Chapter 4. FUNCTION BLOCK

This shows function block for high speed counter module on the GMWIN.

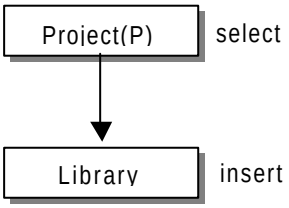
A kind of function block is as follows.

No	G3F-HSCA		G4F-HSCA		G6F-HSCA		Function
	Local	Remote	Local	Remote	Local	Remote	
1	HSC_PRE	HSCR1PRE	HSC_PRE	HSCR0PRE	HSC_PRE	HSCR6APR	Preset value setting
2	HSC_CMP	HSCR1CMP	HSC_CMP	HSCR0CMP	HSC_CMP	HSCR6ACP	Compare value setting
3	HSC_WR	HSCR1WR	HSC_WR	HSCR0WR	HSC_WR	HSCR6AWR	Operation information writing
4	HSC_RD	HSCR1RD	HSC_RD	HSCR0RD	HSC_RD	HSCR6ARD	Operation status value reading

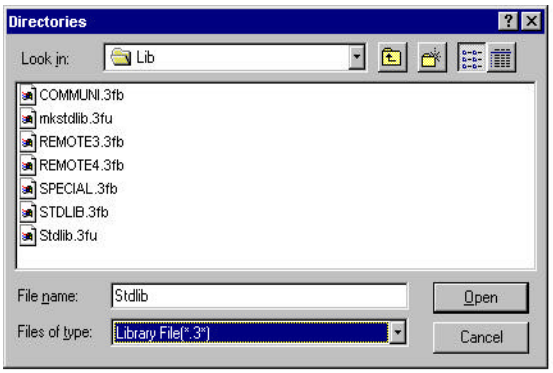
4.1 Insertion of the Function Block for High Speed Counter Module on the GMWIN

Function Block is inserted on the execution of the GMWIN according to following procedure.

Function block can be inserted only in the open condition of the Project.



* GMWIN V3.1 above(G3F-HSCA)

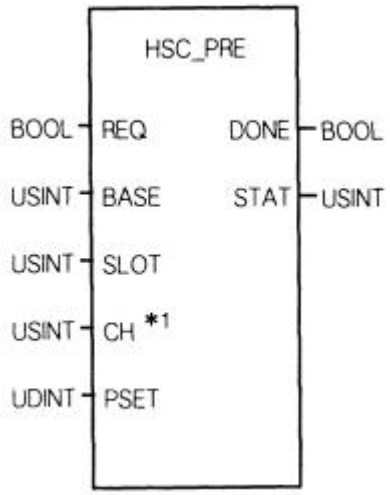


4.2 Local Function Block

4.2.1 The specification of the preset value(HSC_PRE)

Specifying preset (Initial)value for the applicable channel of the High Speed Counter Module.

Function block	Descriptions



■ **INPUT**

REQ : Function block execution request at rising edge.(↑)

BASE : Base location No. for the loaded high speed counting module.
(GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0)

SLOT : Slot location No. for the loaded high speed counting module.
(0 ~ 7)

CH : Specifies the operating channel No.(0 ~ 1)

PSET : Specifies the preset value setting(0 ~ 16,777,215)

■ **OUTPUT**

DONE : Turns on when the function block has finished without error.
The On state is kept until next request.
However, turns off if error occurs during execution of the function block.

STAT : Indicates the error that occurs during execution of the function
block.

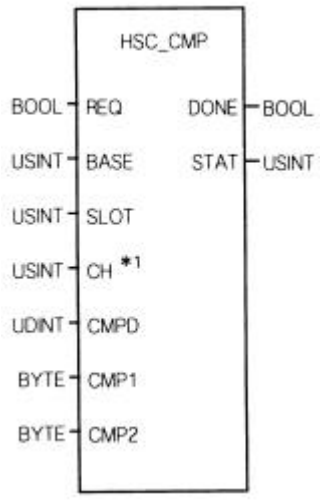
*1: G3F-HSCA only applicable

4.2.2 The specification of the comparison value(HSC_CMP)

Specifies the reference value, which will be compared with the current value for the corresponding channel of the High Speed Counter Module.

