Technical Data Sheet

BECSys7

BECSys7 equipment-room controls provide continuous monitoring and control of sanitizers, oxidizers, pH, conductivity, turbidity, polymer feed, enzyme feed, system flow rates, system pressures and vacuum, chemical inventory levels, and surge tank (Autofill) and backwash holding tank levels. The BECSys7 can optionally provide automatic filter backwash for up to 16 filters.

Patented VFD control technology and Total Dynamic Head monitoring assures optimal and efficient circulation pump operation, while simultaneously assuring optimal water quality. Indoor facilities will benefit from the BECSys7's ability to monitor combined chlorine levels and control UV intensity levels. Total Alkalinity Control helps manage water balance and reduces chemical usage.

The BECSys7 also includes a digital interface to SpinTouch test kit devices. Test kit readings are automatically recorded and logged with the BECSys7, and uploaded to the BECSys server in the Cloud. Test Kit Logs are available to users via the BECSys *Live!* online web portal.

Standard connectivity features include the BECSys *Live!* online web portal, BECSys Now! App for iPhone/IPad and Android smartphones/tablets, Email and Text Message Alarm Notifications and BECSys for Windows PC software. The EZConnect™ system is also included, offering simple and secure remote access as an alternative to traditional IT-intensive remote access techniques, and EZMail™ provides email notification delivery without the need for local email server configuration. Optional MODBUS TCP/IP, BACnet, Metasys N2 and LonWorks BMS interfaces are also available.

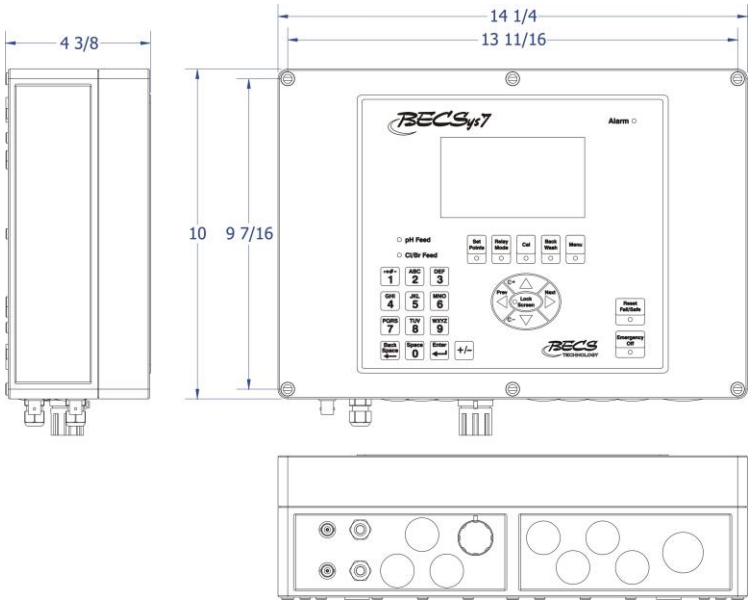
Advanced safety features and multi-level security are standard, and every BECSys7 comes complete with pH, ORP, temperature sensors, flow switch, machined flow cell, and factory-trained start-up and support provided by local distribution in most regions.

Regulatory Approvals/Certifications

- NSF: NSF Certified and Listed to NSF/ANSI Standard 50
- USA: ETL Listed ANSI/UL 61010-1
- Canada: ETL Listed CAN/CSA C22.2 #61010-1
- Europe/CE: CENELEC EN 61010-1
  - European Community Low Voltage Directive 73/23/EEC
- Electromagnetic compatibility
  - FCC part 15 sub part B
  - EN 61326
  - European Community EMC Directive 89/336/EEC

Warranty

- 5 years electronics
- 2 years pH, ORP and temperature sensors
- 1 year optional sensors and flow cell



User Interface

- 14 line x 40 character backlit LCD, with front-panel contrast adjustment and automatic temperature compensation
- Single-touch access to Set Points, Relay Modes, Calibrations, Backwash status/settings, Menu access, and Reset Fail/Safes.

