



*Open Architecture Control Software*

SoftPLC Driver for the Acroloop ACR8020  
Motion Control Card

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# Acroloop ACR8020 SoftPLC Driver

## I. INTRODUCTION

The "ACR8020.TLM" is a TOPDOC Loadable Module (TLM) that enables the Acroloop ACR8020 PCI bus motion control card to be read and written to by SoftPLC. The module contains several TOPDOC Loadable Instructions (TLI's) for accessing the data in the ACR8020 and supports up to four (4) cards. The number of cards to be loaded is set via a command line argument.

This document describes the installation and use of the SoftPLC ACR8020.TLM only, detailed programming and other information about the ACR8020 can be found in the Acroloop documentation. For Technical Support on the Acroloop motion control card and its programming, please contact Acroloop or your Acroloop dealer.

## II. HARDWARE INSTALLATION and CONFIGURATION

The ACR8020 is a Plug and Play device and does not have any manual dip switch settings. Each motion card requires a free PCI slot and will extend into a 2<sup>nd</sup> slot.

## III. SOFTWARE INSTALLATION

The "ACR8020" TLM must be installed on SoftPLC's flash disk in the "\SPLCZIODVR" directory. This can be done using a FTP Client such as WSFTP. A DEMO version of WSFTP\_PRO is provided on the SoftPLC Product CD.

In order for the driver to be selectable and configurable through the TOPDOC NexGen Module Editor, the ACR8020.DEF file must be installed on the Windows PC in the "\SoftPLC\PLC" directory.

The default driver configuration parameters are show below:

**MODULE=C:\SPLCZIODVR\ACR8020.TLM NUMCARDS=1**

For off-line programming with TOPDOC for SoftPLC version 4.x, the ACR8020.TLM must also be installed on the Windows PC and a "MODULE.LST" file created or modified for TOPDOC. This MODULE.LST file must reside in the TDZ directory (\TDZ). The keyword "MODULE" should be used to define the type of "driver". If TOPDOC is installed on the "C:" drive, and the TLM is installed in the "\SPLCZIODVR" directory on the Windows PC, then the following entry would be required in the "MODULE.LST" file:

**MODULE=C:\SPLCZIODVR\ACR8020.TLM**

#### IV. DRIVER OPTION PARAMETERS

The only command line argument supported by the ACR8020.TLM is **NUMCARDS**. The supported values are 1, 2, 3, or 4 cards.

#### V. RUNTIME TLI'S

The following TLI's are provided to interface with the ACR8020 motion control card.

**Note:** See "Acroloop Motion Controller User's Guide Part II" Appendix A for "Code", "Index" and "Parameter Number" assignments and Appendix B for "Flag Number" assignments.

1. **GETFTYPE** (Get FSTAT Group Types) Bits 0-9 are set if the corresponding Data Block of 8 values is in TMS320 format. If the bit is zero then the block is in 32 bit LONG format.  
  
Param0 - Card Number (0 - 3)  
Param1 - Type Bit Flags, Integer  
Param2 - Error Code
2. **GETFSTAT** (Get FSTAT 10x8 Data Block) The Fast Status is a user configured set of ten groups of eight 32 bit values each.  
  
Param0 - Card Number (0-3)  
Param1 - Destination File, Integer, 160 elements.  
Param2 - Error Code
3. **GETGROUP** (Get Eight 32 Bit Values) Read a group of eight (8) long or IEEE32 floating point values by Code and Index. The mask is internally set to 0xFF.  
  
Param0 - Card Number (0-3)  
Param1 - Code  
Param2 - Index  
Param3 - Destination File, Float or Integer, 16 elements.  
Param4 - Error Code
4. **GETVALUE** (Get 32 Bit Value) Read a 32 bit long or IEEE32 floating point value.  
  
Param0 - Card Number (0-3)  
Param1 - Parameter Number  
Param2 - Destination File, Float or Integer, 2 elements  
Param3 - Error Code
5. **PUTVALUE** (Put 32 Bit Value) Write a 32 bit long or IEEE32 floating point value.  
  
Param0 - Card Number (0-3)  
Param1 - Parameter Number  
Param2 - Destination File, Float or Integer, 2 elements  
Param3 - Error Code

6.     **SETFLAG**     (Set Flag by Number) Set a single bit in a flag register by bit index.
- Param0 - Card Number (0-3)  
Param1 - *Flag Number*  
Param2 - Error Code
7.     **CLRFLAG**     (Clear Flag by Number) Clear a single bit in a flag register by bit index.
- Param0 - Card Number (0-3)  
Param1 - *Flag Number*  
Param2 - Error Code
8.     **TMS2IEEE**     (Convert TMS320 to IEEE32) Convert a Fast Status TMS320 floating point value to *SoftPLC's* IEEE32 format.
- Param0 - Source File, type Integer, low/high TMS320 values  
Param1 - Destination File, type floating point  
Param2 - Length of Destination file, 1 to 8  
Param3 - Error Code
9.     **LONG2FLT**     (Convert LONG to IEEE32) Convert a 2 word long value to a floating point value to ease ladder processing of large integer values. Largest value without truncation due to exponent display is +/- 9,999,999.
- Param0 - Source File, type Integer, low/high split long integers  
Param1 - Destination File, type floating point  
Param2 - Length of Destination file, 1 to 8  
Param3 - Error Code

## VI.    **ERROR CODES**

- |                                 |   |
|---------------------------------|---|
| 100 - Unsupported Command       | 200 - Invalid Number of Bytes                 |
| 101 - Bad Command line argument | 201 - Card is Dead                            |
| 102 - Invalid Card Number       | 202 - Read Semaphore Timeout                  |
| 103 - Invalid Group Code        | 203 - Write Semaphore Timeout                 |
| 104 - Invalid Index Code        | 204 - Fast Status Semaphore Timeout           |
| 105 - Data Type Mis-Match       | 205 - Read No Data                            |
| 106 - Invalid File Length       | 206 - Read Buffer Count Less Than Expected    |
|                                 | 207 - Read Buffer Count Greater Than Expected |
|                                 | 300 - Invalid Fast Status Type                |