3.10: Stepping Output Built in Parallel D/O Boards

I-8417/8817/8437/8837 supports D/O Stepping output since its driver version of 2.37. Only below parallel output boards are supported, not for serial boards.

   I-8037, 8041, 8042, 8054, 8055, 8056, 8057, 8060, 8063, 8064, 8065, 8066, 8068, 8069

The max axis number of stepping output is 2 for one controller.
Each axis is drived by 4 digital output channels. Please connect them as below.

Axis 1:	**A --- Ch.1**	**B --- Ch.2**	**A_ --- Ch.3**	**B_ --- Ch.4**
Axis 2:	**A --- Ch.5**	**B --- Ch.6**	**A_ --- Ch.7**	**B_ --- Ch.8**

Note:
  Do not use stepping output & PWM output at the same output channel.
  The I-7188EG/XG doesn't support stepping output.

Available functions:

STP_en   Enable stepping output to output

```
                                                  stp_en
                                                 SLOT_
Parameters:                                      AXIS_
        SLOT_       integer      Which slot ?  0 - 7    MODE_
        AXIS_       Integer      Which axis ? 1 - 2      MS_
                                 AXIS 1: (Ch.1 - Ch.4),  AXIS 2: (Ch.5 - Ch.8)    DIR      Q
        MODE_       Integer      Which mode ? 1 – 3,   (A, B, A_, B_) =
            Mode 1:  (1, 0, 0, 0) --> (0, 1, 0, 0) --> (0, 0, 1, 0) --> (0, 0, 0, 1)
            Mode 2:  (1, 1, 0, 0) --> (0, 1, 1, 0) --> (0, 0, 1, 1) --> (1, 0, 0, 1)
            Mode 3:  (1, 0, 0, 0) --> (1, 1, 0, 0) --> (0, 1, 0, 0) --> (0, 1, 1, 0) -->
                     (0, 0, 1, 0) --> (0, 0, 1, 1) --> (0, 0, 0, 1) --> (1, 0, 0, 1)
        MS_         Integer      Step interval time, 1 - 1000, unit is ms.
                                 For ex. set as 5 means running 200 steps/sec.
        DIR_        Boolean      True: positive direction,  False: opposite direction
return:
        Q_          Boolean      TRUE: Ok , FALSE: wrong input parameters,
                                      or the associate output channel is not found.
```
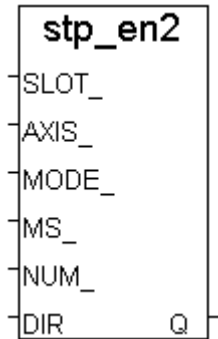
Example: Please refer to I-8417/8817/8437/8837's demo_58 & demo_59.

Note:
1. The way to stop "STP_en" is - call "STP_dis" function
2. If "STP_en", "STP_en2", "STP_sts" & "STP_dis" is not found, please download "**ICP DAS Utilities For ISaGRAF.zip**" from ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/isagraf/ and click on setup to re-install them to your ISaGRAF.

STP_en2   Enable stepping output to output some given steps

```
                                                          ┌─────────────┐
                                                          │   stp_en2   │
                                                          ┤SLOT_        │
                                                          ┤AXIS_        │
                                                          ┤MODE_        │
                                                          ┤MS_          │
                                                          ┤NUM_         │
                                                          ┤DIR       Q  ├
                                                          └─────────────┘
```

Parameters:
SLOT_	integer	Which slot ? 0 - 7
AXIS_	Integer	Which axis ? 1 - 2
		AXIS 1: (Ch.1 - Ch.4), AXIS 2: (Ch.5 - Ch.8)
MODE_	Integer	Which mode ? 1 – 3, (A, B, A_, B_) =

        Mode 1: (1, 0, 0, 0) --> (0, 1, 0, 0) --> (0, 0, 1, 0) --> (0, 0, 0, 1)

        Mode 2: (1, 1, 0, 0) --> (0, 1, 1, 0) --> (0, 0, 1, 1) --> (1, 0, 0, 1)

        Mode 3: (1, 0, 0, 0) --> (1, 1, 0, 0) --> (0, 1, 0, 0) --> (0, 1, 1, 0) -->

                  (0, 0, 1, 0) --> (0, 0, 1, 1) --> (0, 0, 0, 1) --> (1, 0, 0, 1)

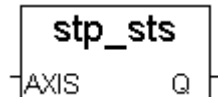|		
MS_	Integer	Step interval time, 1 - 1000, unit is ms.
		For ex. set as 5 means running 200 steps/sec.
NUM_	Integer	How many steps ? 0 - 2,147,483,647
DIR_	Boolean	True: positive direction, False: opposite direction

return:
Q_	Boolean	TRUE: Ok , FALSE: wrong input parameters,
		or the associate output channel is not found.

Note:
1. User may use the "STP_sts" function to test "STP_en2" is finished or not.
2. The ways to stop "STP_en2" are
        - call "STP_dis" function
        - wait until it is finished
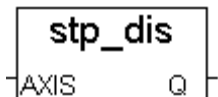

STP_sts   Get stepping output status

```
                                                          ┌─────────────┐
                                                          │   stp_sts   │
                                                          ┤AXIS      Q  ├
                                                          └─────────────┘
```

Parameters:
AXIS_	Integer	Which axis ? 1 - 2
		AXIS 1: (Ch.1 - Ch.4), AXIS 2: (Ch.5 - Ch.8)

return:
Q_	Boolean	TRUE: still enable , FALSE: disable (for stp_en2 been
		called, it means the given step number is reached).

STP_dis   Disable stepping output

```
                                                          ┌─────────────┐
                                                          │   stp_dis   │
                                                          ┤AXIS      Q  ├
                                                          └─────────────┘
```

Parameters:
AXIS_	Integer	Which axis ? 1 - 2
		AXIS 1: (Ch.1 - Ch.4), AXIS 2: (Ch.5 - Ch.8)

return:
Q_	Boolean	TRUE: Ok , FALSE: wrong input parameters,
		or the associate output channel is not found.

Example: Please refer to I-8417/8817/8437/8837's demo_58 & demo_59.