System Security

- Three levels of security access codes – Operator (6), Manager (2), and Rep (1).
- Data logs record history of access identified by user.

Control Outputs

- **Solid-State Relays:** Four (4) standard solid-state relay outputs
- **Mechanical Relays:** Five (5) standard mechanical relay outputs
- **Additional Relays:** Fifteen (15) additional solid-state relay or mechanical outputs with addition of up to 3 optional BECSys SRX or MRX relay expansion modules
- **4-20mA Outputs:** Eight (8) optional separately isolated 4-20mA analog outputs, each of which can be configured to
    - record any enabled input
    - control recirculation pump VFD
    - control main drain modulating valve

Safety Features

- **Manual-On Limit:** built-in limits automatically return manual overrides to automatic control, to prevent accidentally leaving relays activated following service/troubleshooting efforts.
- **High/Low Alarm Settings & Control Lockouts:** Programmable high and low alarm settings for all inputs, and programmable lockout of sanitizer feed upon pH high or low alarm.
- **No Flow Alarm & Flow Restored Delay:** Assures sensors are monitoring an actively circulating water stream, with programmable control lockout following no-flow conditions.
- **Feed Limit Alarms:** Programmable failsafe timers to prevent overfeed due to equipment or systems failures.
- **Emergency Off:** Front-panel Emergency Off button immediately halts all chemical feeds and control outputs; can be password protected.
- **Internal Safety Shield:** Prevents access to high voltage circuitry or wiring during fuse replacement.

Connectivity & Data Logging

Email and Text Message Alarm Notifications are supported by the integral Gbit Ethernet connection, and integration with Wi-Fi networks is supported with the optional BECSys Wi-Fi module. All inputs and system events are recorded in on-board data logs, accessible with BECSys *Live!* online web portal and *BECSys for Windows* PC software. The *BECSys Now!* App provides convenient 24/7 mobile access to BECSys7 status. All 3 applications are included with every BECSys7.

Remote Access and Alarm Notification

- Gbit Ethernet with EZConnect and EZMail
- Email and Text message alarm notifications
- BECSys *Live!* Online web portal included; available for all BECSys controllers using EZConnect
- BECSys for Windows Windows™ 10 compatible PC software package included
- BECSys *Now!* App for IOS iPhone/iPad and Android smartphones/tablets
- Wi-Fi compatibility with optional BECSys Wi-Fi module
- Optional MODBUS, BACnet, Metasys N2, or LonWorks interface

Data-Logging

- Data logs stored in NAND flash memory, which does not require a battery to preserve data logs during power outages
- One full year (365 days) of input readings history, with 1 minute resolution
- One full year (365 days) of system events (e.g. alarms, parameter changes, user logins and operational cycles)
- Data logs automatically uploaded/maintained in BECSys Server
    - Available to users via BECSys *Live!* Online web portal
- Download logs to USB flash drive for upload into BECSys for Windows

Standard Sensors

- **pH:** Configurable for feed-up, feed-down, or dual feed, and either ON/OFF or Time-Based Proportional feed.
- **ORP (Platinum band standard; gold band optional)**
  - **Primary Sanitizer:** Based on ORP, free chlorine (optional), or bracketed combination
  - **Sanitizer Booster:** Selectable trigger set point and separate ending set point.
  - **Ozone:** Feed-up based upon ORP and/or ppm set points; Fireman Cycle feature and Energy Conservation mode.
- **Temperature**
  - **Heater:** On/off control of heater with Fireman Cycle feature, Energy Conservation mode and minimum flow rate set point (inhibits heater if flow rate drops below set point).

