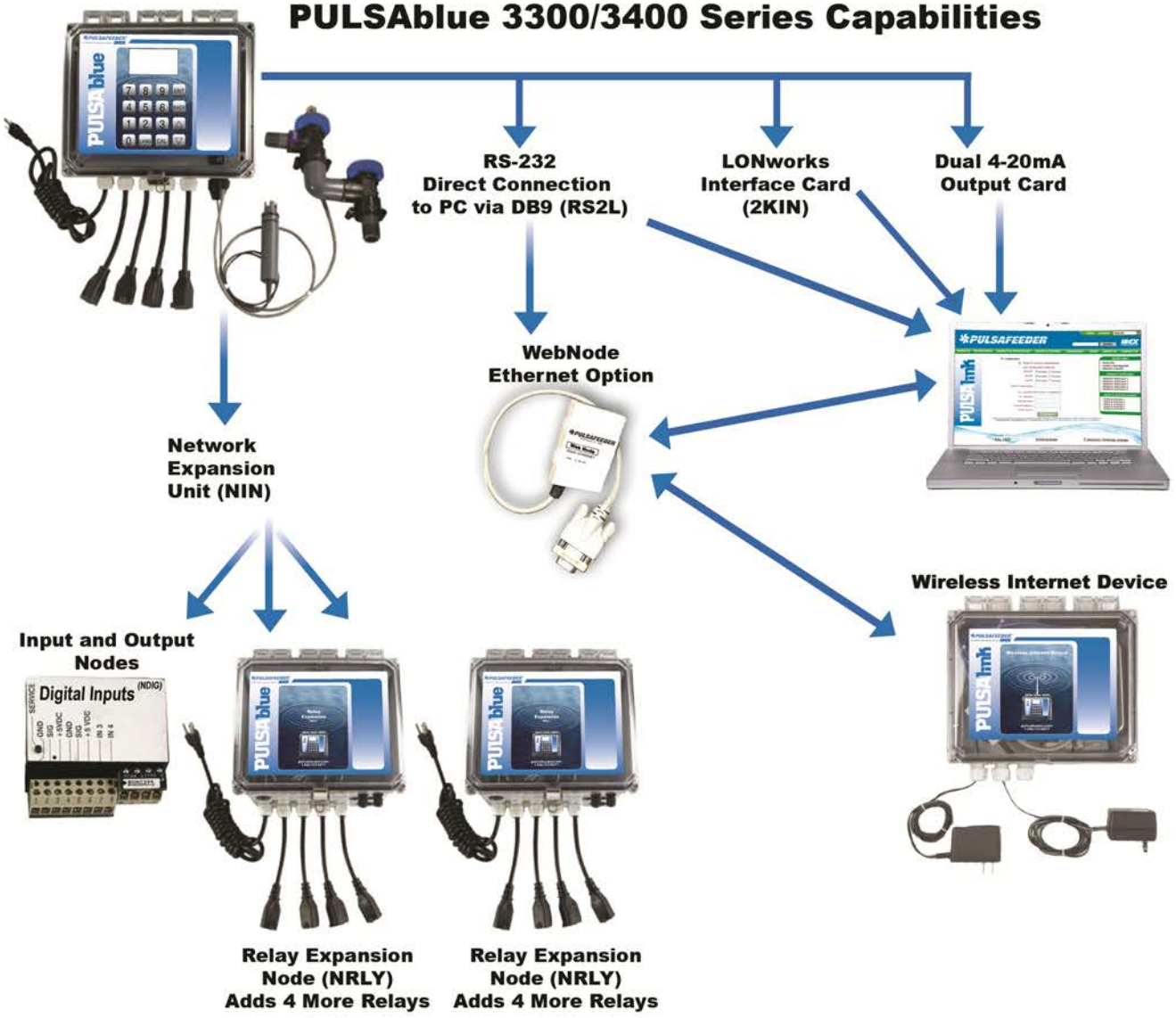
Our proprietary PULSAlink software provides you with a seamless interface to your PULSAblue controller, putting all of the operating parameters and menu selections at your fingertips. Written in our multilayer firmware, PULSAlink protects your network from potential intrusion.

LONworks

If you are looking for a water treatment controller to integrate directly into your Building Management System, we've got you covered. PULSAblue controllers communicate in LONworks protocol, and can even communicate via MODBUS or BACNET with off the shelf LONworks adapters.

PULSAlink; the data you need, when you need it, how you want it, safe, secure and flexible to meet your needs. PULSAblue, relax we have you covered.

PULSAblue 3300/3400 Series Capabilities



PULSAblue 3300 Series can be expanded to add the following input and output nodes:

- **Eight Digital inputs (2 water meters, 6 remote alarm input)**
- **Up to a total of seven sensor inputs, either conductivity, pH or ORP**
- **When adding input and output nodes a power supply, part number 1107251 is required.**

PULSAblue 3400 Series include the Network Expansion option and four additional relays as standard

Optional External Modem in a NEMA4X enclosure for use with the RS-232 option and a dedicated analog phone line.

PULSAblue™ Cooling Tower Controllers

C3200 Series

The PULSAblue C3200 Series controllers offer a wide variety of input and output capabilities including conductivity, pH, ORP and up to five chemical feed timers. From simple single parameter systems to multiple parameter control, PULSAblue has you covered.

ANSI CSA/UL NEMA 4X

Model	Conductivity Control	pH Control	ORP Control	Chemical Pump Timers	Water Meter Input	4-20mA Output	4-20mA Inputs
C3205	√			2	1	1	
C3210	√			3	2	1	1*
C3212		√		3	2	1	1*
C3213			√	3	2	1	1*
C3222	√	√		5	2	2	1*
C3223	√		√	5	2	2	1*

* Remote conductivity/pH/ORP sensor input control only.

PULSAblue 3200 Series Cooling Tower Selection Guide

C32 _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 5	**05**	= Conductivity, with a 20' cable
	10	= Conductivity, with a 20' cable
	12	= pH, with a 15' cable
	13	= ORP, with a 15' cable
	22	= Conductivity and pH, cable 20' Cond, 15' pH
	23	= Conductivity and ORP, cable 20' Cond, 15' ORP
PANEL ASEMBLY Position 6	**X**	= No flow assembly
	F	= Flow assembly, no panel
	A	= Panel mounted flow assembly
SUFFIX CODES Position 7 thru 9	**XXX**	= Standard unit
	CZX	= No Pigtails or Power Cord
	PFB	= Mounted on Prefabricated systems

PULSAblue™ Cooling Tower Control-

C3300 Series

The PULSAblue C3300 Series controllers offer a wide variety of input and output capabilities from conductivity, makeup conductivity, pH and ORP control to Ion specific sensor options. Optional communications packages offer comprehensive system monitoring and data logging at an exceptional value. From simple single parameter systems to multiple parameter control,

Model	Conductivity Control	pH Control	ORP Control	Make-up Conductivity	Chemical Pump Timers	Water Meter Input	4-20mA Output	4-20mA Inputs	Communications
C3310	√			Opt	3 Std	2	2 Opt	4 Opt	Opt
C3312		√	CF		3 Std	2	2 Opt	4 Opt	Opt
C3313		CF	√		3 Std	2	2 Opt	4 Opt	Opt
C3322	√	√	CF	Opt	2 Std	2	2 Opt	4 Opt	Opt
C3323	√	CF	√	Opt	2 Std	2	2 Opt	4 Opt	Opt

OPT *1 - Additional Make-Up Conductivity probe for Cycles of Concentration
CF - Consult Factory for customized configuration not shown in the standard

C US ANSI CSA/UL NEMA 4X

PULSAblue 3300 Series Cooling Tower Selection Guide

C33 _ _ _ _ _ _ _ _ _ _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 5	**10**	= Conductivity, with a 20' cable
	12	= pH, with a 15' cable
	13	= ORP, with a 15' cable
	22	= Conductivity and pH, cable 20' Cond, 15' pH
	23	= Conductivity and ORP, cable 20' Cond, 15' ORP
PANEL ASSEMBLY Position 6	**X**	= No flow assembly
	F	= Flow assembly, no panel
	A	= Panel mounted flow assembly
CONTROLLER NETWORK Position 7	**X**	= No expansion unit
	A	= Expansion unit **(Required for options positions 8, 9 and 11)**
MAKE-UP SENSOR Position 8	**X**	= No make up or closed loop conductivity
	B	= Make up/closed loop conductivity sensor **(Requires controller network option A)**
4-20mA INPUT Position 9	**X**	= No inputs
	4	= Four 4-20mA inputs **(Requires controller network option A)**
4-20mA OUTPUT Position 10	**X**	= No additional outputs
	2	= Two 4-20mA outputs
RELAY OUTPUTS Position 11	**X**	= Four relays standard
	4	= Four additional relays **(Requires controller network option A)**
	5	= Four additional relays **(Required with option A and when positions 8 and 9 are ordered together with this option)**
DIRECT CONNECTIONS Position 12	**X**	= None **(Required for wireless internet option)**
	1	= RS-232 PC to controller with DB9 serial connection **(50' Maximum cable length)**
	2	= External modem **(Includes direct connections option 1 above)**
	3	= Ethernet based web server **(Includes direct connections option 1 above)**
LONworks Position 13	**X**	= No LONworks
	1	= LONworks interface **(Available with options positions 7, 10 or 12 but not all three)**
WIRELESS INTERNET Position 14	**X**	= No Internet interface
	1	= Internet interface **(Requires 12 month service plan P/N 2000059- includes direct connections options 1 and 3 above)**
SUFFIX CODES Position 15 thru 17	**XXX**	= No Option
	CZX	= No Pigtails or Power Cord
	PFB	= Mounted on Prefabricated systems

****LONworks is a registered trademark of Echelon Corporation.**

Part No.	Description
2000059	12 month wireless internet service plan

PULSAblue™ Cooling Tower Controllers

C3400 Series

The PULSAblue C3400 Series controllers offer a wide variety of input and output capabilities from conductivity, makeup conductivity, pH and ORP control to Ion specific sensor options. Optional communications packages offer comprehensive system monitoring and data logging at an exceptional value. From simple single parameter systems to multiple parameter control, PULSAblue has you covered.

NEMA 4X

Model	Conductivity Control	pH Control	ORP Control	Make-up Conductivity	Chemical Pump Timers	Water Meter Input	4-20mA Output	4-20mA Inputs	Communications
C3410	√			Opt	7 Std + 4	2 Std	2 Opt	8 Opt	Opt
C3422	√	√		Opt	6 Std + 4	2 Std	2 Opt	8 Opt	Opt
C3423	√		√	Opt	6 Std + 4	2 Std	2 Opt	8 Opt	Opt
C3435	√	√	√	Opt	5 Std + 4	2 Std	2 Opt	8 Opt	Opt

OPT *1 - Additional Make-Up Conductivity probe for Cycles of Concentration calculation.

PULSAblue 3400 Series Cooling Tower Selection Guide

C34 _ _ _ _ _ _ _ _ _ _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 5	**10**	= Conductivity, with a 20' cable
	22	= Conductivity and pH, cable 20' Cond, 15' pH
	23	= Conductivity and ORP, cable 20' Cond, 15' ORP
	35	= Conductivity pH and ORP, cable 20' Cond, 15' pH & ORP
PANEL ASSEMBLY Position 6	**X**	= No flow assembly
	F	= Flow assembly, no panel
	A	= Panel mounted flow assembly
MAKE-UP SENSOR Position 7	**X**	= No make up or closed loop conductivity
	B	= Make up/closed loop conductivity sensor
4-20mA INPUT Position 8	**X**	= No Inputs
	4	= Four 4-20mA Inputs
	8	= Eight 4-20mA Inputs
4-20mA OUTPUT Position 9	**X**	= No additional outputs
	2	= Two 4-20mA outputs
DIGITAL INPUTS Position 10	**X**	= No digital inputs
	4	= Four digital inputs
	8	= Eight digital inputs
RELAY OUTPUTS Position 11	**X**	= Eight relays standard
	4	= Four additional relays
DIRECT CONNECTIONS Position 12	**X**	= None **(Required for wireless internet option)**
	1	= RS-232-PC to controller with DB9 serial connection **(50' Maximum cable length)**
	2	= External modem **(Includes direct connections option 1 above)**
	3	= Ethernet based web server **(Includes direct connect option 1 above)**
LONworks** Position 13	**X**	= No LONworks
	1	= LONworks interface **(Available with options positions 9 or 12 but not both)**
WIRELESS INTERNET Position 14	**X**	= No Internet interface
	1	= Internet interface **(Requires 12 month service plan P/N 2000059- includes direct connections options 1 and 3 above)**
SUFFIX CODES Position 15 thru 17	**XXX**	= Standard unit
	CZX	= No Pigtails or Power Cord
	PFB	= Mounted on Prefabricated Systems

****LONworks is a registered trademark of Echelon Corporation.**

Part No.	Description
2000059	12 month wireless internet service plan

MicroVision Cooling Tower Controllers

MicroVision Series

The MicroVision controller series features is innovative Toroidal sensor technology. Toroidal sensors are not susceptible to fouling and eliminate the need for routine cleaning and calibration.

The MicroVision is designed specifically for cooling tower applications. The MicroVision is a microprocessor-based conductivity controller with selectable timer and dual biocide control.

The MicroVision controller comes standard with selectable timer, Dry contact/Hall Effect water meter input, dual biocide with pre-bleed, lockout, inhibitor interface, and four programmable start times per biocide, 4-20mA output, dry contact alarm output and 3 drum level inputs.

The base unit comes with the controller, toroidal sensor with signal cable, and a power cord. Optional features such as a sensor mounting tee, pre-wired pigtails on the relays, and a pre-wired flow switch are available to make installation quick and easy. A 15' signal cable is standard, up to 100' optional, on models without a flow switch, and a 3' cable is standard on models with a flow switch.

NEMA 4X

MicroVision Selection Guide

MVS _ _ _ - _ _ _ _ _

PRODUCT DESIGNATOR Position 1, 2 & 3	**MVS**	= MicroVision Toroidal Conductivity Cooling Tower Controller
VOLTAGE Position 4	**1**	= 115 volt
	2	= 230 volt (no prewired power cord or relays available)
POWER WIRING Position 5	**X**	= Conduit connections (required for 230 VAC)
	P	= Prewired power cord and pigtails
PANELS Position 6	**X**	= No Panel and No Flow assembly
	F	= Flow assembly, No Panel
	A	= Standard Panel & Flow Assembly
	B	= Panel & Flow Assy, 1 Pump Mount, strainer, sensor tee, inj tee & rails
	C	= Panel & Flow Assy, 2 Pump Mount, strainer, sensor tee, 2 inj tees & rails
	D	= Panel & Flow Assy, 3 Pump Mount, strainer, sensor tee, 3 inj tees & rails
SUFFIX CODE Position 7, 8 & 9	**XXX**	= Suffix Code
	750	= 3/4" Back Flow Check Valve
	PC025	= 25 Feet (7.6m)
	PC050	= 50 Feet (15.2m)
	PC075	= 75 Feet (22.8m)
	PC100	= 100 Feet (30.4m)

MicroVision Parts

Part No.	Description
16-100-33	Probe Tee

MicroTrac Cooling Tower Controllers

MICROtrac Series

The MICROtrac controller series features is innovative Toroidal sensor technology. Toroidal sensors are not susceptible to fouling and eliminate the need for routine cleaning and calibration.

The MICROtrac measures the conductivity of the cooling tower recirculating water via a toroidal conductivity sensor. The controller activates two independent relay outputs based on bleed and a selectable feed mode of operation.

The MICROtrac controller comes standard with selectable rising or falling setpoint for open or closed loop control, water meter pulse input, percent timer, % post bleed timer and limit timer.

The base unit comes with the controller, toroidal sensor with signal cable, and a power cord. Optional features such as a sensor mounting tee, pre-wired pigtails on the relays, and a pre-wired flow switch are available to make installation quick and easy. A 15' signal cable is standard, up to 100' optional, on models without a flows witch, and a 3' cable is standard on models with a flow switch.

