# **MELSEC-Q/L High-Speed Counter Module FB Library**

### **Reference Manual**

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# Reference Manual Revision History

| Reference Manual Number | Date       | Description   |  |
|-------------------------|------------|---|--|
| FBM-M032-A              | 2010/08/06 | First edition   |  |
| FBM-M032-B              | 2011/04/30 | Added "Reference Manual Revision History", "Overview", "Chine |  |
|                         |            | version of GX Works2".  |  |



#### 1. Overview

#### 1.1 Overview of the FB Library

This FB library is for using the MELSEC-Q QD62(E/D) or MELSEC-L LD62(D) high-speed counter module.

#### 1.2 Function of the FB Library

| Item                          | Description  |
|-------------------------------|--|
| M+D62_SetRingCounter          | Sets the ring counter upper limit and lower limit for a specified channel.   |
| M+D62_CountEnable             | Performs count operation (count start/stop) for a specified channel or all   |
|                               | channels.  |
| M+D62_PresentValueStorage     | Monitors the present value for a specified channel.                          |
| M+D62_AllPresentValueStorage  | Monitors the present value for all channels.                                 |
| M+D62_SetCoincidenceOutput    | Sets a coincidence output point and resets counter value coincidence for a   |
|                               | specified channel.   |
| M+D62_CoincidenceOutputEnable | Enables external coincidence output for a specified channel or all channels. |
| M+D62_PresetOperation         | Performs a preset of present value.  |
| M+D62_CountDisableOperation   | Executes disable count function for a specified channel or all channels.     |
| M+D62_LatchCounterOperation   | Executes latch counter function.   |
| M+D62_SamplingOperation       | Executes sampling counter function.  |
| M+D62_PeriodicPulseCounter    | Executes periodic pulse counter function.                                    |
| M+D62_OverflowDetection       | Detects overflow.  |



### 1.3 System Configuration Example

I/O signals are allocated as shown in the figure below. Q series and L series have the same allocation.

| Power<br>Supply<br>Module | CPU<br>Module | LD62(D),<br>QD62(E/D)<br>( X/Y00 ~<br>X/Y0F ) |
|---------------------------|---------------|---|
|---------------------------|---------------|---|

### (1) Q series system configuration Example

| Module                           | Description   |  |
|----------------------------------|---|--|
| Q series programmable controller | Use base unit, power supply module, and Q series programming controller |  |
|                                  | CPU module.   |  |
| QD62(E/D)                        | MELSEC-Q high-speed counter module.                                     |  |

#### (2) L series system configuration Example

| Module                           | Description  |
|----------------------------------|--|
| L series programmable controller | Use power supply module, and L series programming controller CPU module. |
| LD62(D)                          | MELSEC-L high-speed counter module.                                      |



#### 1.4 Relevant manual

MELSEC-Q High-Speed Counter Module User's Manual MELSEC-L High-Speed Counter Module User's Manual

#### 1.5 Note

Please make sure to read user's manuals for the corresponding products before using the products.



- 2. Details of the FB Library
- 2.1 M+D62\_SetRingCounter (Ring counter setting)

