# *i*-8092 Function Reference

**(Version 1.0)**

**(For WinPAC, XP-8000/XP-8000-CE6 controller)**

**ICP DAS CO., LTD.**

## Warranty

All products manufactured by ICPDAS Inc. are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

## Warning

ICPDAS Inc. assumes no liability for damages consequent to the use of this product. ICPDAS Inc. reserves the right to change this manual at any time without notice. The information furnished by ICPDAS Inc. is believed to be accurate and reliable. However, no responsibility is assumed by ICPDAS Inc. for its use, or for any infringements of patents or other rights of third parties resulting from its use.

## Trademark

The names used for identification only maybe registered trademarks of their respective companies.

## License

The user can use, modify and backup this software on a single machine. The user may not reproduce, transfer or distribute this software, or any copy, in whole or in part.

# Contents

# Introduction

This software package is dedicated to i-8092 pulse-based motion controller. It includes the driver and ANSI-C Library for WinPAC and XP-8000/XP-8000-CE6 (XPAC Compact Edition).

The slot number that the module installed on will be referred by each function in Library. This slot number helps to identify multiple i-8092 modules in WinPAC / XP-8000/XP-8000-CE6.

There are samples that are provided for Microsoft® Visual Studio 2005 C++ and Embedded Visual C++ to demonstrate the functions of i-8092 Library. Some samples need the Generic-Type terminal-board (DN-8237G) to connect the external sensors, output pulse and encoder-input.

This documentation provides the detailed information of i-8092 APIs, including the function-decelerations, definitions of both parameters and return codes. The APIs will be cataloged and described in the following chapters:

- CHAPTER 2 – System Initialization
- CHAPTER 3 – Automatic Home Search
- CHAPTER 4 – Independent Moving Functions
- CHAPTER 5 – Interpolation Moving Functions
- CHAPTER 6 – Other Motion Functions
- CHAPTER 7 – Advanced Motion Configurations
- CHAPTER 8 – Miscellaneous Functions
- CHAPTER 9 – Status
- CHAPTER 10 – FRnet I/O extension
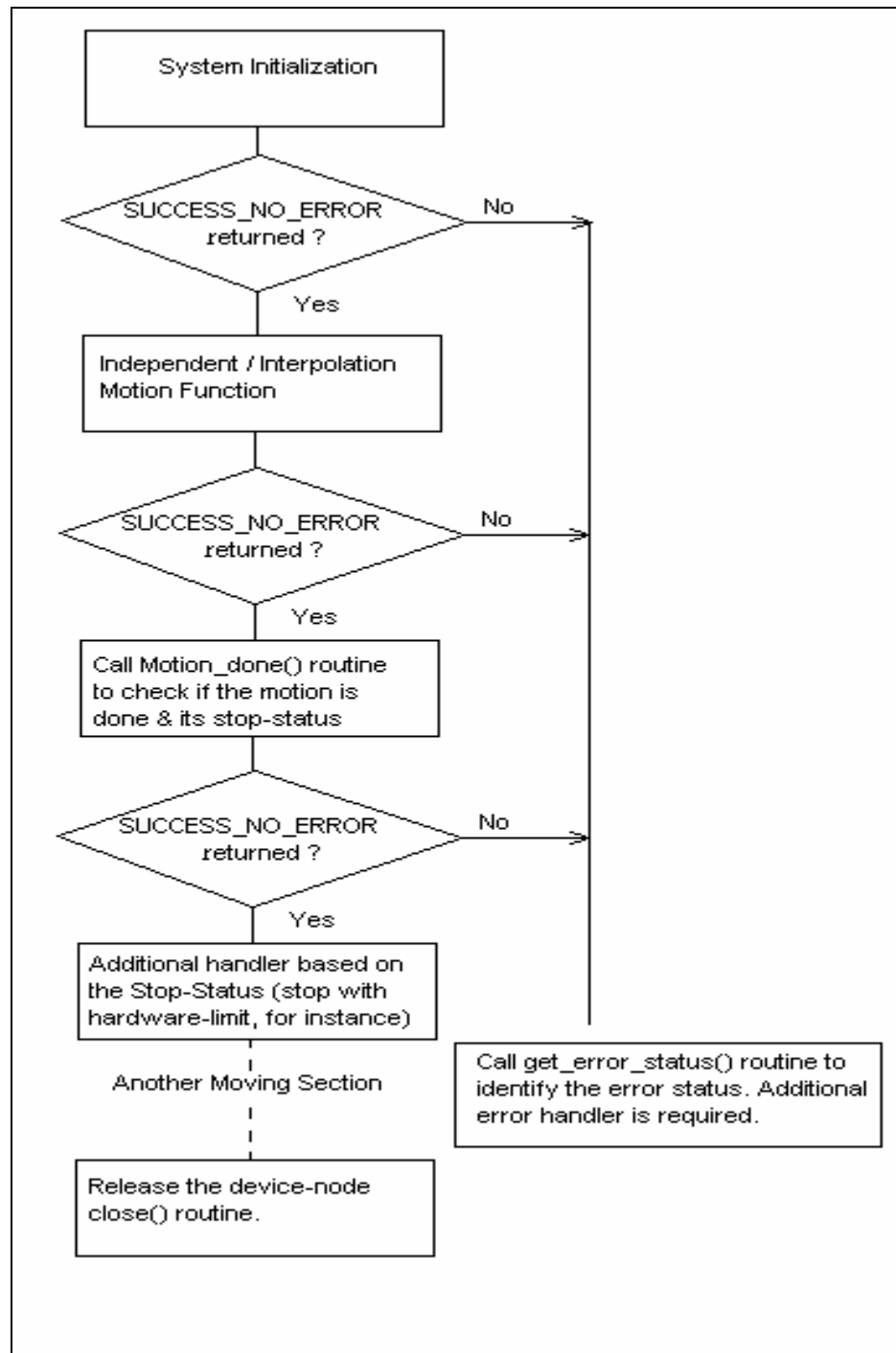
Figure 1 - typical programming following-chart

CHAPTER **2**

# System Initialization

# 2.1  Operating-System Configuration

The functions in this chapter provide the interface to WinPAC / XP-8000 / XP-8000-CE6. By calling these functions, your applications can scan all active i-8092 modules in your PAC, and get the specific slot-number. Open the module and access the internal Motion-Control ASIC with the other functions in i-8092 Library.

## 2.1.1  i8092_scan

short i8092_scan(short* pModuleNum, BYTE* pAvailModules = NULL)

**Description:**

This function scans all active i-8092 modules in your WinPAC / XP-8000 / XP-8000-CE6. The pModuleNum saves the numbers of active i-8092 modules. The optional user-provided Array, pAvailModules, indicates the presence of active i-8092 module. (1: present, 0: absent)

**Parameters:**

pModuleNum: The pointer to the memory that stores the numbers of active i-8092 modules.

pAvailModules: The address of user-provided *BYTE*-Array. Based on the slot-number, each element indicates the presence of active i-8092 module. The user must prepare one *BYTE*-Array with *I8092_MaxModules* elements.

For instance, there are three active i-8092 modules with slot-number 3, 5 and 7. The content of pAvailModules Array will be

{ 0, 0, 0, 1, 0, 1, 0, 1 }

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_NO_MODULE_FOUND: There is no active module available in your PAC.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying

memory, please check the pointer-type parameter you assign to this function.

## 2.1.2 i8092_get_ cardinfo

short i8092_get_cardinfo(int ScannedIndex, BYTE* pSlotNum, WORD* pModuleID = NULL)

**Description:**

This function returns the slot-number based on the scanned-index. This routine will get the slot number that i-8092 module is installed on.

**Parameters:**

ScannedIndex: The index that the active i-8092 module is scanned. This index begins from 0, and is less than the active i-8092 modules.

pSlotNum: The pointer to the memory that stores the specific slot-number.

pModuleID: The pointer to the memory that stores the module-ID. This parameter is optional.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_NO_MODULE_FOUND: There is no active module available in your system.

ERROR_INVALID_SCANNED_INDEX: Indicates the ScannedIndex is not less than the numbers of active I-8092 modules.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

## 2.1.3 i8092_open

short i8092_open(BYTE bSlotNum)

**Description:**

This function opens the device node of i-8092 based on the specific slot-number. If this function returns successfully, the process that calls this function owns the device until i8092_close() is called. The device node of i-8092 is ought to be owned before accessing the Motion-Control ASIC with the other functions. It's recommended to call i8092_scan() and i8092_get_cardinfo() to get the slot-number.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_IOCTL_FAILED: Cannot get the settings of *Range* register, please call GetLastError() for further system information.

ERROR_DEVICE_OPEN: Fail to open the device-node of i-8092. Please make sure no other process owns that i-8092 module.

# 2.1.4  i8092_close

short i8092_close(BYTE bSlotNum)

**Description:**

This function closes the device node of i-8092 based on the specific slot-number. After calling this function, i-8092 module will be released, and other process can open it.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_DEVICE_CLOSE: Fail to close the device-node of i-8092.

# 2.1.5 i8092_reset

short i8092_reset(BYTE bSlotNum)

**Description:**

This function re-sets the internal Motion-Control ASIC and re-configures the basic registers with default value. After calling this function, all configuration set before will be ignored. This function terminates the current motion, too.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MODULE_RESET: Cannot reset the Motion-Control ASIC, please call GetLastError() for further system information.

# 2.1.6 i8092_open_all

short i8092_open_all(void)

**Description:**

This function opens the all active i-8092 modules. If this function returns successfully, the process that calls this function owns all devices until i8092_close_all() is called.

**Parameters:**

None

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_IOCTL_FAILED: Cannot get the settings of *Range* register, please call GetLastError() for further system information.

ERROR_DEVICE_OPEN: Fail to open the device-node of i-8092. Please make sure no other process occupies that i-8092 module.

# 2.1.7 i8092_close_all

short i8092_close_all(void)

**Description:**

This function closes all i-8092 modules that are opened by one application. After calling this function, the i-8092 modules will be released, and other process can open them.

**Parameters:**

None

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_DEVICE_CLOSE: Fail to close the device-node of i-8092.

## 2.1.8 i8092_reset_all

short i8092_reset_all(void)

**Description:**

This function re-sets the internal Motion-Control ASIC of all i-8092 modules that are opened by one application, and re-configures the basic registers with default value. After calling this function, all configuration set before will be ignored. This function terminates the current motion of the active i-8092 modules, too.

**Parameters:**

None

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_MODULE_RESET: Cannot reset the Motion-Control ASIC, please call GetLastError() for further system information.

# 2.2 Hardware Configuration

After the i-8092 module is activated, the pre-defined configurations are assigned to the relative registers of Motion-Control ASIC. The functions in this chapter configure/change the default-settings and polarities of output-pulse, input-encoder and hardware-limit sensors.

## 2.2.1 i8092_set_pls_cfg

short i8092_set_pls_cfg(BYTE bSlotNum, WORD wAxis, WORD wPulseMode, WORD wPulseLogic, WORD wDirectionLogic)

**Description:**
This function configures the output-pulse mode of i-8092.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wAxis: Can be one of AXIS_X or   AXIS_Y.
wPulseMode: PULSE_MODE_CW_CCW or PULSE_MODE_PULSE_DIRECTION.
wPulseLogic: PULSE_LOGIC_ACTIVE_HIGH or PULSE_LOGIC_ACTIVE_LOW
wDirectionLogic: PULSE_FORWARD_ACTIVE_HIGH or PULSE_FORWARD_ACTIVE_LOW. This
      parameter will be ignored if the parameter ***wPulseMode*** is assigned to
      PULSE_MODE_CW_CCW.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
      given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter ***wAxis***.
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter ***wAxis***.
ERROR_INVALID_PULSE_MODE: Neither PULSE_MODE_CW_CCW nor
      PULSE_MODE_PULSE_DIRECTION is assigned to parameter ***wPulseMode***.
ERROR_INVALID_PULSE_LEVEL: Neither PULSE_LOGIC_ACTIVE_HIGH nor
      PULSE_LOGIC_ACTIVE_LOW is assigned to parameter ***wPulseLogic***.
ERROR_INVALID_PULSE_DIRECTION: Neither PULSE_FORWARD_ACTIVE_HIGH nor
      PULSE_FORWARD_ACTIVE_LOW is assigned to parameter ***wDirectionLogic***.

ERROR_PULSE_MODE_SET: Cannot change the output pulse mode, please call GetLastError() for further system information.

## 2.2.2 i8092_set_enc_cfg

short i8092_set_enc_cfg(BYTE bSlotNum, WORD wAxis, WORD wEncoderMode, BYTE bCounterSource = 0)

**Description:**
This function configures the input-encoder mode of i-8092.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wAxis: Can be one of AXIS_X or AXIS_Y.
wEncoderMode: ENCODER_MODE_AB, ENCODER_MODE_AB_DIVID_2,
         ENCODER_MODE_AB_DIVID_4 or ENCODER_MODE_CW_CCW.
bCounterSource: The optional parameter that is reserved for future.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
         given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.
ERROR_INVALID_ENCODER_MODE: No valid encoder mode is assigned to parameter
         *wEncoderMode*.
ERROR_ENCODER_MODE_SET: Cannot change the input encoder mode, please call
         GetLastError() for further system information.