NEMA 4X

MicroTrac Selection Guide

MTC _ _ _ _ - _ _ _ _ _

PRODUCT DESIGNATOR Position 1, 2 & 3	**MTC**	= MICROtrac Toroidal Conductivity Cooling Tower Controller
VOLTAGE Position 4	**1**	= 115 volt
	2	= 230volt (no prewired power cord or relays available)
RELAY & POWER WIRING Position 5	**X**	= Prewired power cord & Liquid-Tight relay connections
	L	= Liquid-Tight connections only (required for 230 volt)
	P	= Prewired power cord and relays
SENSOR TEE Position 6	**X**	= Standard (no tee)
	T	= Sensor Tee with 3/4"" inlet/outlet connections
FLOW SWITCH Position 7	**X**	= Standard (no flow switch)
	F	= Flow Switch with 3' cable
	L	= Standard Flow Assembly (no panel)
	A	= Standard Panel & Flow Assembly
	B	= Deluxe Panel & Flow Assy, 1 Pump Mount, in/out ball valves, strainer, inj tee & rails
SUFFIX CODE Position 7, 8 & 9	**XXX**	= Suffix Code
	750	= 3/4" Back Flow Check Valve
	PC025	= 25 Feet (7.6m)
	PC050	= 50 Feet (15.2m)
	PC075	= 75 Feet (22.8m)
	PC100	= 100 Feet (30.4m)

MicroTrac Parts

Part No.	Description
04-000-21	Toroidal sensor
16-100-01	Flow switch
16-100-33	Sensor Tee

PULSAtrol®

Cooling Tower Controllers

MC9000 Series

The PULSAtrol® 9000 Series cooling tower controllers represent a significant improvement in the PULSAtrol product line. We have simplified the configurations to bring you the most popular features as standard without compromising the flexibility to select the product you need to meet your specific requirement. All controllers come standard with a complete flow assembly mounted to a polypropylene backboard. All the installer needs to do is mount the assembly to the wall and connect the power and water.

MC9200 Series

In addition to the mounted flow assembly, all MC9200 Series include as standard, a pre-wired selectable timer, alarm output relay, dry contact alarm output and water meter totalizer. Options include up to two 28-day biocide timers, single or dual 4-20 mA outputs, communications and agency approvals.

NEMA 4X

MC9200 Series Selection Guide

MC92_ _ _ _ _ _ _ _

MODELS: Position 5 & 6	**10** = Conductivity control **20** = pH control **30** = Conductivity and pH control
RELAY & POWER WIRING Position 7	**X** = Prewire (Standard) (Not available with CE Approval) **A** = Conduit only (required for CE Approval)
TIMER 1 Position 8	**X** = None **A** = Single 28 day biocide timer **B** = Dual 28 day biocide timer (not available on MC9230)
ANALOG I/O Position 9	**X** = None **A** = Single isolated 4-20mA output **B** = Dual 4-20mA outputs
COMMUNICATIONS Position 10	**X** = None **A** = Serial line communications, includes software **B** = Communications with modem and software
AGENCY APPROVAL Position 11	**X** = None **A** = ETL Approval (conduit on inlet power) **B** = "CE" Approval
PANEL ASSEMBLY Position 12	**FOR DETAILS ON OPTIONAL PANEL CONFIGURATIONS, SEE PAGE 15.** **X** = Standard Panel with flow assembly **A** = Conductivity panel, prewire **B** = Conductivity, pH panel, prewire **C** = Conductivity panel, conduit (must select "A" in position 7 of model string) **D** = Conductivity, pH panel, conduit (must select "A" in position 7 of model string)

A completed model number should look like "MC9210XXXXXX"

NOTE: Cables for water meters, 4-20mA I/O and alarms must be ordered separately. See page 29-30.

Series MC9000 Optional Sensors and Flow Assemblies

All controllers can be configured with high pressure flow assemblies and non-standard sensor configurations. Contact your sales representative or Technical Support with your specifications to arrange a quote.

PULSAtrol®

Cooling Tower Controllers

MC9300 Series

In addition to the mounted flow assembly, all MC9300 Series include as standard, four tagable timers two water meter totalizers user configured as dry contact or hall effect, dry contact alarm relay and alarm output relay. Options include two 4-20 mA outputs, conduit connection for power and relays, communications, language and agency approvals.

NEMA 4X

MC9300 Series Selection Guide

MC93_ _ _ _ _ _ _ _ _

MODELS: Position 5	**1** = Conductivity control **2** = Conductivity and ORP control **3** = Conductivity and pH control
ANALOG I/O Position 6	**0** = None **1** = Dual 4-20mA Outputs
RELAY & POWER WIRING Position 7	**X** = Prewire (Standard) (Not available with CE Approval) **A** = Conduit only (required for CE Approval)
pH SETTINGS Position 8	**X** = Not applicable (for non pH systems) **A** = Single set point (uses 1 relay selectable for high pH or low pH) **B** = Dual set point (uses 2 relays, one for high pH and one for low pH
LANGUAGE Position 9	**X** = English (Standard) **A** = Spanish **B** = German **C** = French
COMMUNICATIONS Position 10	**X** = None **A** = Serial line communications, includes software **B** = Communications with modem and software
AGENCY APPROVAL Position 11	**X** = None **A** = ETL Approval (conduit on inlet power) **B** = CE"' Approval
PANEL ASSEMBLY Position 12	**FOR DETAILS ON OPTIONAL PANEL CONFIGURATIONS, SEE PAGE 15.** **X** = Standard Panel with flow assembly **A** = Conductivity panel, prewire **B** = Conductivity, pH panel / or Conductivity, ORP panel, prewire **C** = Conductivity panel, conduit (must select "A" in position 7 of model string) **D** = Conductivity, pH panel / or Conductivity, ORP panel, conduit (must select "A" in position 7 of model string)

A completed model number should look like "MC9310XXXXXX"

NOTE: Cables for water meters, 4-20mA I/O and alarms must be ordered separately. See page 29-30.

Series MC9000 Optional Sensors and Flow Assemblies

All controllers can be configured with high pressure flow assemblies and non-standard sensor configurations. Contact your sales representative or Technical Support with your specifications to arrange a quote.

PULSAtrol®

Cooling Tower Controllers

MC9500 Series

In addition to the mounted flow assembly, all 9500 Series include as standard, four tagable timers, two water meter totalizers user configured as dry contact or hall effect, four drum level inputs, dry contact alarm relay and alarm output relay. Options include up to four 4-20 mA inputs and outputs, conduit connection for power and relays, communications, language and agency approvals.

NEMA 4X

MC9500 Series Selection Guide

MC95_ _ _ _ _ _ _ _ _

MODELS: Position 5	**1** = Conductivity control **2** = Conductivity and ORP **3** = Conductivity and pH control **4** = Conductivity, make-up conductivity and pH control **5** = Conductivity (with make-up), pH and ORP **6** = Dual Conductivity for use on open loop (tower) and closed loop (chiller) **7** = Dual Conductivity for use on dual cooling tower systems
4-20mA INPUTS/OUTPUTS Position 6	**0** = 0 Inputs, 0 Outputs **1** = 0 Inputs, 2 Outputs **2** = 0 Inputs, 4 Outputs **3** = 2 Inputs, 0 Outputs **4** = 2 Inputs, 2 Outputs **5** = 2 Inputs, 4 Outputs **6** = 4 Inputs, 0 Outputs **7** = 4 Inputs, 2 Outputs **8** = 4 Inputs, 4 Outputs
RELAY & POWER WIRING Position 7	**X** = Prewire (Standard) (Not available with CE Approval) **A** = Conduit only (required for CE Approval)
pH SETTINGS Position 8	**X** = Not applicable (for non pH systems) **A** = Single set point (uses 1 relay selectable for high pH or low pH) **B** = Dual set point (uses 2 relays, one for high pH and one for low pH
LANGUAGE Position 9	**X** = English (Standard) **A** = Spanish **B** = German **C** = French
COMMUNICATIONS Position 10	**X** = None **A** = Serial line communications, includes software **B** = Communications with modem and software
AGENCY APPROVAL Position 11	**X** = None **A** = ETL Approval (conduit on inlet power) **B** = CE"" Approval
PANEL ASSEMBLY Position 12	**FOR DETAILS ON OPTIONAL PANEL CONFIGURATIONS, SEE PAGE 15.** **X** = Standard Panel with flow assembly **A** = Conductivity panel, prewire **B** = Conductivity, pH panel / or Conductivity, ORP panel, prewire **C** = Conductivity panel, conduit (must select "A" in position 7 of model string) **D** = Conductivity, pH panel / or Conductivity, ORP panel, conduit (must select "A" in position 7 of model string)

A completed model should look like " MC9510XXXXXX"

NOTE: Cables for water meters, 4-20mA I/O and alarms must be ordered separately. See page 29-30.

Series MC9000 Optional Sensors and Flow Assemblies

All controllers can be configured with high pressure flow assemblies and non-standard sensor configurations. Contact your sales representative or Technical Support with your specifications to arrange a quote.

Series MC9000 Optional Panel Assemblies

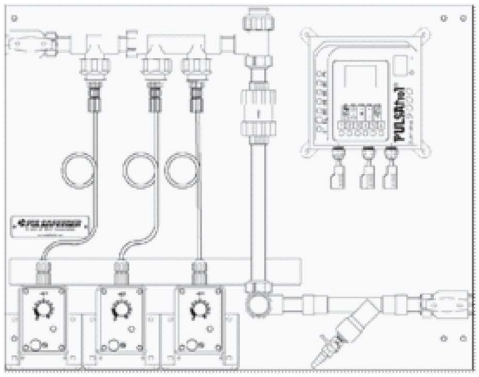
All MC9000 Systems come standard with a flow assembly and sensor tee mounted to a sturdy polypropylene panel. Optional configurations of the panel can be selected to create a complete chemical injection system. These systems are designed to simplify installation and reduce problems caused by a poor installation.

Each panel includes 3/4" plumbing with the following features:

- Quick disconnect sensor mounting tees
- Chemical injection points
- Ball valves on the inlet and outlet
- Back flow check valve
- Flow strainer
- Mounting brackets for chemical metering pumps

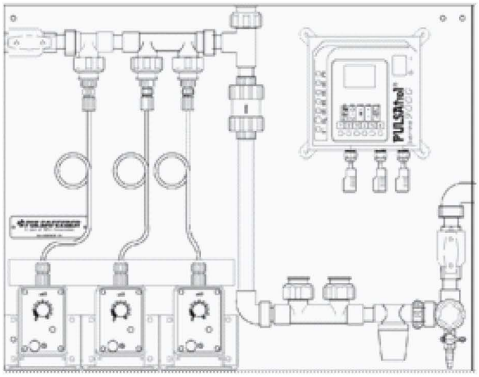
Note: Pumps must be ordered separately. If ordering PULSAtron Pumps in conjunction with a panel, use suffix code PFB in place of the XXX in the last three digits and the pumps will be installed on the panel during assembly. If you already have a suffix code, then order your standard suffix code followed by PF. For example, if your suffix code is G15, then you would order G15PF when ordering in conjunction with a panel.

Select from one of the following configurations and insert the option code into digit #12 when configuring your controller.



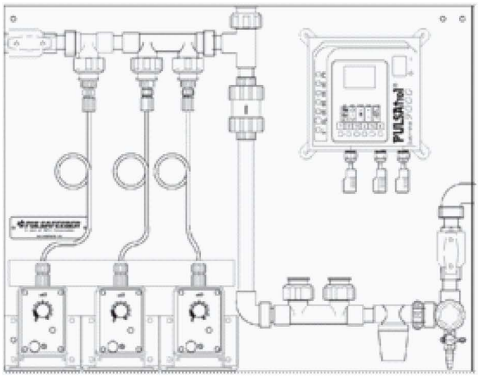
Conductivity Panel - Prewire

Enter Option "**A**" in position 12 of the PULSAtrol 9000 Model String.
Panel features 'quick-disconnect' sensor tee; three injectors for inhibitor and biocides; and mounting brackets for three pumps.



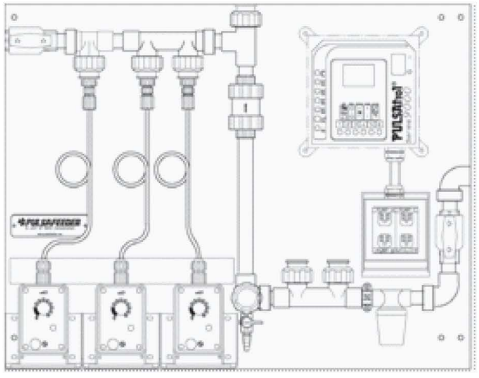
*Conductivity, pH, ORP Panel - Prewire**

Enter Option "**B**" in position 12 of the PULSAtrol 9000 Model String.
Panel features 'quick-disconnect' sensor tees for all parameters; three injectors for inhibitor and biocides; and mounting brackets for three pumps.



Conductivity Panel - Conduit

Enter Option "**C**" in position 12 of the PULSAtrol 9000 Model String. This option also requires option 'A' in position 7 for conduit.
Panel features 'quick-disconnect' sensor tee; three injectors for inhibitor and biocides; and mounting hardware for three pumps. Pump and bleed relays are wired into a watertight outlet box with a splash guard cover.



*Conductivity, pH, ORP Panel - Conduit**

Enter Option "**D**" in position 12 of the PULSAtrol 9000 Model String. This option also requires option 'A' in position 7 for conduit.
Panel features 'quick-disconnect' sensor tees for all parameters; three injectors for inhibitor and biocides; and mounting hardware for three pumps. Pump and bleed relays are wired into a watertight outlet box with a splash guard cover.

***NOTE:** The sensor tee is capped on systems that do not require it.

MC9000 SENSORS

Series MC9000 Replacement Sensors

Item No.	Application	Note:
04-600-92-1	Conductivity	MC9000 Series replacement sensor. Stainless steel electrodes, 12" cable terminated with DIN plug.
04-600-92-2	Conductivity or Make-up	MC9000 Series replacement sensor. Stainless steel electrodes, 120" cable terminated with DIN plug.
04-600-93-1	Conductivity	MC9000 Series replacement sensor. CE approved, Stainless steel electrodes, 12" cable terminated with DIN plug.
04-600-93-2	Conductivity or Make-up	MC9000 Series replacement sensor. CE approved, Stainless steel electrodes, 120" cable terminated with DIN plug.
04-000-00	pH	MC9000 replacement sensor. Epoxy body, dual junction, 42mm extension with 3 ft. cable.
04-000-01	pH	MC9000 replacement sensor. Epoxy body, dual junction, 42mm extension with 10 ft. cable.
04-000-10	ORP	MC9000 replacement sensor. Epoxy body, platinum band, single junction, 42mm extension with 3 ft. cable.
04-000-11	ORP	MC9000 replacement sensor. Epoxy body, platinum band, single junction, 42mm extension with 10 ft. cable.
04-300-92	Flow	Flow switch, 3/4" with 18" cable terminated with DIN plug.
04-300-94	Flow	Flow switch, 3/4" with 120" cable terminated with DIN plug.
04-300-93	Flow	Flow switch, CE approved, 3/4" with 18" cable terminated with DIN plug.
04-300-95	Flow	Flow switch, CE approved, 3/4" with 120" cable terminated with DIN plug.

MC9500 ACCESSORIES

Single Point Level Wands

Part No.	Description
16-171-81-2	Adjustable to 26" with 3 ft. cable
16-171-81-1	Adjustable to 42" with 3 ft. cable
16-171-81-4	Adjustable to 60" with 3 ft. cable

PULSAtrol®

pH/ORP Controllers

MCT Series

The MCT series continuously protects cooling systems from the harmful effects of scaling, corrosion, and microbiological growth. They are designed using advanced microprocessor technology and the latest in surface mount assembly techniques. The result is versatility in a compact, reasonably priced controller package. Simple to program using a clearly labeled keypad and the bright alphanumeric display. And PULSAtrol's distinctive receptacle cords make easy to connect any electrical device being controlled.