# FB Name

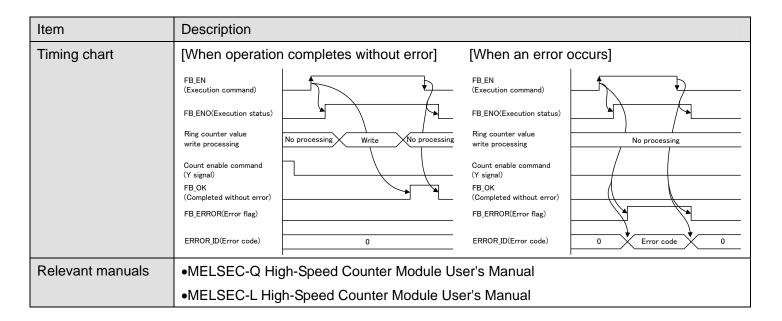
M+D62\_SetRingCounter

| Item                | Description  |           |                       |                          |          |                         |
|---------------------|--|-----------|-----------------------|--------------------------|----------|-------------------------|
| Function overview   | Sets the ring counter upper limit and lower limit for a specified channel. |           |                       |                          |          |                         |
| Symbol              |  |           | M+D62_SetRingCounter  |                          |          | ]                       |
|                     | Execution command  |           | B : FB_EN FB_EN       |                          | ENO : B  | Execution status        |
|                     | Module start XY address  |           | W:i_Start_IO_No       | FB_OK : B                |          | Completed without error |
|                     | Target CH  |           | W:i_CH                | FB_ERROR : B             |          | Error flag              |
|                     | Ring counter upper limit   |           | D:i_RingUpperLimit    | ERROR_ID : W Error code  |          | Error code              |
|                     | Ring counter lower limit   |           | D: i_RingLowerLimit   |                          |          |                         |
|                     |  |           |                       |                          |          |                         |
| Applicable hardware | High-Speed   |           |                       |                          |          |                         |
| and software        | Counter Module   | Se        | eries                 | Model                    |          |                         |
|                     |  | MI        | ELSEC-Q Series        | QD62(E/D)                |          |                         |
|                     |  | MI        | ELSEC-L Series        | LD62(D)                  |          |                         |
|                     | CPU module   |           |                       |                          |          |                         |
|                     | CFO module   | Series    |                       | Model                    |          |                         |
|                     |  | -         | ELSEC-Q Series        | Basic model              | <u> </u> |                         |
|                     |  | 1011      | LLOLO Q Ochos         | High performance model * |          |                         |
|                     |  |           |                       | Universal model          |          |                         |
|                     |  | MI        | ELSEC-L Series        | LCPU                     |          |                         |
|                     |  |           | ot applicable for QCI |                          |          |                         |
|                     | Engineering  | GX Works2 |                       | ,                        |          |                         |
|                     | software   | Series    |                       | Language                 | Softv    | vare version            |
|                     |  | МІ        | ELSEC-Q/L Series      | English                  | Ver 1    | I.31H or later          |
|                     |  |           |                       | Chinese                  | Ver 1    | .49B or later           |
|                     |  |           |                       |                          | 1        |                         |
| Programming         | Ladder   |           |                       |                          |          |                         |
| language            |  |           |                       |                          |          |                         |



| Item                 | Description  |  |
|----------------------|--|--|
| Number of steps      | For high performance model CPU: 128*   |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a       |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple     |  |
|                      | Project).  |  |
| Function description | 1) When FB_EN (Execution command) is turned ON, the set ring counter lower and upper       |  |
|                      | value are stored in the buffer memory.   |  |
|                      | 2) FB operation is one-shot only, triggered by the FB_EN signal.                           |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,         |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).          |  |
|                      | Refer to the error code explanation section for details.                                   |  |
| Compiling method     | Macro type   |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery           |  |
| precautions          | processing separately in accordance with the required system operation.                    |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do   |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,              |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.                                  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of |  |
|                      | the target CH.   |  |
|                      | 5) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index re       |  |
|                      | in an interrupt program.   |  |
|                      | 6) Every input must be provided with a value for proper FB operation.                      |  |
|                      | 7) When count enable command (Y signal) is ON, the FB does not complete its execution      |  |
|                      | until turned OFF. (Please turn OFF count enable command (Y signal).)                       |  |
|                      | 8) If the parameter is set using GX Configurator-CT or the configuration function of GX    |  |
|                      | Works 2, using this FB is unnecessary.   |  |
|                      | 9) The pulse input mode, counting speed setting, and counter format must be properly       |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).             |  |
| FB operation type    | Pulsed execution (1 scan execution type)   |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples                                      |  |





#### Error code list

| Error code   | Description                                | Action   |  |
|--------------|--|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |  |
|              | The target channel is not within the       |  |  |
|              | range of 1 to 2.                           |  |  |