## 2.2.3 i8092_set_limit

short i8092_set_limit(BYTE bSlotNum, WORD wAxis, WORD wLimitLogic, WORD wStopMode = LIMIT_STOP_SUDDEN)

**Description:**
This function configures the polarity and stop-mode of hardware-limit sensor.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wLimitLogic: LIMIT_LOGIC_ACTIVE_HIGH or LIMIT_LOGIC_ACTIVE_LOW.

wStopMode: LIMIT_STOP_SUDDEN or LIMIT_STOP_SLOWDOWN. This optional parameter is set
as LIMIT_STOP_SUDDEN by default.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_LIMIT_LOGIC: Neither LIMIT_LOGIC_ACTIVE_HIGH nor
LIMIT_LOGIC_ACTIVE_LOW is assigned to parameter *wLimitLogic*.

ERROR_INVALID_STOP_MODE: Neither LIMIT_STOP_SUDDEN nor LIMIT_STOP_SLOWDOWN
is assigned to parameter *wStopMode*.

ERROR_LIMIT_SENSOR_SET: Cannot configure the hardware-limit sensor, please call
GetLastError() for further system information.

# 2.3  Hardware Configuration (optional)

The functions in this chapter enable/disable the additional signals, including INP and ALARM. The signal-filtering feature is built in Motion-Control ASIC, and can be configured with i8092_set_filter(). The *Range* register of Motion-Control ASIC can be configured with i8092_set_range() function. Assigning different value to the *Range* register, the accuracy and valid-range of speed, acceleration/deceleration and jerk/deceleration-rate will be changed.

The Motion-Control ASIC also provides the software-limit feature, and is enabled/configured with i8092_set_softlimit(). Another helpful function, i8092_load_config(), configures all i-8092 modules with the pre-defined configuration file, I8092_Config.bin.

## 2.3.1  i8092_set_range

short i8092_set_range(BYTE bSlotNum, WORD wAxis, DWORD dwRange)

**Description:**

This function changes the *Range* register to change the accuracy and valid-range of speed, acceleration/deceleration and jerk/deceleration-rate. The relationship between *Range* register and Speed/Acceleration/Jerk is illustrated in Figure 2. Another function, i8092_get_range_settings(), gets the current valid-range of speed, acceleration/deceleration and jerk/deceleration-rate.



$$Multiple = \frac{8,000,000}{R}$$

$$Drive\ Speed\ (PPS) = V \times \underbrace{\frac{8,000,000}{R}}_{Multiple}$$

$$Jerk\ (PPS/SEC^2) = \frac{62.5 \times 10^6}{K} \times \underbrace{\frac{8,000,000}{R}}_{Multiple}$$

$$Deceleration\ (PPS/SEC) = D \times 125 \times \underbrace{\frac{8,000,000}{R}}_{Multiple}$$

$$Acceleration\ (PPS/SEC) = A \times 125 \times \underbrace{\frac{8,000,000}{R}}_{Multiple}$$

$$Initial\ Speed\ (PPS) = SV \times \underbrace{\frac{8,000,000}{R}}_{Multiple}$$

Figure 2 − relationship between *Range* register and Speed/Acceleration/Jerk

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

dwRange: The value to be assigned to the *Range* register (16,000 ~ 8,000,000)

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter **wAxis**.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter **wAxis**.

ERROR_INVALID_RANGE: The value to be assigned to **Range** register is invalid.

ERROR_RANGE_CHANGE: Cannot change the content of **Range** register, please call GetLastError() for further system information.

## 2.3.2 i8092_get_range_settings

short i8092_get_range_settings(BYTE bSlotNum, WORD wAxis, AXIS_RANGE_SETTINGS* pAxisRangeSetting)

**Description:**

This function gets the valid-range of Speed, Acceleration/Deceleration and Jerk/Deceleration-Increasing-Rate based on the setting of *Range* register. Please refer to the 'Set_Range' sample.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pAxisRangeSetting: The pointer to the data structure that stores the valid-range of Speed, Acceleration/Deceleration and Jerk/Deceleration-Increasing-Rate.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

## 2.3.3 i8092_set_inp

short i8092_set_inp(BYTE bSlotNum, WORD wAxis, WORD wINPEnable, WORD wINPLogic)

**Description:**
This function enables/disables INP feature and configures its polarity. This feature is active until calling i8092_set_inp() with INP_DISABLE_FEATURE.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wAxis: Can be one of AXIS_X or AXIS_Y.
wINPEnable: INP_ENABLE_FEATURE or INP_DISABLE_FEATURE.
wINPLogic: INP_LOGIC_ACTIVE_HIGH or INP_LOGIC_ACTIVE_LOW.

> *Caveat:*
> If the incorrect setting is assigned to parameter *wINPLogic*, the i8092_motion_done() will report MOTION_NOT_DONE always.
> It's recommended to run *i8092_EzGo.exe* to check the correct settings.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.
ERROR_INVALID_INP_ENABLE: Neither INP_ENABLE_FEATURE nor INP_DISABLE_FEATURE is assigned to parameter *wINPEnable*.
ERROR_INVALID_INP_LOGIC_LEVEL: Neither INP_LOGIC_ACTIVE_HIGH nor INP_LOGIC_ACTIVE_LOW is assigned to parameter *wINPLogic*.
ERROR_INP_SIGNAL_SET: Cannot set the INP configuration, please call GetLastError() for further system information.

## 2.3.4  i8092_set_alarm

short i8092_set_alarm(BYTE bSlotNum, WORD wAxis, WORD wAlarmEnable, WORD wAlarmLogic)

**Description:**

This function enables/disables ALARM feature and configures its polarity. This feature is active until calling i8092_set_alarm() with ALARM_DISABLE_FEATURE.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wAlarmEnable: ALARM_ENABLE_FEATURE or ALARM_DISABLE_FEATURE.

wAlarmLogic: ALARM_LOGIC_ACTIVE_HIGH or ALARM_LOGIC_ACTIVE_LOW.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_ALARM_ENABLE: Neither ALARM_ENABLE_FEATURE nor ALARM_DISABLE_FEATURE is assigned to parameter *wAlarmEnable*.

ERROR_INVALID_ALARM_LOGIC_LEVEL: Neither ALARM_LOGIC_ACTIVE_HIGH nor ALARM_LOGIC_ACTIVE_LOW is assigned to parameter *wAlarmLogic*.

ERROR_ALARM_SIGNAL_SET: Cannot set the ALARM configuration, please call GetLastError() for further system information.

# 2.3.5 i8092_set_filter

short i8092_set_filter(BYTE bSlotNum, WORD wAxis, WORD wFilterEnable, WORD wFilterCfg, WORD wDelayTime)

**Description:**

This function enables/disables the signal filter built in Motion-Control ASIC, and configures the signal-sources and delay-time. This feature is active until calling i8092_set_filter() with FILTER_ DISABLE_FEATURE.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wFilterEnable: FILTER_ENABLE_FEATURE or FILTER_DISABLE_FEATURE.

wFilterCfg: The following signal-sources can be combined with OR ( | ) operator.

> FILTER_CFG_EMG_EL_ORG_NORG (for EMG, hardware-limit, Home and Near-Home),
>
> FILTER_CFG_ENCODER_Z_PHASE (for Z-Phase/INDEX),
>
> FILTER_CFG_INP_ALARM (for INP and ALARM),
>
> FILTER_CFG_EXP_EXPLSN (for manual-pulse-generator),
>
> FILTER_CFG_IN3 (for digital-input IN3)

wDelayTime: Can be one of the following delay-time settings (unit: micro-second):

> FILTER_DELAY_2us,
>
> FILTER_DELAY_256us,
>
> FILTER_DELAY_512us,
>
> FILTER_DELAY_1024us,
>
> FILTER_DELAY_2048us,
>
> FILTER_DELAY_4096us,
>
> FILTER_DELAY_8192us,
>
> FILTER_DELAY_16384us

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_FILTER_ENABLE: Neither FILTER_ENABLE_FEATURE nor
FILTER_DISABLE_FEATURE is assigned to parameter **wFilterEnable**.

ERROR_INVALID_FILTER_CONFIGURATION: Invalid Filter-Source combination is assigned to
parameter **wFilterCfg**.

ERROR_INVALID_FILTER_DELAY_TIME: Invalid delay-time is assigned to parameter **wDelayTime**.

ERROR_FILTER_SET: Cannot set the Filter configuration, please call GetLastError() for further
system information.

# 2.3.6 i8092_set_softlimit

short i8092_set_softlimit(BYTE bSlotNum, WORD wAxis, WORD wSWLimitEnable, WORD wCmpSource, long LimitPositive, long LimitNegaitive)

**Description:**

The internal comparators of Motion-Control ASIC provide the software-limit feature. The Motion-Control ASIC will monitor either Logic-Command counter or Encoder-Position counter. Once the content of these counters exceeds the pre-defined value, the deceleration stop will be started. This feature is active until calling i8092_set_softlimit() with SW_LIMIT_DISABLE_FEATURE.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wSWLimitEnable: SW_LIMIT_ENABLE_FEATURE or SW_LIMIT_DISABLE_FEATURE.

wCmpSource: CMP_SRC_LOGIC_COMMAND or CMP_SRC_ENCODER_POSITION.

LimitPositive: The pre-defined value for the comparator in forward direction.

LimitNegaitive: The pre-defined value for the comparator in reverse direction.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_SOFTWARE_LIMIT_ENABLE: Neither SW_LIMIT_ENABLE_FEATURE nor SW_LIMIT_DISABLE_FEATURE is assigned to parameter *wSWLimitEnable*.

ERROR_INVALID_SOFTWARE_LIMIT_COMPARATOR_SOURCE: Neither CMP_SRC_LOGIC_COMMAND nor CMP_SRC_ENCODER_POSITION is assigned to parameter *wCmpSource*.

ERROR_SW_LIMIT_SET: Cannot configure the software-limit settings, please call GetLastError() for further system information.

# 2.3.7 i8092_load_config

short i8092_load_config(char* FileName = NULL)

**Description:**

This function loads the pre-defined configuration file and configures all active -8092 modules automatically. The i8092_open_all() is needed to be called before this function.

It's strongly recommended to change the settings of configuration file with the utility, i8092_EzGO.exe.

The involved configuration routines are:

i8092_set_pls_cfg(), i8092_set_enc_cfg(), i8092_set_limit(), i8092_set_home_cfg(),

i8092_set_softlimit(), i8092_set_alarm(), i8092_set_inp() and i8092_set_filter().

**Parameters:**

FileName: The pointer to the memory that stores the pathname of configuration file. Without
assigning pathname, the default configuration file,
\System_Disk\ICPDAS\System\I8092_Config.bin, will be loaded. This parameter is
optional, and NULL is assigned by default.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_CONFIG_FILE_LOAD: Cannot locate the configuration file.

ERROR_CONFLICT_IN_CONFIG_FILE: The active i-8092 modules settings is not identical to the
configuration file.

ERROR_INVALID_FILE_HANDLE: There is no valid file-handle is related to the i-8092 module
recorded in configuration. Please make sure the i8092_open_all() had been called and
returns SUCCESS_NO_ERROR..

Other return codes please refer to the following functions:

 i8092_set_pls_cfg, i8092_set_enc_cfg, i8092_set_limit, i8092_set_softlimit, i8092_set_inp,
i8092_set_alarm and i8092_set_filter.

# 2.3.8 i8092_servo_on

short i8092_servo_on(BYTE bSlotNum, WORD wAxis, BYTE bServoON, BYTE bAutoOFF)


**Description:**

This function turns on/off the Servo.


**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

bServoON: SERVO_ON or SERVO_OFF.

bAutoOFF: SERVO_MANUAL_OFF: turn off Servo manually.

　　　　　SERVO_AUTO_OFF: turn off Servo when the i8092_close() or i8092_close_all() is

　　　　　called.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the

　　　　　given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_SERVO_SETTING: Neither SERVO_ON nor SERVO_OFF is assigned to

　　　　　parameter *bServoON*.

ERROR_SERVO_ON_SET: Cannot set the Servo output, please call GetLastError() for further

　　　　　system information.