MCT Series Selection Guide

MCT1_ _ _ _ _ _ _ _ _ _ _ _

MODELS: Position 5 & 6	**20**	= MCT1 (pH) control with high/low alarm indicator and limit timer [1]
	30	= MCT1 (ORP) control with high/low alarm indicator and limit timer [1]
AVAILABLE OPTIONS Position 7 thru 16 as needed	**A**	= Conduit (Required for 220V, ""Pl""s and ""FW""s)
	B	= Mounted flow assembly (not required on prefab's)
	B2	= High pressure flow assy for pH, 250 psi Max.
	B4	= High pressure flow assy for orp, 250 psi Max.
	C	= Selectable timer: %, limit, pulse, % post blow down
	D	= Alarm output relay (limit one per unit)
	E	= 28 day single biocide w/ bleed lockout & pre-bleed
	K	= Alarm dry contact
	M3	= 4-20 mA isolated proportional programmable output
	R	= ETL Approval
	R1	= CE Mark (option A required)
	W [2]	= Private Label

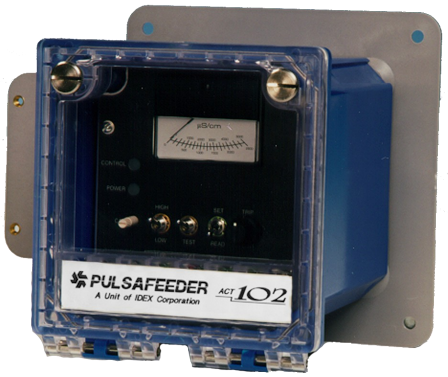
A completed model should look like "MCT120AB""

Notes: (1) Limit Timer - 9 hours 59 min Max

(2) First time private label customers need to contact the factory or sales representative for information.

PULSAtrol®

ACT SERIES



Controllers from ACT series continuously protect cooling systems from the harmful effects of scaling and corrosion. The ACT102 is designed using modular circuit boards. The ACT102 is accurate and easy to use. This simplified design provides automated control at an economical cost. The ACT series provides electrical receptacle cords as standard for blow down valve and metering pump activation.

ACT Series Selection Guide

ACT102 _ _ _ _ _ _

MODEL: Position 1 thru 6	**ACT102**	= Analog Meter Conductivity Controller Selectable Dual Scale 0-2500 and 0-5000 us/cm
AVAILABLE OPTIONS Position 7 thru 12 as needed	**A**	= Conduit
	B	= Flow assembly
	C	= Lockout timer
	P	= 220v, 50/60 Hz service (option "A" required)
	V	= Agency Approval US/Canada
	V1 [1]	= Agency Approval ""CE""
	W [2]	= Private Label

A completed model should look like "ACT102BC"

Notes: (1) Option "A" (conduit) and option "P" (220V) required.

(2) First time private label customers need to contact the factory or sales representative for information.

ACT Replacement Sensor

Part No.	Description
04-600-02	Conductivity; Stainless Steel with 10' cable

Custom Panel Systems

These custom panels can be used to create a complete chemical injection system for use in numerous applications. Systems with a flow assembly feature 3/4” PVC plumbing with a flow switch, sample valve, isolation valves and a strainer. Panel systems will receive the controller discount.

CUSTOM PANEL SYSTEM Selection Guide

P - _ _ - _ _ _ _ - _ _ _ _ - _ _ _ _ _

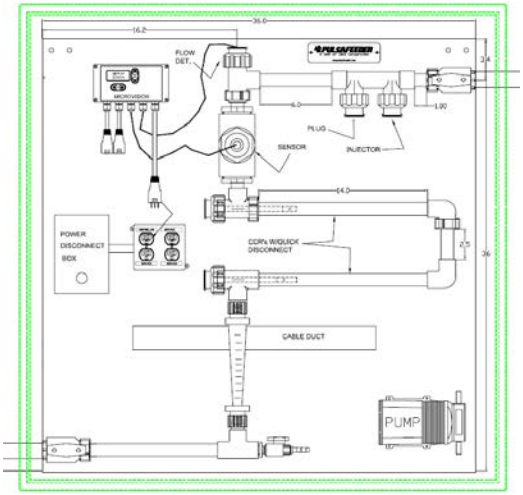
PRODUCT DESIGNATOR	**P**	= Panel Mount System
PUMP TYPE SELECTOR PULSATRON	**0**	= No Pumps
	1	= One Pump
	2	= Two Pumps
	3	= Three Pumps
	4	= Four Pumps
	5	= Five Pumps
	6	= Six Pumps
PUMP TYPE SELECTOR XP SERIES	**0**	= No Pumps
	1	= One Pump
	2	= Two Pumps
	3	= Three Pumps
	4	= Four Pumps
	5	= Five Pumps
	6	= Six Pumps
FLOW ASSEMBLY WITH FLOW SWITCH	**Not available with Chlorine Dioxide Probe**	
	X	= No Flow Assembly
	0	= No Sensor Tee
	1	= One Sensor Tee
	2	= Two Sensor Tees
	3	= Three Sensor Tees
	4	= Four Sensor Tees
	5	= One Torroidal Sensor Tee
INJECTION TEES	**X**	= No Injection Tee
	1	= One Injection Tee
	2	= Two Injection Tees
	3	= Three Injection Tees
	4	= Four Injection Tees
	5	= Five Injection Tees
	6	= Six Injection Tees
PUMP MOUNTING	**X**	= Not Mounted
	1	= Mounted
FLOW METER	**X**	= No Flow Meter
	M	= Flow Meter
COUPON STATION (coupons are not included)	**C0**	= No Corrosion Coupon Station
	C1	= 1 Corrosion Coupon Station
	C2	= 2 Corrosion Coupon Stations
	C3	= 3 Corrosion Coupon Stations
	C4	= 4 Corrosion Coupon Stations
MOUNTING RAILS	**X**	= No Mounting Rails
	R	= Mounting Rails
BACK FLOW CHECK VALVE	**X**	= No Check Valve
	V	= 3/4" Back Flow Check Valve
RECEPTACLE BOX	**X**	= No Receptacle Box
	1	= One Receptacle Box
	2	= Two Receptacle Boxes
JUNCTION BOX (Conduit Only)	**X**	= No Junction Box
	1	= One Junction Box
	2	= Two Junction Boxes
	3	= Three Junction Boxes
	4	= Four Junction Boxes
CONTROLLER SERIES	**X**	= None To be mounted on panel
	P	= PULSAblue
	T	= PULSAtrol
	M	= MicroVision / MircoTrac
WIRELESS INTERNET DEVICE	**X**	= None To be mounted on panel
	1	= Panel Mounted
RELAY NODE	**X**	= None To be mounted on panel
	1	= Panel Mounted

Prefabricated Systems

Cooling Tower and Timer Applications

FI Series: Fully Enclosed Systems

Standard system includes a sample stream plumbing assembly of polypropylene with 3/4" PVC inlet valve, 3/4" PVC outlet valve, sample valve, clear bowl strainer and flow switch. No injection tees are supplied with the standard unit. The system is enclosed in a steel enclosure with a hinged door. Additional plumbing will be installed according to controller ordered.



PREFABRICATED SYSTEMS Selection Guide

FI _

PRODUCT DESIGNATOR	**100**	= Accommodates one controller and one to three chemical metering pumps
	200	= Accommodates one controller and one to four chemical metering pumps
	300	= Accommodates one controller and one to six chemical metering pumps
PUMP TYPE SELECTOR PULSATRON (pumps to be mounted)	**0**	= No Pumps
	1	= One Pump
	2	= Two Pumps
	3	= Three Pumps
	4	= Four Pumps
	5	= Five Pumps
	6	= Six Pumps
PUMP TYPE SELECTOR XP SERIES (pumps to be mounted)	**0**	= No Pumps
	1	= One Pump
	2	= Two Pumps
	3	= Three Pumps
	4	= Four Pumps
	5	= Five Pumps
	6	= Six Pumps
INJECTION TEES (if purchasing this option, you may only make 1 selection)	**0**	= No Injection Tees (available on FI100, FI200 and FI300)
	1	= One Injection Tee (available on FI100, FI200 and FI300)
	2	= Two Injection Tees (available on FI100, FI200 and FI300)
	3	= Three Injection Tees (available on FI100, FI200 and FI300)
	4	= Four Injection Tees (available on FI200 and FI300 only)
	5	= Five Injection Tees (available on FI300 only)
	6	= Six Injection Tees (available on FI300 only)
FLOW ASSEMBLY (optional)	**X**	= No Flow Meter
	M	= Flow Meter, indicates rate of flow (1-10 gpm)
MISCELLANEOUS ACCESSORIES (optional, may choose any combination of 1 or more)	**XX**	= No Options
	02	= Junction box for contractor's electrical hook
	03	= Mounting stand for FI100
	03	= Mounting stand for FI200
	03	= Mounting stand for FI300
	04	= Window kit (controller window)
	05	= Back flow check valve 3/4
PUMP MOUNTING	**X**	= Not Mounted
	M	= Mounted
COUPON STATION (coupons are not included)	**XX**	= No Coupon Stations
	C1	= 1 Corrosion Coupon Station
	C2	= 2 Corrosion Coupon Stations
	C3	= 3 Corrosion Coupon Stations
	C4	= 4 Corrosion Coupon Stations
CONTROLLER SERIES	**P**	= PULSAblue
	T	= PULSAtrol
	M	= MicroVision / MircoTrac

DCS900 Series

The DCS900 was designed specifically to control conductivity and feed inhibitor in cooling tower systems.
With three timer modes and optional water meter input, the DCS900 offers the best value in a stand-alone control system. Sensor and flow switch are connected to the controller via DIN plug type connectors - eliminating the need to remove the front cover for wiring.

Each system comes standard with a flow switch, 4-electrode stainless steel sensor, bleed relay and control relay for controlling a chemical feed pump. The DCS902 includes a water meter totalizer that is user configurable as a dry contact or Hall Effect.

The mounted flow option provides a rugged polypropylene back board onto which the flow / sensor assemblies and controller are mounted.

DCS900 Series Selection Guide

DCS90_ _ _ X

MODELS	**1** = No water meter input, % T, % Post and Limit Timer **2** = Water Meter Input (includes 3 ft. cable), Pulse Timer, % T, % Post and Limit Timer
ELECTRICAL	**X** = 115 VAC 50/60 Hz, ETL Approval **A** = 230 VAC 50/60 Hz, CE Approvals (Conduit Required)
FLOW	**X** = Flow switch and tee with 8.5' cable (Standard) **A** = Mounted Flow Assembly, Pre-wire (see note 1) **B** = Mounted Flow Assembly, Conduit (see note 2)
SENSOR	**X** = Stainless Steel Sensor (Standard) **A** = Carbon Graphite Sensor

1. Controller and flow assembly mounted onto a polypropylene back board. Flow switch and sensor cords cut to an appropriate length.
2. Controller and flow assembly mounted onto a polypropylene back board. Flow switch and sensor cords cut to appropriate length. Power and relay outputs accessable to the electrical contractor through a junction box mounted onto the back board.

Series DCS900 Replacement Sensors

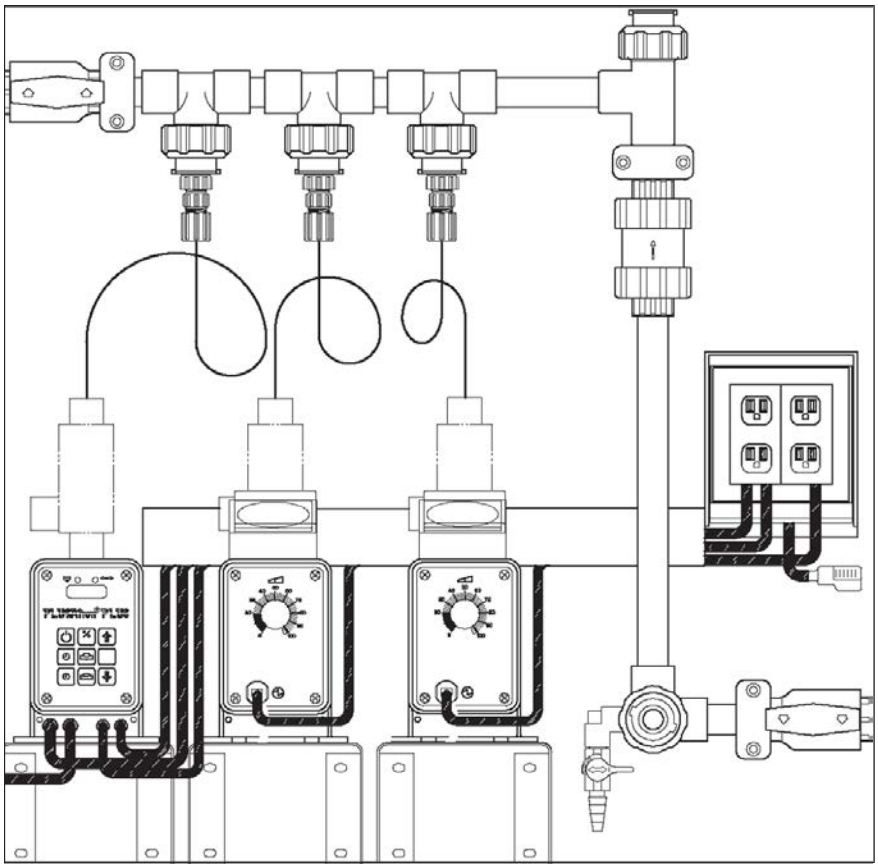
Item No.	Description
04-600-34	DCS900 replacement sensor. Stainless steel, 18" cable terminated with DIN plug.
04-600-38	DCS900 replacement sensor. Carbon Graphite, 18" cable terminated with DIN plug.
04-600-32	DCS900 replacement sensor. Stainless steel, 7 ft. cable terminated with DIN plug.
04-600-36	DCS900 replacement sensor. Carbon Graphite, 7 ft. cable terminated with DIN plug.

CTS Panel

The PULSAtron Plus Cooling Tower Control System allows you to create a low cost Cooling Tower Control System based on the PULSAtron Plus. The PULSAtron Plus is a simple Feed & Bleed Conductivity Controller built into a metering pump. It is available with up to four flow/pressure ratings.

The PULSAtron Series T7 is a timer pump with a built in 7-day timer. Program the timer with up to 8 on/off cycles per day. Each timed event can be set to run any day of the week on a 7-day cycle. The CTS panel comes standard with the following features:

- Series CW Conductivity Control
- Pump
- Series T7 Timer Pump (second
- timer pump optional)
- 3 pump shelf brackets
- Flow Switch
- Backflow Check Valve
- Sensor tee with sample valve
- Watertight electrical outlet box
- with splashguard cover
- Ball valves on inlet and outlet
- Mounting rails



Ordering Information:

To order, build your model number by selecting one item from each of the categories below.

PULSATRON PLUS PANEL SYSTEM Selection Guide

CTS_ _ _ _ XXX

VOLTAGE	**2**	= 115 volt, 50/60 Hz
	R	= 230 volt, 50/60 Hz
PUMP A "PULSATRON +"	**2**	= 6 GPD/.95 LPH @ 150 PSI/10 BAR, Cond. control pump w / w ater meter inputs
	3	= 12 GPD/1.9 LPH @ 150 PSI/10 BAR, Cond. control pump w / w ater meter inputs
	4	= 24 GPD/3.8 LPH @ 100 PSI/7 BAR, Cond. control pump w / w ater meter inputs
	6	= 30 GPD/4.7 LPH @ 100 PSI/7BAR, Cond. control pump w / w ater meter inputs
PUMP B "SERIES T7"	**2**	= 12 GPD/1.9 LPH @ 100 PSI/7 BAR, Timer pump for biocide control
	3	= 24 GPD/3.8 LPH @ 100 PSI/7 BAR, Timer pump for biocide control
	4	= 30 GPD/4.7 LPH @ 100 PSI/7 BAR, Timer pump for biocide control
PUMP C "SERIES T7""	**0**	= None
	2	= 12 GPD/1.9 LPH @ 100 PSI/7 BAR, Timer pump for biocide control
	3	= 24 GPD/3.8 LPH @ 100 PSI/7 BAR, Timer pump for biocide control
	4	= 30 GPD/4.7 LPH @ 100 PSI/7 BAR, Timer pump for bio
SUFFIX CODE	**XXX**	= Standard

PULSAblue™ Boiler Controllers

B3200 Series

The PULSAblue B3200 Series controllers offer a wide variety of input and output capabilities from conductivity, condensate conductivity, pH and up to three chemical feed timers. From simple single parameter systems to multiple parameter control, PULSAblue has you covered.