# Labels

### ■ Input labels

| Name               | Variable name    | Data Setting range |                              | Description              |
|--------------------|------------------|--------------------|------------------------------|--------------------------|
|                    |                  | type               |                              |                          |
| Execution command  | FB_EN            | В                  | ON, OFF                      | ON: The FB is activated. |
|                    |                  |                    |                              | OFF: The FB is not       |
|                    |                  |                    |                              | activated.               |
| Module start XY    | i_Start_IO_No    | W                  | Depends on the I/O point     | Specify the starting XY  |
| address            |                  |                    | range. For details, refer to | address (in hexadecimal) |
|                    |                  |                    | the CPU user's manual.       | where the D62 module is  |
|                    |                  |                    |                              | mounted. (For example,   |
|                    |                  |                    |                              | enter H10 for X10.)      |
| Target CH          | i_CH             | W                  | 1~2                          | Specify the CH number.   |
| Ring counter upper | i_RingUpperLimit | D                  | -2,147,483,648~              | Specify the ring counter |
| limit              |                  |                    | 2,147,483,647                | upper limit.             |
| Ring counter lower | i_RingLowerLimit | D                  | -2,147,483,648~              | Specify the ring counter |
| limit              |                  |                    | 2,147,483,647                | lower limit.             |

| Name              | Variable name | Data | Initial | Description                                    |  |
|-------------------|---------------|------|---------|--|--|
|                   |               | type | value   |  |  |
| Execution status  | FB_ENO        | В    | OFF     | ON: Execution command is ON.                   |  |
|                   |               |      |         | OFF: Execution command is OFF.                 |  |
| Completed without | FB_OK         | В    | OFF     | When ON, it indicates that the setting of ring |  |
| error             |               |      |         | counter upper and lower value is completed.    |  |
| Error flag        | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has        |  |
|                   |               |      |         | occurred.                                      |  |
| Error code        | ERROR_ID      | W    | 0       | FB error code output.                          |  |



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|---|---------|------------|---------------|
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#### Note

This chapter includes information related to the M+D62\_SetRingCounter function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.



### 2.2 M+D62\_CountEnable (Count enable operation)

### FB Name

M+D62\_CountEnable

| Item                | Description  |      |                      |             |                                  |  |  |
|---------------------|--|------|----------------------|-------------|----------------------------------|--|--|
| Function overview   | Performs count operation (count start/stop) for a specified channel or all channels. |      |                      |             |                                  |  |  |
| Symbol              |  |      | M+D62_CountEnable    |             |                                  |  |  |
|                     | Execution command  |      | B : FB_EN FI         |             | B_ENO : B Execution status       |  |  |
|                     | Module start XY address  |      | W:i_Start_IO_No      | o_Cou       | ntStart : B Count operating flag |  |  |
|                     | Target CH  |      | W : i_CH             | FB_I        | ERROR : B Error flag             |  |  |
|                     |  |      |                      | ERF         | ROR_ID : W Error code            |  |  |
| Applicable hardware | High-Speed   |      |                      |             |                                  |  |  |
| and software        | Counter Module   | Se   | ries                 | Model       |                                  |  |  |
|                     |  | ME   | ELSEC-Q Series       | QD62(E/D)   |                                  |  |  |
|                     |  | ME   | LSEC-L Series        | LD62(D)     |                                  |  |  |
|                     | ODU dod-   |      |                      |             |                                  |  |  |
|                     | CPU module   | 0-   |                      | Mandal      |                                  |  |  |
|                     |  |      | ries                 | Model       |                                  |  |  |
|                     |  | ME   | ELSEC-Q Series       | Basic mode  |                                  |  |  |
|                     |  |      |                      |             | mance model *                    |  |  |
|                     |  |      |                      | Universal m | odel                             |  |  |
|                     |  | ME   | LSEC-L Series        | LCPU        |                                  |  |  |
|                     |  | * No | t applicable for QCI | PU (A mode) |                                  |  |  |
|                     | Engineering  | GX   | Works2               |             |                                  |  |  |
|                     | software   | Se   | ries                 | Language    | Software version                 |  |  |
|                     |  | ME   | LSEC-Q/L Series      | English     | Ver 1.31H or later               |  |  |
|                     |  |      |                      | Chinese     | Ver 1.49B or later               |  |  |
|                     |  |      |                      |             |                                  |  |  |
| Programming         | Ladder   |      |                      |             |                                  |  |  |
| language            |  |      |                      |             |                                  |  |  |