# Home Searching

The Motion ASIC on I-8092 does not provide the automatic-homing feature. For I-8092, the home-searching feature is feasible with the homing-related sensors, Near-Home, Home and Z-Phase. The typical Home Searching is illustrated in Figure 3; and the following-chart is described in Figure 4. Please refer to the 'Home_Search' sample.
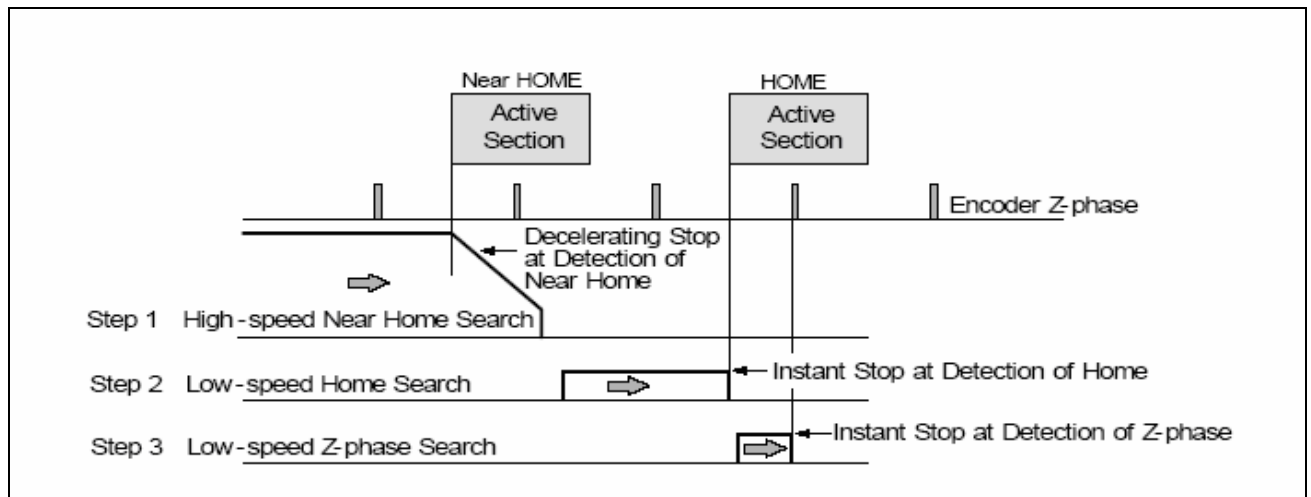


Figure 3 - typical Home-Searching
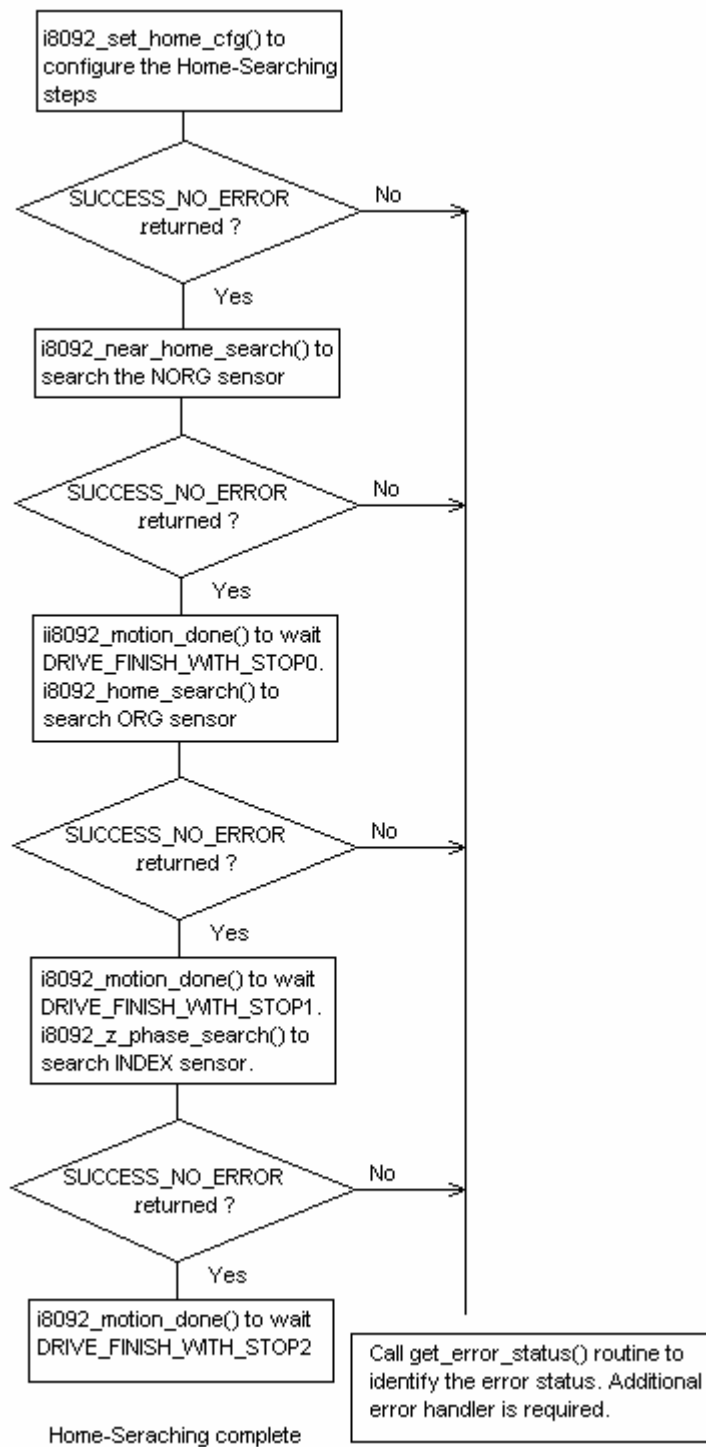
Figure 4 - typical programming following-chart of home-searching

# 3.1 i8092_set_home_cfg

short i8092_set_home_cfg(BYTE bSlotNum, WORD wAxis, WORD wHomeLogic, WORD wNHomeLogic, WORD wIndexLogic, WORD wHomeSteps)

**Description:**

This function configures the polarities of Near-Home(NORG), Home(ORG) and Z-Phase/INDEX sensors. The searching-steps of Home-Searching are configured in this function, too.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wHomeLogic: HOME_LOGIC_ACTIVE_HIGH or HOME_LOGIC_ACTIVE_LOW.

wNHomeLogic: NHOME_LOGIC_ACTIVE_HIGH or NHOME_LOGIC_ACTIVE_LOW

wIndexLogic: INDEX_LOGIC_ACTIVE_HIGH or INDEX_LOGIC_ACTIVE_LOW

wHomeSteps: The combination of Automatic-Home-Search 4-Steps. The configurations are:

> Step-1:
>
> AUTO_HOME_STEP1_FORWARD, AUTO_HOME_STEP1_REVERSE and
> AUTO_HOME_STEP1_DISABLE
>
> Step-2:
>
> AUTO_HOME_STEP2_FORWARD, AUTO_HOME_STEP2_REVERSE and
> AUTO_HOME_STEP2_DISABLE
>
> Step-3:
>
> AUTO_HOME_STEP3_FORWARD, AUTO_HOME_STEP3_REVERSE and
> AUTO_HOME_STEP3_DISABLE

> *Notice:* Based on external sensor, It's recommended to include either
> AUTO_HOME_STEP2_FORWARD or AUTO_HOME_STEP2_REVERSE in
> wHomeSteps.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_HOME_LOGIC_LEVEL: Neither HOME_LOGIC_ACTIVE_HIGH nor HOME_LOGIC_ACTIVE_LOW is assigned to parameter *wHomeLogic*.

ERROR_INVALID_NEAR_HOME_LOGIC_LEVEL: Neither NHOME_LOGIC_ACTIVE_HIGH nor NHOME_LOGIC_ACTIVE_LOW is assigned to parameter *wNHomeLogic*.

ERROR_INVALID_INDEX_LOGIC_LEVEL: Neither INDEX_LOGIC_ACTIVE_HIGH nor INDEX_LOGIC_ACTIVE_LOW is assigned to parameter *wIndexLogic*.

ERROR_INVALID_AUTO_HOME_STEP: The Home-Searching Steps are out of pre-defined configurations.

ERROR_HOME_STEP2_NOT_CONFIGURE: The Home(ORG) sensor is not applied to Home-Searching Steps.

ERROR_HOME_CFG_SET: Cannot change the configuration of Home-Searching, please call GetLastError() for further system information.

# 3.2   i8092_near_home_search

short i8092_near_home_search(BYTE bSlotNum, WORD wAxis, DWORD dwStartSpeed, DWORD dwAcceleration, DWORD dwDeceleration, DWORD dwNHomeSearchSpeed )

**Description:**
This function starts Near-Home Searching with the Start-Speed, Acceleration/Deceleration, Near-Home Searching Speed.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wAxis: can be one of AXIS_X or AXIS_Y.
dwStartSpeed: The Start Speed in Near-Home Searching.
dwAcceleration: The Acceleration in Near-Home Searching.
dwDeceleration: The Deceleration in Near-Home Searching.
dwNHomeSearchSpeed: The Near-Home Search Speed(Driving Speed) in Near-Home Searching.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.
ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The *dwStartSpeed* is larger than *dwNHomeSearchSpeed*.
ERROR_INVALID_START_SPEED: The value assigned to parameter *dwStartSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().
ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwNHomeSearchSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().
ERROR_INVALID_ACCELERATION: The value assigned to parameter *dwAcceleration* is out of range of Acceleration. Please refer to i8092_set_range() and i8092_get_range_settings().
ERROR_INVALID_DECELERATION: The value assigned to parameter *dwDeceleration* is out of range of Deceleration. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_CONFIG_IS_NEEDED: The Near-Home Searching had not been configured. Please
configure the Home-Searching Step1 in i8092_set_home_cfg() first.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:
Indicates that some error happens to AXIS_X or AXIS_Y. Please call
i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed. Please wait
for completion of motion, or stop motion with i8092_stop_move().

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
Please disable MPG settings with i8092_set_mpg().

ERROR_NEAR_HOME_SEARCH: Cannot start Near-Home Searching, please call GetLastError()
for further system information.

# 3.3   i8092_home_search

short i8092_home_search(BYTE bSlotNum, WORD wAxis, DWORD dwHomeSearchSpeed)

**Description:**

This function starts Home-Search procedure with the Home Searching Speed.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: can be one of AXIS_X or AXIS_Y.

dwHomeSearchSpeed: The speed of Home Searching.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_HOME_SEARCH_SPEED: The value assigned to parameter
*dwHomeSearchSpeed* is out of range of Speed. Please refer to i8092_set_range() and
i8092_get_range_settings().

ERROR_CONFIG_IS_NEEDED: The Home Searching had not been configured. Please configure
the Home-Searching Step2 in i8092_set_home_cfg() first.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:
Indicates that some error happens to AXIS_X or AXIS_Y. Please call
i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed. Please wait
for completion of motion, or stop motion with i8092_stop_move().

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
Please disable MPG settings with i8092_set_mpg().

ERROR_HOME_SEARCH: Cannot start Home Searching, please call GetLastError() for further
system information.

## 3.4  i8092_z_phase_search

short i8092_z_phase_search(BYTE bSlotNum, WORD wAxis, DWORD dwZPhaseSearchSpeed)

**Description:**

This function starts Home-Search procedure with the Home Searching Speed.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: can be one of AXIS_X or AXIS_Y.

dwZPhaseSearchSpeed: The speed of Z-Phase Searching.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_HOME_SEARCH_SPEED: The value assigned to parameter
*dwZPhaseSearchSpeed* is out of range of Speed. Please refer to i8092_set_range()
and i8092_get_range_settings().

ERROR_CONFIG_IS_NEEDED: The Home Searching had not been configured. Please configure
the Home-Searching Step3 in i8092_set_home_cfg() first.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:
Indicates that some error happens to AXIS_X or AXIS_Y. Please call
i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed. Please wait
for completion of motion, or stop motion with i8092_stop_move().

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
Please disable MPG settings with i8092_set_mpg().

ERROR_Z_PHASE_SEARCH: Cannot start Home Searching, please call GetLastError() for further
system information.

CHAPTER **4**

# Independent Moving Functions

These functions in this chapter start the independent motion, including velocity-move, constant-speed move, trapezoidal-profile and S-curve move.

## 4.1 i8092_velocity_move

short i8092_velocity_move(BYTE bSlotNum, WORD wAxis, DWORD dwStartSpeed, DWORD dwDriveSpeed, DWORD dwAcceleration, BYTE bDirection)

**Description:**

This function starts velocity-move with ***dwDriveSpeed*** driving-speed continuously. The trapezoidal-profile moving will be applied to Acceleration. Calling i8092_stop_move() to terminate the velocity-move.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

dwStartSpeed: The Start-Speed in trapezoidal-profile move.

dwDriveSpeed: The Drive-Speed in trapezoidal-profile move.

dwAcceleration: The Acceleration in trapezoidal-profile move.

bDirection: MOVE_DIRECTION_FORWARD or MOVE_DIRECTION_REVERSE.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter ***wAxis***.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter ***wAxis***.

ERROR_INVALID_MOVE_DIRECTION: Neither MOVE_DIRECTION_FORWARD nor
        MOVE_DIRECTION_REVERSE is assigned to parameter ***bDirection***.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The ***dwStartSpeed*** is larger than
        ***dwDriveSpeed***.

ERROR_INVALID_START_SPEED: The value assigned to parameter ***dwStartSpeed*** is out of range
        of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter ***dwDriveSpeed*** is out of
        range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_ACCELERATION: The value assigned to parameter ***dwAcceleration*** is out of
        range of Acceleration. Please refer to i8092_set_range() and
        i8092_get_range_settings().

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:
        Indicates that some error happens to AXIS_X or AXIS_Y. Please call
        i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
        Please disable MPG settings with i8092_set_mpg().

ERROR_CONTI_MOVE_START: Cannot start velocity-move, please call GetLastError() for further
        system information.

# 4.2   i8092_const_move

short i8092_const_move(BYTE bSlotNum, WORD wAxis, DWORD dwDriveSpeed, long FixedPulse)

**Description:**

This function starts constant-speed, fixed-pulse motion. No acceleration/deceleration is applied in this motion.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

dwDriveSpeed: The Drive-Speed in constant-speed moving.

FixedPulse: The total numbers of output pulse. This parameter is a signed 32-bits variable, the negative value indicates motion in reverse-direction

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:
Indicates that some error happens to AXIS_X or AXIS_Y. Please call i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active. Please disable MPG settings with i8092_set_mpg().

ERROR_CONST_MOVE_START: Cannot start constant-speed motion, please call GetLastError() for further system information.