Standard Control Functions

- All system inputs (standard and optional) feature high/low alarm settings
- **Superchlorination:** Manually-triggered feed-up superchlorination set point, based upon ORP or ppm.
- **Dechlorination:** Feed-down control of dechlorination agent.
- **LSI & RSI:** Langelier Saturation Index and Ryzner Saturation Index, computed based upon current inputs, Ca Hardness entered by operator, and Alkalinity from either the BECSys Alkalinity Meter or entered by operator.
- **Enzyme:** Programmable daily timed feed with start and end time, feed duration, and multiple feeds per day.
- **Polymer:** Programmable for daily timed feed or feed-down control based upon turbidity reading and set point.
- **Sensor wash:** programmable sensor wash with start and end time, feed duration, and multiple cycles per day.
- **Alternate Setpoints:** Run the pool at less demanding levels during periods of low usage.
- **Energy Conservation Mode:** Program a "Sleep" mode which suspends mechanical and chemical functions during off-hours, "waking" periodically to keep water quality in check.

Main Recirculation Pump Control Functions

- **On/Off Control:** Based upon various sensors and settings such as Low surge tank level, strainer high vacuum, Energy Conservation mode, Emergency Off, and Fireman Switch settings.

Optional Sensors/Features

All optional readings are depicted on front panel display, recorded in data logs, and have high and low alarm settings, which can generate email and/or text message alarm notifications. Additional features are listed with each sensor:

Alkalinity Meter [US Patent #10,018,610 / Canada Patent #3,019,683] (Optional)

- Provides reading of pool Total Alkalinity (TA)
- Control TA by automatically switching between CO_2 and acid for pH control, based upon user-defined set points.

Flow Rate Sensor (Optional)

- **Uses:** Main System Circulation Flow rate or Makeup Flow Rate with water consumption
- **Features:** Display and log flow rate, maintaining a total flow volume; Low System Flow alarm can disable chemical feeds.
- **Advanced VFD Recirculation Pump Control [US Patent #8,404,117]**
  - Variable Frequency Drive interface (via optional 4-20mA output) to control recirculation pump drive level to maintain flow rate, effluent pressure, or fixed setting.
  - Automatically adjusts flow rate to user-settable level during filter backwash.
  - Four Manually-triggered and Four Scheduled profiles ("Turndowns") are user programmable.
  - To assure water quality does not suffer during Turndowns, water chemistry alarms abort Turndown in progress and return to normal flow rate
  - If Turndown does not satisfy minimum flow rate of heater, controller will temporarily increase flow rate during heating cycles to heater minimum.

Free Chlorine Sensor (Optional)

- Choose from two free chlorine sensor technologies: CP-1 or membrane; membrane recommended with Total Cl sensor
- **Primary Sanitizer:** Based on free chlorine input, ORP input, or bracketed combination of the two
- **Sanitizer Booster:** Selectable trigger set point and separate ending set point.

Conductivity sensor used to measure Total Dissolved Solids / TDS (Optional)

- **TDS:** Feed-down control of drain valve based upon TDS set point, with programmable fail-safe timer.

Auxiliary Inputs/Sensors (Optional), up to 8 from the following list:

- Free chlorine sensor (membrane)
  - Membrane free chlorine sensor used 1 auxiliary input (CP-1 sensor has dedicated input circuit)
- Total (Combined) chlorine sensor (requires free chlorine sensor; membrane sensor recommended)
  - Total and Combined chlorine readings, with high and low alarm settings
  - Combined chlorine level can be interfaced to air handling systems to reduce air turnover
  - UV (Combined Chlorine) Control: Programmable combined chlorine set point; BECSys7 will activate a relay to turn down UV system when combined chlorine reading is below set point.
- Filter Influent Pressure
  - Controller calculates **Filter Differential Pressure** (requires Filter Effluent Pressure sensor)
  - Can be used to trigger automatic backwash
- Filter Effluent Pressure
  - Controller calculates **Filter Differential Pressure** (requires Filter Influent Pressure sensor)
  - Can be used to trigger automatic backwash
- Pump Effluent Pressure
  - Controller calculates **TDH**: Monitor pump Total Dynamic Head (TDH) with user settable high/low alarm settings (requires Strainer Vacuum sensor)
  - Required for TDH monitoring when there is a pressure drop between the pump effluent and filter influent
- Strainer Vacuum
  - Controller calculates **TDH**: Monitor pump Total Dynamic Head (TDH) with user settable high/low alarm settings (requires pump effluent or filter influent pressure sensor)
  - Dirty Strainer Warning, based upon a programmable vacuum set point
  - High Vacuum Alarm, based upon a programmable vacuum set point
    - Programmable Emergency Off condition, disabling the circulation pump
- Makeup Water Flow Sensor
  - Monitor makeup water consumption, with totalizer resettable by operator
- Side Stream Flow Sensor
  - Monitor flow rate through side stream, e.g. heater
- Additional System Circulation Flow Sensor
  - Combine with System Flow Rate sensor to monitor combined flow in split stream systems
- Surge Tank Level (BECSys SLS sensor)
  - **Surge Tank monitoring:** monitor, display and data log surge tank level
  - **Autofill:** control water makeup valve to maintain pool water level set point based upon surge tank (or equivalent) level, with a programmable alternate set point
  - **Main Drain Modulating Valve:** Control main drain modulating valve (via optional 4-20mA output) based upon user-defined surge tank level set points
- Backwash Tank Level (BECSys SLS sensor)
  - **Backwash Tank monitoring:** monitor, display and data log backwash tank level
- pH Liquid Chemical Inventory (BECSys LLS sensor)
  - **Liquid Chemical Inventory**: monitor, display and data log chemical inventories with low alarm settings
- Chlorine Liquid Chemical Inventory (BECSys LLS sensor)
  - **Liquid Chemical Inventory**: monitor, display and data log chemical inventories with low alarm settings
- Turbidity
  - Monitor turbidity, and feed polymer

Filter Backwash (BW) Control Functions (Optional)

- **Initiation**: Programmable based upon time, pressure differential, system flow, flow volume, turbidity, or Manual
- **Standard Operation**: Features include a settable Inhibit period, BW Frequency Failsafe, Fireman Cycles, Primary/Priority Valve management, alternating lead filter, BW duration, and dwell time between filters.
- **BW Holding Tank Management**: Monitor the backwash holding tank to prevent overflow. Automatically suspend backwash when tank is full, and resume when empty, keeping track of the cumulative backwash time.
- **BW Lockout Management**: Multiple BECSys7s and/or BECSysBWs coordinate backwashes.
- **Advanced Optimization**: Accessory relay can be programmed for wide range of options, such as dechlorination in the BW holding tank. Save water by ending a filter backwash early when desired turbidity level reached.

Specification/Ordering Guide

BECSys7 Specification/Ordering Guide														Selection
BECSys7-	**Flow Switch Type**													01
↓	E	Reed Flow Switch (Standard)												
	O	Rotary Flow Switch												
	X	Flow Switch Integrated into Lighted Flow Cell (see Flow Cell selection)												
	↓	**Sensor Wire Length**												02
		S	Short (36 inch) Sensor Wires (Standard)											
		L	Long (10 foot) Sensor Wires											
		↓	**Input Voltage Selection**											03
			1	115 VAC input power (Standard)										
			2	230 VAC input power										
			↓	**Communications**										04
				G	1 Gbit Ethernet with EZConnect (Standard)									
				M	1 Gbit Ethernet with EZConnect and MODBUS TCP/IP									
				↓	**ORP Sensor Tip Material**									05
					P	Platinum Band (Standard)								
					S	Solid Gold Band								
					↓	**Chlorine Sensor Circuitry**								06
						1	Circuitry for both CP-1 and membrane (4-20mA) included in controller (Standard)							
						↓	**Conductivity Sensor**							07
							C	Conductivity Sensor						
							X	No conductivity sensor (Standard)						
							↓	**Option Board #1**						08
								O	Four 4-20mA outputs & Four loop power supplies for 4-20mA inputs					
								L	Four loop power supplies for 4-20mA inputs (No 4-20mA outputs)					
								X	No 4-20mA outputs or loop power supplies (Standard)					
								↓	**Option Board #2**					09
									O	Four 4-20mA outputs & Four loop power supplies for 4-20mA inputs				
									L	Four loop power supplies for 4-20mA inputs (No 4-20mA outputs)				
									X	No 4-20mA outputs or loop power supplies (Standard)				
									↓	**Flow Cell**				10
										R	Round Flow Cell with pH, ORP & temperature sensors (Standard)			
										L	Lighted Flow Cell with pH, ORP & temperature sensors			
										P	Lighted Flow Cell with pH, ORP, temperature & CP-1 sensors			
										↓	**Back Panel**			11
											B	Preassembled on backpanel		
											W	With Connection Center on back panel.		
											I	With Connection Center and Interlock Relay on back panel		
											P	With Connection Center, Interlock Relay and 24VAC power supply on back panel		
											C	With Connection Center, Custom Configuration		
											A	LFC preassembled, no backpanel		
											X	Shipped as kit (Standard)		
											↓	**Filtration Control**		40
												N	No Filtration Control (Standard)	
												F	With Filtration Control	
BECSys7-	O	S	1	G	P	1	X	O	X	R	I	F	**Example Part Number**	
													BECSys7 with rotary flow switch, 36" sensor wires, 115VAC input, Gbit Ethernet with EZConnect, platinum band ORP sensor, no conductivity sensor, four 4-20mA outputs with four loop power supplies, no 2nd option board, round flow cell preassembled on backpanel with Connection Center including Interlock Relay, filtration control.	