| Item                 | Description   |  |  |  |  |  |  |
|----------------------|---|--|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 137*  |  |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a  |  |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).  |  |  |  |  |  |  |
| Function description | By turning ON/OFF FB_EN (Execution command), the count operation is started or stopped.   |  |  |  |  |  |  |
|                      | 2) FB operation is one-shot only, triggered by the FB_EN signal.  |  |  |  |  |  |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,  |  |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).   |  |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.  |  |  |  |  |  |  |
| Compiling method     | Macro type  |  |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery  |  |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.   |  |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.   |  |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do  |  |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,   |  |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.   |  |  |  |  |  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH.   |  |  |  |  |  |  |
|                      | 5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an interrupt program.   |  |  |  |  |  |  |
|                      | 6) Every input must be provided with a value for proper FB operation.   |  |  |  |  |  |  |
|                      | 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. |  |  |  |  |  |  |
|                      | 8) The pulse input mode, counting speed setting, and counter format must be properly  |  |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).  |  |  |  |  |  |  |
| FB operation type    | Real-time execution   |  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples   |  |  |  |  |  |  |



| Item             | Description   |  |  |  |  |  |  |
|------------------|---|--|--|--|--|--|--|
| Timing chart     | [When operation completes without error]  FB_EN (Execution command) FB_ENO(Execution status)  Count enable command (Y signal) o_CountStart (Count operating flag) FB_ERROR(Error flag) ERRORJD(Error code)  0 | FB_EN (Execution command) FB_ENO(Execution status) Count enable command (Y signal) o_CountStart (Count operating flag) FB_ERROR(Error flag) ERROR_ID(Error code)  0 Error code |  |  |  |  |  |
| Relevant manuals | MELSEC-Q High-Speed Counter Module Use  | ser's Manual   |  |  |  |  |  |
|                  | •MELSEC-L High-Speed Counter Module Us  | ser's Manual   |  |  |  |  |  |

#### Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2 or 15.                     |  |



# Labels

### ■ Input labels

| Name              | Variable name | Data | Setting range                | Description              |
|-------------------|---------------|------|------------------------------|--------------------------|
|                   |               | type |                              |                          |
| Execution command | FB_EN         | В    | ON, OFF                      | ON: The FB is activated. |
|                   |               |      |                              | OFF: The FB is not       |
|                   |               |      |                              | activated.               |
| Module start XY   | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY  |
| address           |               |      | range. For details, refer to | address (in hexadecimal) |
|                   |               |      | the CPU user's manual.       | where the D62 module is  |
|                   |               |      |                              | mounted. (For example,   |
|                   |               |      |                              | enter H10 for X10.)      |
| Target CH         | i_CH          | W    | 1~2 or 15                    | 1~2: Specify the CH      |
|                   |               |      |                              | number.                  |
|                   |               |      |                              | 15: Specify all CHs.     |

|                      | _             |      |         |   |
|----------------------|---------------|------|---------|---|
| Name                 | Variable name | Data | Initial | Description                             |
|                      |               | type | value   |   |
| Execution status     | FB_ENO        | В    | OFF     | ON: Execution command is ON.            |
|                      |               |      |         | OFF: Execution command is OFF.          |
| Count operating flag | o_CountStart  | В    | OFF     | ON: Count enable command (X signal) is  |
|                      |               |      |         | ON.                                     |
|                      |               |      |         | OFF: Count enable command (X signal) is |
|                      |               |      |         | OFF.                                    |
| Error flag           | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has |
|                      |               |      |         | occurred.                               |
| Error code           | ERROR_ID      | W    | 0       | FB error code output.                   |



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#### Note

This chapter includes information related to the M+D62\_CountEnable function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.