Function block	Description

No.	Symbol	Contents	OUT1 LED	OUT2 LED
0		Not compare	OFF	OFF
1	<	CNT < CMPD	ON	ON
2	=	CNT = CMPD	ON	ON
3	≤	CNT ≤ CMPD	ON	ON
4	>	CNT > CMPD	ON	ON
5	≠	CNT ≠ CMPD	ON	ON
6	≥	CNT ≥ CMPD	ON	ON
7	-	CNT - CMPD	ON	ON



■ **INPUT**

REQ : Function block execution request at rising edge.(▲)
BASE : Base location No. for the loaded high speed counting module.
(GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0)
SLOT : Slot location No. for the loaded high speed counting module.
(0 ~ 7)
CH : Specifies the operating channel No.(0 ~ 1)
CMPD : Specifies the Setting value (0 ~ 16,777,215)
CMP1 : Specifies the comparison method for the first Setting value. (0 ~ 7)
CMP2 : Specifies the comparison method for the second Setting value. (0 ~ 7)

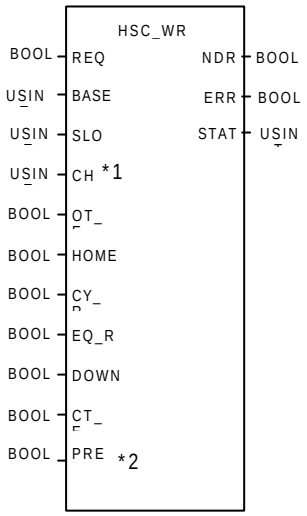
[Magnitude comparison method specification]

■ **OUTPUT**

DONE : Turns on when the function block has finished without error.
The On state is kept until next request

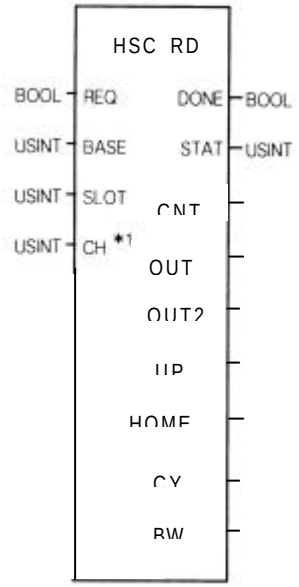
4.2.3 Writing the operating information(HSC_WR)

Specifies the run status control information for the corresponding channel of the High Speed Counter Module.

Function block	Description
	■ **INPUT** REQ : Function block execution request.(_┘▀└_) BASE : Base location No. for the loaded high speed counting module. (GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0) SLOT : Slot location No. for the loaded high speed counting module. (0 ~ 7) CH : Specifies the operating channel No.(0 ~ 1) OT_E: Specifies output enable/disable (0:disable, 1:enable) HOME :Specifies Home-Latch enable/disable (0:disable, 1:enable) CY_R: Specifies carry/borrow reset enable/disable (0:disable, 1:enable) EQ_R: Specifies coincidence reset enable/disable (0:disable, 1:enable) DOWN: Specifies the increment/decrement (0:increment, 1:decrement) CT_E : Specifies counting enable/disable (0:disable, 1:enable) PRE_I/E : Specifies external preset input usable (0 : external preset input disable, 1 : external preset input usable) ■ **OUTPUT** DONE : Turns on when the function block has finished without error. The On state is kept until next request. However, turns off if error occurs during execution of the function block. STAT : Indicates the error that occurs during execution of the function block. *1: G3F-HSCA only applicable *2: G6F-HSCA only applicable

4.2.4 Reading the value of the operating status (HSC_RD)

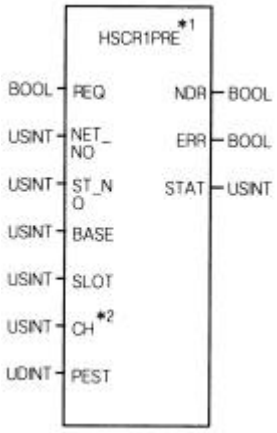
Reads the current value and operating status for the corresponding channel of the High Speed Counter Module.