# 4.3  i8092_const_moveall

short i8092_const_moveall(BYTE bSlotNum, WORD wAxis, DWORD dwDriveSpeed[], long FixedPulse[])

**Description:**
This function starts multiple axes the constant-speed, fixed-pulse moving simultaneously. No acceleration/deceleration is applied in this motion.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wAxes: Can be any combination of AXIS_X or AXIS_Y.
dwDriveSpeed[]: The pointer to the *DWORD*-Array that contains Driving-Speed of multiple axes.
    Different speed can be assigned to each axis.
FixedPulse[]: The pointer to the *long*-Array that contains Fixed-Pulse of multiple axes. Different pulse
    number can be assigned to each axis. The element of this *long*-Array is a signed 32-bits
    variable, the negative value indicates motion in reverse-direction

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
    given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.
ERROR_INVALID_DRIVING_SPEED: The value assigned to some elements of *dwDriveSpeed[]*
    are out of range of Speed. Please refer to i8092_set_range() and
    i8092_get_range_settings().
ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying
    memory, please check the pointer-type parameter you assign to this function.
ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY:
    Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()
    for detailed information.
ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.
ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
    Please disable MPG settings with i8092_set_mpg().
ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please
    call GetLastError() for further system information.

ERROR_CONST_MOVE_START: Cannot start constant-speed motion, please call GetLastError() for further system information.

# 4.4 i8092_t_move

short i8092_t_move(BYTE bSlotNum, WORD wAxis, DWORD dwStartSpeed, DWORD dwDriveSpeed, DWORD dwAcceleration, DWORD dwDeceleration, long FixedPulse, short wAccCntOffset = 8)

**Description:**

This function starts trapezoidal-profile, fixed-pulse motion.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: can be one of AXIS_X or AXIS_Y.

dwStartSpeed: The Start-Speed in trapezoidal-profile moving.

dwDriveSpeed: The Drive-Speed in trapezoidal-profile moving.

dwAcceleration: The Acceleration in trapezoidal-profile moving.

dwDeceleration: The Deceleration in trapezoidal-profile moving.

FixedPulse: The total numbers of output pulse. This parameter is a signed 32-bits variable, the negative value indicates motion in reverse-direction

wAccCntOffset: This optional parameter to configure the offset for Acceleration/Deceleration driving. The default setting of *wAccCntOffset* is 8.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The *dwStartSpeed* is larger than *dwDriveSpeed*.

ERROR_INVALID_START_SPEED: The value assigned to parameter *dwStartSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_ACCELERATION: The value assigned to parameter *dwAcceleration* is out of range of Acceleration. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DECELERATION: The value assigned to parameter **dwDeceleration** is out of

range of Deceleration. Please refer to i8092_set_range() and

i8092_get_range_settings().

*Notice:* In the case, **dwAcceleration** > **dwDeceleration** , the following formula should be

satisfied, too.

**dwDeceleration > (dwAcceleration x dwDriveSpeed) / 4,000,000.**

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:

Indicates that some error happens to AXIS_X or AXIS_Y. Please call

i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.

Please disable MPG settings with i8092_set_mpg().

ERROR_T_MOVE_START: Cannot start trapezoidal moving, please call GetLastError() for further

system information.

# 4.5   i8092_t_moveall

short i8092_t_moveall(BYTE bSlotNum, WORD wAxes, DWORD dwStartSpeed[], DWORD dwDriveSpeed[], DWORD dwAcceleration[], DWORD dwDeceleration[], long FixedPulse[], short wAccCntOffset[] = NULL)

**Description:**

This function starts multiple axes the trapezoidal-profile, fixed-pulse moving simultaneously.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxes: can be any combination of AXIS_X or AXIS_Y.

dwStartSpeed[]: The pointer to the ***DWORD***-Array that contains Start-Speed of multiple axes. Different value can be assigned to each axis.

dwDriveSpeed[]: The pointer to the ***DWORD***-Array that contains Driving-Speed of multiple axes. Different value can be assigned to each axis.

dwAcceleration[]: The pointer to the ***DWORD***-Array that contains Acceleration of multiple axes. Different value can be assigned to each axis.

dwDeceleration[]: The pointer to the ***DWORD***-Array that contains Deceleration of multiple axes. Different value can be assigned to each axis.

FixedPulse[]: The pointer to the ***long***-Array that contains Fixed-Pulse of multiple axes. Different pulse number can be assigned to each axis. The element of this parameter is a signed 32-bits variable, the negative value indicates motion in reverse-direction

wAccCntOffset[]: This optional pointer to the ***short***-Array that contains offset of multiple axes. The default setting of ***wAccCntOffset[]*** is NULL.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter ***wAxis***.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: Some elements in ***dwStartSpeed[]*** are larger than relative element of ***dwDriveSpeed[]***.

ERROR_INVALID_START_SPEED: The value assigned to some elements of ***dwStartSpeed[]*** are out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to some elements of **dwDriveSpeed[]**
  are out of range of Speed. Please refer to i8092_set_range() and
  i8092_get_range_settings().

ERROR_INVALID_ACCELERATION: The value assigned to some elements of **dwAcceleration[]**
  are out of range of Acceleration. Please refer to i8092_set_range() and
  i8092_get_range_settings().

ERROR_INVALID_DECELERATION: The value assigned to some elements of **dwDeceleration[]**
  are out of range of Deceleration. Please refer to i8092_set_range() and
  i8092_get_range_settings().

  *Notice:* In the case, **dwAcceleration** > **dwDeceleration** , the following formula should be
  satisfied, too.

  **dwDeceleration > (dwAcceleration x dwDriveSpeed) / 4,000,000.**

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying
  memory, please check the pointer-type parameter you assign to this function.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY:
  Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()
  for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
  Please disable MPG settings with i8092_set_mpg().

ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please
  call GetLastError() for further system information.

ERROR_T_MOVE_START: Cannot start trapezoidal moving, please call GetLastError() for further
  system information.

# 4.6    i8092_s_move

short i8092_t_move(BYTE bSlotNum, WORD wAxis, DWORD dwStartSpeed, DWORD dwDriveSpeed, DWORD dwAccelerationRate, DWORD DWORD dwDecelerationRate, long FixedPulse, short wAccCntOffset = 8)

**Description:**

This function starts S-curve, fixed-pulse motion. Only symmetric S-Curve motion is provided by i-8092.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

dwStartSpeed: The Start-Speed in S-curve moving.

dwDriveSpeed: The Drive-Speed in S-curve moving.

dwAccelerationRate: The Acceleration-Increasing-Rate in S-curve moving. The Acceleration will be assigned to maximum value automatically.

dwDecelerationRate: This parameter is reserved and will be ignored.

FixedPulse: This parameter is a signed 32-bits variable, the negative value indicates motion in reverse-direction

wAccCntOffset: This optional parameter to configure the offset for Acceleration/Deceleration driving. The default setting of ***wAccCntOffset*** is 8.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter ***wAxis***.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter ***wAxis***.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The ***dwStartSpeed*** is larger than or equal to ***dwDriveSpeed***.

ERROR_INVALID_START_SPEED: The value assigned to parameter ***dwStartSpeed*** is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter ***dwDriveSpeed*** is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_JERK: The value assigned to parameter ***dwAccelerationRate*** is out of range of
Acceleration-Increasing-Rate. Please refer to i8092_set_range() and
i8092_get_range_settings().

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y:
Indicates that some error happens to AXIS_X or AXIS_Y. Please call
i8092_get_error_status() for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
Please disable MPG settings with i8092_set_mpg().

ERROR_S_MOVE_START: Cannot start S-curvel moving, please call GetLastError() for further
system information.

# 4.7   i8092_s_moveall

short i8092_s_moveall(BYTE bSlotNum, WORD wAxes, DWORD dwStartSpeed[], DWORD dwDriveSpeed[], DWORD dwAccelerationRate[], DWORD dwDecelerationRate[], long FixedPulse[], short wAccCntOffset[] = NULL)


**Description:**

This function starts multiple axes the S-curve, fixed-pulse moving simultaneously.


**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxes: Can be any combination of AXIS_X or AXIS_Y.

dwStartSpeed[]: The pointer to the *DWORD*-Array that contains Start-Speed of multiple axes. Different value can be assigned to each axis.

dwDriveSpeed[]: The pointer to the *DWORD*-Array that contains Driving-Speed of multiple axes. Different value can be assigned to each axis.

dwAccelerationRate[]: The pointer to the *DWORD*-Array that contains Acceleration-Increasing-Rate of multiple axes. Different value can be assigned to each axis.

dwDecelerationRate[]: This Deceleration-Increasing-Rate array is reserved and will be ignored.

FixedPulse[]: The pointer to the *long*-Array that contains Fixed-Pulse of multiple axes. Different pulse number can be assigned to each axis. The element of this parameter is a signed 32-bits variable, the negative value indicates motion in reverse-direction

wAccCntOffset[]: This optional pointer to the *short*-Array that contains offset of multiple axes. The default setting of *wAccCntOffset[]* is NULL.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: Some elements in *dwStartSpeed[]* are larger than relative element of *dwDriveSpeed[]*.

ERROR_INVALID_START_SPEED: The value assigned to some elements of *dwStartSpeed[]* are out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to some elements of **dwDriveSpeed[]**
   are out of range of Speed. Please refer to i8092_set_range() and
   i8092_get_range_settings().

ERROR_INVALID_JERK: The value assigned to some elements of **dwAccelerationRate[]** are out of
   range of Acceleration-Increasing-Rate. Please refer to i8092_set_range() and
   i8092_get_range_settings().

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying
   memory, please check the pointer-type parameter you assign to this function.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY,:
   Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()
   for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
   Please disable MPG settings with i8092_set_mpg().

ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please
   call GetLastError() for further system information.

ERROR_S_MOVE_START: Cannot start S-curve moving, please call GetLastError() for further
   system information.

# Interpolation Moving Functions

## 5.1 Individual Interpolation Moving

The functions in this chapter provide both trapezoidal and S-curve acceleration/deceleration in 2D linear interpolation moving. And only trapezoidal acceleration/deceleration can be applied to circular interpolation moving.

### 5.1.1 i8092_t_line2_move

short i8092_t_line2_move(BYTE bSlotNum, WORD wMainAxis, WORD wSlaveAxis, DWORD dwStartSpeed, DWORD dwDriveSpeed, DWORD dwAcceleration, DWORD dwDeceleration, long MainAxisFinishPoint, long SlaveAxisFinishPoint, short wAccCntOffset = 8, WORD wBlockMode = DISABLE_BLOCK_OPEARTION)

**Description:**
This function starts the trapezoidal-profile, 2-dimension linear interpolation moving.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wMainAxis: The main-axis of Interpolation moving. For i-8092, only AXIS_X is valid.
wSlaveAxis: The slave-axis of Interpolation moving. For i-8092, only AXIS_Y is valid.
dwStartSpeed: The Start-Speed in trapezoidal-profile moving. This Start-Speed will be applied to
        main-axis.
dwDriveSpeed: The Drive-Speed in trapezoidal-profile moving. This Drive-Speed will be applied to
        main-axis.
dwAcceleration: The Acceleration in trapezoidal-profile moving. This Acceleration will be applied to
        main-axis.
dwDeceleration: The Deceleration in trapezoidal-profile moving. This Deceleration will be applied to
        main-axis.

MainAxisFinishPoint: The finish point of main-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

SlaveAxisFinishPoint: The finish point of slave-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

wAccCntOffset: This optional parameter to configure the offset for Acceleration/Deceleration driving. The default setting of *wAccCntOffset* is 8.

wBlockMode: The Block/Non-Block operation mode. Now only DISABLE_BLOCK_OPEARTION is valid.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wMainAxis* or *wSlaveAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wMainAxis* or *wSlaveAxis*.

ERROR_INVALID_INTERPOLATION_SLAVE_AXES: The parameter *wSlaveAxis* includes the axis ID assigned to *wMainAxis*.

ERROR_INVALID_BLOCK_OPEARTION_MODE: Not DISABLE_BLOCK_OPEARTION is assigned to parameter *wBlockMode*.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The *dwStartSpeed* is larger than *dwDriveSpeed*.

ERROR_INVALID_START_SPEED: The value assigned to parameter *dwStartSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_ACCELERATION: The value assigned to parameter *dwAcceleration* is out of range of Acceleration. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DECELERATION: The value assigned to parameter *dwDeceleration* is out of range of Deceleration. Please refer to i8092_set_range() and i8092_get_range_settings().

*Notice:* In the case, *dwAcceleration* > *dwDeceleration* , the following formula should be satisfied, too.

*dwDeceleration > (dwAcceleration x dwDriveSpeed) / 4,000,000.*

ERROR_INTERPOLATION_NOT_COMPLETE: The interpolation moving started before had not
completed.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY:
Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()
for detailed information.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
Please disable MPG settings with i8092_set_mpg().

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please
call GetLastError() for further system information.

ERROR_T_LINE2_START: Cannot start trapezoidal 2D interpolation moving, please call
GetLastError() for further system information.

