



## Enhancements to the 8864 Firmware in 2015

If you already have an 8864, then these new features and improved capacities are made available in free firmware updates with an ESC support agreement. Many upgrades are available now and were released in version 4.47 of the firmware, posted in May of 2015. Version 5.00 is currently in Q/A testing.

**Enhanced Modbus Capabilities** – With more instruments moving to Modbus communications, we've put early emphasis on enhancing the Modbus capabilities of the 8864.

### Available Now:

- The ability to write instantaneous status flags to a type 'Q' Modbus Channel
- The ability to read DAC outputs from Modbus channels – floats and integers are both supported. Avoid the cost of hard-wired connections.
- New Modbus time-of-day registers
- Load the Modbus configuration file (server.cfg) into the 8864 via a USB drive – this is in addition to existing transfer capability through serial or Ethernet connections
- Configure multiple retries of a Modbus command before moving on if the first command doesn't get a response from a remote instrument – prevents time-out delays on a spotty network and allows you to process instrument data more often
- Implement a swap code to be able to directly handle instruments that have a non-standard arrangement of floating point registers – the 8864 can now swap registers during transfers

**Increased Capacity** – The 8864 added significant enhanced capabilities at launch – up to 999 channels, 999 digital lines, greatly increased data storage, etc. and we are carrying that momentum forward this year.

### Available Now:

- Double the maximum equation size from 255 characters to 512
- The 8864 can now handle 10 times the number of math operations in each equation, allowing very complex calculations to be performed
- The number of math ("K") constants increased from 32 to 99

- Ethernet console tasks increased from 4 to 8 so that you can have up to eight SSH (PuTTY) and StackVision polling tasks active at the same time (the front panel MDI counts as one of the tasks)
- Ten times the number of entries in the line changes log – this can be a huge help, for example, if you are debugging an instrument issue
- Ten times the number of entries in the system log – improves the chances that a system problem can be tracked down before critical debug issues have scrolled out of the data controller’s history
- Up to 96 analog outputs (DACs) can be configured – the 8832 is limited to 24 analog outputs, but the 8864 will allow four times as many

### Coming in Version 5.00:

- Increased data storage efficiency – more channels with longer data storage times provide an even longer cushion of time when communications to the data controller may be interrupted

**Additional Features** – These have been driven by customer requests and requests from the ESC engineering group to provide more capability in the 8864 in order to allow it to handle the always increasing complexities of CEMS reporting.

### Available Now:

- A new data validation type to meet regulatory requirements of some new permits – some customers need to calculate data according to 40CFR75 rules, but are *not* subject to the 26-hour calibration requirement or receive an 8-hour grace period
- Ability to enable/disable Ethernet ports at the integrator login level
- System applies changes to the serial port interface type when the controller is rebooted, instead of requiring a cold start
- Hold the analog output signals at their last good values based on any data controller flag – for example, if the instrument goes into calibration and the data value is not yet invalid
- Filter the line changes log so that you can show only a particular line number or all line numbers – makes it easier to navigate the expanded logging capacity

### Coming in Version 5.00:

- Configure a delay period after a Digital Event program is triggered before the output conditions are set – for example, allow other events to complete, keep sequences in order
- Add “round significant digits” functions to math equations – Particularly useful where MATS requires reporting to a specified number of significant digits

**New “Counter” Channel** – Coming in Version 5.00 – We’re adding a very flexible channel type that can count or total values based on a configurable start and stop signal. This will be used, for example, to totalize emissions during a startup event or count the number of startup events over some configurable period of time.

## Enhancements to the 8864 Planned in 2015, after Version 5.00

### Enhanced Modbus Capabilities

- Modbus diagnostics, including real-time views of Modbus communications and the ability to capture a time-tagged trace of the Modbus commands
- Parallel processing of Modbus master (client) commands so that a non-responsive instrument won't block communications with other Modbus instruments
- Parallel processing of Modbus server requests so that the 8864 can respond to multiple Modbus commands that are received simultaneously without responding with "busy"

### Increased Capacity

- Double the maximum number of calibration phases – some complex calibration sequences cannot be handled by an 8832, this change allows very involved calibration sequences to run
- Double the maximum number of Digital Event programs – allows even more advanced configurations

### Additional Features

- Configure a digital output that is set when the 8864 hasn't been polled by StackVision for a configurable period of time – allows early warning of communications problems to plant systems
- Trigger events and calculations off of the amount of time that has elapsed into the 8 hour calibration grace period on startups and the 26 hour limit between calibrations – only trigger calibrations after enough time has elapsed, if your permit requires a particular period
- Allow user-initiated and digital-input-initiated calibrations to be started from the GUI front-panel display – saves the time and effort of navigating menus
- Auto-refresh in the "View Input Line Changes" log – display new input changes as they occur

**Configuration Compare** – We are adding the capability to upload the 8864 configuration back to StackVision so that the configuration in the 8864 can be compared to the configuration that is stored in StackStudio. This helps to identify potential problems caused when a configuration change made in the Data Controller is lost when a different configuration is downloaded from StackVision. This was the #1 requested new feature for the 8864. It is in development now and is planned for a release soon after Version 5.00.

These are the highlights, if you'd like to know all of the details on available features, please read the release notes, available through the Data Controller Downloads page on our website. (Requires site login. Contact [support@envirosys.com](mailto:support@envirosys.com) if you have a current contract and need access or assistance.)