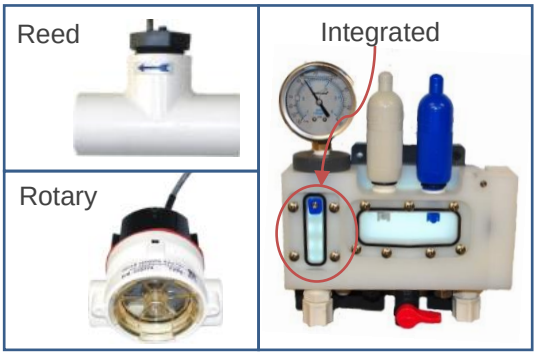
Specification/Ordering Guide Selections

Flow Switch Type (Selection 01)

The flow switch is a vital safety component, which assures that water is flowing through the sample stream. When there is no water flowing through the sample stream, the sensor readings are not reliable.

There are three options for flow switch

- Reed flow switch
- Rotary flow Switch, which only senses flow in the forward direction, so no check valve is required.
- Integrated into Lighted Flow Cell; this option requires that the Lighted Flow Cell be selected in the Flow Cell section (Selection 10).



Sensor Wire Length (Selection 02)

pH, ORP and temperature sensors can have two sensor length: 36" and 10'. The only reason to need 10' cable length is in situations where the flow cell will be mounted more than 36" away from the controller. When ordering a controller pre-mounted on a back panel (Selection 11), the short (36") sensor wire length should be selected/specified.

Input Voltage Selection (Selection 03)

The BECSys7 can accept 115 VAC input power or 230 VAC input power. In either case, the BECSys7 can accept either 50 or 60 Hz.

Communications (Selection 04)

All BECSys7 controllers come equipped with Gbit Ethernet communications, including EZConnect and EZMail support. BECSys *Live!* Online web portal, BECSys for Windows PC software and the BECSys Now mobile app for Android and iOS are included.

GBit Ethernet with EZConnect: Standard, maximum speed Ethernet; backwards compatible with 100BaseT and 10BaseT local area networks; Includes EZConnect and EZMail.

GBit Ethernet with EZConnect with MODBUS TCP/IP: Adds support for a MODBUS TCP/IP connection over the Gbit Ethernet connection. The MODBUS TCP/IP capability is required when interfacing to a Building Management System with the BMS protocol converter. EZConnect, EZMail, BECSys *Live!*, BECSys for Windows and the BECSys Now mobile app are also supported concurrently with the MODBUS BMS interface.

ORP Sensor Tip Material (Selection 05)

All BECSys7 controllers come with an ORP sensor with a platinum band electrode ("tip") included.
A gold tip version of the ORP sensor is also available, and may be beneficial in systems with salt chlorine generators.

