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SPLCMISC.TLM

A Collection of Loadable Instructions (TLIs) for SoftPLC®

I. INCLUDED TLIs

As of 1/03/01, the SPLCMISC.TLM includes the following TLI instructions:

1. ***WRDS2LNG*** - "*Convert 16 bit words to a Long*"
   This instruction combines two 16 bit integers into a single floating point value. The low word is interpreted as a positive number between 0 and FFFFh. The High word is perceived as containing the sign. This instruction was primarily written for use with the Tealware™ High Speed Counter Module (Cat. No. HSC10).

2. ***SPLITFLT*** - "*Split Float into 2 Words*"
   This instruction splits a raw floating point number into two 16 bit words. There are 3 parameters: Floating Point Value, LO Word, and HI Word. This instruction is primarily used to allow floating point data to be transferred to other systems that do not support floating point communications. The receiving system would then reconstruct the floating point number from the LO and HI 16 bit values.

3. ***RECONFLT*** - "*Reconstruct Split Float*"
   This instruction reconstructs a floating point number from two 16 bit words. There are 3 parameters: LO Word, HI Word, and Floating Point Value. The LO and HI words must be in actual floating point format; previously split into two 16 bit words. This instruction can be used to recreate a floating point value that was read as 2 words; eg: by a device driver.

4. ***SPLITFLTS*** - "*Split Floats into two Words*"
   This instruction splits a file (100 max.) of raw floating point numbers into two 16 bit words; High word first then Low word. There are 4 parameters: Floating Point File, Integer File, Number of Floats and Hi/Lo. The instruction will expand the Float and Integer data tables to the maximum size (100 & 200 elements respectively) during instruction entry. The Hi/Lo parameter is provided to control whether the order of the split; High word (1) or Low word (0) first. This instruction is primarily used to allow floating point data to be transferred to other systems that do not support floating point communications. The receiving system would then reconstruct the floating point number from the High and Low 16 bit values.

5. ***RECONFLTS*** - "*Reconstruct Split Floats*"
   This instruction reconstructs floating values from two 16 bit words; High word then Low word order. A maximum of 100 Floating points values may be reconstructed. There are 3 parameters: Integer File, Floating Point File, and Number of Floats to recreate. The instruction will expand the Integer and Floating Point data tables to the maximum size (200 & 100 elements respectively) during instruction entry. The Hi/Lo parameter is provided to declare the order of the split; High word (1) or Low word (0) first. The Integer High and Low words must be in actual floating point format; previously split into two 16 bit words. This instruction can be used to recreate a floating point value that was read as 2 words; eg: by a device driver.

6. ***TON_001*** - *".001 Second Timer on-Delay"*
   This is a new timer that provides accuracy to 1 millisecond. This instruction takes 2 parameters. The first parameter is a unique timer number between 0 and 999. The second is the timer element to be used. The timer element is a 3 word structure that contains the Control word, the Preset and the Accumulator value.

7. ***TOF_001*** - *".001 Second Timer off-Delay"*
   This is a new timer that provides accuracy to 1 millisecond. This instruction takes 2 parameters. The first parameter is a unique timer number between 0 and 999. The second is the timer element to be used. The timer element is a 3 word structure that contains the control word, the Preset and the Accumulator value.

8. ***RTO_001*** - *".001 Second Retentive Timer"*
   This is a new timer that provides accuracy to 1 millisecond. This instruction takes 2 parameters. The first parameter is a unique timer number between 0 and 999. The second is the timer element to be used. The timer element is a 3 word structure that contains the control word, the Preset and the Accumulator value.

9. **TRUEBITS** - "Count Number of True Bits"
   This instruction counts the number of true (on) bits in the 16 bit source parameter and puts the resulting count in the Result parameter. Both parameters must be integers.

II. INSTALLATION:

The TLI instructions are added to your *SoftPLC* program via an entry in the *SoftPLC* and *TOPDOC* **MODULE.LST** files. There are no command line parameters. The format is as follows:

MODULE=SPLCMISC.TLM

III. EXAMPLE LADDER PROGRAM:

The following is an example ladder program showing the format of these instructions:

```
      !                                                                                            +- TLI -----------------+!
P2/0  +--------------------------------------------------------------------------------------------+ Convert Words to Long ++
      !                                                                                            ! Function: WRDS2LNG    !!
      !                                                                                            ! LowWord:  N007:000    !!
      !                                                                                            !                    -1 !!
      !                                                                                            ! HiWord:   N007:001    !!
      !                                                                                            !                     7 !!
      !                                                                                            ! Result:   F008:000    !!
      !                                                                                            !              524286.0 !!
      !                                                                                            +------------------------+!

      !                                                                                         +- TLI --------------------+!
P2/1  +-----------------------------------------------------------------------------------------+ Split Float into 2 words ++
      !                                                                                         ! Function: SPLITFLT       !!
      !                                                                                         ! Float:    F008:001       !!
      !                                                                                         !                0.2345670 !!
      !                                                                                         ! LowWord:  N007:010       !!
      !                                                                                         !                    12885 !!
      !                                                                                         ! HiWord:   N007:011       !!
      !                                                                                         !                    15984 !!
      !                                                                                         +--------------------------+!

      !                                                                                          +- TLI -------------------+!
P2/2  +------------------------------------------------------------------------------------------+ Reconstruct Split Float ++
      !                                                                                          ! Function: RECONFLT      !!
      !                                                                                          ! LowWord:  N007:010      !!
      !                                                                                          !                   12885 !!
      !                                                                                          ! HiWord:   N007:011      !!
      !                                                                                          !                   15984 !!
      !                                                                                          ! Float:    F008:002      !!
      !                                                                                          !               0.2345670 !!
      !                                                                                          +-------------------------+!

      !    S:001                                                                                                 T004:002   !
P2/3  +-----] [-----------------------------------------------------------------------------------------------+---(RES)-----+
      !       15                                                                                              !             !
      !                                                                                                       !  T004:005   !
      !                                                                                                       +---(RES)-----+
      !                                                                                                       !  T004:008   !
      !                                                                                                       +---(RES)-----+

      !  T004:002                                                                             +- TLI ----------------------+!
P2/4  +----]/[--------------------------------------------------------------------------------+ .001 Second Timer On-Delay ++
      !      DN                                                                               ! Function: TON_001          !!
      !                                                                                       ! TimerNo:  2                !!
      !                                                                                       ! Control:  T004:002         !!
      !                                                                                       !          1100000000000000 !!
      !                                                                                       +-----------------------------+!

      !  T004:002                                                                            +- TLI -----------------------+!
P2/5  +----] [-------------------------------------------------------------------------------+ .001 Second Timer Off-Delay ++
      !      DN                                                                              ! Function: TOF_001           !!
      !                                                                                      ! TimerNo:  5                 !!
      !                                                                                      ! Control:  T004:005          !!
      !                                                                                      !           0110000000000000 !!
      !                                                                                      +------------------------------+!

      !+- LIM ------------+                                                                  +- TLI -----------------------+!
P2/6  ++ A <= B <= C      +------------------------------------------------------------------+ .001 Second Retentive Timer ++
      !! A: 0             !                                                                  ! Function: RTO_001           !!
      !!                  !                                                                  ! TimerNo:  8                 !!
      !! B: T004:002.ACC  !                                                                  !                              !!
      !!             8135 !                                                                  ! Control:  T004:008          !!
      !! C: 1000          !                                                                  !           0000000000000000 !!
      !!                  !                                                                  +------------------------------+!
      !+------------------+                                                                                                 !
```