Acutrol3000 Release Notes

Technical Manual

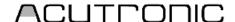TM-9389

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1. Acutrol 3000 v1.1.5-1859 Release Notes

For items preceded by a #xxx (e.g. **#131**), see Bugzilla for additional details.

1.1 New Features in Build 1859

- Added new ACL command **:configure:realtime:init** (see #191/#192 below).

#203 When running the real-time demands in **BINARY** mode, the host motion state variables static motion state variables (**V_POSN_DMD...V_JERK_DMD**) as well are now automatically de-scaled in place.

#193 When the Demand Tracker Bandwidth is too high for a given update rate, it can go quite unstable. Previously, the tracker outputs could cause NaN's to be generated. We now limit the motion state outputs on the Demand State Tracker and the Demand and Monitor Translators to 1.5 times the TRACK_MODE limits.

#191, #192 Demand state tracker and demand/monitor translators are now initialized to the current position, rate=0, acceleration=0 on any of the following events:

- **:configure:realtime:setup**
- **:configure:realtime:init**

- Mode is changed to **TRACK_MODE**.

Note *This can cause transients if these events are initiated while an axis is in motion.*

#183 - Variables are now saved as mnemonics rather than numbers.

1.2 Bug Fixes in Build 1859

- Mode change over control word now behaves the same as ACL command.

- Plant is not reset when changing modes.

- Motion states are now initialized when interlocks are closed via the real-time interface control word.

- When a data logging trigger occurs, if the number of samples accumulated so far is less then the requested number of presamples, only those samples are saved.

- Fixed problems with mode / algorithm implementation for Demand State Tracker

- Real-time process now checks key variables for "not a number" (NaN). If an NaN is detected for an axies a hard abort is issued for that axis.

- Fixed problem with spurious "`Illegal Datalog Command`" errors when configuring data logging parameters.

#187   The alternate filters bit (`AxDYN:14`) now works.

#184   Real-time `BINARY` mode no longer generates NaN for observer output if demand tracker and translator bandwidths are too high.

#180   Binary scaling for real-time is now initialized properly if the number of axes is less than 3

#176   Data Log Average / Max / Min now work.

#175   Data Log Interval now works.

#174   Rate Profile Complete bit is now operates properly when going to `OFF` mode.

#172   If an entire tag (e.g., `<BEMF x="1.0" y="2.0">`) is missing from an XML file, the default is now used and no error is reported.

#171   XML attributes now default correctly if attribute type is `enum`.

#170   The error word is now byte-swapped for the reflective memory ACL channel.

1.3   Upgrade Details for Build 1859

No special procedures are required for this upgrade.

1.4   Known Issues and Limitations in Build 1859

#221, #222   When configuring data logging with `AutoIndex Ch #` on, be careful not to hit Enter without a valid variable (i.e. a double variable) in the `Variable #` field. This can happen if you change one of the other settings (e.g., `Frames/Sample`) after the `Channel Select` has auto-incremented to an empty channel.

WORKAROUND: Set non-channel configuration before using `AutoIndex Ch #` feature.

#179   If the number of AIMs physically installed in the system is more than the number of axes configured in `system.xml`, then the GUI will try to access axis 2, which will generate an error.

WORKAROUND: Make sure `system.xml` and physical AIMs installed are consistent.

#127   The `:config:save` command does not default the file number or comment.

> **WORKAROUND:** Always specify the file number and comment.

#105   The GPIB probe in the GPIB driver sometimes fails if the client is connected on startup.

> **WORKAROUND:** Disconnect client before starting Acutrol.

#102   The `:interface:ieee488` command is used to change the IEEE488 board address and high-speed mode.

WORKAROUND: Currently, you must save the system configuration and restart before the new address will take effect. High speed mode is not implemented.

2. Acutrol 3000 v1.1.3-1848 Release Notes

For items preceded by a #xxx (e.g. **#131**), see Bugzilla for additional details.

2.1 New Features in Build 1848

- Back-EMF compensation (NOTE: This is untested.)

- XML files are backed up in a rotation (.1 thru .10) when saved.

- Data logging channels are now numbered 1-32 instead of 0-31.

- XML files do not (normally) need to be modified when new attributes are added.

- Event pulse parameter **epDirThresh** and **epHystScale** are now stored in the **system.xml file** instead of hard coded.