Chlorine Sensor Circuitry (Selection 06)

No selection required (this is a legacy option); CP-1 circuitry is always included.
The membrane free chlorine sensor utilizes one of the auxiliary 4-20mA inputs.

Conductivity Sensor (Selection 07)

BECSys7 controllers are capable of monitoring conductivity (TDS). If selected, the conductivity sensor will be included in the BECSys7 configuration, along with a mounting "T" kit.

Option Board #1 (Selection 08)

There are 2 options boards from which to choose:

1. Four (4) 4-20mA output signals AND Four (4) loop power supplies for 4-20mA inputs.
2. No 4-20mA output signals; Four (4) loop power supplies for 4-20mA inputs.

4-20mA Output Signals Uses

- 4-20mA output signals are required for VFD control and Main Drain modulating valve control; one signal per VFD and one signal per main drain valve.
- 4-20mA output signals may also be used to report input readings to a Building Management Systems (BMS) or independent data logger. Typically MODBUS TCP/IP (See Communications section) is used for BMS interface, and independent data loggers are rarely used due to the comprehensive on board data logging available on the BECSys7.
- The 1st option board listed above provides 4 of these signals.

Loop Power Supplies for 4-20mA Inputs

- Many optional sensors require a power supply, including pressure and vacuum transducers, BECSys LLS and BECSys SLS liquid level sensors and the BECSys PLX point level switch.
- Each such sensor will require a loop power supply, which can be provided by the BECSys controller.
- Both of the options boards listed above provide 4 of these loop power supplies.

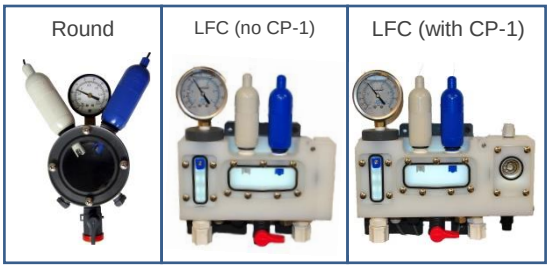
Option Board #2 (Selection 09)

A second option board, providing an additional four (4) 4-20mA output signals and/or four (4) loop power supplies for 4-20mA inputs, can be added to the BECSys7.

Flow Cell (Selection 10)

Three flow cell options are available for the BECSys7

- Round PVC
- Lighted Flow Cell (pH, ORP, temperature sensors)
- Lighted Flow Cell (pH, ORP, temperature and CP-1 sensors)



When specifying the Lighted Flow Cell (LFC), the Flow Switch Type (Selection 01) should be specified as “X” (Flow Switch Integrated into Lighted Flow Cell).

In all cases sample stream components such as pressure gauge, isolation ball valves, sample tap and associated PVC fittings are included.

Back Panel (Selection 11)

Shipped as kit: Flow cell will be delivered unassembled; installer will assemble flow cell per instructions provided in Installation Manual. No back panel will be included; controller and flow cell will be mounted directly to wall.

LFC preassembled, no back panel: The Lighted Flow Cell can be ordered preassembled at factory.

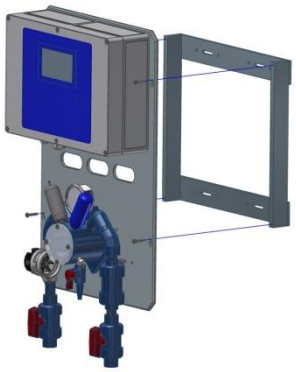
Preassembled on back panel: The flow cell is pre-assembled at the factory and mounted with the BECSys7 on a back panel for convenient installation. In this configuration a lightweight PVC mounting frame is easily leveled and installed on the wall. The back panel assembly is then hung on the mounting frame through 4 teardrop holes. Tighten the four bolts, make plumbing and electrical connections and installation is complete.