### 2.3 M+D62\_PresentValueStorage (Present value monitoring)

### FB Name

M+D62\_PresentValueStorage

| Item                | Description   |           |                           |                          |           |                           |  |
|---------------------|---|-----------|---------------------------|--------------------------|-----------|---------------------------|--|
| Function overview   | Monitors the present value for a specified channel. |           |                           |                          |           |                           |  |
| Symbol              |   |           | M+D62_PresentValueStorage |                          |           |                           |  |
|                     | Execution command                                   | B : FB_EN |                           | FB_ENO : B               |           | Execution status          |  |
|                     | Module start XY address                             |           | W : i_Start_IO_No         | FE                       | 3_OK : B  | — Completed without error |  |
|                     | Target CH   |           | W : i_CH                  | o_Present\               | /alue : D | — Present value           |  |
|                     |   |           |                           | FB_ER                    | ROR : B   | — Error flag              |  |
|                     |   |           |                           | ERRO                     | R_ID : W  | Error code                |  |
| Applicable hardware | High-Speed  |           |                           |                          |           |                           |  |
| and software        | Counter Module                                      | Se        | ries                      | Model                    |           |                           |  |
|                     |   | МЕ        | LSEC-Q Series             | QD62(E/D)                |           |                           |  |
|                     |   | ME        | ELSEC-L Series            | LD62(D)                  |           |                           |  |
|                     |   |           |                           |                          |           |                           |  |
|                     | CPU module  |           |                           |                          |           |                           |  |
|                     |   | Series    |                           | Model                    |           |                           |  |
|                     |   | ME        | LSEC-Q Series             | Basic mode               | l         |                           |  |
|                     |   |           |                           | High performance model * |           |                           |  |
|                     |   |           |                           | Universal model          |           |                           |  |
|                     |   | ME        | LSEC-L Series             | LCPU                     |           |                           |  |
|                     |   | * No      | t applicable for QCI      | PU (A mode)              |           |                           |  |
|                     | Engineering   | GX        | Works2                    |                          | ı         |                           |  |
|                     | software  | Se        | ries                      | Language                 | Softwa    | are version               |  |
|                     |   | ME        | LSEC-Q/L Series           | English                  | Ver 1.3   | 31H or later              |  |
|                     |   |           |                           | Chinese                  | Ver 1.4   | 19B or later              |  |
|                     |   |           |                           |                          |           |                           |  |
| Programming         | Ladder  |           |                           |                          |           |                           |  |
| language            |   |           |                           |                          |           |                           |  |