- New variables were added (**x570/V_A2K_FHOST_POS_MON** thru **x573/V_A2K_FHOST_JERK_MON**) that represent the binary scaled version of the monitor skewed output variables (**x560/V_FHOST_POS_MON** thru **x563/V_FHOST_JERK_MON**).

- Some real-time variables were renumbered for consistency (**xxx0**, **xxx1**, **xxx2**, **xxx3** represent position, rate, acceleration, and jerk respectively).

- New status register bits were added:

    - **RT:8** - Bad Data (The real-time interface received bad data)

    - **AxERR:4** - Divide by zero (A divide by zero was prevented)

    - **AxDYN:13** - BEMF Limiting (The BEMF module is limiting acceleration)

- Real-time interface drivers will now clear their input queues when going on-line.

- A copy of **vars.txt** is now included on the flash.

- Lockout mode is not automatically enabled when the real-time interface goes on-line. It must be explicitly set by either issuing the "**:utility:lockout enable**" ACL command or by setting bit 31 of the control word via the real-time interface.

2.2 Bug Fixes in Build 1848

#168 VMIC driver crashes when using ACL channel.

#165   Data log configuration causes frame overruns.

#145   Variable name not restored from saved config file.

#134   Event pulses occasionally go away when changing direction.

#131   `:acquire:free` does not work properly.

#129   XML config save fails on copy/rotate for backups.

#119   Tracking error sets `AxSWFAULT` bit 12 instead of `AxSWFAULT` bit 2.

 # 76   Saving axis configuration to a new file causes 215:XML Path Not Found error.

- ACL commands without a response now send CR/LF (except for GPIB interface)

- Fixed problems with the real-time control word (a.k.a. B100 records).

- Fixed problems with reflective memory interface (SC150E and VMIC5565) drivers and ring buffer overflows.

- Fixed problem with demand translator causing error if interval between host frames was too long.

- Fixed problem with variable pointer initialization when the real-time data type was FLOAT.

- Fixed problem with real-time interface drivers crashing system on shutdown.

- A problem with the VMIC5565 driver not returning the node ID properly was fixed.

- Fixed problem where the ACL Command Block Transmit address variable (`0066/S_RFM_CMDBLK`) was returning the receive address.

2.3 Upgrade Details for Build 1848

- Depending on the original version of your `system.xml` file, you may need to add the following attributes to the `<ACUTROL_MASTER_SYSTEM_CONFIG ... >` tag:

      `epDirThresh="0.0005" epHystScale="1.001"`

- In the `config.001.xml` file, change the lines:

      `</ANALOG_CONFIG>`
      `<CONDITIONERS>`

to

```
</ANALOG_CONFIG>
<BEMF a0="1.0+04" r0="2.0+04" mode="0" />
<CONDITIONERS>
```

You will need to do this for each axis within a given file. You will also need to do this for each `config.xxx.xml` file you want to use.

2.4 Known Issues and Limitations in Build 1848

- The `autosave` option for data logging is not implemented.

  WORKAROUND: None

#184 Real-time BINARY mode generates NaN for observer output.

  WORKAROUND: None

#183 Variables are saved as numbers rather than mnemonics. If the number for a variable changes in a new release, it may be possible that an existing configuration file will need modification. This will be fixed in a future release.

  WORKAROUND: None

#180 Binary scaling for real-time fails if number of axes is less than 3.

  WORKAROUND: None

#172 If an entire tag (e.g., <BEMF x="1.0" y="2.0") is missing from an XML file, no default is used and an error is reported.

  WORKAROUND: Manually add the tag to pre-existing XML files.

#171 XML attributes do not default if attribute type is `enum`.

  WORKAROUND: Manually add attributes to pre-existing XML files.

#170 The error word is not byte-swapped for the SCRAMNet reflective memory ACL channel.

  WORKAROUND: None

#127 The `:config:save` command does not default the file number or comment.

  WORKAROUND: Always specify the file number and comment.

#105 The GPIB probe in the GPIB driver sometimes fails if the client is connected on startup.

WORKAROUND: Disconnect client before starting Acutrol.

#102 The `:interface:ieee488` command is used to change the IEEE488 board address and high-speed mode.

WORKAROUND: Currently, you must save the system configuration and restart before the new address will take effect. High speed mode is not implemented.