Model	Conductivity Control	Condensate Control	pH Control	Chemical Pump Timers	Water Meter Input	4-20mA Output
B3210	√	Opt *2		3	2	1
B3212			√	3	2	1

OPT *2 - Can be configured for Standard

C SA US ANSI CSA/UL NEMA 4X

PULSAblue 3200 Series Boiler Controller Selection Guide

B32 _ _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 5	**10**	= Conductivity
	12	= pH (Condensate Return Only, 230 F / 70 PSI)
PANEL Position 6	**X**	= None
	A	= 1/2" Solenoid vlv, one 1" orifice union w/4 plates (Timed Sample) 100 PSI Max
	B	= 1/2" Motorized ball vlv one 1/2" flow throttling vlv (Timed Sample) 250 PSI Max
	C	= 1/2" Motorized ball vlv, one 1" orifice union w/4 plates (Timed Sample) 250 PSI Max
	D	= 3/4" Motorized ball vlv, one 3/4" throtting vlv, one 1/2" throttling vlv (Continous Sample) 250 PSI Max
	E	= 3/4" Motorized ball vlv, two 1" orifice union w/4 plates (Continous Sample) 250 PSI Max
	F	= High Pressure Flow Assembly (250 PSI) for cooling tower appliications
Maximum sensor cable length is 20 Feet (6 Meters)		
PROBE OPTIONS Position 7	**A**	= Standard boiler Sensor 500 to 8,000uS/cm 600 PSI @ 486 F, 3/4" NPT, with a 20' cable
	B	= Condensate 10 to 100uS/cm - Inline configuration, 3/4" NPT, with a 20' cable
	C	= Condensate 1 to 10 uS/cm - Inline configuration, 3/4" NPT, with a 20' cable
	D	= Condensate 10 to 100uS/cm - Retractable configuration, 3/4" NPT, with a 20' cable
	E	= Condensate 1 to 10 uS/cm - Retractable configuration, 3/4" NPT, with a 20' cable
	F	= Standard pH sensor, 3/4" NPT Inline fitting - with a 20' cable
	G	= Retractable pH sensor 1.0" NPT- cable 15 feet
	H	= Contact 2 electrode 600 PSI 486F, 3/4" NPT Amine Resistant, 3/4" NPT, with a 20' cable
	J	= 1" NPT contact 2 electrode, 250 PSI Max (210 PSI for steam) 392ºF Max, with a 20' cable
SUFFIX CODES Position 8 thru 10	**XXX**	= No Option
	CZX	= No Pigtails or Power Cord
	PFB	= Prefab (Required for Panel Assembly options A to F position 6)

PULSAblue™ Boiler Controllers

B3300 Series

The PULSAblue B3300 Series controllers offer a wide variety of input and output capabilities including conductivity, and up to 3 chemical feed timers. Optional communications packages offer comprehensive system monitoring and data logging at an exceptional value. From simple single parameter systems to multiple parameter control, PULSAblue has you covered.

Model	Conductivity Control	Chemical Pump Timers	Water Meter Input	4-20mA Output	4-20mA Inputs	Communications
B3310	√	3 Std + 4 Opt	2	2 Opt	4 Opt	Opt

C SP US ANSI CSA/UL NEMA 4X

PULSAblue 3300 Series Boiler Controller Selection Guide

B33 _ _ _ _ _ _ _ _ _ _ _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 5	**10**	= Conductivity
SYSTEM OPTIONS Position 6	**X**	= None
	A	= 1/2" Solenoid vlv, one 1" orifice union w/4 plates (Timed Sample) 100 PSI Max
	B	= 1/2" Motorized ball vlv, one 1/2" flow throttling vlv (Timed Sample) 250 PSI Max
	C	= 1/2" Motorized ball vlv, one 1" orifice union w/4 plates (Timed Sample) 250 PSI Max
	D	= 3/4" Motorized ball vlv, one 3/4" throtting vlv, one 1/2" throttling vlv (Continous Sample) 250 PSI Max
	E	= 3/4" Motorized ball vlv, two 1" orifice union w/4 plates (Continous Sample) 250 PSI Max
	F	= High Pressure Flow Assembly (250 PSI) for cooling tower appliications
CONTROLLER NETWORK Position 7	**X**	= No expansion unit
	A	= Expansion unit **(Required for options positions 8, 9 and 11)**
4-20mA INPUT Position 8	**X**	= No Inputs
	4	= Four 4-20mA Inputs **(Requires controller network option A)**
4-20mA OUTPUT Position 9	**X**	= No additional outputs
	2	= Two 4-20mA outputs
DIGITAL INPUTS Position 10	**X**	= No digital inputs
	4	= Four digital inputs **(Requires controller network option A)**
		=
RELAY OUTPUTS Position 11	**X**	= Eight relays standard
	4	= Four additional relays **(Requires controller network option A)**
	5	= Four additional relays **(Required with option A and when positions 8 and 10 are ordered together with this option)**
DIRECT CONNECTIONS Position 12	**X**	= None **(Required for wireless internet option)**
	1	= RS-232- PC to controller with DB9 serial connection **(50' Maximum cable length)**
	2	= External modem **(Includes direct connections option 1 above)**
	3	= Ethernet based web server **(Includes direct connect option 1 above)**
LONworks** Position 13	**X**	= No LONworks
	1	= LONworks Interface **(Available with options positions 7, 9 or 12 but not all three)**
WIRELESS INTERNET Position 14	**X**	= No Internet Interface
	1	= Internet Interface **(Requires 12 month service plan P/N 2000059)- includes direct connections options 1 and 3 above)**
Maximum sensor cable length is 20 Feet (6 Meters)		
CONDUCTIVITY SENSORS Position 15	**A**	= 2 electrode 600 PSI 486 F, 3/4" NPT, with a 20' cable
	H	= 2 electrode 600 PSI 486 F, 3/4" NPT Amine Resistant, with a 20' cable
	B	= Four electrode 250 PSI, 392 F 3/4" NPT, with a 20' cable
	J	= 1" NPT contact electrode, 250 PSI Max (210 PSI for steam) 392 F Max, with a 20' cable
SUFFIX CODES Position 16 thru 18	**XXX**	= No Option
	CZX	= No Pigtails or Power Cord
	PFB	= Prefab (Required for Panel Assembly options A to F position 6)

****LONworks is a registered trademark of Echelon Corporation.**

Part No.	Description
2000059	12 month wireless internet service plan

PULSAblue™ Boiler Controllers

B3400 Series

The PULSAblue B3400 Series controllers offer a wide variety of input and output capability and multiple boiler blowdown conductivity control. Optional communications packages offer comprehensive system monitoring and data logging at an exceptional value. From simple single parameter systems to multiple parameter control, PULSAblue has you covered.

NEMA 4X

Model	Conductivity Control	Water Meter Input	Communications	Relay Numbers: Timer or Alarm	Blowdown, Timer or	Optional-Blowdown, Timer or
B3410	1 - 8	2	Opt	1-4	5-8	9-12

PULSAblue 3400 Series Boiler Controller Selection Guide

B34 _ _ _ _ _ _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 5	**10**	= Conductivity
SYSTEM OPTIONS Position 6	**X**	= No flow assembly
	A	= Controller on a PE Panel
RELAY OUTPUTS Position 7	**X**	= Eight relays standard
	4	= Four additional relays
SAMPLE MODE Position 8	**T**	= Timed mode
	C	= Continuous mode
DIRECT CONNECTIONS Position 9	**X**	= None **(Required for wireless internet option)**
	1	= RS-232-PC to controller with DB9 serial connection **(50' Maximum cable length)**
	2	= External modem **(Includes direct connections option 1 above)**
	3	= Ethernet based web server **(Includes direct connect option 1 above)**
WIRELESS INTERNET Position 10	**X**	= No Internet Interface
	1	= Internet Interface **(Requires 12 month service plan P/N 2000059- includes direct connections options 1 and 3 above)**
*** Enter probe quantity; the price shown is for each probe ordered. Example: for 2 Standrd Duty Probes, enter**		
CONDUCTIVITY SENSORS* Position 11 thru 12	**A _**	= 2 electrode 600 PSI 486ºF, 3/4" NPT, with a 20' cable (enter 1 to 8 - Eight sensors system max)
	H _	= 2 electrode 600 PSI 486ºF, 3/4" NPT Amine Resistant, with a 20' cable
	B _	= Four electrode 250 PSI, 392ºF 3/4" NPT, with a 20' cable
	J _	= 1" NPT contact electrode, 250 PSI Max (210 PSI for steam) 392ºF Max, with a 20' cable
SUFFIX CODES Position 13 thru 15	**XXX**	= No Option
	CZX	= No Pigtails or Power Cord
	PFB	= Prefab (Required for Panel Assembly options A position 6)

****Maximum sensor cable length is 20 Feet (6 Meters) to the node, and 1000' (305m) to controller.**

Part No.	Description
2000059	12 month wireless internet service plan

MicroVision Boiler

Boiler Controllers

MicroVision Boiler Series

The **MicroVision Boiler Controller** delivers comprehensive boiler water control with 'plug & play' simplicity, at outstanding value. This latest addition to the MicroVision family of controllers is configured specifically for boiler water control, and utilizes intuitive software which provides simple set-up, while providing state of the art maintenance of the water in your boiler. Features of this device include a reliable temperature compensated conductivity probe, 5 output relays with selectable timers, scalable 4-20mA output to report conductivity, hall-effect and pulse water meter inputs and digital drum levels or a flow switch.

NEMA 4X

MicroVision Boiler Selection Guide

MVBX _ _ _ _ _ _ _ - XXX

PRODUCT DESIGNATOR Position 1 thru 4	**MVBX**	= MicroVision Boiler Controller
REVIEW AND WIRING Position 5	**P**	= Prewired with pigtails (115 VAC only)
	C	= Conduit connections (115V or 230V)
ENCLOSURE OPTIONS Position 6	**H**	= Heavy Duty Enclosure
SYSTEM OPTIONS ASSEMBLED Position 7	**X**	= None
	A	= 1/2" Solenoid valve, one 1" orifice union w/4 plates (Timed Sample) 100 PSI Max.
	B	= 1/2" Motorized ball valve one 1/2" flow throttling valve (Timed Sample) 250 PSI Max.
	C	= 1/2" Motorized ball valve one 1" orifice union w/4 plates (Timed Sample) 250 PSI Max.
	D	= 3/4" Motorized ball vlv, one 3/4" throtting vlv, one 1/2" throttling vlv (Continous Sample) 250 PSI Max.
	E	= 3/4" Motorized ball valve, two 1" orifice union w/4 plates (Continous Sample) 250 PSI Max.
	F	= High Pressure Flow Assembly (250 PSI) for cooling tower appliications
SENSOR OPTIONS Position 8	**X**	= No Sensor Provided
	S	= Contact Electrode, 250 PSI Max (210 PSI for steam) 392° F Max
CABLE LENGTH Position 9 thru 11	**000**	= No Cable Supplied
	010	= 10 Feet of sensor cable
	025	= 25 Feet of sensor cable
	050	= 50 Feet of sensor cable
	075	= 75 Feet of sensor cable
	100	= 100 Feet of sensor cable
	150	= 150 Feet of sensor cable
SUFFIX CODES Position 12 thru 14	**XXX**	= Standard Unit

MicroVision Boiler Parts

Part No.	Description
CCBS-MVB	MicroVision Boiler Sensor - No Cross

MB9000 SENSORS

Series MB9000 Replacement Sensors		
Item No.	**Application**	**Note:**
04-750-18	Conductivity	MB9000 Series replacement sensor. Stainless steel electrodes.
04-048-00	pH	MB9000 Series replacement sensor. Stainless steel body, 10' cable.
04-400-50	pH, Self Cleaning	MB9000 Series replacement sensor. Kynar body, 3' cable.

MB9600 ACCESSORIES

Single Point Level Wands	
Part No.	**Description**
16-171-81-2	Adjustable to 26" with 3 ft. cable
16-171-81-1	Adjustable to 42" with 3 ft. cable
16-171-81-4	Adjustable to 60" with 3 ft. cable

CABLES

Some cables for the PULSAtrol 9000 and DCS 900 are ordered separately to provide you the opportunity to buy only the cables required for your application and cut to your specified length. Some cables, e.g. sensor and communications cables are included.

Cables that come **standard** with the product are as follows:

Sensor cables. All sensor cables are cut to the length required for installation into the provided flow assembly. If you order a dual system, the sensor that comes with the second flow assembly will be cut to 10 ft or 3 meters.

Flow Switch cables. All flow switch cables are cut to length required for installation into the provided flow assembly. If you order a dual system, the sensor that comes with the second flow assembly will be cut to 10 ft or 3 meters.

Communications cables. When you order the communications option, you will receive a 10 foot (3 meter) cable with a DIN connection on one end for plugging into the controller and a standard RJ-45 connection on the other end. If your communications option includes the modem, you will also receive an RJ-45 to RJ-11 adapter for connecting into a standard telephone jack.

Optional cables that must be ordered separately are as follows:

Levels – All four drum level inputs are available from a single DIN on the controller. When you order a cable for levels, one end is terminated with the mating DIN for connecting to the controller. The cable is 8-conductor twisted pair. The other end of the cable is terminated with 4 dual-pin Molex connectors, one set for each of the four drum levels.

Water Meters – All water meters inputs are available from a single DIN on the controller. When you order a cable for water meters, one end is terminated with the mating DIN for connecting to the controller. The cable is 8-conductor twisted pair. The other end of the cable has no terminals. Color-coded stripped leads are available for wiring to your specific water meter.

Analog (4-20mA) Inputs – All 4-20 mA inputs are available from a single DIN on the controller. When you order a cable for 4-20mA inputs, one end is terminated with the mating DIN for connecting to the controller. The cable is 8-conductor twisted pair. The other end of the cable has no terminals. Color-coded stripped leads are available for wiring to your analog output device.

Analog (4-20mA) Outputs – All 4-20 mA outputs are available from a single DIN on the controller. When you order a cable for 4-20mA outputs, one end is terminated with the mating DIN for connecting to the controller. The cable is 8-conductor twisted pair. The other end of the cable has no terminals. Color-coded stripped leads are available for wiring to your analog output device.

Dry-contact Alarm – All dry contact alarm outputs are available from a single DIN on the controller. When you order cable for dry contact alarms, one end is terminated with the mating DIN for connecting to the controller. The cable is 8-conductor twisted pair. The other end of the cable has no terminals. Color-coded stripped leads are available for wiring to your alarm input.

Extension cables for sensors – as stated, all sensors come with standard length cables. If you need to extend the length of cable for your sensor, you can order an extension cable up to the maximum distance allowed for proper operation. The cable will come with a DIN plug on one end and a DIN receptacle on the other.

Extension cables for the flow switch – as stated, all flow switch sensors come with standard length cables. If you need to extend the length of cable for your flow switch, you can order an extension cable up to the maximum distance allowed for proper operation. The cable will come with a DIN plug on one end and a DIN receptacle on the other.

Extension cables for single point drum levels – drum level wands come with 3 ft of cable terminated with a two-pin Molex receptacle that mates to one of the four drum level outputs on the level cable coming from the controller. If you need to extend the length of a single point drum level, you can order an extension cable up to the maximum distance allowed for proper operation. The cable will come with a 2-pin Molex receptacle on one end and a 2-pin Molex plug on the other.

Controller Cables

Use the selection guide below to configure an accessory cable to the length necessary for your application. Please refer to the information at the bottom of the table for maximum lengths.

CONTROLLER CABLE Selection Guide

CBL_ _ _ | _ _ | - | XXX

CABLE TYPE	**121** = Multi-port drum level, 4 drum levels **101** = Water Meters, Analog Input, Analog Output, Dry Contact Alarms **211** = Extension Cable for Flow Switch **111** = Extension Cable for Conductivity Sensor **311** = Extension Cable for Conductivity Sensor **433** = Extension Cable for pH/ORP **222** = Extension Cable for single point drum levels
AGENCY APPROVAL	**X** = No agency approval required **A** = CE Approval (required for use with CE approved options)
CABLE LENGTH	**003** = 3 ft. standard minimum length **XXX** = Desired length in feet up to maximum allowed by application (see below)

Cable Application (1 ft = 0.30 m, 1m = 3.28 ft)	**Maximum**
Level Wands	500 ft / 152.5 m
Flow Switch	500 ft / 152.5 m
Series 9000 Conductivity Sensor	200 ft / 61 m
DCS 900 Conductivity Sensor	35 ft / 10.5 m
Level Wands - multiple wands (4) in one cable	500 ft / 152.5 m
4-20mA Signals	500 ft / 152.5 m
Dry Contact Water Meters	500 ft / 152.5 m
Hall Effect (paddle wheel) water meters	500 ft / 152.5 m
pH/ORP - for distances greater than 30 ft/9.2m, you must use a preamp.	1000 ft / 305 m

The following diagrams indicate the type of terminals on the cable based on the three digit order code.