Function block	Descriptions
	■ **INPUT** REQ : Function block execution request.(_┘▀└_) BASE : Base location No. for the loaded high speed counting module. (GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0) SLOT : Slot location No. for the loaded high speed counting module. (0 ~ 7) CH : Specifies the run channel No (0 ~ 1) ■ **OUTPUT** DONE : Turns on when the function block has finished without error. The On state is kept until next request. However, turns off if error occurs during execution of the function block. STAT : Indicates the error that occurs during execution of the function block. CNT : Current count value read from the High Speed Counter Module (0~16,777,215) OUT1: OUT1 status (0:Off. 1:On) OUT2: OUT2 status (0:Off, 1:On) UP : Increment/decrement status (0:decrement, 1:increment) HOME: Home signal input status (0:Off, 1:On) CY :Carry signal status (0:Off, 1:On) BW :Borrow signal status (0:Off, 1:On) *1: G3F-HSCA only applicable

4.3 Remote Function Block

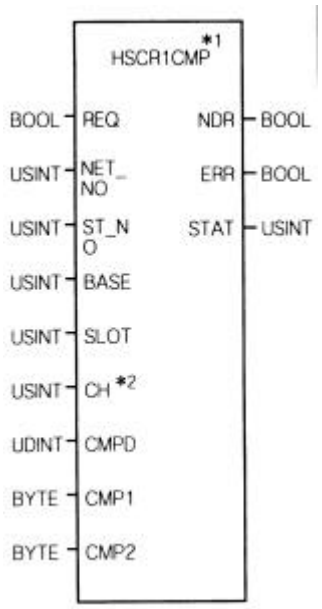
4.3.1 The specification of the preset value (HSCR1PRE)

Sets the preset value for the corresponding channel of the High Speed Counter Module mounted on a remote station.

Function block	Descriptions
	■ **INPUT** REQ : Function block execution request at rising edge.(⌐↑) NET_NO : Location No.(0 ~ 7) of the slot where the local communicati modules (G3L – FUEA, G4L – FUEA, G3L – FUOA) is loaded to which the function block will be sent. St_NO : Station No.(0 ~ 63) of the communication modules(G3L – RBEA, G4L – RBOA, G4L – BBEA) mounted on the remote I/O station. BASE: Location No. of the base unit where the High Speed Counter Module is loaded. (GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0) SLOT: Location No. of the slot in the base unit where the High Speed Counter Module is loaded.(0 ~ 7) CH : Specifies operating channel No. (0 ~ 1) PSET : Specifies preset value (0 ~ 16,777,215) ■ **OUTPUT** NDR : Turns on when the function block has finished without error. Turns off at next scan. ERR : Turns on when an error occurs during execution of the function block. STAT : Indicates the error that occurs during execution of the function block. *1: G4F-HSCA : “HSCR0PRE” G6F-HSCA : “HSCR6APR” *2: G3F-HSCA only applicable

4.3.2 The specification of the comparison value (HSCR1CMP)

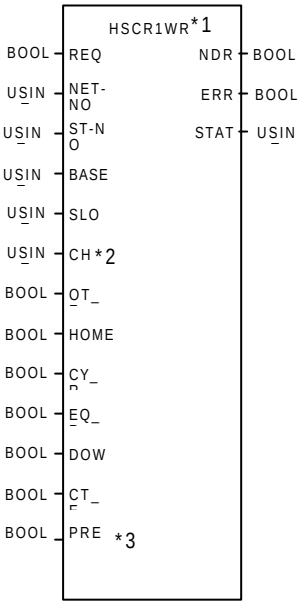
Specifies the reference value, which will be compared with the current value for the corresponding channel of the High Speed Counter Module mounted on a remote station.