# 5.1.2 i8092_s_line2_move

short i8092_s_line2_move(BYTE bSlotNum, WORD wMainAxis, WORD wSlaveAxis, DWORD dwStartSpeed, DWORD dwDriveSpeed, DWORD dwAccelerationRate, DWORD dwDecelerationRate, long MainAxisFinishPoint, long SlaveAxisFinishPoint, short wAccCntOffset = 8, WORD wBlockMode = DISABLE_BLOCK_OPEARTION)

**Description:**

This function starts the S-curve, 2-dimension linear interpolation moving.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wMainAxis: The main-axis of Interpolation moving. For i-8092, only AXIS_X is valid.

wSlaveAxis: The slave-axis of Interpolation moving. For i-8092, only AXIS_Y is valid.

dwStartSpeed: The Start-Speed in S-curve moving. This Start-Speed will be applied to main-axis.

dwDriveSpeed: The Drive-Speed in S-curve moving. This Drive-Speed will be applied to main-axis.

dwAccelerationRate: The Acceleration-Increasing-Rate in S-curve moving. The Acceleration will be assigned to maximum value automatically. This Acceleration-Increasing-Rate will be applied to main-axis.

dwDecelerationRate: This parameter is reserved and will be ignored..

MainAxisFinishPoint: The finish point of main-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

SlaveAxisFinishPoint: The finish point of slave-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction

wAccCntOffset: This optional parameter to configure the offset for Acceleration/Deceleration driving. The default setting of *wAccCntOffset* is 8.

wBlockMode: The Block/Non-Block operation mode. Now only DISABLE_BLOCK_OPEARTION is valid.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wMainAxis* or *wSlaveAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wMainAxis* or
    *wSlaveAxis*.

ERROR_INVALID_INTERPOLATION_SLAVE_AXES: The parameter *wSlaveAxis* includes the axis
    ID assigned to *wMainAxis*.

ERROR_INVALID_BLOCK_OPEARTION_MODE: Not DISABLE_BLOCK_OPEARTION is assigned
    to parameter *wBlockMode*.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The *dwStartSpeed* is larger than or equal
    to *dwDriveSpeed*.

ERROR_INVALID_START_SPEED: The value assigned to parameter *dwStartSpeed* is out of range
    of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of
    range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_JERK: The value assigned to parameter *dwAccelerationRate* is out of range of
    Acceleration Increasing Rate. Please refer to i8092_set_range() and
    i8092_get_range_settings().

ERROR_INTERPOLATION_NOT_COMPLETE: The interpolation moving started before had not
    completed.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY:
    Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()
    for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
    Please disable MPG settings with i8092_set_mpg().

ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please
    call GetLastError() for further system information.

ERROR_S_LINE2_START: Cannot start S-curve 2D interpolation moving, please call GetLastError()
    for further system information.

# 5.1.3 i8092_t_arc2_move

short i8092_t_arc2_move(BYTE bSlotNum, WORD wMainAxis, WORD wSlaveAxis, DWORD dwStartSpeed, DWORD dwDriveSpeed, DWORD dwAcceleration, WORD wArcDirection, long MainAxisCenterPoint, long SlaveAxisCenterPoint, long MainAxisFinishPoint, long SlaveAxisFinishPoint, short wAccCntOffset = 8, WORD wBlockMode = DISABLE_BLOCK_OPEARTION)

**Description:**

This function starts the trapezoidal-profile, 2-dimension circular interpolation moving. Only symmetric trapezoidal Acceleration/Deceleration is applied to circular interpolation. The start-point will be the *Origin* of circular-interpolation motion. The **MainAxisCenterPoint** & **SlaveAxisCenterPoint** are center coordinates related to *Origin*; and **MainAxisFinishPoint** & **SlaveAxisFinishPoint** are finish coordinates related to *Origin*. The position tolerance for the specified circular curve is ±1 within the interpolation range. When the value of finish-point reaches the coordinate of *short-axis*, the circular interpolation will be completed. Figure 5 illustrates the finish-point checking of circular interpolation.
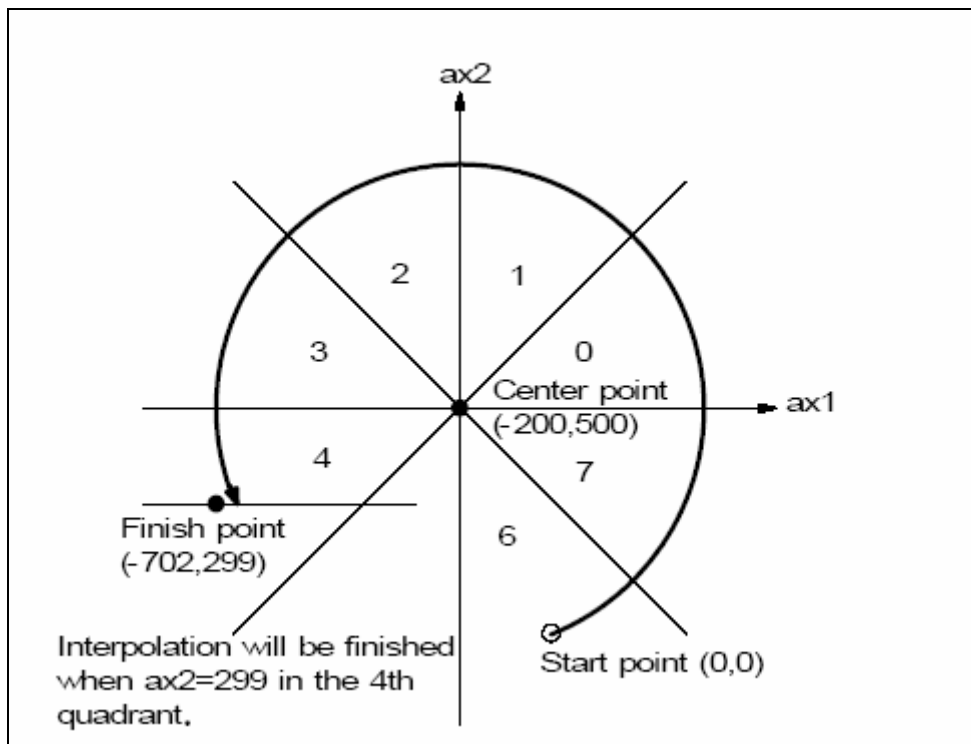


Figure 5 – finish-point checking of circular interpolation

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wMainAxis: The main-axis of Interpolation moving. For i-8092, only AXIS_X is valid.

wSlaveAxis: The slave-axis of Interpolation moving. For i-8092, only AXIS_Y is valid.

dwStartSpeed: The Start-Speed in trapezoidal-profile moving. This Start-Speed will be applied to main-axis.

dwDriveSpeed: The Drive-Speed in trapezoidal-profile moving. This Drive-Speed will be applied to main-axis.

dwAcceleration: The Acceleration in trapezoidal-profile moving. This Acceleration will be applied to main-axis.

wArcDirection: Clockwise (INTERP_ARC_DIRECTION_CLOCKWISE) or Counter-Clockwise (INTERP_ARC_DIRECTION_COUNTER_CLOCKWISE).

MainAxisCenterPoint: The center point of main-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

SlaveAxisCenterPoint: The center point of slave-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

MainAxisFinishPoint: The finish point of main-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

SlaveAxisFinishPoint: The finish point of slave-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-direction.

wAccCntOffset: This optional parameter to configure the offset for Acceleration/Deceleration driving. The default setting of **wAccCntOffset** is 8.

wBlockMode: The Block/Non-Block operation mode. Now only DISABLE_BLOCK_OPEARTION is valid.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter **wMainAxis** or **wSlaveAxis**.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter **wMainAxis** or **wSlaveAxis**.

ERROR_INVALID_INTERPOLATION_ARC_DIRECTION: Neither INTERP_ARC_DIRECTION_CLOCKWISE nor INTERP_ARC_DIRECTION_COUNTER_CLOCKWISE is assigned to parameter **wArcDirection**.

ERROR_INVALID_INTERPOLATION_SLAVE_AXES: The parameter *wSlaveAxis* includes the axis
ID assigned to *wMainAxis*.

ERROR_INVALID_BLOCK_OPEARTION_MODE: Not DISABLE_BLOCK_OPEARTION is assigned
to parameter *wBlockMode*.

ERROR_START_SPEED_EXCEED_DRIVING_SPEED: The *dwStartSpeed* is larger than
*dwDriveSpeed*.

ERROR_INVALID_START_SPEED: The value assigned to parameter *dwStartSpeed* is out of range
of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of
range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_INVALID_ACCELERATION: The value assigned to parameter *dwAcceleration* is out of
range of Acceleration. Please refer to i8092_set_range() and
i8092_get_range_settings().

ERROR_ARC_DECELERATION_POINT_CALCULATE: The path of circular moving is too small.
Please try to increase the circular-path.

ERROR_INTERPOLATION_NOT_COMPLETE: The interpolation moving started before had not
completed.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY:
Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()
for detailed information.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active.
Please disable MPG settings with i8092_set_mpg().

ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please
call GetLastError() for further system information.

ERROR_T_ARC2_START: Cannot start circular interpolation moving, please call GetLastError() for
further system information.

# 5.2 Continuous Interpolation Moving

The continuous interpolation provides none-stop linear & circular interpolation moving. The continuous interpolation moving is combined with multiple linear & circular interpolation segments. To add arbitrary interpolation segment, only the constant Vector-Speed is applied to continuous-interpolation moving.

The continuous interpolation moving is configured with i8092_conti_interp_begin() and completed with i8092_conti_interp_end(). All settings that are configured with i8092_conti_interp_begin() will be kept in driver until i8092_conti_interp_end() being called. The interpolation segments after i8092_conti_interp_begin() will use these configurations, including axes involved in interpolation-moving and constant Vector-Speed.

To avoid the continuous interpolation to be interrupted, the configurations of next interpolation segment had better be set as soon as possible. The function, i8092_conti_interp_next_ready(), indicates the next interpolation segment is ready to be configured.

In case the continuous-interpolation moving is terminated, you could re-start the uncompleted interpolation segments with INTERP_CONTINUE_START setting in parameter *wContiInterpMoveMode*. The typical programming following-chart is described in Figure 6. Please refer to the 'Conti_Interp' sample.

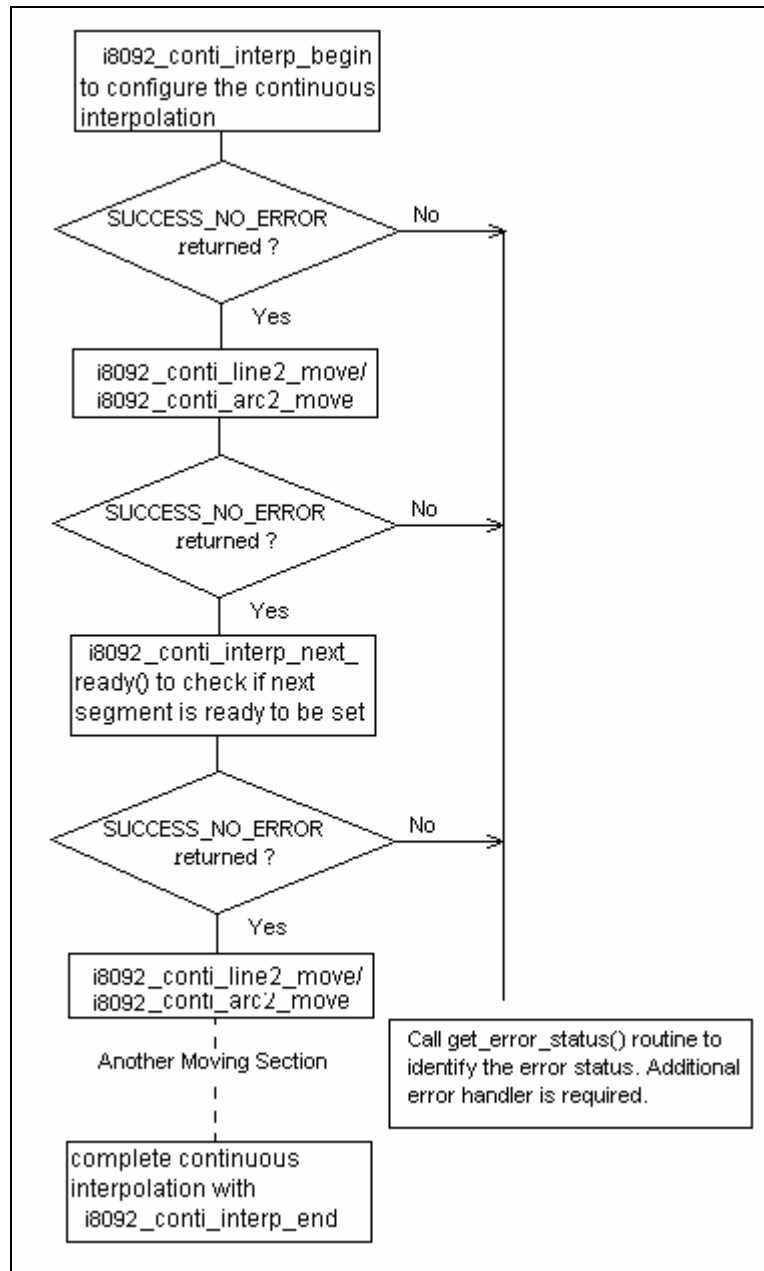Figure 6 - typical programming following-chart of continuous-interpolation

# 5.2.1 i8092_conti_interp_begin

short i8092_conti_interp_begin(BYTE bSlotNum, WORD wMainAxis, WORD wSecondAxis, WORD wThirdAxis, DWORD dwConstSpeed)

**Description:**
This function configures the involved axes, the constant vector-speed in continuous interpolation moving.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wMainAxis: The main-axis of interpolation moving. Now only AXIS_X is valid..
wSecondAxis: The second-axis of Interpolation moving. Now only AXIS_Y is valid.
wThirdAxis: This parameter is reserved and will be ignored.
dwConstSpeed: The constant Vector-Speed in continuous interpolation. This parameter should be less than 2,000,000 PPS )

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wMainAxis* or *wSecondAxis*.
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wMainAxis* or *wSecondAxis*.
ERROR_INVALID_INTERPOLATION_SLAVE_AXES: The *wSecondAxis* includes the axis ID assigned to *wMainAxis*.
ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().
ERROR_INTERPOLATION_NOT_COMPLETE: The previous interpolation-moving had not been completed.
ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY: Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status() for detailed information.
ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.
ERROR_CONFLICT_WITH_MPG: Indicates the previous Manual-Pulse-Generator setting is active. Please disable MPG settings with i8092_set_mpg().

