

# *PicoDAD SynqNet*

## *Firmware Revision History*

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## **Base Version: 0.1.9**

Release Date: January 19, 2005

### ***Known Issues***

- UVMODE: Modes 1 and 2 not supported
- MOTOTYPE=3 not supported
- Voltage measurements are inaccurate. For example, bus voltage input of 48V is measured as 45V
- Over Current on one axis is displayed on the other axis
- With EnDat feedback, drive may lock up if communications with the encoder is attempted on both axes simultaneously. This only occurs in extreme cases.
- The display of Hall States on MoCon may flicker.

### ***Driving AKM Motors with Encoder Feedback***

- Set MOTORTYPE=0
- Connect phases U-V-W on motor to C-B-A on drive
- Connect halls U-V-W on motor to H3-H2-H1 on drive
- Set MPHASE=180

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## **Version 0.2.0**

Release Date: March 13,2005

### ***Additions and Changes***

- Over-voltage trip level set to 70VDC, instead of 60VDC
- Over-temperature trip level set to 90°C, instead of 80°C
- Supported added for UVMODE 1
- Time-based capture, using the Index as the capture trigger and the real-time monitor to hold the position.
- Warning Reports:
  - The under-voltage, Foldback, and time-based capture overrun are all reported via cyclic status bit 12, and the warning word (read with Direct Command 0xA)
  - The Warning Word includes the following bit definitions:

Bit 0:	Foldback
Bit 1:	Under-voltage
Bits 3-11:	Reserved
Bit 12:	Time based capture inactive
Bits 13-15:	Reserved
- The rotary switch state appears in the serial port VER response
- TESTLED command added to the serial port command list

- BRAT command added to the serial port command list - to support different serial communication baud rates. At power up, the baud rate is always set to 9600bps.
- Drive Processor Interrupt processing changes:
  - The Index ISR (used for time-based capture and for encoder index handling) cannot be interrupted
  - MTS counter (cntr\_625) updated at the beginning of the MTS, before nested interrupts are enabled.
- Sine/cosine calibration: error indication added for Velocity Too High
- Support added for drive-controlled time-based capture

### ***Bug Fixes***

- Jump after Enable fixed
- Display fixes:
  - Over-current display fixed
  - Flashing 'u' added for under-voltage
  - Flashing '2' added for Encoder Initialization (MENCTYPE=4)
- Motor over-temperature processing activated for MENCTYPE=9 (EnDat)

### ***Known Issues and Limitations***

- Analog Voltage measurements are inaccurate. For example, bus voltage input of 48V is measured as 45V
- UVMODE=2 not supported
- Drive-controlled time-based capture not yet fully functional

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## **Version 0.2.1**

Release Date: March 17,2005

### ***Additions and Changes***

- Added parameters to set sine encoder and resolver out-of-range limits.

### ***Known Issues and Limitations***

- The new parameters are read-only

## **Version 0.2.2**

Release Date: March 20,2005

### ***Additions and Changes***

- Parameters to set sine encoder and resolver out-of-range limits are read/write.

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## **Version 0.2.3**

### ***Additions and Changes***

- LPF on the current sense was added, IACLPF and IBLPF to change the LPF of phase a-c and b accordingly. Ranges are 0-5000Hz, (0=no filter)
- PWM en/dis moved to RT
- Internal factor of 1.4 removed from MLGAINZ. MLGAINZ was hard coded to 1.4, now it hard coded to 1.0
- Sampled 1.5V are subtracted from current samples to reduce common noise.

### ***Bug Fixes***

- On enable PWM set to 50% for 2msec, to eliminate spike, because of the bootstrap.

### ***Known Issues and Limitations***

- ANIN is not working in this version, 1.5V sampled instead.

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## **Version 0.2.4**

### ***Additions and Changes***

- ADC modified - added 4th start convert to sample 4 pairs of each axis' current(anin are sampled not at quite zone)
- MENCTYPE 3 added
- 1V5 Fault added (display is A-4)
- Autonomous drive action protocol added to SynqNet (with drive mode and Autonomous drive action bits)
- DC brush motor support - added some code. not finalized
- 4 digit F/W number
- UVMODE 2 support added

### **Bug Fixes**

- MENCTYPE 9 in resolver bug fix
- Halls flickering solved

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## **Version 0.2.5**

Release Date: June 29,2005

### **Bug Fixes**

- SynqNet support added for IACLPF and IBLPF. These are assigned SynqNet parameters 0x6B and 0x6C respectively.

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## **Version 0.2.6**

### **Additions and Changes**

- MLGAINC default changed to 7, MLGAINP to 8.
- Phase find warning bit changed to bit 2
- UVRECOVER - added hysteresis

### **Bug Fixes**

- "Bad CRC" message on EnDat during power up - bug solved.
- COMPFILT cannot be turned off on resolver - big fixed.
- Bug related to first command being CCW causing a motor jump - fixed.
- DICONT/DIPEAK are not programmable.
- Phase finding warning bug fix: setting MENCTYPE 3 + CONFIG warning will not set.
- RS232 crash fixed

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## **Version 0.2.7**

Release date: August 3, 2005

### **Additions and Changes**

None

### **Bug Fixes**

Adaptive gain of the current loop was fixed

It had been found that changing MLGAINP affects the current loop at zero current. This is a bug that was introduced during changes made in version 0.2.3

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## **Version 0.2.8**

Release date: August 8, 2005

### **Additions and Changes**

Phase finding done bit operation modified

### **Bug Fixes**

None

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## **Version 0.2.9**

Release date: August 18,2005

### **Additions and Changes**

- RSTVAR: Only operational parameters are reset to avoid invalid foldback message when LOAD is executed
- MICONT - writing the same value will not cause no-comp
- Odd number of motor poles (MPOLES) rejected
- PWMFRQ=16 command response modified
- Writing to PFB blocked. This is only allowed with REMOTEOFF=2, which is used for debugging purposes only
- Writing MENCTYPE of resolver will not cause NO-COMP fault
- MOTORTYPE 4 (DC brush) blocked. This feature is not available
- FEEDBACK options 4 and 5 blocked. These features are not available

### **Bug Fixes**

- MTANGLP bug fix
- MKT changed to unsigned. This fixes a bug that occurred if the value written was larger than 32767.
- MPITCH range check bug fix
- UVTIME range fixed