Order Code

XXX

- Termination 'B'
- Termination 'A'
- Cable Type

1 = 8-conductor twisted par
2 = 2-conductor
3 = 8-conductor shielded cable
4 = 2-conductor shielded

Option 0
Stripped wire

Option 1
DIN Plug

Option 2
Molex 2-pin plug

Option 3
BNC receptacle

Option 0
Stripped wire

Option 1
DIN receptacle

Option 2
Molex 2-pin
receptacle

Option 3
BNC plug

pH Preamp Options (Extension Cable Required)

Part No.	Description
04-046-16	Preamp with power supply only
04-046-18	Preamp with battery pack only
04-046-20	Replacement battery for preamp
45-000-25-1	Preamp with power supply and flow assembly plug
45-000-25-2	Preamp with battery pack and flow assembly plug

PULSAtrol®

Boiler Controllers

MBC100 SERIES

The MBC Series continuously protects boiler systems from the harmful effects of scaling and corrosion. They are designed using advanced microprocessor technology and the latest in surface mount assembly techniques. The result is versatility in a compact, reasonably priced controller package. Simple to program using a clearly labeled keypad and the bright alphanumeric display.

NEMA 4X

MBC Series Selection Guide

			MBC110	_ _ _ _ _ _
MODEL: Position 1 thru 6	**MBC110**	= Conductivity control w oth selectable sample mode (continuous or timed), single line display, S.S. sensor		
AVAILABLE OPTIONS Position 7 thru 12 as needed	**C**	= Selectable timer: %, limit (1), pulse, % post blow down		
	D	= Alarm output relay		
	K	= Alarm dry contact		
	M3	= 4-20 mA isolated proportional programmable output		
	R	= Agency approval - US/Canada (conduit on inlet power)		
	R1	= CE Mark approved		
	W (2)	= Private Label		

A completed model should look like " MBC110CDR1"

Notes: (1) Limit timer - 9 hours 59 min Max

(2) First time private label customers need to contact the factory or sales representative for information.

MBC Replacement Sensor

Part No.	Description
04-750-13-1	Conductivity; In-Line type Max. Press.250psi, Max Temp. 400ºF w/ Temp. Comp.

PULSAtrol®

Boiler Controllers

ABC SERIES

The ABC Boiler Controller Series features the latest analog technology and attractive styling. Additional features include selectable scale, easy installation and a rugged enclosure designed to NEMA4X for reliable and accurate monitoring. This simplified design provides automated control at a economical cost.

NEMA 4X

ABC Series Selection Guide

			ABC102	_ _ _ _ _
MODEL: Position 1 thru 6	**ABC102**	= Analog Meter Conductivity Controller Selectable Dual Scale 0-500, 0-1,000, 0-2,000, 0-5,000, 0-10,000 and 0-20,000 us/cm		
AVAILABLE OPTIONS Position 7 thru 10 as needed	**P5**	= 220v, 50 Hz service		
	P6	= 220v, 60 Hz service		
	V	= Agency Approval US/Canada		
	V1 (1)	= Agency Approval ""CE""		
	W (2)	= Private Label		

A completed model should look like "ABC102"

Notes: (1) Option "P5" (220V) is required.

(2) First time private label customers need to contact the factory or sales representative for information.

ABC Replacement Sensors

Part No.	Description
04-750-14-1	Conductivity (ABC50) only In-Line type Max. Press. 250 psi, Max Temp. 400ºF
04-750-13-1	Conductivity (ABC101/102) only In-Line type Max. Press. 250 psi, Max Temp. 400ºF w/Temp. Comp.

Prefabricated Systems

Cooling Tower and Timer Applications

FI Series: Fully Enclosed Systems

If a standard panel system does not fit your requirements, Pulsafeeder can fabricate a system tailored to your application. Some of the systems we have developed include:

- Boiler Panels that include a boiler controller, metering pumps and water tight conduit boxes mounted to a polypropylene or stainless panel.
- Fully Enclosed system with pumps, controller and all electrical mounted into a Nema 4X enclosure for installations in extreme conditions.
- Floor or Wall mounted drum rack systems.
- High Pressure Flow Assemblies.
- Corrosion Monitoring systems that combine the features of a standard panel system with a coupon rack.

For details on any of these systems contact your sales representative or the Pulsafeeder Technical Support team with your specifications to arrange a quote.

MicroVision Timer

Programmable Timers

MicroVision Timer

The MicroVision -Timer is a microprocessor-based selectable timer controlller. Designed specifically for timer based control applications, MicroVision Timer comes with the features and functions you need for accurate timer based control.

The MicroVision Timer comes standard with the five programmable digital inputs that can be programmed as Drum Level inputs, water meter inputs or a Hall effect input and five programmable timers for 28 day, pulse, percent, cycle and system alarm.

The base unit comes with the controller and a power cord. Optional features such as a pre-wired flow switch are available to make installation quick and easy. A 15' signal cable is standard, up to 100' optional, on models without a flow switch, and a 3' cable is standard on models with a flow switch.

NEMA 4X

MicroVision Timer Selection Guide

MVT _ _ _ _ - _ _ _

PRODUCT DESIGNATOR Position 1, 2 & 3	**MVT**	= MicroVision Timer Controller
VOLTAGE Position 4	**1**	= 115 volt
	2	= 230 volt (no prewired power cord or relays available)
POWER WIRING Position 5	**X**	= Liquid Tite connections only (required for 230VAC)
	P	= Prewired w/Power Cord and Pigtails for 115 VAC
PANELS Position 6	**X**	= No Panel and No Flow assembly
	F	= Flow assembly, No Panel
	A	= Standard Panel & Flow Assembly
	B	= Panel & Flow Assy, 1 Pump Mount, strainer, sensor tee, inj tee & rails
	C	= Panel & Flow Assy, 2 Pump Mount, strainer, sensor tee, 2 inj tees & rails
	D	= Panel & Flow Assy, 3 Pump Mount, strainer, sensor tee, 3 inj tees & rails
SUFFIX CODE Position 7, 8 & 9	**XXX**	= Suffix Code

A completed model should look like "MVT1PB-XXX

PULSAtrol®

ANALOG MINI SERIES

ANALOG TIMER Selection Guide

_ _ _ _ _ _

MODEL	**MP1**	= Water meter actuated. Enclosure: Molded fiberglass, prewired to include power cord, duplex AC receptacle & 8' water meter hook-up (0-9 min. scale std.).
	MPC1	= Percentag/recycle timer in fiberglass prewired enclosure. Adjustable % on-time: fixed 9 min. scale
	MPC2	= Percentage/recycle timer in fiberglass prewired enclosure. Adjustable % on-time and off-time. Standard scales 0-9 min. on-time, 0-9 min. off-time.
AVAILABLE OPTIONS TIME SCALE Position 4 & 5 as needed	**A2**	= 0 - 18 seconds
	A4	= 0 - 18 minutes
	A5	= 0 - 90 seconds
	A6	= 0 - 180 seconds
	A7	= 0 - 90 minutes
PUSH BUTTON SETTING. SINGLE TIMER.	**FA**	= 0 - 9.9 minutes
	FB	= 0 - 99 seconds

DIGITAL GLYCOL FEEDER

DIGITAL GLYCOL FEEDER Selection Guide

DGF_ _ _ _ _ _ _ _

CLOSED LOOPS Position 4	**1** = Single Loop **2** = Dual Loop
CONDUIT / PREWIRE Position 5	**A** = Conduit **B** = Prewire
AUDIBLE ALARM Position 6	**A** = without Audible Alarm **B** = with Audible Alarm
ALARM OUTPUT OPTION Position 7	**X** = None **A** = Dry Contact, Single **B** = Dry Contact, Dual **C** = AC Output, Single **D** = AC Output, Dual **E** = Dry Contact, Single & AC Output, Single
PRESSURE SWITCH OPTION Position 8	**A** = Standard pressure switch, 30 to 50 psi (adjustable to 80 psi) **B** = Low pressure switch, 5 to 10 psi (adjustable to 35 psi) **C** = One standard and one low pressure switch (DGF2 only)
PUMP AND VOLTAGE RATING Position 9	**A** = 115VAC no pump **B** = 230VAC no pump (must be conduit) **C** = 115VAC 60Hz 1.50GPM @ 100psi **E** = 115VAC 60Hz 3.75GPM @ 100 psi
AGENCY APPROVAL Position 10	**X** = None **A** = ETL Approval
PANEL ASSEMBLY Position 11	**B** = Assembled (must ship via freight)

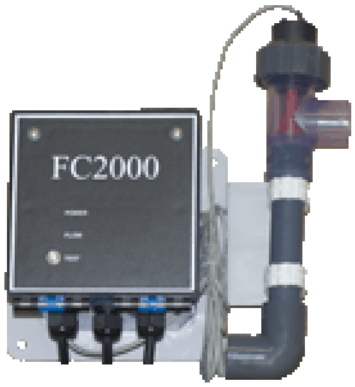
ACCESSORIES

Digital Glycol Feeder for Closed Loop Systems

Part No.	Description
Replacement Pumps	
18-600-35	115V 60Hz 1.50GPM @ 100PSI
18-600-42	115V 60Hz 3.75GPM @ 100PSI
Replacement Wand	
16-171-81-9	Wand, level, adjustable up to 34
Cables	
16-171-81-3	Cable, extension, 10' with connectors
Replacement Fuse	
05-052-18	Fuse, 16A, 250V, 5X20MM
Replacement Relay	
10-006-01	Relay, 5V, 12A, PCB Type
Pressure Switches	
12-140-00	Standard pressure switch 30 - 50psi (adjustable to 80 psi)
12-140-01	Low pressure switch to 5 - 10psi (adjustable to 35 psi)
Pressure Gauge	
12-130-01	Standard pressure gauge 0-100psi, liquid filled
12-130-03	Low pressure gauge 0-30psi, liquid filled

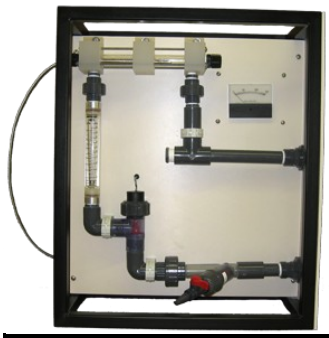
FLOW CONTROLLERS

Flow Controllers	
Model No.	**Description**
FC2000	Flow Controller - Standard flow controller has 3/4 PVC threaded connections with 3/4" PVC slip adaptors to use if needed. 1 GPM minimum flow required for activation
FC2000C	Flow Controller - Standard flow controller w/ 1 PVC slip connectors; 1 GPM min. flow required for activation.
	Available options for FC2000 & FC2000C:
	Receptacle functions (Standard--both on with flow)
1	Both on with no flow
2	One on with flow, other on no flow
3	One on with flow, other service
4	One on with no flow, other service



Replacement Flow Assemblies	
Part No.	**Description**
16-977-79	3/4 (FC2000)
16-977-71	1 (FC2000C)

CORROSION DEPOSIT MONITOR



Corrosion Deposit Monitor	
Model No.	**Description**
DPM14	120 VAC
DPM24	230 VAC wiring

Corrosion Deposit Monitor Replacement Parts	
Part Number	**Description**
03-008-00	Small Neoprene O-rings (2 required)
03-210-06	Compression fittings for end blocks (2 per block)
03-013-00	Large Neoprene O-rings (2 required)
05-047-50	Sight glass (1 required)
05-052-00	15 amp fuse (1 required)
05-051-00	Fuse holder for 05-052-00
05-047-20	Heater cartridge (1 required)
05-047-30	Left exchanger end block (1 required)
05-047-40	Right exchanger end block (1 required)
05-047-35	Center exchanger block (1 required)

Specimen Tubes for Corrosion Deposit Monitor	
Part Number	**Description**
03-223-00	Mild Steel
03-223-10	Copper
03-223-30	304 Stainless Steel
03-223-40	316 Stainless Steel
03-223-50	Nickel
03-223-60	Brass

Corporation Stops	
Part Number	**Description**
J61135	3/4" corporation stop - PVC 120 psi

Surge Protector	
10-014-03	AC Power and Telecom surge/spike protector (115V)

Sample Coolers	
Part Number	**Description**
12-066-00	Sample Cooler

CORROSION COUPON RACKS

Our Corrosion Coupon Racks are hydrostatically tested for maximum system performance exceeding industry standards. These simple and reliable coupon test stations are typically installed on the side stream of re-circulating systems to allow for controlled testing of coupon samples. Samples are periodically removed and examined by a laboratory in order to calculate corrosion rates and other effects such as pitting and deposition.

Corrosion Coupon Racks

Standard system includes: PVC coupon holder, nylon screw and nut, PVC inlet ball valve, 0.75 in. (19mm) piping, and Schedule 80 PVC mounted on 0.25 in. HDPE. System does not include coupons.

Model No.	Description
CCR10	1 station 12 in. H x 22 in. W (305 x 559 mm) Panel Size
CCR20	2 stations 16 in. H x 22 in. W (406 x 559 mm) Panel Size
CCR30	3 stations 20 in. H x 22 in. W (508 x 559 mm) Panel Size
CCR40	4 stations 28 in. H x 22 in. W (71 x 559 mm) Panel Size
CCR50	5 stations 32 in. H x 22 in. W (813 x 559 mm) Panel Size
CCR60	6 stations 36 in. H x 22 in. W (914 x 559 mm) Panel Size

Available optional Piping:

1" PVC piping max 150 psi (10.4 bar), 140^0 F (60^{0}C)	3/4" CPVC piping max 150 psi (10.4 bar), 212^0 F (100^{0}C)	1" CPVC piping max 150 psi (10.4 bar), 212^0 F (100^{0}C)	3/4" black iron piping max 250 psi (17 bar), 212^0 F (100^{0}C)
Model No.	Model No.	Model No.	Model No.
CCR10A	CCR10B	CCR10C	CCR10D
CCR20A	CCR20B	CCR20C	CCR20D
CCR30A	CCR30B	CCR30C	CCR30D
CCR40A	CCR40B	CCR40C	CCR40D
CCR50A	CCR50B	CCR50C	CCR50D
CCR60A	CCR60B	CCR60C	CCR60D

Available options:

Option	Description
X1	Quick release coupon holders (PVC only)
X4	3/4 hot/cold water flow meter
X6	1 cold water flow meter
X7	PVC outlet ball valve, 3/4 blk iron units use 3/4" brass gate valve 300 psi
X8A	Y Strainer for 3/4 PVC
X8B	Y Strainer for 1 PVC or CPVC
X8C	Y Strainer for 3/4 CPVC or black iron
X8D	3/4" Polypropylene bowl strainer 30 mesh, 150 psi max at 70ºF
X8E	1" Polypropylene T strainer 30 mesh, 150 psi max at 70ºF
X9	Clear PVC pipe sections. Only available on .75 in PVC models above.
F3	Flow control valve 3 GPM (3/4" only)
F5	Flow control valve 5 GPM (3/4" only)
1F5	Flow control valve 5 GPM (1" only)
1F10	Flow control valve 10 GPM (1" only)
Z4	Sample/Dain port (PVC) only

NOTE: Options X4 and X6 for max. 150 psi (10.4 bar) @ 130ºF (54ºC).

CORROSION COUPON RACKS

Corrosion Coupon Racks				
Standard system includes: PVC coupon holder, nylon screw and nut, PVC inlet ball valve, 0.75 in. (19mm) piping, and Schedule 80 PVC mounted on 0.50 in. HDPE. System does not include coupons.				
Model No.	**Description**			
CCR1	1 station	12 in. H x 22 in. W (305 x 559 mm) Panel Size		
CCR2	2 stations	16 in. H x 22 in. W (406 x 559 mm) Panel Size		
CCR3	3 stations	20 in. H x 22 in. W (508 x 559 mm) Panel Size		
CCR4	4 stations	28 in. H x 22 in. W (71 x 559 mm) Panel Size		
CCR5	5 stations	32 in. H x 22 in. W (813 x 559 mm) Panel Size		
CCR6	6 stations	36 in. H x 22 in. W (914 x 559 mm) Panel Size		
Available optional Piping:				
1" PVC piping max 150 psi (10.4 bar), 140^0 F (60^{0}C)		**3/4" CPVC piping max 150 psi (10.4 bar), 212^0 F (100^{0}C)**	**1" CPVC piping max 150 psi (10.4 bar), 212^0 F (100^{0}C)**	**3/4" black iron piping max 250 psi (10.4 bar), 212^0 F (100^{0}C)**
Model No.		**Model No.**	**Model No.**	**Model No.**
CCR1A		**CCR1B**	**CCR1C**	**CCR1D**
CCR2A		**CCR2B**	**CCR2C**	**CCR2D**
CCR3A		**CCR3B**	**CCR3C**	**CCR3D**
CCR4A		**CCR4B**	**CCR4C**	**CCR4D**
CCR5A		**CCR5B**	**CCR5C**	**CCR5D**
CCR6A		**CCR6B**	**CCR6C**	**CCR6D**
Available options:				
Option	**Description**			
X1	Quick release coupon holders (PVC only)			
X4	3/4 hot/cold water flow meter			
X6	1 cold water flow meter			
X7	PVC outlet ball valve std, 3/4 blk iron units use 3/4" brass gate valve 250 psi			
X8A	Y Strainer for 3/4 PVC			
X8B	Y Strainer for 1 PVC or CPVC			
X8C	Y Strainer for 3/4 CPVC or black iron			
X8D	3/4" Polypropylene bowl strainer 30 mesh, 150 psi max at 70ºF			
X8E	1" Polypropylene T strainer 30 mesh, 150 psi max at 70ºF			
X9	Clear PVC pipe sections. Only available on .75 in PVC models above.			
F3	Flow control valve 3 GPM (3/4" only)			
F5	Flow control valve 5 GPM (3/4" only)			

NOTE: Options X4 and X6 for max. 150 psi (10.4 bar) @ 130ºF (54ºC).