| Item                 | Description  |  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 97*  |  |  |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a   |  |  |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple   |  |  |  |  |  |  |  |
|                      | Project).  |  |  |  |  |  |  |  |
| Function description | 1) When FB_EN (Execution command) is turned ON, the present value is read from the   |  |  |  |  |  |  |  |
|                      | buffer memory.   |  |  |  |  |  |  |  |
|                      | 2) When the target CH setting value is out of range, the FB_ERROR output turns ON,   |  |  |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).  |  |  |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.   |  |  |  |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery   |  |  |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.  |  |  |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do   |  |  |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,  |  |  |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.  |  |  |  |  |  |  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of   |  |  |  |  |  |  |  |
|                      | the target CH.   |  |  |  |  |  |  |  |
|                      | 5) This FB uses index registers Z9, Z8, and Z7. Please do not use these index registers in   |  |  |  |  |  |  |  |
|                      | an interrupt program.  |  |  |  |  |  |  |  |
|                      | 6) Every input must be provided with a value for proper FB operation.  |  |  |  |  |  |  |  |
|                      | 7) The pulse input mode, counting speed setting, and counter format must be properly   |  |  |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).   |  |  |  |  |  |  |  |
| FB operation type    | Real-time execution  |  |  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples  |  |  |  |  |  |  |  |
| Timing chart         | [When operation completes without error] [When an error occurs]  |  |  |  |  |  |  |  |
|                      | FB_EN (Execution command) FB_EN (Execution command)  |  |  |  |  |  |  |  |
|                      | FB_ENO(Execution status)  FB_ENO(Execution status)   |  |  |  |  |  |  |  |
|                      | o_PresentValue (Present value)  Refreshing   Refreshing   Refreshing   Refreshing   Stop   Refreshing   Refre |  |  |  |  |  |  |  |
|                      | FB_OK  FB_OK  FB_OK  FB_OK   |  |  |  |  |  |  |  |
|                      | (Completed without error)  FB_ERROR(Error flag)  FB_ERROR(Error flag)  |  |  |  |  |  |  |  |
|                      | ERROR_ID(Error code)  0 ERROR_ID(Error code)  0 Error code   |  |  |  |  |  |  |  |
| Relevant manuals     | MELSEC-Q High-Speed Counter Module User's Manual   |  |  |  |  |  |  |  |
|                      | MELSEC-L High-Speed Counter Module User's Manual   |  |  |  |  |  |  |  |



#### ■ Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2.                           |  |

# Labels

### ■ Input labels

| Name              | Variable name | Data | Setting range                | Description              |
|-------------------|---------------|------|------------------------------|--------------------------|
|                   |               | type |                              |                          |
| Execution command | FB_EN         | В    | ON, OFF                      | ON: The FB is activated. |
|                   |               |      |                              | OFF: The FB is not       |
|                   |               |      |                              | activated.               |
| Module start XY   | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY  |
| address           |               |      | range. For details, refer to | address (in hexadecimal) |
|                   |               |      | the CPU user's manual.       | where the D62 module is  |
|                   |               |      |                              | mounted. (For example,   |
|                   |               |      |                              | enter H10 for X10.)      |
| Target CH         | i_CH          | W    | 1~2                          | Specify the CH number.   |

| Name              | Variable name  | Data | Initial | Description                                  |
|-------------------|----------------|------|---------|--|
|                   |                | type | value   |  |
| Execution status  | FB_ENO         | В    | OFF     | ON: Execution command is ON.                 |
|                   |                |      |         | OFF: Execution command is OFF.               |
| Completed without | FB_OK          | В    | OFF     | When ON, it indicates that the present value |
| error             |                |      |         | is being read.                               |
| Present value     | o_PresentValue | D    | 0       | Store the present value.                     |
| Error flag        | FB_ERROR       | В    | OFF     | When ON, it indicates that an error has      |
|                   |                |      |         | occurred.                                    |
| Error code        | ERROR_ID       | W    | 0       | FB error code output.                        |



|   | Version | Date       | Description   |  |
|---|---------|------------|---------------|--|
| ſ | 1.00A   | 2010/08/06 | First edition |  |

#### Note

This chapter includes information related to the M+D62\_PresentValueStorage function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.