ERROR_AXES_MOVE_CHECK: Cannot forward the Axes-checking command to system, please call GetLastError() for further system information.

ERROR_INVALID_RANGE: The assigned value is invalid.

ERROR_RANGE_CHANGE: Cannot change the settings of *Range* register, please call GetLastError() for further system information.

ERROR_CONTI_INTERP_SET: Cannot configure continuous-interpolation moving, please call GetLastError() for further system information.

# 5.2.2 i8092_conti_interp_next_ready

short i8092_conti_interp_next_ready(BYTE bSlotNum,  BYTE *pReady)

**Description:**

This function checks if the next interpolation segment is ready to be set.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

pReady: The pointer to the memory that stores the ready-status of next interpolation segment.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_CONFIG_IS_NEEDED: The continuous interpolation had not been configured. Please call i8092_conti_interp_begin() first.

ERROR_CONTI_INTERP_NEXT_READY: Cannot get the next-ready status, please call GetLastError() for further system information.

# 5.2.3 i8092_conti_line2_move

short i8092_conti_line2_move(BYTE bSlotNum,  long MainAxisFinishPoint, long SlaveAxisFinishPoint, WORD wContiInterpMoveMode)

**Description:**

This function starts the constant vector-speed, 2-dimension linear interpolation moving.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

MainAxisFinishPoint: The finish point of main-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-way.

SlaveAxisFinishPoint: The finish point of slave-axis. This parameter is the relative offset to the current position. And the negative value indicates that the finish point is in reverse-way

wContiInterpMoveMode:

> INTERP_CONTINUE_START: indicates the begin of continuous interpolation moving.

> INTERP_NEXT_CONTINUOUS_MOTION: indicates the interpolation segment is one part of continuous interpolation moving, and the interrupt of motion checking in involved implicitly.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_CONFIG_IS_NEEDED: The continuous interpolation had not been configured. Please call i8092_conti_interp_begin() first.

ERROR_INVALID_CONTINUE_INTERPOLATION_MOTION: Neither INTERP_CONTINUE_START nor INTERP_NEXT_CONTINUOUS_MOTION is assigned to parameter ***wContiInterpMoveMode***.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY: Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status() for detailed information.

ERROR_CONTI_INTERP_INTERRUPTED: Indicates the continuous interpolation moving is interrupted. This code is returned only when ***wContiInterpMoveMode*** is set as INTERP_NEXT_CONTINUOUS_MOTION.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed. This code is returned only when ***wContiInterpMoveMode*** is set as INTERP_CONTINUE_START.

ERROR_CONTI_INTERP_NEXT_NOT_READY: Indicates the internal Motion-Control ASIC is not ready to set the next interpolation segment. Please call i8092_conti_interp_next_ready() first.

ERROR_CONTI_INTERP_LINE2_MOVE: Cannot start i8092_conti_line2_move, please call GetLastError() for further system information.

# 5.2.4 i8092_conti_arc2_move

short i8092_conti_arc2_move(BYTE bSlotNum, WORD wArcDirection,  long MainAxisCenterPoint, long SlaveAxisCenterPoint,  long MainAxisFinishPoint, long SlaveAxisFinishPoint, WORD wContiInterpMoveMode)

**Description:**
This function starts the constant vector-speed, 2-dimension linear interpolation moving.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wArcDirection: Clockwise (INTERP_ARC_DIRECTION_CLOCKWISE) or Counter-Clockwise
　　　　　(INTERP_ARC_DIRECTION_COUNTER_CLOCKWISE).
MainAxisCenterPoint: The center point of main-axis. This parameter is the relative offset to the
　　　　　current position. And the negative value indicates that the finish point is in reverse-way.
SlaveAxisCenterPoint: The center point of slave-axis. This parameter is the relative offset to the
　　　　　current position. And the negative value indicates that the finish point is in reverse-way
MainAxisFinishPoint: The finish point of main-axis. This parameter is the relative offset to the current
　　　　　position. And the negative value indicates that the finish point is in reverse-way.
SlaveAxisFinishPoint: The finish point of slave-axis. This parameter is the relative offset to the
　　　　　current position. And the negative value indicates that the finish point is in reverse-way
wContiInterpMoveMode:
　　　　　INTERP_CONTINUE_START: indicates the begin of continuous interpolation moving.
　　　　　INTERP_NEXT_CONTINUOUS_MOTION: indicates the interpolation segment is one
　　　　　part of continuous interpolation moving, and the interrupt of motion checking in involved
　　　　　implicitly.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
　　　　　given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_CONFIG_IS_NEEDED: The continuous interpolation had not been configured. Please call
　　　　　i8092_conti_interp_begin() first.
ERROR_INVALID_CONTINUE_INTERPOLATION_MOTION: Neither INTERP_CONTINUE_START
　　　　　nor INTERP_NEXT_CONTINUOUS_MOTION is assigned to parameter
　　　　　***wContiInterpMoveMode***.

ERROR_INVALID_INTERPOLATION_ARC_DIRECTION: Neither

   INTERP_ARC_DIRECTION_CLOCKWISE nor

   INTERP_ARC_DIRECTION_COUNTER_CLOCKWISE is assigned to parameter

   **wArcDirection**.

ERROR_OCCURS_IN_AXIS_X, ERROR_OCCURS_IN_AXIS_Y, ERROR_OCCURS_IN_AXIS_XY:

   Indicates that some error happens to AXIS_xxxx. Please call i8092_get_error_status()

   for detailed information.

ERROR_CONTI_INTERP_INTERRUPTED: Indicates the continuous interpolation moving is

   interrupted. This code is returned only when **wContiInterpMoveMode** is set as

   INTERP_NEXT_CONTINUOUS_MOTION.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed. This code is

   returned only when **wContiInterpMoveMode** is set as INTERP_CONTINUE_START.

ERROR_CONTI_INTERP_NEXT_NOT_READY: Indicates the internal Motion-Control ASIC is not

   ready to set the next interpolation segment, please call i8092_conti_interp_next_ready()

   first.

ERROR_CONTI_INTERP_ARC2_MOVE: Cannot start i8092_conti_arc2_move, please call

   GetLastError() for further system information.

# 5.2.5 i8092_conti_interp_end

short i8092_conti_interp_end (BYTE bSlotNum)

**Description:**

This function completes the continuous-interpolation moving, and clears the related configurations kept in driver.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_INVALID_RANGE: The assigned value is invalid.

ERROR_RANGE_CHANGE: cannot change the settings of *Range* register, please call GetLastError() for further system information.

ERROR_CONTI_INTERP_CLEAR: Cannot clear continuous-interpolation settings, please call GetLastError() for further system information.

CHAPTER **6**

# Other Motion Functions

This chapter introduces several helpful functions, including i8092_stop_move(), i8092_drv_hold() and i8092_drv_start().

## 6.1 i8092_stop_move

short i8092_stop_move(BYTE bSlotNum, WORD wAxis, WORD wStopMode)

**Description:**

This function stops current motion with slowdown or stop-sudden mode. Please call i8092_motion_done() to make sure that specific axis stop before starting next motion.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wStopMode: STOP_SLOWDOWN or STOP_SUDDEN.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_STOP_MODE: Neither STOP_SLOWDOWN nor STOP_SUDDEN is assigned to parameter *wStopMode*.

ERROR_MOTION_STOP_SET: Cannot stop current motion, please call GetLastError() for further system information.

# 6.2 i8092_stop_move_all

short i8092_stop_move_all(BYTE bSlotNum, WORD wAxes, WORD wStopMode)

**Description:**

This helpful function stops motion of multiple axes. Please call i8092_motion_done() to make sure that all axes stop before starting next motion.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxes: can be any combination of AXIS_X or AXIS_Y.

wStopMode: STOP_SLOWDOWN or STOP_SUDDEN.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Invalid axis-combination is assigned to parameter *wAxes*.

ERROR_INVALID_STOP_MODE: Neither STOP_SLOWDOWN nor STOP_SUDDEN is assigned to parameter *wStopMode*.

ERROR_MOTION_STOP_SET: Cannot stop current motion, please call GetLastError() for further system information.

# 6.3  i8092_drv_hold

short i8092_drv_hold(BYTE bSlotNum, WORD wAxes)

**Description:**

This function holds the motion-starting of the involved axes. And these involved axes will start moving simultaneously when i8092_drv_start() is called.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxes: Can be any combination of AXIS_X or AXIS_Y.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Invalid axis-combination is assigned to parameter *wAxes*.

ERROR_HOLD_AXES_NOT_RELEASE: Indicates the some axes had been hold, please call i8092_drv_start() to release the hold-axes first.

ERROR_MOTION_NOT_COMPLETE: Indicates the previous motion is not completed.

ERROR_DRIVE_HOLD: Cannot hold the motion-starting, please call GetLastError() for further system information.

# 6.4   i8092_drv_start

short i8092_drv_start(BYTE bSlotNum, WORD wAxes)

**Description:**

This function starts multiple axes simultaneously that are held by i8092_drv_hold().

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxes: Can be any combination of AXIS_X or AXIS_Y.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
            given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Invalid axis-combination is assigned to parameter *wAxes*.

ERROR_HOLD_AXES_NOT_MATCH: The axes that will to be started are not match to the axes that
            are held by i8092_drv_hold().

ERROR_DRIVE_START: Cannot start motion of held axes, please call GetLastError() for further
            system information.

# Advanced Motion Configurations

This chapter introduces some advanced features, including variable-ring counter, manual-pulse-generator and the synchronous-action between axes.

The advanced features are special, and maybe not co-exist with normal operation. It's recommended to disable these functions when they are not needed.

## 7.1    i8092_set_vring

short i8092_set_vring(BYTE bSlotNum, WORD wAxis, WORD wVRINGEnable, DWORD dwRingValue)

**Description:**

This function enables and configures the variable-ring feature for both logic-command and encoder-position counters. After enabling variable-ring feature, these two counters will be reset to zero automatically.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wVRINGEnable: VARIABLE_RING_ENABLE_FEATURE or
               VARIABLE_RING_DISABLE_FEATURE.

dwRingValue: The total numbers that counter can count. ( 2 < dwRingValue ).

For instance, assigning 10,000 to dwRingValue indicates the operation of ring-counter

will be:   increasing in forward direction … →9998→9999→0→1→…

decreasing in reserve direction …→1→0→9999→9998→…

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_RING_COUNTER: Indicates the parameter *dwRingValue* is less than 2.

ERROR_INVALID_FILTER_ENABLE: Neither VARIABLE_RING_ENABLE_FEATURE nor VARIABLE_RING_DISABLE_FEATURE is assigned to parameter *wVRINGEnable*.

ERROR_CONFLICT_WITH_SOFTLIMIT: Indicates that the AXIS-Internal Comparators are used for software-limit. Please disable software-limit feature with i8092_set_softlimit().

ERROR_VRING_SET: Cannot enable/configure the variable-ring feature, please call GetLastError() for further system information.

## 7.2    i8092_set_mpg

short i8092_set_mpg(BYTE bSlotNum, WORD wAxis, WORD wEXPConfig, DWORD dwFixedPulse, DWORD dwSpeed, DWORD dwMaxMPGFreq)

**Description:**
This function enables and configures the manual-pulse-generator feature. After enabling manual-pulse-generator feature, the constant-speed motion will be started when every pulse is sent from external manual-pulse-generator.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.
wAxis: Can be one of AXIS_X or AXIS_Y.
wEXPConfig: EXP_AB_PHASE_MPG, EXP_CW_CCW_ACTIVE_LOW_MPG or
            EXP_DISABLE_FEATURE.
dwFixedPulse: Indicates the numbers of pulse will be output when each pulse is sent from
            manual-pulse-generator. For instance, assigning 5 to this parameter, 5 pulses will be
            output when each pulse is sent from external manual-pulse-generator.
dwSpeed: The constant-speed of output pulse.
dwMaxMPGFreq: The maximum frequency of the manual-pulse-generator. Please check the
            datasheet of manual-pulse-generator.
    ***Notice:*** the following formula is needed to be satisfied:
            dwSpeed      dwMaxMPGFreq x dwFixedPulse x 2.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.
ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
            given slot-number is invalid (for instance, slot-number is assigned to 254).
ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter ***wAxis***.
ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter ***wAxis***.
ERROR_INVALID_MPG_EXP_CONFIG: Indicates the invalid MPG setting is assigned to parameter
            ***wEXPConfig***.
ERROR_INVALID_MPG_SPEED: The value assigned to parameter ***dwSpeed*** is out of range of
            Speed or is less than ***2 x dwMaxMPGFreq x dwFixedPulse***.
ERROR_MPG_SET: Cannot enable/configure the manual-pulse-generator, please call GetLastError()
            for further system information.