Function block	Descriptions
	■ **INPUT** REQ : Function block execution request at rising edge.(↑) NET_NO : Location No.(0 ~ 7) of the slot where the local communication modules (G3L – FUEA, G4L – FUEA, G3L – FUOA) is loaded to which the function block will be sent. St_NO : Station No.(0 ~ 63) of the communication modules(G3L – RBEA, G4L – RBOA, G4L – BBEA) mounted on the remote I/O station. BASE: Location No. of the base unit where the High Speed Counter Module is loaded. (GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0) SLOT: Location No. of the slot in the base unit where the High Speed Counter Module is loaded.(0 ~ 7) CH : Specifies operating channel No. (0 ~ 1) CMPD : Specifies the Setting value (0 ~ 16,777,215,) CMP1 : Specifies the comparison method for the first Setting value. (0 ~ 7) CMP2 : Specifies the comparison method for the second Setting value. (0 ~ 7) **[Magnitude comparison method specification]** ■ **OUTPUT** NDR : Turns on when the function block has finished without error. Turns off at next scan. ERR : Turns on when an error occurs during execution of the function block. STAT : Indicates the error that occurs during execution of the function block. *1: G4F-HSCA : "HSCR0CMP" G6F-HSCA : "HSCR6ACP" *2: G3F-HSCA only applicable

No.	Symbol	Contents	OUT1 LED	OUT2 LED
0		Not compare	OFF	OFF
1	<	CNT < CMPD	ON	ON
2	=	CNT = CMPD	ON	ON
3	≤	CNT ≤ CMPD	ON	ON
4	>	CNT > CMPD	ON	ON
5	≠	CNT ≠ CMPD	ON	ON
6	≥	CNT ≥ CMPD	ON	ON
7	-	CNT - CMPD	ON	ON

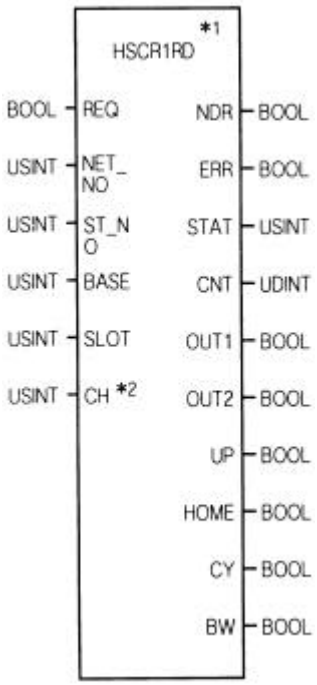
4.3.3 Writing the operating information (HSCR1WR)

Specifies the control information of the operating status for the corresponding channel of the High Speed Counter Module mounted on the remote station.

Function block	Descriptions
	■ **INPUT** REQ : Function block execution request at rising edge.(⎍↑) NET_NO : Location No.(0 ~ 7) of the slot where the local communication modules (G3L – FUEA, G4L – FUEA, G3L – FUOA) is loaded to which the function block will be sent. St_NO : Station No.(0 ~ 63) of the communication modules(G3L – RBEA, G4L – RBOA, G4L – BBEA) mounted on the remote I/O station. BASE: Location No. of the base unit where the High Speed Counter Module is loaded. (GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0) SLOT: Location No. of the slot in the base unit where the High Speed Counter Module is loaded.(0 ~ 7) CH : Specifies operating channel No. (0 ~ 1) OT_E: Specifies output enable/disable (0:disable, 1:enable) HOME :Specifies Home-Latch enable/disable (0:disable, 1:enable) CY_R: Specifies carry/borrow reset enable/disable (0:disable, 1:enable) EQ_R: Specifies coincidence reset enable/disable (0:disable, 1:enable) DOWN: Specifies the increment/decrement (0:increment, 1:decrement) CT_E : Specifies counting enable/disable (0:disable, 1:enable) PRE_I/E : Specifies external preset input usable (0 : external preset input disable, 1 : external preset input usable) ■ **OUTPUT** NDR : Turns on when the function block has finished without error. Turns off at next scan. ERR : Turns on when an error occurs during execution of the function block. STAT : Indicates the error that occurs during execution of the functio block. *1: G4F-HSCA : “HSCR0WR” G6F-HSCA : “HSCR6AWR” *2: G3F-HSCA only applicable *3: G6F-HSCA only applicable