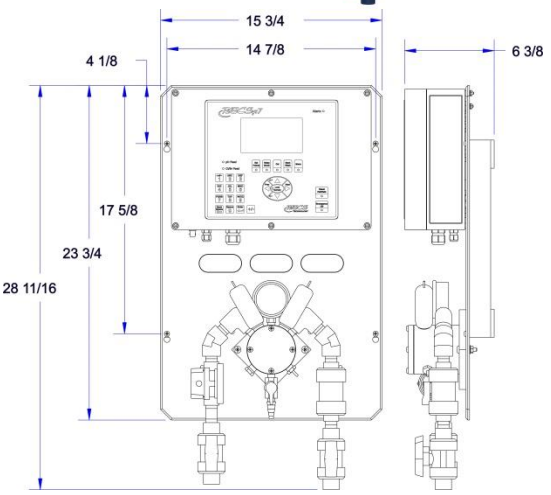
With Connection Center: The Connection Center option provides the most convenient installation. In addition to pre-assembly of the flow cell, the BECSys7 will be pre-programmed based upon the configuration selected, and controller and flow cell mounted on a back panel at the factory. A 36 Watt 24VDC power supply is included and can be used to power external devices.

The Connection Center provides a separate enclosure for all line-voltage field wiring; configuration-specific wiring diagrams are supplied with the BECSys7. The Interlock Relay can be included in the Connection Center, and is recommended as an important safety feature to interlock chemical feeds, UV, heaters and other equipment with the circulation pump. A 24VAC 1.67A (40VA) power supply may also be included to power solenoids or other devices.

Standard configurations cover most common situations; for special requirements a custom configuration can be created. Both standard and custom configurations can be specified, assuring that the proper configuration will be delivered to the project. Contact BECS Technology for details on available standard configurations or to develop a project-specific custom configuration.

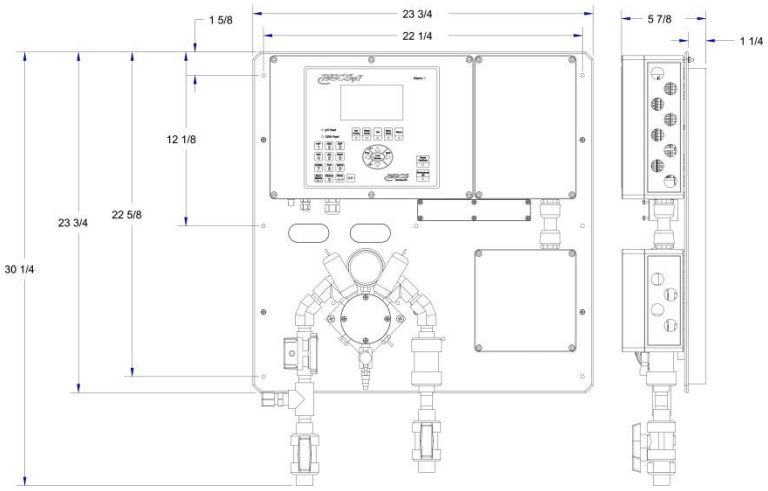
Preassembled on back panel





With Connection Center

Dimensions of panel are the same whether or not Interlock Relays are included.



Filtration Control (Selection 40)

The BECSys7 can optionally provide automatic or semi-automatic filter backwash control. With automatic control, the BECSys7 can be programmed to automatically initiate backwash based upon pressure differential, system flow, flow volume, turbidity or time. With semi-automatic control, the backwash is initiated manually by the operator. In either case, the backwash sequence of operations is controlled by the BECSys7.

The mechanical relays in a BECSys7 can be used to control electrically actuated valves. A relay expansion module can be added to increase the number of relays for backwash control.

For hydraulically actuated valves, BECS Technology manufactures a Filter Interface Panel (FIP), which can be configured to control up to 15 filters. The FIP interfaces to the BECSys7 via a low voltage RS485 digital communications cable, allowing the FIP to be conveniently mounted by the filtration system.