Coupon Rack Replacement Parts	
Part No.	**Description**
16-756-51-1	Quick Release coupon holder with hardware
16-756-50	PVC and CPVC holder with hardware
16-756-42	Steel on black iron holder with hardware
33-022-16	3/4 hot/cold water flow meter

Coupons for Corrosion Coupon Racks & Corrosion	
Part Number	**Description**
03-220-10	Mild Steel
03-220-00	Copper
03-220-60	303 Stainless Ste
03-220-70	304 Stainless Steel
03-220-20	316 Stainless Steel
03-220-50	Nickel
03-221-30	Brass
03-221-40	Bronze
03-221-50	Aluminum

WATER METERS

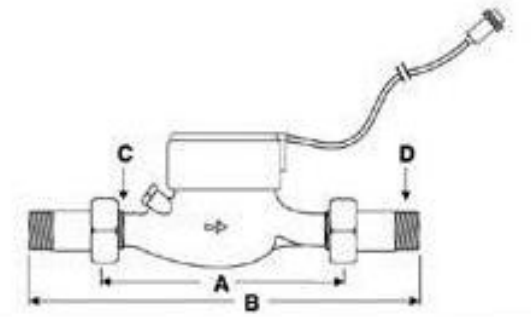
Contacting Water Meters - Cold Water

	Code	Rating	Reference	MTR _	_ _
Select Water Meter Size	2 =	.75" NPT	.22 - 22 GPM		
	3 =	1" NPT	.44 - 52 GPM		
	4 =	1.5" NPT	.88 - 88 GPM		
	5 =	2" NPT	2 - 132 GPM		
	6 =	3" Flanged	440 GPM		
	7 =	4" Flanged	660 GPM		
	8 =	6" Flanged	1650 GPM		

Code	Rating	Gallons Per Contact (GPC)						
		3/4"	1"	1.5"	2"	3"	4"	6"
01 =	0.1 GPC	X						
02 =	0.25 GPC	X	X					
03 =	0.5 GPC	X	X					
04 =	1 GPC	X	X	X	X			
06 =	5 GPC	X	X	X	X			
07 =	10 GPC	X	X	X	X			
09 =	50 GPC	X	X	X	X			
10 =	100 GPC	X	X	X	X	X	X	X
13 =	1,000 GPC					X	X	X

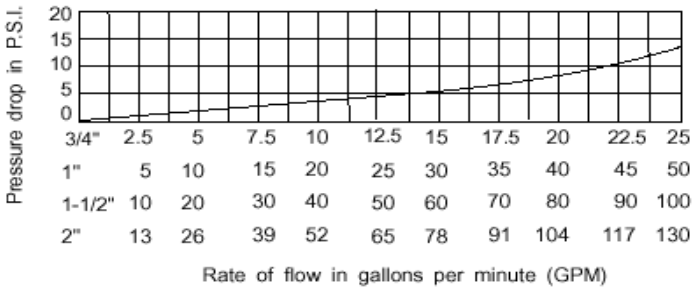
3/4" - 2" Meters have male Epoxy Coated NPT Bronze Bodies with unions, rated for 150 PSI max, 105 F max.
3", 4" & 6" Meters have Epoxy Coated Ductile Iron Flanged Bodies, rated for 200 PSI max, 105 F max.
Pump Part Discount Applies on Water Meters

3/4" - 2" Meters have male NPT Bronze Bodies
150 PSI max, 105 F max.

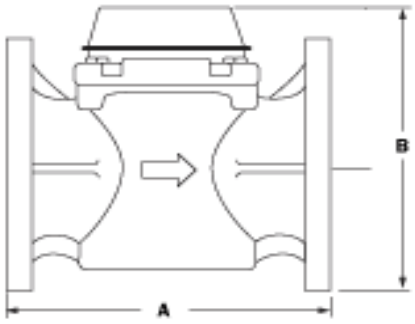


Size	A	B	C (IPS)	D (NPT)
3/4"	7.50	12.62	1	3/4
1"	10.25	15.62	1 1/4	1
1.5"	11.75	17.62	2	1 1/2
2"	11.75	17.62	2 1/2	2

Typical Pressure Drop Curve



3", 4" & 6" Meters have Epoxy Coated Ductile Iron Flanged Bodies
200 PSI max, 105 F max.



Size	A	B	Flanges
3"	8.86	10.87	150# ANSI
4"	9.84	11.26	
6"	11.81	13.60	

SOLENOIDS & MOTORIZED BALL VALVES

Standard Solenoid Valves	
Part Number	**Description**
12-072-62	2 Way N/C 1/4" Stainless Steel Body with tefon Seat. 150 psi MOPD at 160^{O} F. 120/60, 110/50 volt - ASCO vlv
12-072-53	2 Way N/C 1/2" NPT Brass Body. 0 psi min - 150 psi MOPD at 180^{O} F. 120/60, 110/50 volt - ASCO vlv
12-072-54	2 Way N/C 3/4" NPT Brass Body. 0 psi min - 150 psi MOPD at 180^{O} F. 120/60, 110/50 volt - ASCO vlv
12-072-55	2 Way N/C 1" NPT Brass Body. 0 psi min - 150 psi MOPD at 180^{O} F. 120/60 volt - ASCO vlv
12-072-56	2 Way N/C 1" NPT Brass Body. 5 psi min - 150 psi MOPD at 180^{O} F. 120/60, 110/50 volt - ASCO vlv
12-072-57	2 Way N/C 1 1/2" NPT Brass Body. 0 psi min - 150 psi MOPD at 180^{O} F. 120/60 volt - ASCO vlv
12-072-58	2 Way N/C 1 1/2" NPT Brass Body. 5 psi min - 150 psi MOPD at 180^{O} F. 120/60 volt - ASCO vlv
12-072-59	2 Way N/C 2" NPT Brass Body. 5 psi min - 150 psi MOPD at 180^{O} F. 120/60 volt - ASCO vlv
High Temp Solenoid Valves	
12-072-60	2 Way N/C 1/2" NPT Brass Body. 1 psi min - 125 psi MOPD at 353^{O} F. 120/60 volt - ASCO vlv
12-072-61	2 Way N/C 3/4" NPT Brass Body. 2 psi min - 125 psi MOPD at 353^{O} F. 120/60, 110/50 volt - ASCO vlv
12-048-00	2 Way N/C 1/2" Brass Body, PTFE. 0 psi differential, 100 psi @ 356^{O}F. 115 VAC.
12-056-00	2 Way N/C 3/4" Brass Body, PTFE. 0 psi differential, 100 psi @ 356^{O}F. 115 VAC.

Standard Solenoid Valve

High Temp Solenoid Valve

EC Series Motorized Valve

EC Series - Motorized Valves	
Part Number	**Description**
	Motorized Valves for Cooling Tower Applications Low differential pressure applications. Brass bodies. Spring return.
12-045-00	1/2" NPT (25 psi maximum)
12-054-10	3/4" NPT (25 psi maximum)
12-057-00	1" NPT (15 psi maximum)

Dynamatic Series - Motorized Valves	
Part Number	**Description**
	Motorized Valves for Cooling Tower Applications. Brass valve, full port, with electric actuator. 300 psi max. 115 VAC
12-054-14	1/2" NPT
12-054-13	3/4" NPT
12-054-12	1" NPT
12-054-11	2" NPT

Dynamic Series Motorized Valve

MOTORIZED BALL VALVES & VALVE PACKAGES - Boiler Applications

Materials of construction: Solenoid Valves are bronze body with stainless steel pilot and valves; Motorized Ball Valves are carbon steel body with 316 stainless steel ball and stem; Throttling Valves are carbon steel body and valve; and Orifice Unions are carbon steel union with stainless steel plates.

Valve Packages	
Timed Sample Systems	
Part Number	**Description**
16-896-00	**Up to 100 psi** Package includes 1/2" solenoid valve (12-048-00) and 1" orifice union with 4 orifice plates (12-012-00 and 12-013-50).
16-896-04	**Up to 300 psi** Package includes 1/2" motorized ball valve with heavy duty 90 degree actuator (16-892-00) and 1/2" flow throttling valve (12-046-01).
16-896-08	**Up to 450 psi** Package includes 1/2" motorized ball valve with 360 degree actuator (16-892-02) and 1" orifice union with 4 orifice plates (12-012-00 and 12-013-50).
Valve Packages	
Continuous Sample Systems	
16-896-02	**Up to 100 psi** Package includes 3/4" solenoid valve (12-056-00) and two 1" orifice unions with 4 orifice plates each (12-012-00 and 12-013-50).
16-896-06	**Up to 300 psi** Package includes 3/4 motorized ball valve with 90 degree actuator (16-892-01), 3/4 flow throttling valve (12-055-01), and 1/2" flow throttling valve (12-046-01).
16-896-10	**Up to 425 psi** Package includes 3/4" motorized ball valve with 360 degree actuator (16-892-04) and two 1" orifice unions with 4 orifice plates each (12-012-00 and 12-013-50).
Available option:	
-2	**230 VAC service**

NOTE: **Materials of construction: Solenoid Valves are bronze body with stainless steel pilot and valves; Motorized Ball Valves are carbon steel body with 316 stainless steel ball and stem; Throttling Valves are carbon steel body and valve; and Orfice Unions are carbon steel union with stainless steel plates.**

Throttling

Motorized Ball Valves	
Part Number	**Description**
16-892-00	1/2" motorized ball valve (10-75 Worcester Actuator)
16-892-01	3/4" motorized ball valve (10-75 Worcester Actuator)
16-892-02	1/2" motorized ball valve (10-36 Worcester Actuator)
16-892-04	3/4" motorized ball valve (10-36 Worcester Actuator)
16-892-16	1/2" high steam rated motorized ball valve (10-36 Worcester Actuator)
16-892-18	3/4" high steam rated motorized ball valve (12-75 Worcester Actuator)
Available option:	
-2	230 VAC service
Part Number	**Description**
12-040-00	Worcester 10-75 actuator only
12-040-10	Worcester 10-36 actuator only

Motorized Ball Valve

Motorized Ball Valve Parts	
Part Number	**Description**
12-043-00	Worcester 1/2" steam rated ball valve only
12-051-00	Worcester 3/4" steam rated ball valve only
12-041-00	Mounting kit for 12-043-00 & 12-040010
12-041-10	Mounting kit for 12-043-00 & 12-040-10
12-049-00	Mounting kit for 12-051-00 & 12-040-00
12-049-10	Mounting kit for 12-051-00 & 12-040-10
05-006-20	Limit switch for 10-36 actuator

FLOW CONTROL VALVES - Boiler Applications

Flow control valves maintain sufficient back pressure in boiler blowdown lines in order to prevent flashing and to ensure adequate blowdown rates. The orifice union includes four plates, 1/16" , 1/8", ¼" and a 5/16". Flow control valves include an indexed position indictor.

Flow Control Valves	
Part Number	**Description**
12-075-01	3/8" valve (300 psi maximum)
12-046-01	1/2" valve (300 psi maximum)
12-055-01	3/4" valve (300 psi maximum)

Orifice Plates

Orifice Union

Flow Control Valves

Orifice Unions & Orifice Plates	
Part Number	**Description**
12-012-00-1	1" orifice union with set of (4) orifice plates
12-013-50	Set of four orifice plates

BLEED-OFF PIPING ASSEMBLY - Cooling Tower Applications

The pre-plumbed bleed-off assemblies make installation of a cooling tower bleed valve easy. The assemblies include a solenoid valve, Y strainer and a brass shutoff valve.

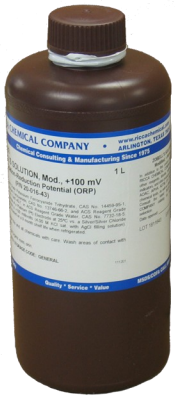
Bleed-off Piping Assembly	
Part Number	**Description**
	Includes SVC solenoid valve, steel Y-strainer, and brass shutoff valve.
16-900-18	3/4"
16-900-12	1"
16-900-13	1 1/2"
16-900-14	2"
16-900-18-1	16-900-18 less solenoid valve
16-900-12-1	16-900-12 less solenoid valve
16-900-13-1	16-900-13 less solenoid valve
16-900-14-1	16-900-14 less solenoid valve

Sample Stream Parts	
Part Number	**Description**
26-034-48-1	Complete sample stream assembly. Includes: flow switch, PVC shutoff valve (input side), bowl strainer, sample valve, PVC shutoff valve (output side)
26-034-48-2	Same as above less flow switch
03-034-00	3/4" Tee TXTXT, PVC
03-174-00	Reducer Bushing, 3/4S x 1/2T, PVC
03-048-11	3/4" Tee TXTXT, CPVC
12-068-00	1" Steel Y-strainer
12-071-00	3/4" Steel Y-strainer
12-069-00	3/4" Clear PVC Y-strainer
12-070-00	Replacement mesh for 12-069-00
12-072-11	1" PVC shutoff valve
12-079-00	1" Brass shutoff valve
12-072-00	3/4" PVC ball valve
16-810-00	2 stage injection manifold
16-810-03	3 stage injection manifold
16-810-04	4 stage injection manifold
16-810-08	5 stage injection manifold
04-300-08	Sample valve assembly

CONDUCTIVITY TESTERS

Hand Held Conductivity Testers	
Model No.	**Description**
HJ6BC	0-100, 0-1000, 0-10,000 µS/cm
HJ7B	0-50, 0-500, 0-5,000 µS/cm

Calibration Solutions	
Part No.	**Description**
Conductivity Solutions (500 ml bottles)	
20-016-24	500 conductivity (6 pack)
20-016-26	2000 conductivity (6 pack)
20-016-28	5000 conductivity (6 pack)
20-016-00	500 conductivity (1 bottle)
20-016-02	2000 conductivity (1 bottle)
20-016-04	5000 conductivity (1 bottle)
pH Kit Solutions	
20-016-36	pH 4 buffer solution - 4 oz
20-016-37	pH 4 buffer solution - 32 oz
20-016-38	pH 7 buffer solution - 4 oz
20-016-39	pH 7 buffer solution - 32 oz
20-016-40	pH 10 buffer solution - 4 oz
20-016-41	pH 10 buffer solution - 32 oz
ORP Kit Solutions	
20-016-42	ORP 100 mV buffer solution - 4 oz
20-016-43	ORP 100 mV buffer solution - 32 oz
20-016-44	ORP 465 mV buffer solution - 4 oz
20-016-45	ORP 465 mV buffer solution - 32 oz
Calibration Kit / Tee	
12-043-58	Calibration Kit / Tee



ACT / ABC PARTS

ACT / ABC Parts (101/102 only)	
Part No.	**Description**
08-986-05	Power supply board assembly, ETL/CE

ACT Parts (101/102 onl)	
Part No.	**Description**
08-986-06	Limit timer board assembly

ACT Motherboard Panel Assemblies, Complete	
Part No.	**Description**
15-920-08	Panel assembly ACT102BC
15-920-08-1	"CE" Panel assembly ACT102ABCPV1
15-920-12	Panel assembly ACT102B
15-920-12-1	"CE" Panel assembly ACT102ABPV1
15-920-20	Panel assembly ACT102
15-920-20-1	"CE" Panel assembly ACT102APV1