4.3.4 Reading the value of the operating status (HSCR1RD)

Reads the current value and operating status for the corresponding channel of the High Speed Counter Module mounted on the remote station.

Function block	Descriptions
	■ **INPUT** REQ : Function block execution request at rising edge.(▁▲▔) NET_NO : Location No.(0 ~ 7) of the slot where the local communication modules (G3L – FUEA, G4L – FUEA, G3L – FUOA) is loaded to which the function block will be sent. ST_NO : Station No.(0 ~ 63) of the communication modules(G3L – RBEA, G4L – RBOA, G4L – BBEA) mounted on the remote I/O station. BASE: Location No. of the base unit where the High Speed Counter Module is loaded. (GM1 : 0~31, GM2 : 0~7, GM3/4 : 0~3, GM6 : 0) SLOT: Location No. of the slot in the base unit where the High Speed Counter Module is loaded.(0 ~ 7) CH : Specifies operating channel No. (0 ~ 1) ■ **OUTPUT** NDR : Turns on when the function block has finished without error. Turns off at next scan. ERR : Turns on when an error occurs during execution of the function block. STAT : Indicates the error that occurs during execution of the function block. CNT : Current count value read from the High Speed Counter Module (0~16,777,215) OUT1: OUT1 status (0:Off. 1:On) OUT2: OUT2 status (0:Off, 1:On) UP :Increment/decrement status (0:decrement, 1:increment) HOME : Home signal input status (0:Off, 1:On) CY :Carry signal status (0:Off, 1:On) BW :Borrow signal status (0:Off, 1:On) *1: G4F-HSCA : “HSCR0RD” G6F-HSCA : “HSCR6ARD” *2: G3F-HSCA only applicable

4.4 Error code on the function block

This shows the errors on the output variable "STAT" of variables and the resolutions in accordance with them.

STAT No.	Local/ Remote	Descriptions	Resolutions
0	Local	Operating with no fault	-
1		The base location number is exceeding the proper setting range	Correct the number in accordance with the proper range(See Section 4.2)
2		H/W error of the base	Contact the service station.
3		The slot location number is exceeding the proper setting range	Set the right number to the slot mounting the high speed counter module.
4		The high speed counter module on the slot is empty	Mount the high speed counter module to the specified slot
5		The module loaded isn't the high speed counter module	Mount the high speed counter module to the specified slot
6		The channel number is exceeding the proper range	Specify the available channel correctly
7		H/W error of the high speed counter module	Contact the service station.
8		The high speed counter module's shared memory	Contact the service station.
9		The available channels are not specified	Make a correct specification of the available channel on the initialization function block
128	Remote	H/W error of the communication module for remote	See the manual for the remote communication module
129		The base location number is exceeding the proper setting range	Corsets the number in accordance with the proper range(See Section 4.2)
131		The slot location number is exceeding the proper setting range	Set the right number to the slot mounting the high speed counter module
133		The module loaded isn't the high speed counter module	Mount the high speed counter module to the specified slot
135		H/W error of the high speed counter module	Contact the service station.
136		The high speed counter module's shared memory	Contact the service station.
137		The available channels are not specified	Make a correct specification of the available channel on the initialization function block