

Dual Axis SynqNet Amplifier

Firmware Revision History

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1. Version 0.1.3

Date of release: January 12, 2003

Based Upon V0.1.1

- Drive temperature reading filter is fixed. A filter of 10Hz is applied instead of a filter of 0.1Hz.
- Drive no longer reports "ACTIVE = 1" when an over-current fault exists
- Foldback warning is reported in the Upstream Cyclic Flags. Bit 13 of the Cyclic
- Status Flags indicates Torque Limit (Foldback), and Bit 14 of the Cyclic Status Flags indicates a Warning. Thus, in the event of foldback, bit bits 13 and 14 will be set.
- The **AxisOff** instruction has been added to the list of parameters accessible over SynqNet. The parameter index is 0x20
- Firmware upgrade can be done over the serial port instead of having to use the jumpers.
 - Enter the instruction **EMBER**
 - Exit from MotionLink (or set to off-line mode)
 - Choose baud rate of 9600 in the IGNITE28xx utility

2. Version 0.1.4

Date of release: February 19,2003

Based on version 0.1.3

- Service ADC readings modified from left justified to right justified:
 - Adc_In_0
 - Adc_In_1
 - Adc_In_2
 - Adc_In_3
 - Adc_In_4
 - Adc_In_5
 - Bus Voltage
 - Drive Temperature

3. Version 0.1.5

Date of release: June 20,2003

Based on version 0.1.4

- SynqNet communications fault fixed.

4. Version 0.1.6

Date of release: August 10,2003

Based on version 0.1.5

- MFBDIR functionality extended. Support for position and velocity feedback inversion added. Bit number 2 defines position and velocity inversion.
- Support for BURNIN mode added. This is used at the factory only, during the pre-shipping test process.
- X1 parameter added. This command is used for ignore the "A/B line break" fault detection. Set X1 to 1 to ignore the fault. The parameter is NOT saved in EEPROM.

5. Version 0.1.7

Date of release: September 7,2003

Based on version 0.1.6

- X1 parameter saved in EEPROM now
- WBTRESH command added - used to define wire break threshold in degrees for A/B line break fault. Range 0 - 359 electrical degrees, measured from the center of the hall segment. Default is 35 degrees.
- SynqNet support for X1 (param 0x21) and WBTRESH (param 0x22) added.
- Bug fix: FLTCLR did not clear the fault history.

6. Version 0.1.8

Date of release: December 1, 2003

Based on version 0.1.7

- SynqNet status word was changed as follows:

| Bit# | Version 0.1.7 | Version 0.1.8 |
|------|----------------------|---------------|
| 0 | Reserved | Reserved |
| 1 | Reserved | Reserved |
| 2 | Reserved | Reserved |
| 3 | Reserved | HALL A |
| 4 | Reserved | HALL B |
| 5 | Reserved | HALL C |
| 6 | Reserved | Reserved |
| 7 | Amp Powered (Enable) | Amp Ready |
| 8 | WD toggle | WD toggle |
| 9 | Reserved | Reserved |
| 10 | Reserved | Reserved |

| | | |
|----|--------------|----------------------|
| 11 | Reserved | Amp Powered (Enable) |
| 12 | Drive Ready | Drive Ready |
| 13 | Torque limit | Torque limit |
| 14 | Warning | Warning |
| 15 | Fault | Fault |

The bit interpretation is as follows:

Amp Powered Drive enabled

WD toggle watchdog bit toggled by controller

Drive Ready Drive has completed synchronization with controller and is able to exchange data cyclically

Torque Limit Drive in foldback.

Warning Warning exists (Foldback is the only warning)

Fault Drive in fault mode

Amp Ready Drive ready to be enabled. When AMP_EN is set, the drive will be enabled (ACTIVE).

7. Version 0.1.9

Date of release: December 7, 2003

Based on version 0.1.8

- Bug fix: WD occurred during CLREEPROM command.
- Bug fix: BurnIn did not work on second axis.

8. Version 0.2.0

Date of release: December 17, 2003

Based on version 0.1.9

- Bug fix: Service channel in SynqNet did not work. The problem was that with changing mapping of bits in cyclic word the service channel bit was cleared.

9. Version 0.2.1

Date of release: March 31, 2004

Based on version 0.2.0

- Addition of analog inputs gain and offset support. The following commands were added (supported only by the serial I/F as they are not intended for DASA users):
 - ANNULL0

- ANNULL1
- ANNULL2
- ANNULL3
- ANNULL4
- ANNULL5
- ANGAIN0
- ANGAIN1
- ANGAIN2
- ANGAIN3
- ANGAIN4
- ANGAIN5

Where ANNULLx sets the offset of the corresponding analog input. Units :mV, and ANGAINx sets the gain of the corresponding analog input. Units x/1000 (or Gain of 1=1000)

No save command is necessary as the values are saved automatically. The software also saves this value after a CLREERPOM command is issued.

10. Version 0.2.2

Date of release: December 12,2004

- '=' signed instead of space in dump
- Foldback parameters added for SynqNet
 - FOLDD 0x23
 - FOLDT 0x24
 - FOLDR 0x25
- UVTRESH command added. This allows the under-voltage threshold to be programmed, and thus enabled a bus voltage lower than 36VDC to be used. SynqNet parameter 0x26. Minimum value is 12, and maximum value is 36.
- Serial command response to ADCDTEMP replaces from mV to temp (units=0.1 degrees)

11. Version 0.2.3

Date of release: July 24,2005

- Added AQBQUAL command (SynqNet parameter 0x27).
 - Range: 0-255
 - Default 0 (no qualifier)

Qualifier (filter) time is AQBQUAL * 80 nano-sec

12. Version 0.2.4

Date of release: October 11, 2005

Additions and Changes

- Support for software dynamic braking was added. New parameters were defined for dynamic braking:
 - STOPMODE (0x28 in SynqNet)
 - STOPTIME (0x2A in SynqNet)
 - ISTOP (0x29 in SynqNet)
- Support for monitoring wire brake value added. A new parameter was defined.
 - WBVAL (0x2B in SynqNet)

WBVAL can be monitored via the SynqNet Real-Time Monitoring mechanism, using index 38 in the drive.
- The range for AQBQUAL is set to 0 – 1, instead of 0 – 255 previously. The qualifier cannot be set to a value greater than 1 without disrupting the SynqNet network operation.

Bug Fixes

- An under-voltage fault was flagged if UVTRESH was set to its minimum value on Axis 0 and Axis 1.
- The serial recorded values of IA, IC were not scaled correctly; they had an incorrect factor of 1.25.

13. Version 0.2.5

Date of release: January 24, 2006

Additions and Changes

- Added support for Direct Commands 0x40, 0x41 and 0x42. These are required in order for the *sqDriveMonitor* utility to work

Bug Fixes

- Drive stops working when the Index pulse oscillates:
 - For MENCTYPE=6 (A/B plus Halls), the index interrupt is always disabled
 - For MENCTYPE=0 (A/B/I plus Halls), index interrupt is disabled after the first occurrence
- ILIM, ICONT, ISTOP have negative values in case of EEPROM checksum fault.

14. Version 0.2.6

Date of release: February 21, 2006

Additions and Changes

- Hall filter at power up has been added. We now read the halls until three consecutive reads are the same.

Bug Fixes

N/A