ABC Mother Board Panel Assemblies, Complete	
Part No.	**Description**
15-920-28	Panel assembly ABC102
15-920-28-1	"CE" Panel assembly ABC102P5V1

ACT Flow Assemblies, Complete	
Part No.	**Description**
16-596-20	Flow assembly, with flow switch conductivity (no sensor)

ACT Flow Assembly Components	
Part No.	**Description**
03-093-00	Male adaptor, 3/4"
03-096-62-E	Elbow tee, 3/4"
04-300-08	Sample valve assembly
03-096-56-E	Tee, sensor
03-096-52-E	Tee, flow, clear
03-005-05	O-ring, 1 1/2" ID, 1 3/4" OD, 1/16" Thk (tee)
03-005-04-2	O-ring, 15/16" ID, 1 1/8" OD, 3/32" Thk (sensor/ sensor holder)
06-008-00-E	Coupling Nut
03-096-71-E	Pipe Nipple, 3/4" x 3.00 long
04-300-90-1	Flow Switch
04-300-91	"CE" flow switch

PULSAtrol® *PARTS*

Daughter Cards

Part No.	Description	Applicable Series
08-985-05	Conductivity card	100
08-985-50	Isolated pH card	100
08-600-48	Serial line comm. card w/o 2400 baud modem	200/300/9200
08-600-45	Serial line comm. card w/ 2400 baud modem	200/300/9200
08-600-06	Dual conductivity card	All Series except 100
08-600-16	Single conductivity card	All Series except 100
08-600-08	Dual pH/ORP card	All Series except 100
08-600-18	Single pH card	All Series except 100
08-600-23	Dual conductivity card for boilers and hi-pressure	All Series except 100
08-600-21	Single conductivity card for boilers and hi-pressure	All Series except 100
08-600-12	Dual 4-20mA output card	All Series except 100
08-600-13	Single 4-20mA output card	200/300/9200
08-600-10-1	Dual 4-20mA input card	9600/9500
08-600-19	Single ORP card	9300/9500/9600
08-600-48	Serial line comm. card w/o 14.4K baud modem	9300/9500/9601
08-600-59	Serial line comm. card w/ 14.4K baud modem	9300/9500/9602

Mother Boards

Part No.	Description	Applicable Series
08-985-00-E	Mother board, 100 Series	100
12-042-73	Kit, 100 Series mother board w/ battery	100
12-042-74	Kit, 100 Series mother board w/ M1 option	100
12-042-75	Kit, 100 Series mother board w/ M2, M3 option	100
08-600-14-2	Mother board with 2 line display	200/9200
08-600-50	Mother board for 2 line display	200/9200
08-600-15-2	Mother board with 8 line display	300/9300/9500/9600
08-600-52	Mother board for 8 line display	300/9300/9500/9601

Power Supply / Relay Boards

Part No.	Description	Applicable Series
12-042-76	Power supply/relay board w/ K option	100
08-985-60	Power supply/relay board w/o connectors	100
08-600-04-1	Relay board w/o dry contact option	200
08-600-04-2	Relay board w/o dry contact option	200/9200
12-042-78	Relay board w/o dry contact option	300
08-600-03-3	Relay board w/o dry contact option	All Series except 100
08-600-47-2	Relay board w/o dry contact option	All Series except 100
08-600-65-3	Relay board w/o dry contact option	400/9300/9500/9600

Kits, Power Supply / Relay Boards

Part No.	Description	Applicable Series
12-042-71	Kit, Power supply/relay board complete	100
12-042-77	Kit, Relay board complete	200/9200
12-042-72	Kit, power supply board w/ cables to relay board	200/300/9200
12-042-78	Kit, Relay board complete	300
12-042-79	Kit, CE" power supply board complete	All Series except 100
12-042-83	Kit, Relay board complete	9300/9500/9600

Relays

Part No.	Description	Applicable Series
10-001-08-E	Relay, AC/IO, module, plug-in/screw mounting	200/300/9200
10-001-12	Relay, SPDT, 10A, 12VDC coil, mech., plug-in	All Series except 100

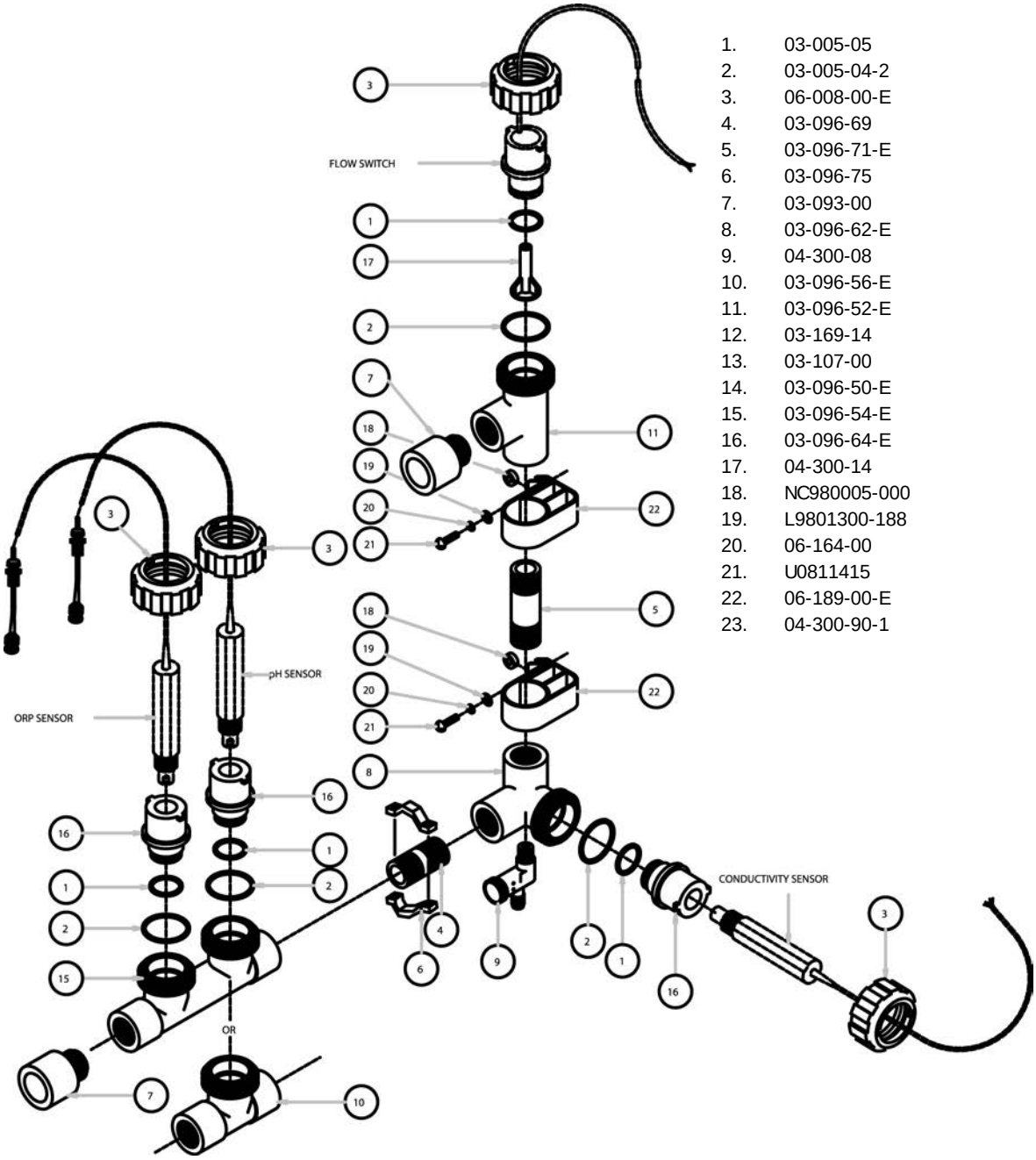
PULSAtrol® *PARTS*

Kits, Fuse / Spare Parts		
Part No.	**Description**	**Applicable Series**
12-042-61	Kit, fuse, 1A, 250V, rectangular (pkg. of 5)	100
12-450-01	Kit, fuses (1A, 125V and 5A, 125V) and jumpers	100
12-450-04	Kit, fuses (5A 250V slo-blo) and jumpers	100
12-042-62	Kit, fuse, 5A, 125V, rectangular (pkg. of 5)	200/300/9200
12-042-62-1	Kit, fuse, 5A, 250V, round (pkg. of 5)	200/300/9200
12-450-00	Kit, fuses (1A, 250V and 5A, 250V) and jumpers	200/300/9200
12-450-02	Kit, fuses, (1/4A, 250V and 5A, 125V) and jumpers	300/9300/9500/9600
12-042-62-2	Kit, fuse, 5A, 250V, slo-blo, round (pkg. of 5)	All Series except 100
12-042-85	Kit, fuse, 1A, 250V, slo-blo, glass (pkg. of 5)	All Series except 100
12-450-03	Kit, fuses (1A & 5A, 250V, slo-blo) and jumpers	All Series except 100
12-450-05	Kit, CE' fuses (1.6A & 5A, 250V slo-blo) and jumpers	All Series except 100
12-450-06	Kit, fuse, 63mA, 250V, slo-blo (pkg. of 4)	9300/9500/9600

Complete Flow Assemblies	
Part No.	**Description**
Standard Flow Assemblies	
16-596-00	Flow assembly, with flow switch (no sensor)
16-596-02	Flow assembly, with flow switch for pH or ORP (no sensor)
16-596-04	Flow assembly, with flow switch for pH/ORP (no sensors)
16-596-08	Flow assembly, with flow switch for pH/ORP/Cond (no sensors)
16-596-12	Flow assembly, with flow switch for pH/Cond or ORP/Cond (no sensors)
16-596-22	Flow assembly, with flow switch for conductivity (no sensor)
Hi-Pressure Flow Assemblies	
16-596-24	Flow assembly, w/o flow switch for conductivity (no sensor) "B1"
16-596-26	Flow assembly, w/o flow switch for pH (no sensor) "B2"
16-596-28	Flow assembly, w/o flow switch for pH/Cond or ORP/Cond (no sensors) "B3"
16-596-30	Flow assembly, w/o flow switch for ORP (no sensor) "B4"
16-596-32	Flow assembly, w/o flow switch for pH/ORP (no sensors) "B6"
16-596-34	Flow assembly, w/o flow switch for pH/ORP/Cond (no sensors) "B7"
"CE" Flow Assemblies (R1)	
16-596-01	Flow assembly, with flow switch (no sensor)
16-596-03	Flow assembly, with flow switch for pH or ORP (no sensors)
16-596-05	Flow assembly, with flow switch for pH/ORP (no sensors)
16-596-09	Flow assembly, with flow switch for pH/ORP/Cond (no sensors)
16-596-13	Flow assembly, with flow switch for pH/Cond or ORP/Cond (no sensors)
16-596-23-1	Flow assembly, with flow switch for conductivity (no sensor)

FLOW ASSEMBLY PARTS

Flow Assembly Diagram



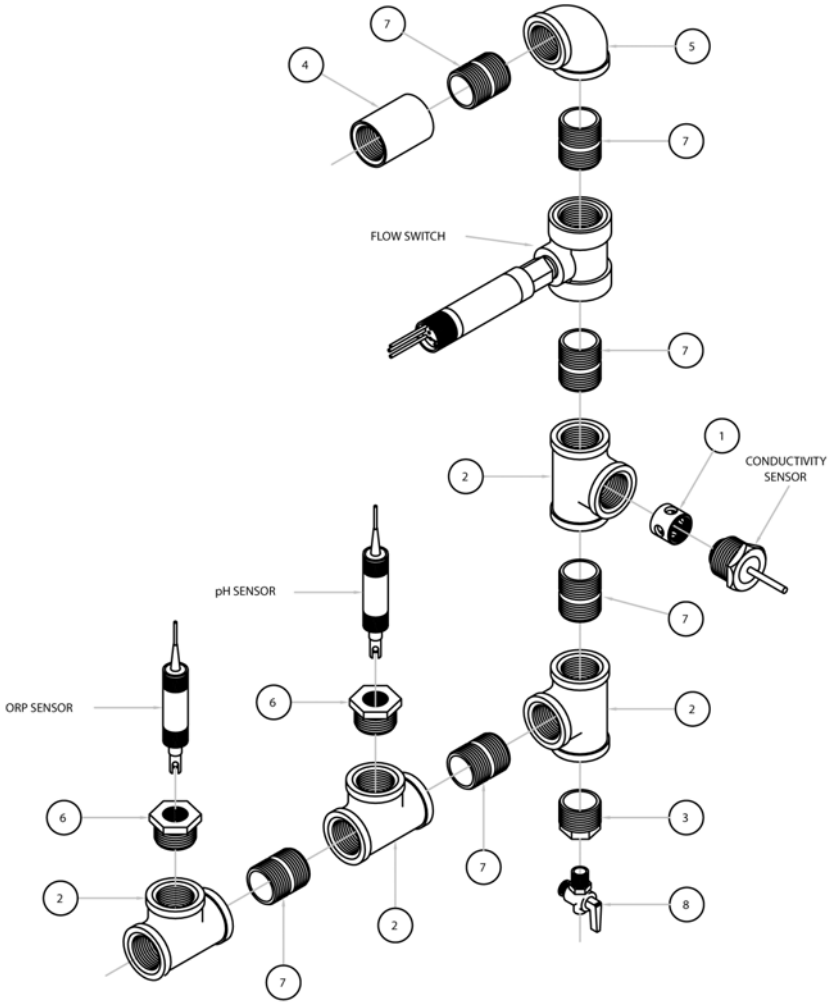
1. 03-005-05
2. 03-005-04-2
3. 06-008-00-E
4. 03-096-69
5. 03-096-71-E
6. 03-096-75
7. 03-093-00
8. 03-096-62-E
9. 04-300-08
10. 03-096-56-E
11. 03-096-52-E
12. 03-169-14
13. 03-107-00
14. 03-096-50-E
15. 03-096-54-E
16. 03-096-64-E
17. 04-300-14
18. NC980005-000
19. L9801300-188
20. 06-164-00
21. U0811415
22. 06-189-00-E
23. 04-300-90-1

Drawing #1

FLOW ASSEMBLY PARTS

Hi-Pressure Flow Assembly Diagram

1. 03-068-00
2. 03-135-13
3. 03-135-14
4. 03-135-15
5. 03-135-16
6. 03-135-17
7. 03-135-18
8. 03-176-00
9. 12-600-90



Drawing #2

Policies and Procedures

1. Manufacturer's Equipment Warranty

a. Pulsafeeder warrants all pumps and controllers of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24 months from date of shipment from the factory. The manufacturer's liability is limited to repair or replacement of any failed equipment or part which is proven defective in material or workmanship upon manufacturer's examination. This warranty does not include removal or installation costs and in no event shall the manufacturer's liability exceed the selling price of such equipment or part.

b. The manufacturer disclaims all liability for damage to its products through improper installation, maintenance, use or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any other unauthorized repair. The manufacturer is not responsible for consequential or other damages, injuries or expense incurred through the use of its products.

c. The above warranty is in lieu of any other warranty, whether expressed or implied. The manufacturer makes no warranty of fitness or merchantability. No agent of ours is authorized to provide any warranty other than the above.

2. Pulsafeeder's Parts and Accessory Warranty

a. Pulsafeeder, Inc. warrants parts and accessories provided to be free of defects in material or workmanship. Unless otherwise noted below, liability under this policy extends for 90 days from date of shipment from the factory when sold as service parts. (Replaceable elastomeric parts are expendable and are not covered by any warranty either expressed or implied.)

b. This policy is extended to a full 12 months from the date of installation or 18 months from shipment from the factory whichever comes first on the following accessories;
Intelliscan
Digital Glycol Feeders
Analog Timers
Water Meters
Flow Controllers

c. MicroTrac and MicroVision toroidal probes are warranted for 24 months from date of shipment from the factory when purchased in conjunction with the controller.
All other electrodes/probes and sensors are considered maintenance items and such are warranted for six (6) months from the date of shipment when purchased in conjunction with the controller.
Any electrodes/probes and sensors purchased as spare parts are warranted for 90 days from date of shipment.

d. The manufacturer's liability is limited to repair or replacement of any failed equipment or part which is proven defective in material or workmanship upon manufacturer's examination. This warranty does not include removal or installation costs and in no event shall the manufacturer's liability exceed the selling price of such equipment or part.

e. The manufacturer disclaims all liability for damages to its products through improper installation, maintenance, use or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any unauthorized repair. The manufacturer is not responsible for consequential or other damages, injuries or expense incurred through the use of its products.

f. The above warranty is in lieu of any other warranty, whether expressed or implied. The manufacturer makes no warranty of fitness or merchantability. No agent of ours is authorized to provide any warranty other than the above.

