

## BECSys5 v1.11

BECSys5 v1.11 firmware was released to production on June 5, 2008. A summary of changes present in this firmware release is included below - complete details are available in the latest Installation & Technical Manual, Rev E08 – sections of this manual are referenced in the summary.

All new features will be covered in detail in BECSys Technical Training Sessions.

Units with older versions of the firmware may be upgraded with these new features by replacing the program chip.

Part Number	Description	Trade Price
1230079	BECSys5 v1.11 program chip	\$200.00
8680025	ROM chip extraction tool	\$100.00
8680026	ROM chip insertion tool	\$100.00

### Summary of New Features in BECSys5 v1.11

#### **New Inputs & Control Functions**

- 1) \*Amperometric Sensor support for Bromine
  - o The standard amperometric “Free Chlorine” sensor can now be used to monitor Bromine
  - o No modifications needed to the sensor (PN 1210235)
  - o When Sanitizer Chemical is set to Bromine, the algorithm to monitor Bromine will be executed
  - o NOTE: Sensor will not function properly in environments with both Chlorine and Bromine
- 2) Conductivity Input (C-4.5) / TDS Control (C-7.1.2.5)
  - o The BECSys5 can now be configured to accept a conductivity sensor
  - o Requires a different input circuit board, which has only two 4-20mA inputs
  - o Can be configured as conductivity ( $\mu\text{mhos/cm}$ ) or TDS (ppm)
  - o Reading is recorded in data logs, alarm points can be set, and drain valve controlled
- 3) All 4-20mA inputs are re-assignable based upon installed sensors (C-5)
  - o Provides maximum flexibility in the use of the standard 4-20mA input channels
- 4) Turbidity Reading (C-5.3) – Polymer Feed (C-7.1.2.3)
  - o BECSys5 now accepts a turbidity sensor input
  - o Turbidity reading will be displayed, data logged, and has a high alarm point
  - o Polymer feed control based upon turbidity reading
- 5) Surge Pit Monitoring (C-5.4) - AutoFill (C-5.6, C-7.10)
  - o BECSysLS can be used to monitor water level
  - o Contact switch can be used to monitor low water point
  - o Advanced AutoFill algorithm includes Overfill Delay setting
- 6) Pressure/Vacuum Readings (C-5.5)
  - o Filter Influent, Filter Effluent, Strainer Vacuum
  - o Used in TDH calculations; Alarms (High strainer vacuum alarm signals a dirty strainer)
- 7) Enzyme (timed) feed (C-7.13)
  - o Daily timed feed that operates like the enhanced sensor wash function
- 8) Power Saver (C-8.2)
  - o Incorporates a circulation pump schedule with the Alternate feed settings
- 9) Vacuum Filter Support
  - o System now allows assignment of Vacuum Transducer to filter influent
- 10) Increased relay expansion capability
  - o Up to 15 additional relays (3 BECSys SRX's) can be added to BECSys5.
  - o Previous versions allowed only 5 additional relays (1 BECSys SRX)

### Advanced Recirculation Pump Interface

- 1) VFD control algorithm (C-11, C-12)
  - Requires 4-20mA output board, and 1 dedicated relay
  - Control features
    - Controls recirc pump to maintain desired flow rate
    - Four manual and four scheduled turndowns
    - Override setting for backwash
    - Ramp up and ramp down settings
    - Minimum output setting
- 2) Total Dynamic Head (TDH) monitoring (C-5.5.5)
  - Monitors pump for proper operation
  - Requires strainer vacuum and filter influent pressure transducer inputs
  - TDH high and low alarms (can be disabled)
- 3) Fireman Switch controls
  - Ozone feed fireman switch timer
    - Control input can be set to “none” to operate in a simple fireman switch mode.
  - Heater
    - Temperature control can be disabled to operate heater in a simple fireman switch mode.

### Enhancements to existing Control Functions

- 1) \*Improved *Calculated* Bromine ppm value
  - Adjustments are utilized only when Bromine is selected as the sanitization chemical
- 2) Cl/Br feed and Cl/Br Booster feed with *Calculated* ppm (C-7.3)
  - Can now select *Calculated* ppm input for control input source
  - This allows the operator to specify a setpoint in ppm units instead of ORP (mV)
  - This mode still uses ORP for control, but the ORP set points are calculated based off the entered ppm set point, the pH set point, and the ppm calibration.
- 3) Enhanced Failsafe Timers
  - All running failsafe timers now display time remaining until Failsafe alarm activates
- 4) Renaming of inputs and feeds
  - New parameter “Label” allows entry of a text string to be used instead of the default
    - For example, Ozone is commonly used for UV and it now can be renamed “UV”
  - Features that support renaming
    - Surge Pit (C-5.4), Chlorine Booster (C-7.4), Dechlorination (C-7.6), Ozone (C-7.7), Sensor Wash (C-7.12), Enzyme feed (C-7.13)
- 5) Enhanced Sensor Wash algorithm (C-7.12)
  - Supports multiple wash cycles per day (useful with saline systems)
  - Since it can be renamed, this control function could be used to do a timed chemical feed
- 6) Improved Control (On/Off and Time-Based Proportional)
  - The following modifications will provide tighter control around the set point
    - System will go **into** cycle when the input goes above/below the set point
    - System will **end** cycle when input reaches set point +/- hysteresis.
  - Previous versions went **into** cycle at set point and **ended** when input passed set point +/- hysteresis.
- 7) Time-Based Proportional (TBP) Control Enhancements
  - When input satisfies set point and hysteresis and shuts off feed, TBP feeds now complete the remaining cycle before allowing the feed to start again.
    - Prevents relay toggling on and off rapidly if input is oscillating near the set point.
  - Minimum on time setting for TBP feeds is now user settable
    - Previous versions fixed at 10% of span (6 seconds when using 1 minute span)
- 8) Modified LSI/RSI calculations (C-9)
  - Removed dosage calculations

### New Technical Support Features

- 1) Firmware version is displayed in Main Menu
  - No longer need to be on-site with the enclosure opened to determine firmware version
  - Available from front panel or BECSys for Windows
  - On the controller, press MENU key; firmware version is displayed in the title bar
- 2) Serial number display (C-10.1)
  - System S/N will be used in future networking releases to address individual systems
  - This is a factory-set parameter that cannot be modified in the field
  - When upgrading from earlier versions of the firmware, or performing a CPU board swap with this version of the firmware, the service technician **will** need to enter this value during startup; Technical Support can provide assistance
- 3) Alarm Callout Verification test (C-10.2)
  - Allows immediate verification of Alarm Callout setup
  - Each programmed phone number has an associated option which, when selected, immediately triggers a test callout of that phone number only

### New Safety Features

- 1) Manual On Limits (E-2)
  - Prevents accidentally leaving a relay in "Manual On" mode
  - Applicable for all non-filter/backwash/recirculation relays
  - User is prompted for duration when entering Manual On mode
  - System will return relay to Auto mode after that duration expires
- 2) Reduced default feed limits
  - pH and Cl/Br default: 1 hour
  - Booster and Ozone default: 30 minutes
- 3) Added feed limit timers to
  - Cl/Br Booster Control algorithm (C-7.4)
  - Ozone Control algorithm (C-7.7)

\*These items were added in v1.11. All other items were present in v1.10, which was released on 5/16/08.