# 7.3 i8092_set_int_factor

short i8092_set_int_factor(BYTE bSlotNum, WORD wAxis, WORD wIntFactor)

**Description:**

This function configures the motion-related interrupt-factors. Please call i8092_get_int_status() to get the relevant interrupt-status;

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wIntFactor: The interrupt factor can be the combination of following settings:

> INT_FACTOR_DISABLE: disables all interrupt factors.
>
> INT_FACTOR_EXCEED_CMP_NEGATIVE: interrupt will be triggered while the content of logic-command/encoder-position counter is larger than COMP- comparator.
>
> INT_FACTOR_LESS_CMP_NEGATIVE: interrupt will be triggered while the content of logic-command/encoder-position counter is less than COMP- comparator.
>
> INT_FACTOR_LESS_CMP_POSITIVE: interrupt will be triggered while the content of logic-command/encoder-position counter is less than COMP+ comparator.
>
> INT_FACTOR_EXCEED_CMP_POSITIVE: interrupt will be triggered while the content of logic-command/encoder-position counter is larger than COMP+ comparator.
>
> INT_FACTOR_END_CONST_SPEED_MOVE: interrupt will be triggered when the constant-speed moving is completed.
>
> INT_FACTOR_START_CONST_SPEED_MOVE: interrupt will be triggered when the constant-speed moving is started.
>
> INT_FACTOR_END_DRIVING: interrupt will be triggered when the motion is completed.

> ***Notice:***
>
> If the INT_FACTOR_START_CONST_SPEED_MOVE is set, the interrupt will be triggered both at the end of Acceleration and Deceleration.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERORR_INVALID_INT_FACTOR: Indicates the invalid interrupt factor is assigned to parameter *wIntFactor*.

ERROR_INT_FACTOR_SET: Cannot enable/configure the specific interrupt factor, please call GetLastError() for further system information.

# Miscellaneous Functions

This chapter introduces some functions that are difficult to be cataloged, including setting the logic-command counter and encoder-position counter, triangle prevention of trapezoidal-profile fixed-pulse driving, changing driving-speed while trapezoidal-profile moving and updating the total numbers of output pulse.

## 8.1   i8092_t_change_v

short i8092_t_change_v(BYTE bSlotNum, WORD wAxis, DWORD dwDriveSpeed)

**Description:**

This function changes the Drive-Speed during trapezoidal-profile moving.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

dwDriveSpeed: The Drive-Speed in trapezoidal-profile moving.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_DRIVING_SPEED: The value assigned to parameter *dwDriveSpeed* is out of range of Speed. Please refer to i8092_set_range() and i8092_get_range_settings().

ERROR_SPEED_CHANGE_FAIL_IN_ACC_DEC: Indicates the Drive-Speed cannot be changed
during Acceleration/Deceleration.

ERROR_INVALID_OPERATION_IN_S_CURVE: Indicates the Drive-Speed cannot be applied to
S-curve moving.

ERROR_NOT_CONSTANT_SPEED_IN_T_MOVE: Indicates the Drive-Speed cannot be changed in
non-constant speed area of trapezoidal-profile moving.

ERROR_T_DRIVING_SPEED_CHANGE: Cannot change the Drive-Speed, please call
GetLastError() for further system information.

# 8.2   i8092_t_set_avtri

short i8092_t_set_avtri(BYTE bSlotNum, WORD wAxis, WORD wAvTriCfg)

**Description:**

This function enables the triangle prevention of fixed-pulse, trapezoidal-profile moving. After enabling
this feature, the Motion-Control ASIC will determine the deceleration-point by the following formula:

*Numbers of output pulse      2 x ( pulse number at Acceleration + pulse number at Deceleration ).*

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

wAvTriCfg: AVOID_TRIANGLE_ ENABLE_FEATURE or

AVOID_TRIANGLE_DISABLE_FEATURE.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_INVALID_AVOID_TRIANGLE_CONFIG: Neither AVOID_TRIANGLE_ENABLE_FEATURE
nor AVOID_TRIANGLE_DISABLE_FEATURE is assigned to parameter *wAvTriCfg*.

ERROR_T_AVOID_TRIANGLE_SET: Cannot set the avoid-triangle feature, please call
GetLastError() for further system information.

# 8.3  i8092_change_p

short i8092_change_p(BYTE bSlotNum, WORD wAxis, DWORD dwP)

**Description:**

This function changes the total numbers of output pulse during moving.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

dwP: The total numbers of output pulse.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_CONFLICT_WITH_INTERPOLATION_MOVE: Indicates the finish-point of interpolation moving cannot be changed dynamically.

ERROR_OUTPUT_PULSE_CHANGE: Cannot change total number of output pulse, please call GetLastError() for further system information.

## 8.4 i8092_set_cmdcounter

short i8092_set_cmdcounter(BYTE bSlotNum, WORD wAxis, long lData)

**Description:**

This function set the logic-command counter.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

lData: The value to be set to logic-command counter.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_CMD_COUNTER_SET: Cannot set the logic-command counter, please call GetLastError() for further system information.

# 8.5  i8092_set_enccounter

short i8092_set_enccounter(BYTE bSlotNum, WORD wAxis, DWORD lData)


**Description:**

This function set the encoder-counter.


**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

lData: The value to be set to encoder-position counter.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
　　　　　given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_POS_COUNTER_SET: Cannot set the encoder-position counter, please call GetLastError()
　　　　　for further system information.

# Status

This chapter introduces functions to get the status of i-8092 module, including i8092_motion_done(), i8092_get_cmdcounter(), i8092_get_position(), i8092_get_speed(), i8092_get_acc(), i8092_get_mdi_status(), i8092_get_in3(), i8092_get_int_status() and i8092_get_error_status().

## 9.1 i8092_motion_done

short i8092_motion_done(BYTE bSlotNum, WORD wAxis, BYTE* pDone, WORD* pStopStatus)

**Description:**

This function checks the completion of motion and reports the cause of motion-completion.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: can be one of AXIS_X or AXIS_Y.

pDone: The pointer to the memory that stores the motion-status. The motion-status will be

   MOTION_DONE: the specific axis is stop.

   MOTION_NOT_DONE: the specific axis is driving.

pStopStatus: The pointer to the memory that stores the cause of motion-completion, including

   DRIVE_FINISH_WITH_SW_LIMIT_POSITIVE: reaches software limit in forward direction and stops

   DRIVE_FINISH_WITH_SW_LIMIT_NEGATIVE: reaches software limit in reverse direction and stops

   DRIVE_FINISH_WITH_STOP_COMMAND: the stop command is executed.

   DRIVE_FINISH_OUTPUT_FIXED_PULSE: completion of fixed-pulse moving.

   DRIVE_FINISH_WITH_STOP0: completion of near-home-sensor searching.

   DRIVE_FINISH_WITH_STOP1: completion of home-sensor searching.

   DRIVE_FINISH_WITH_STOP2: completion of Z-Phase/INDEX sensor searching.

   DRIVE_FINISH_WITH_LIMIT_POSITIVE: reaches hardware limit in forward direction

and stops

DRIVE_FINISH_WITH_LIMIT_NEGATIVE: reaches hardware limit in reverse direction
and stops

DRIVE_FINISH_WITH_ALARM: the ALARM feature is enabled and is active to stop
driving.

DRIVE_FINISH_WITH_EMG: the driving is stopped when EMG is active.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying
memory, please check the pointer-type parameter you assign to this function.

ERROR_MOTION_DONE_GET: Cannot get motion status, please call GetLastError() for further
system information.

# 9.2    i8092_get_cmdcounter

short i8092_get_cmdcounter(BYTE bSlotNum, WORD wAxis, long* pData)

**Description:**

This function gets the content of logic-command counter.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pData: The pointer to the memory that stores logic-command counter.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_CMD_COUNTER_GET: Cannot get the logic-command counter, please call GetLastError() for further system information.

# 9.3    i8092_get_enccounter

short i8092_get_enccounter(BYTE bSlotNum, WORD wAxis, long* pData)

**Description:**

This function gets the content of encoder-counter.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pData: The pointer to the memory that stores encoder-position counter.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_POS_COUNTER_GET: Cannot get the encoder-position counter, please call GetLastError() for further system information.

# 9.4 i8092_get_speed

short i8092_get_speed(BYTE bSlotNum, WORD wAxis, DWORD* pSpeed)

**Description:**

This function gets the speed of current motion.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pSpeed: The pointer to the memory that stores speed of current motion.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_SPEED_GET: Cannot get the current speed, please call GetLastError() for further system information.

# 9.5　i8092_get_acc

short i8092_get_acc(BYTE bSlotNum, WORD wAxis, DWORD* pAcc)


**Description:**

This function gets the acceleration of current motion.


**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pAcc: The pointer to the memory that stores acceleration of current motion.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_ACCELERATION_GET: cannot get the current acceleration, please call GetLastError() for further system information.

# 9.6   i8092_get_mdi_status

short i8092_get_mdi_status(BYTE bSlotNum, WORD wAxis, WORD* pDIStatus)

**Description:**
This function checks the status of motion-related digital inputs.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pDIStatus: The pointer to the memory that stores the motion-related digital inputs. The value stored in this parameter may be the combination of following status:

DI_STATUS_ACTIVE_DRIVING: indicates the specific axis is driving.

DI_STATUS_ACTIVE_LMTP: the hardware limit in forward direction is active.

DI_STATUS_ACTIVE_LMTM: the hardware limit in reverse direction is active.

DI_STATUS_ACTIVE_EMG: the EMG signal is active.

DI_STATUS_ACTIVE_ALARM: the ALARM signal is enabled and active.

DI_STATUS_ACTIVE_HOME: the Home (ORG) signal is active.

DI_STATUS_ACTIVE_NEARHOME: the Near-Home (NORG) signal is active.

DI_STATUS_ACTIVE_INP: the INP signal is enabled and active.

DI_STATUS_ACTIVE_INDEX: The Z-Phase/INDEX signal is active.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_DI_STATUS_GET Cannot get motion-related digital inputs, please call GetLastError() for further system information.

# 9.7   i8092_get_in3

short i8092_get_in3(BYTE bSlotNum, WORD wAxis, BYTE* pIN3Status)

**Description:**

This function gets the status of digital input *IN3*.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pIN3Status: The pointer to the memory that stores the input of IN3. The value stored in this
parameter will be 0x01 or 0x00.

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying
memory, please check the pointer-type parameter you assign to this function.

ERROR_IN3_GET: Cannot get the digital input *IN3*, please call GetLastError() for further system
information.

# 9.8   i8092_get_int_status

short i8092_get_int_status(BYTE bSlotNum, WORD wAxis, WORD* pIntStatus)

**Description:**
This function gets the status of interrupt factors.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pIntStatus: The pointer to the memory that stores the status of interrupt factors, including

INT_STATUS_EXCEED_CMP_NEGATIVE,

INT_STATUS_LESS_CMP_NEGATIVE,

INT_STATUS_LESS_CMP_POSITIVE,

INT_STATUS_EXCEED_CMP_POSITIVE,

INT_STATUS_END_CONST_SPEED_MOVE,

INT_STATUS_START_CONST_SPEED_MOVE,

INT_STATUS_END_DRIVING

Please refer to i8092_set_int_factor() for the setting of relative interrupt factors.

**Return Code:**
SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the
given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying
memory, please check the pointer-type parameter you assign to this function.

ERROR_INT_STATUS_GET: Cannot get the status of interrupt, please call GetLastError() for further
system information.

# 9.9   i8092_get_error_status

short i8092_get_error_status(BYTE bSlotNum, WORD wAxis, WORD* pErrorStatus)


**Description:**

This function gets the error-status of specific axis.


**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wAxis: Can be one of AXIS_X or AXIS_Y.

pErrorStatus: The pointer to the memory that stores the error status, including

         DRIVE_ERROR_STATUS_SLMTP: error caused by software limit in forward direction.

         DRIVE_ERROR_STATUS_SLMTM: error cause by software limit in reverse direction.

         DRIVE_ERROR_STATUS_LMTP: error caused by hardware limit in forward direction.

         DRIVE_ERROR_STATUS_LMTM: error caused by hardware limit in reverse direction.

         DRIVE_ERROR_STATUS_ALARM: error caused by ALARM signal.

         DRIVE_ERROR_STATUS_EMG: error caused by EMG signal.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_MULTI_AXES_ASSIGNED: Multiple axes are assigned to parameter *wAxis*.

ERROR_NO_VALID_AXIS_ASSIGNED: No valid axis ID is assigned to parameter *wAxis*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_ERROR_STATUS_GET: Cannot get the error status, please call GetLastError() for further system information.

CHAPTER **10**

# FRnet I/O extension

The I-8092F equips the FRnet ASIC to connect the remote FRnet I/O extension. The FRnet ASIC provides the real-time status-updating of its remote I/O modules. This chapter introduces the FRnet functions, including i8092_get_FRnet_DI() and i8092_set_FRnet_DO().