Specifications

Part Numbers		
BECSys7 Part Number		BECSys7, See Specification/Ordering Guide for options
Firmware version		v3.1x and higher
Physical		
Enclosure Material		Glass Reinforced Polycarbonate, NEMA 4X (IP66)
Overlay Material		UV Stabilized Polyester
Flow Cell Material (round)		PVC Body, Clear Acrylic Window, Stainless Steel Hardware
Flow Cell Material (lighted)		UHMW Body, Clear Acrylic Window, Stainless Steel Hardware
Back Panel Material		PVC
Display		14 Row, 40 Character, Backlit Alpha/Numeric LCD
pH and ORP Sensor Connection Type		BNC
BECSys7 Enclosure Dimensions		Width: 14.21" Height: 10.00" Depth: 4.37"
BECSys7 Back Panel Dimensions		Width: 15.75" Height: 28.6875" Depth: 6.375"
BECSys7 Back Panel with Connection Center Dimensions		Width: 23.75" Height: 30.25" Depth: 5.875"
Environmental[1]		
Storage Temperature		-40 to 85 °C
Ambient Operating Temperature		-18 to 50 °C
Ambient Humidity		95% non-condensing maximum
Electrical		
Voltage		115/230 VAC, 50/60 Hz
Phase		Single
Current	115 VAC Input	27.5 Amps Full Load: (0.5 A: Controller, 27 A: Relay Outputs, 3A x 9)
	230 VAC Input	27.25 Amps Full Load (0.25 A: Controller, 27 A: Relay Outputs, 3A x 9)
Performance		
pH Range / Resolution		0 to 14 pH / User Selectable: 0.1 pH units or 0.01 pH units
ORP Range / Resolution		-1000 to +1000 mV / 1mV
Temperature Range / Resolution		32 to 212 °F (0 to 100 °C) / 1 °F or °C
Alkalinity (optional) Range/Resolution		50 to 150 ppm / 1 ppm
Membrane Free Chlorine (optional) Range/Res		0 to 20 ppm / 0.1 ppm
CP-1 Free Chlorine (optional) Range/Res		0 to 10 ppm / 0.1 ppm
Total Chlorine (optional) Range/Res		0 to 20 ppm / 0.1 ppm
Combined Chlorine (optional) Range/Res		0 to 20 ppm / 0.1 ppm
Conductivity/TDS (optional) Range/Resolution		0 to 20,000 micro-mhos (cond) / 1 micro-mho 0 to 10,000 ppm (TDS) / 1 ppm
Flow Rate (optional) Range/Resolution		0 to 8800 gpm (0 to 33265 liter/min) / 0.1 gpm or lpm
Flow Volume		Records up to 999 trillion gallons or liters
Turbidity (optional) Range/Resolution		0 to 20 NTU / 0.01 NTU
Pressure (optional) Range		0 to 100 psi (0 to 689 kPa)
Vacuum (optional) Range		-15 to +85 psi (-103 to 586 kPa) -31 to 173 in. Hg (-78 to 440 cm Hg)
4-20 mA Inputs (8 standard)		Resolved with 16 bit Analog to Digital Converter
4-20 mA Outputs (optional)		13 bit Digital to Analog Conversion, Load Capacity 440 Ω per output channel
Failsafe Overfeed Timers		Programmable in 1 minute increments, up to 18 hours
RS-485		9600 bps at distances up to 4000 ft.
Ethernet (standard)		1 Gigabit (100BaseT and 10BaseT compatible)
Solid State Relay Outputs (4), each jumper selectable to:		1) "Line" Setting: Same as Controller Input Voltage: 115 VAC or 230 VAC, 3 Amps max 2) "Common" Setting: Supports 24 to 280 VAC; Each Solid State Relay has its own Common position provided to bring in Solid State Relay output voltage
Mechanical Relay Outputs (5) each jumper selectable to:		1) "Line" Setting: Same as Controller Input Voltage: 115 VAC or 230 VAC; Relays Five through Nine, 3 Amps max 2) "Common" Setting: Supports maximum 30 VDC or 250 VAC; Each Mechanical Relay has its own Common position provided to bring in Mechanical Relay output voltage.

[1]Environmental specifications are for controller only; specifications for sensors and other components vary, and are available in respective Data Sheets.

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