3. Process for All Returned Goods

a. Please contact our Customer Service Department to request a RMA (Return Material Authorization) number prior to returning any goods. The following information will be required:
Billing and ship-to address
Model number and serial number
Contact name and phone number
Reason for return
Purchase order (where applicable)
A packing slip will be provided to the shipper and MUST accompany the product being returned. Packages received without our proper packing list will be refused by the receiver.

b. All material must be returned freight prepaid.

c. All material must be properly packaged to prevent damage in shipment.

d. All products MUST be wiped and flushed clean of any and all chemicals, solvents or buffers and be warranted to be safe for handling. You will be requested to acknowledge the condition of the product being returned on our packing list. Any product received that is deemed to be unsafe for handling or without this acknowledgement will be refused by our receiver.

e. RMA for returning product for credit is effective for 90 days from the date of issue. After 90 days if the product has not been returned to Pulsafeeder the RMA number will be cancelled, and a new request must be made by the customer to continue with the return procedure.

4. Non-Warranty Return Procedure

a. If you are experiencing a concern with your Pulsafeeder product, first consult the distributor, dealer or Regional Sales Manager or the operation and maintenance manual for assistance. If service of your non-warranty unit is necessary, you must request a return material authorization. A RMA form will be issued and must be used as the packing list attached to the outside of the box. Please send the unit freight prepaid with the RMA number visibly displayed on the outside of the carton. All products MUST be wiped and flushed clean of any and all chemicals, solvents or buffers and be warranted to be safe for handling. You will be requested to acknowledge the condition of the product being returned on our packing list. Any product received that is deemed to be unsafe for handling or without this acknowledgement will be refused by our receiver.

b. The charges listed in the following table will apply.

Product	Repair Cost
Pumps and Pump Accessories – within 5 years of sale date	Current List Price x .50 x Part Discount Multiplier
Controllers and Controller Accessories within 5 years of sale date	Current List Price x .50 x Part Discount Multiplier
Any item older than 5 years from date of sale	With purchase order, $50 bench fee to evaluate. The $50 bench fee may be applied towards repair cost of unit or towards a new controller

c. Extended warranty on repair goods will be offered only when the repairs were made by the factory on non-warranty units.
i. Microprocessor Controls – 1 year from date of shipment
ii. Electronic Controls – 6 months from date of shipment (excluding electronic parts)
iii. Standard metering pumps – 3 months from date of shipment

Policies and Procedures continued

5. Credit for Return of New, Unused Equipment

a. No equipment will be accepted beyond six months after date of shipment from factory for credit.
b. Only new, unused and undamaged standard equipment will be accepted for return to stock.
c. All credits are based on evaluation and acceptance of material as new and unused by Pulsafeeder. You will be requested to acknowledge the condition of the product being returned on our packing list. Any product received that is deemed to be unsafe for handling or without this acknowledgement will be refused by our receiver.
d. A restocking fee of 25% will apply to returned goods. When a PO is provided for a replacement item at the time of the return request the restocking fee will be 15%. Note: any product mounted on a panel or skid will be charged a 50% re-stocking fee.
e. A request for a Returned Material Authorization (RMA) number must be made prior to returning product to Pulsafeeder.
f. All equipment shall be returned with the RMA Packing List form attached to the outside of the box.
g. If any chemical, solvent or buffer has been introduced into the product it must be wiped and flushed clean of any and all substances prior to returning to Pulsafeeder.
h. All material shall be returned freight prepaid.
i. Private label products or Engineered Panel Mount Systems are not returnable.

6. Pricing Errors

a. Pulsafeeder does their very best to avoid errors in billing. You will receive a confirmation of your order within 24 hours of order entry. If upon review the customer feels there is a discrepancy, they should contact Pulsafeeder Customer Service as soon as possible to resolve.
b. Should an invoice be received that the customer believes to have incorrect pricing, they should notify Pulsafeeder Customer Service to investigate.

7. Missing Items

a. If a product is received by the customer with an item missing the customer must notify Pulsafeeder Customer Service within 7 days of receipt of the product by the end user. A replacement item will be sent at no charge as quickly as possible.
b. If a shipment is received by the customer with a line item missing they must notify Pulsafeeder Customer Service within 7 days of receipt of the product by the end user. If the customer had been billed for that item, a credit will be issued against the original Sales Order and a new Sales Order will be created for the replacement product.

8. Damaged Items

a. Should the customer receive an order that was damaged in transit, the customer must notify the carrier directly to initiate a claim on the day of delivery.
b. Should the customer receive a product with damaged components due to improper packaging they should notify Pulsafeeder Customer Service within 7 days of receipt of product by end user. A replacement item will be sent at no charge as quickly as possible.

9. Technical Support Services Available

a. Pulsafeeder's Technical Sales Support team is available *to provide all your sales and support needs. The principle mission of this group is to sell and support our customer base in a timely and effective manner. This includes the ability to provide in-field service training, assistance in start-up of our products and perform field repair of goods when required.*
b. Scope

Pulsafeeder, Inc. factory Field Service Technicians are available throughout the World for field services on all Pulsafeeder products. Services include:

i. Maintenance Training Seminars, including Classroom slide presentations and or Hands-on Training. The seminar will take approximately four to five hours, and if time permits minor repair and or adjustments may be made to the customer's pumps, controllers or accessories.
ii. Pre-start up inspections and start up testing/calibration of pumps, controllers and accessories.

Fee Schedule **Field Repairs and Start-ups**	**Service Rate** [1]
Normal 8 hour day	$98.00/hour
Overtime (in excess of 8 hrs, each day)	$148.00/hour
Sundays, National Holiday	$195.00/hour
Travel time to job site and return	$87.00/hour
Travel expenses (air fare, hotel, car and meals)	Chargeable to customer at cost
Minimum charge	4 hours labor, plus travel time and expenses
End User Training Seminars	
Normal work day	$750.00/day plus expenses (air fare, car rental, hotel and meals at cost)
Sundays, National Holiday	$1495.00/day plus expenses (air fare, car rental, hotel and meals at cost)

iii. Field repairs of pumps controllers and accessories
iv. Diagnosing and recommending solutions to systems problems.

[1] *All rates listed in this section are actual hourly and daily rates, not reference rates*

TERMS & CONDITIONS

1 . AGREEMENT. The contract of sale resulting from Seller's documentation together with these terms and conditions ("Contract") constitutes the entire agreement between the parties hereto, except as modified in writing signed by both the Seller and Purchaser. The Seller is Pulsafeeder, Inc. and the Purchaser is identified in the Contract. Any terms in a purchase order, irrespective of their materiality, which are either different from or additional to Seller's conditions of sale, are objected to and are excluded unless the Seller expressly agrees in writing to such terms. Execution of such forms by Seller to accommodate Purchaser's procurement or accounting procedures or to evidence agreed up on change orders shall not be construed as assent to Purchaser's terms. Acceptance of the goods shipped shall constitute assent to Seller's conditions of sale. This Contract shall be binding up on Purchaser and Seller, and on their successors and assigns.

2 . PROPOSAL OR QUOTATION. A proposal shall not become binding up on Seller until it has been executed and returned by Purchaser. An oral quotation shall not be considered an offer: only a written confirmation thereof incorporating Seller's terms and conditions shall constitute an offer.

3 . CREDIT. Credit terms of payment must have the approval of Seller's Credit Department and must be specified in writing on Seller's invoice or in the Contract. If Purchaser's credit is found by Seller to be unsatisfactory . Seller may rescind or terminate this Contract. If at any time during the term of this Contract Purchaser's financial responsibility becomes impaired or unsatisfactory to Seller, Seller reserves the right to stop shipment on notification to Purchaser, project owner and surety with a demand for payment in advance or at time of delivery for future deliveries or to require other security satisfactory to Seller and in the absence thereof, to cancel the unfilled portion of the Contract. Seller will notify Purchaser promptly of its decision to stop shipments and give an advance notice to the extent this is possible. In the absence of credit terms, sales are for cash.

4 . PAYMENT. Specific terms of payment for this order shall be set forth on the reverse side of this Contract or identified and appended hereto. Purchaser agrees to make payment at Seller's location specified in this Contract in lawful money of the United States. Purchaser further agrees to make all payments when due to Seller in accordance with the agreed terms of payment in this Contract without reference to Purchaser's agreement with or payments by the owner and with no right of retention.

5 . INTEREST AND COSTS. Purchaser agrees to pay interest at 1.5% per month (to the extent permitted by law) on all delinquent balances if and when assessed by Seller, and any attorney's fees or court costs arising out of and made necessary in collection of its obligation to Seller created by this Contract.

6 . TAXES. Any federal, state or local tax assessment, fee, duty or charge hereafter imposed on or measured by the products purchased hereunder shall be for Purchaser's account unless Purchaser furnishes Seller an acceptable exemption certificate from such tax, fee, duty or charge prior to shipment.

7 . FORCE MAJEURE. Seller shall make delivery in accordance with the terms of this Contract or within a reasonable time in the absence of any commitment, but Seller shall not be liable for delays or defaults in delivery caused by floods, fires, storms, or other acts of God, by war or act of public enemy (or civil disturbance), strikes, lock outs, shortages of labor or raw materials and supplies (including fuel) or production facilities, transportation service or equipment shortages or failures, action of any governmental authority or other conditions beyond Seller's reasonable control.

8 . CANCELLATION. If Purchaser desires to cancel or change any portion of this Contract, he must make such request in writing to Seller. Seller may, in its sole discretion, accept or reject any such request. If accepted, the Purchaser nonetheless must take delivery and make payment to Seller for all material manufactured and in process of manufacture at time of notice, and all special materials ordered at time of notice and for which Seller must take delivery , unless otherwise agreed by Seller in writing. All such materials must be removed from Seller's premises within 30 days after payment and payment will due at time of notice. Seller also reserves the right to make a cancellation charge in the event of cancellation by the Purchaser of an order p laced in Seller's shipping schedule and acknowledged by Seller.

9 . INSPECTION AND TESTING . Seller's standard specifications and tests apply to all orders. All charges for inspections or tests not regularly furnished are for Purchaser's account and subject to prior negotiation. All inspections shall be conducted at Seller's plant, and failure of Purchaser to avail himself of inspection privileges shall be deemed a waiver of such privileges.

1 0 . PRICES. Prices are subject to change without notice. Orders based on published prices and accepted for scheduled shipment will be invoiced at Seller's applicable price in effect on the scheduled date of shipment, unless otherwise specifically noted on the order acknowledgment. All prices will be in accordance with applicable government regulations. Orders specifying palletizing or special packaging will involve special charges.

1 1 . DELAYS. All orders are accepted subject to Seller's ability to make delivery at the time and in the quantities specified, and Seller shall not be liable for damages for failure to make partial or complete shipment or for any delay in making shipments. Purchaser shall be liable for any added expenses incurred by Seller because of Purchaser's delay in furnishing requested information to Seller, delay resulting from order changes by Purchaser, or delay in unloading shipments at delivery point.

1 2 . SHIPMENT. Seller will select method of shipment and routing when transportation charges are for account of Seller. When shipping instructions are specified by the Purchaser, all costs will be for the account of the Purchaser. The foregoing includes, but is not limited to, carriers charges for notification prior to delivery, demurrage, delay in unloading, diversion, or reconsignment.

1 3 . TITLE. Title to products transfers up on delivery to Purchaser at the F.O.B. point of delivery which will be clearly set forth in the shipment terms of this Contract. On receipt of title, Purchaser is then responsible for proper protection of product, placement, compliance with all regulations and ordinances, and will indemnify Seller against all claims for personal injuries or property damage arising from the storage, use or handling of such products.

1 4 . IN TRANSIT CLAIMS. Claims for damage or shortage in transit must be made against the carrier by the owner of the shipment according to the F.O.B. terms of the Contract. Purchaser has the responsibility to inspect shipments before or during unloading to identify any such damage or shortage and see that appropriate notation is made on the delivery tickets or an inspection report furnished by the local agent of the carrier in order to support a claim.

1 5 . CLAIMS. Notice of Claims against Seller hereunder for any reason, must be made to Seller in writing promptly after discovery and within any applicable warranty period. Failure to give such notice to Seller shall constitute a waiver by Purchaser of any right later to assert such a claim.

1 6 . RETURNS. Returned goods shall be accepted for credit only if in salable condition and only with evidence of Seller's prior written consent. Seller will assess charges for freight both ways and any costs necessary to restore such goods to the regular plant inventory . The amount of credit given will depend further up on the degree of salability of products accepted in opinion of Seller.

1 7 . PATENTS. Seller agrees to defend, and to protect Purchaser against loss or damage arising out of any legal action for patent infringement in connection with the manufacture of its products sold to Purchaser, provided Seller is notified promptly of any such action with complete information and is given an opportunity to defend.

1 8 . WARRANTY : LIMITATION OF LIAB ILITY . Seller warrants title to each individual product sold under this Contract and further warrants for a period of twenty-four (24) months from ship date, but only to the extent and limit of the purchase price paid for such individual product, that such product conforms to the specifications set forth in the Contract and is free from defects in material and workmanship under normal service and use for which it was designed. Seller's sole obligation and Purchaser's exclusive remedy under this warranty shall be limited to one of the following, as selected by Seller: delivering to Purchaser a replacement for any product or part thereof determined by Seller to be defective, repairing such product or part, or refunding the purchase price (or an equitable portion thereof) paid for such product or part by Purchaser. SELLER MAKES NO WARRANTY OF FITNESS OR MERCHANTABILITY, AND NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED SHALL EXIST IN CONNECTION WITH SELLER'S PRODUCTS OR ANY SALE OR USE THERE OF. Purchaser must notify Seller promptly and within the warranty period of any claim under this warranty. Seller's warranty extends only to the first purchaser of a product from Seller or Seller's authorized distributor. All goods not manufactured by Seller are warranted only to the extent of the warranties of the original manufacturer. Seller disclaims any liability arising from tort, including strict liability , and Seller further disclaims any liability (whether arising under this or any other provision of this Contract or otherwise) for any costs (including costs of removal or replacement), liabilities, lost profits, loss of good will or any other general, special, incidental or consequential damages incurred by Purchaser in connection with this Contract or any product purchased there under.

1 9 . LAW . This order shall be governed by and shall be construed by the law of the State of New York .

2 0 . GOVERNMENTAL REGULATIONS. Seller warrants that no code, law, regulation or ordinance of the United States, a state or any other governmental authority or agency or any applicable Executive Order has been violated in the manufacture or sale of the items covered by this Agreement and warrants that the equipment, supplies, and/or articles covered thereby conform with all such requirements.

TERMS & CONDITIONS continued

2 1 . NUCLEAR FINANCIAL PROTECTION. Purchaser agrees to procure and maintain, as available to it, nuclear energy liability insurance, in a form of policy approved by the Nuclear Regulatory Commission, and protection, as available, against liability for nuclear incidents not covered by such insurance through an indemnity agreement, as provided in Section 170 of the Atomic Energy Act of 1954, as amended, or any succeeding comparable statutory provision, and the regulations there under. Such financial protection shall be effective prior to the time any equipment purchased from us is used or installed at or in connection with any nuclear facility and shall cover us an insured party . To the extent that such financial protection is not suitable to Purchaser. Purchaser agrees to use its best efforts to cause such financial protection to be obtained by eligible parties. We will cooperate with Purchaser and representatives of the nuclear energy insurance syndicates in complying with all underwriting requirements and with those insurance recommendations which may be mutually agreed up on. Notwithstanding any representations or warranties made by us elsewhere in these conditions of sale, we shall not be responsible for any bodily injury or property damage liability or any other public liability for any nuclear incidents, whether or not in respect of or arising in connection with use or installation of our equipment at any nuclear facility or in connection with any such facility . Purchaser hereby assumes any liability which might otherwise be imposed up on us and agrees to indemnify us and hold harmless from any such liability and costs or expenses in connection therewith.

PULSAFEEDER
27101 Airport Rd
Punta Gorda, FL 33982
Phone: ++1(941) 575-3800
Fax: ++1 (941) 575-4085