## 10.1  i8092_get_FRnet_DI

short i8092_get_FRnet_DI(BYTE bSlotNum, WORD wSA, WORD *pStatus, WORD wEnableDirectAccess = FRNET_ENABLE_DIRECT_ACCESS)

**Description:**
This function get the digital-inputs of *FRnet* DI module.

**Parameters:**
bSlotNum: The specific slot number that i-8092 installed on.

wSA: The Group-Address of *FRnet* DI module. One of following Group-Address can be assigned to this parameter:
FRNET_SA8,
FRNET_SA9,
FRNET_SA10,
FRNET_SA11,
FRNET_SA12,
FRNET_SA13,
FRNET_SA14,
FRNET_SA15.

pStatus: The pointer to the WORD that indicates each digital-input of *FRnet* DI module.

B15                                             B8

| DI_15 | DI_14 | DI_13 | DI_12 | DI_11 | DI_10 | DI_9 | DI_8 |
|-------|-------|-------|-------|-------|-------|------|------|

B7                                             B0
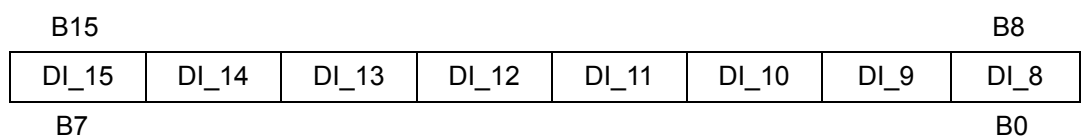
| DI_7 | DI_6 | DI_5 | DI_4 | DI_3 | DI_2 | DI_1 | DI_0 |
|------|------|------|------|------|------|------|------|

wEnableDirectAccess: Now only FRNET_ENABLE_DIRECT_ACCESS is valid.


**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_INVALID_FRNET_ACCESS_MODE: Not FRNET_ENABLE_DIRECT_ACCESS is assigned to parameter *wEnableDirectAccess*.

ERROR_INVALID_FRNET_SA_GROUP_ADDRESS: Indicates the invalid Group-Address of *FRnet* DI module is assigned to parameter *wSA*.

ERROR_ACCESS_VIOLATION_DATA_COPY: Some system exception occurs while copying memory, please check the pointer-type parameter you assign to this function.

ERROR_FRNET_INPUT: Cannot get the digital-inputs of *FRnet* DI module, please call GetLastError() for further system information.

# 10.2 i8092_set_FRnet_DO

short i8092_set_FRnet_DO(BYTE bSlotNum, WORD wRA, WORD wDOData)

**Description:**

This function set the digital-outputs of *FRnet* DO module.

**Parameters:**

bSlotNum: The specific slot number that i-8092 installed on.

wRA: The Group-Address of *FRnet* D0 module. One of following Group-Address can be assigned to

　　　this parameter:
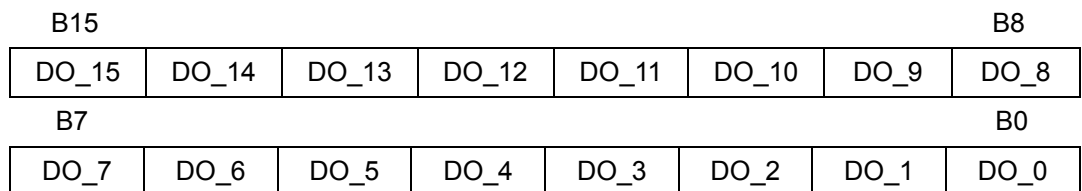
　　　FRNET_RA0,

　　　FRNET_RA1,

　　　FRNET_RA2,

　　　FRNET_RA3,

　　　FRNET_RA7,

　　　FRNET_RA5,

　　　FRNET_RA6,

　　　FRNET_RA7.

wDOData: The 16-bits data to be set to *FRnet* DO module.

B15　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　B8

| DO_15 | DO_14 | DO_13 | DO_12 | DO_11 | DO_10 | DO_9 | DO_8 |
|-------|-------|-------|-------|-------|-------|------|------|

B7　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　B0

| DO_7 | DO_6 | DO_5 | DO_4 | DO_3 | DO_2 | DO_1 | DO_0 |
|------|------|------|------|------|------|------|------|

**Return Code:**

SUCCESS_NO_ERROR: The function returns successfully.

ERROR_INVALID_CARD_ID: There is no active i-8092 module on the given slot, bSlotNum; or the

　　　given slot-number is invalid (for instance, slot-number is assigned to 254).

ERROR_INVALID_FRNET_RA_GROUP_ADDRESS: Indicates the invalid Group-Address of *FRnet*

　　　DO module is assigned to parameter **wRA**.

ERROR_UNSUPPORTED_FUNCTION    Indicate this function does not support i-8092 module.

ERROR_FRNET_OUTPUT: Cannot set the digital-outputs of *FRnet* DO module, please call

　　　GetLastError() for further system information.

# Error Code

The Error Codes are divided into tree parts: System Error, Parameter Error and Runtime Error.

| | |
|---|---|
| SUCCESS_NO_ERROR | 0 |

System Error:

| | |
|---|---|
| ERROR_ROUTINE_FAIL_BASE | -100 |
| ERROR_GET_MODULE_ID | -101 |
| ERROR_DEVICE_OPEN | -102 |
| ERROR_DEVICE_CLOSE | -103 |
| ERROR_MODULE_RESET | -104 |
| ERROR_RANGE_CHANGE | -105 |
| ERROR_PULSE_MODE_SET | -106 |
| ERROR_ENCODER_MODE_SET | -107 |
| ERROR_LIMIT_SENSOR_SET | -108 |
| ERROR_INP_SIGNAL_SET | -109 |
| ERROR_ALARM_SIGNAL_SET | -110 |
| ERROR_SERVO_ON_SET | -111 |
| ERROR_IN3_SET | -112 |
| ERROR_IN3_GET | -113 |
| ERROR_FILTER_SET | -114 |
| ERROR_SW_LIMIT_SET | -115 |
| ERROR_HOME_CFG_SET | -116 |
| ERROR_HOME_LIMIT_SET | -117 |
| ERROR_START_HOME | -118 |
| ERROR_DI_STATUS_GET | -119 |
| ERROR_ERROR_STATUS_GET | -120 |
| ERROR_CMD_COUNTER_SET | -121 |
| ERROR_CMD_COUNTER_GET | -122 |
| ERROR_POS_COUNTER_SET | -123 |

| | |
|---|---|
| ERROR_FRNET_RESET | -162 |
| ERROR_NEAR_HOME_SEARCH | -163 |
| ERROR_HOME_SEARCH | -164 |
| ERROR_Z_PHASE_SEARCH | -165 |

Parameter Error:

| | |
|---|---|
| ERROR_INVALID_PARAMETER_BASE | -200 |
| ERROR_INVALID_CARD_ID | -201 |
| ERROR_INVALID_SCANNED_INDEX | -202 |
| ERROR_MODULE_ID_DUPLICATED | -203 |
| ERROR_INVALID_RANGE | -204 |
| ERROR_INVALID_PULSE_MODE | -205 |
| ERROR_INVALID_PULSE_LEVEL | -206 |
| ERROR_INVALID_PULSE_DIRECTION | -207 |
| ERROR_INVALID_ENCODER_MODE | -208 |
| ERROR_INVALID_LIMIT_LOGIC | -209 |
| ERROR_INVALID_STOP_MODE | -210 |
| ERROR_INVALID_INP_ENABLE | -211 |
| ERROR_INVALID_INP_LOGIC_LEVEL | -212 |
| ERROR_INVALID_ALARM_ENABLE | -213 |
| ERROR_INVALID_ALARM_LOGIC_LEVEL | -214 |
| ERROR_INVALID_SERVO_SETTING | -215 |
| ERROR_INVALID_IN3_ENABLE | -216 |
| ERROR_INVALID_IN3_LOGIC_LEVEL | -217 |
| ERROR_INVALID_FILTER_ENABLE | -218 |
| ERROR_INVALID_FILTER_CONFIGURATION | -219 |
| ERROR_INVALID_FILTER_DELAY_TIME | -220 |
| ERROR_INVALID_SOFTWARE_LIMIT_ENABLE | -221 |
| ERROR_INVALID_SOFTWARE_LIMIT_COMPARATOR_SOURCE | -222 |
| ERROR_INVALID_MOVE_DIRECTION | -223 |
| ERROR_INVALID_HOME_LOGIC_LEVEL | -224 |
| ERROR_INVALID_NEAR_HOME_LOGIC_LEVEL | -225 |
| ERROR_INVALID_INDEX_LOGIC_LEVEL | -226 |
| ERROR_INVALID_AUTO_HOME_STEP | -227 |
| ERROR_INVALID_BLOCK_OPEARTION_MODE | -228 |
| ERROR_INVALID_AVOID_TRIANGLE_CONFIG | -229 |
| ERROR_INVALID_MPG_EXP_CONFIG | -230 |
| ERROR_INVALID_NHOME_SEARCH_SPEED | -231 |

| | |
|---|---|
| ERORR_INVALID_INT_FACTOR | -270 |
| ERORR_INVALID_FEEDBACK_SOURCE | -271 |
| ERROR_HOME_STEP2_NOT_CONFIGURE | -272 |

Runtime Error:

| | |
|---|---|
| ERROR_RUNTIME_BASE | -300 |
| ERROR_OCCURS_IN_AXIS_X | -301 |
| ERROR_OCCURS_IN_AXIS_Y | -302 |
| ERROR_OCCURS_IN_AXIS_XY | -303 |
| ERROR_OCCURS_IN_AXIS_Z | -304 |
| ERROR_OCCURS_IN_AXIS_XZ | -305 |
| ERROR_OCCURS_IN_AXIS_YZ | -306 |
| ERROR_OCCURS_IN_AXIS_XYZ | -307 |
| ERROR_OCCURS_IN_AXIS_U | -308 |
| ERROR_OCCURS_IN_AXIS_XU | -309 |
| ERROR_OCCURS_IN_AXIS_YU | -310 |
| ERROR_OCCURS_IN_AXIS_XYU | -311 |
| ERROR_OCCURS_IN_AXIS_ZU | -312 |
| ERROR_OCCURS_IN_AXIS_XZU | -313 |
| ERROR_OCCURS_IN_AXIS_YZU | -314 |
| ERROR_OCCURS_IN_AXIS_XYZU | -315 |
| ERROR_NO_MODULE_FOUND | -316 |
| ERROR_MEMORY_MAP | -317 |
| ERROR_MEMORY_UNMAP | -318 |
| ERROR_ACCESS_VIOLATION_DATA_COPY | -319 |
| ERROR_VARIABLE_PITCH_SET | -320 |
| ERROR_INT_EVENT_ATTACH | -321 |
| ERROR_INT_EVENT_DETTACH | -322 |
| ERROR_INT_EVENT_CREATE | -323 |
| ERROR_CONFIG_IS_NEEDED | -324 |
| ERROR_MOTION_NOT_COMPLETE | -325 |
| ERROR_CONFLICT_WITH_SOFTLIMIT | -326 |
| ERROR_CONFLICT_WITH_CMPTRIG | -327 |
| ERROR_CONFLICT_WITH_VRING | -328 |
| ERROR_CONFLICT_WITH_SYNCH_ACTION | -329 |
| ERROR_ARC_DECELERATION_POINT_CALCULATE | -330 |
| ERROR_REASSIGN_SYNCH_MODE_COMMAND | -331 |
| ERROR_OVERLAP_EVENT_CREATE | -332 |

| | |
|---|---|
| ERROR_INTERPOLATION_NOT_COMPLETE | -333 |
| ERROR_CONTI_INTERP_INTERRUPTED | -334 |
| ERROR_CONTI_INTERP_INCORRECT_CONFIG | -335 |
| ERROR_CONTI_INTERP_NEXT_NOT_READY | -336 |
| ERROR_SPEED_CHANGE_FAIL_IN_ACC_DEC | -337 |
| ERROR_INVALID_OPERATION_IN_S_CURVE | -338 |
| ERROR_NOT_CONSTANT_SPEED_IN_T_MOVE | -339 |
| ERROR_MOTION_IS_COMPLETED | -340 |
| ERROR_CONFLICT_WITH_INTERPOLATION_MOVE | -341 |
| ERROR_HOLD_AXES_NOT_MATCH | -342 |
| ERROR_BLOCK_OP_CONFLICT_WITH_CMPTRIG | -343 |
| ERROR_CONFLICT_WITH_MPG | -344 |
| ERROR_HOLD_AXES_NOT_RELEASE | -345 |
| ERROR_ZPHASE_ACTIVE_AT_STEP3 | -346 |
| ERROR_BLOCK_OP_CONFLICT_WITH_DRV_HOLD | -347 |
| | |
| ERROR_AXES_MOVE_CHECK | -360 |
| ERROR_IOCTL_FAILED | -361 |
| ERROR_UNDEFINED_EXCEPTION | -362 |
| | |
| ERROR_CONFIG_FILE_LOAD | -370 |
| ERROR_CONFLICT_IN_CONFIG_FILE | -371 |
| ERROR_INVALID_FILE_HANDLE | -372 |
| | |
| ERROR_ACCESS_REGISTRY_ACTIVE_ROOT | -375 |
| ERROR_ACCESS_REGISTRY_ACTIVE_NUMBER | -376 |
| | |
| ERROR_UNSUPPORTED_FUNCTION | -380 |