### 2.4 M+D62\_AllPresentValueStorage (Present value monitoring (All CHs))

### FB Name

M+D62\_AllPresentValueStorage

| Item                | Description                                  | Description                  |                       |                          |                                  |  |  |
|---------------------|--|------------------------------|-----------------------|--------------------------|----------------------------------|--|--|
| Function overview   | Monitors the present value for all channels. |                              |                       |                          |                                  |  |  |
| Symbol              |  | M+D62_AllPresentValueStorage |                       |                          |                                  |  |  |
|                     | Execution command                            | d B : FB_EN                  |                       | FB_                      | ENO : B Execution status         |  |  |
|                     | Module start XY address                      |                              | W : i_Start_IO_No     | FE                       | B_OK : B Completed without error |  |  |
|                     |  |                              |                       | o_PresentVa              | alue1 : D CH1 present value      |  |  |
|                     |  |                              |                       | o_PresentVa              | alue2 : D CH2 present value      |  |  |
|                     |  |                              |                       | FB_ER                    | RROR : B Error flag              |  |  |
|                     |  |                              |                       | ERRO                     | PR_ID:W—— Error code             |  |  |
| Applicable hardware | High-Speed                                   |                              |                       |                          |                                  |  |  |
| and software        | Counter Module                               | Se                           | ries                  | Model                    |                                  |  |  |
|                     |  | ME                           | ELSEC-Q Series        | QD62(E/D)                |                                  |  |  |
|                     |  | ME                           | ELSEC-L Series        | LD62(D)                  |                                  |  |  |
|                     | CPU module                                   |                              |                       |                          |                                  |  |  |
|                     |  | Se                           | ries                  | Model                    |                                  |  |  |
|                     |  | ME                           | ELSEC-Q Series        | Basic model              |                                  |  |  |
|                     |  |                              |                       | High performance model * |                                  |  |  |
|                     |  |                              |                       | Universal model          |                                  |  |  |
|                     |  | ME                           | LSEC-L Series         | LCPU                     |                                  |  |  |
|                     |  | * No                         | ot applicable for QCI | PU (A mode)              |                                  |  |  |
|                     | Engineering                                  | GX                           | Works2                |                          | <del>,</del>                     |  |  |
|                     | software                                     | Se                           | ries                  | Language                 | Software version                 |  |  |
|                     |  | MELSEC-Q/L Series            |                       | English                  | Ver 1.31H or later               |  |  |
|                     |  |                              |                       | Chinese                  | Ver 1.49B or later               |  |  |
|                     |  |                              |                       |                          |                                  |  |  |



| Item                 | Description  |  |  |  |  |
|----------------------|--|--|--|--|--|
| Programming          | Ladder   |  |  |  |  |
| language             |  |  |  |  |  |
| Number of steps      | For high performance model CPU: 64*  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a   |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple   |  |  |  |  |
|                      | Project).  |  |  |  |  |
| Function description | 1) When FB_EN (Execution command) is turned ON, the present value is read from the   |  |  |  |  |
|                      | buffer memory.   |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery   |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do   |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.  |  |  |  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of   |  |  |  |  |
|                      | the target CH.   |  |  |  |  |
|                      | 5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an   |  |  |  |  |
|                      | interrupt program.   |  |  |  |  |
|                      | 6) Every input must be provided with a value for proper FB operation.  |  |  |  |  |
|                      | 7) The pulse input mode, counting speed setting, and counter format must be properly   |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).   |  |  |  |  |
| FB operation type    | Real-time execution  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples  |  |  |  |  |
| Timing chart         | [When operation completes without error]   |  |  |  |  |
|                      | FB.EN (Execution command)  |  |  |  |  |
|                      | FB ENO(Execution status)   |  |  |  |  |
|                      | o Present Value 1 Petrophins   |  |  |  |  |
|                      | (CH1 present value) stop stop stop   |  |  |  |  |
|                      | o_PresentValue2   Refreshing   Refreshing   Refreshing   Stop   Refreshing   Refres |  |  |  |  |
|                      | FB_OK (Completed without error)  |  |  |  |  |
|                      | FB_ERROR(Error flag)   |  |  |  |  |
|                      | ERRORJD(Error code) 0  |  |  |  |  |
| Relevant manuals     | MELSEC-Q High-Speed Counter Module User's Manual   |  |  |  |  |
|                      | MELSEC-L High-Speed Counter Module User's Manual   |  |  |  |  |



#### ■ Error code list

| Error code | Description | Action |
|------------|-------------|--------|
| None       | None        | None   |

### Label

### ■ Input labels

| Name              | Variable name | Data | Setting range                | Description              |
|-------------------|---------------|------|------------------------------|--------------------------|
|                   |               | type |                              |                          |
| Execution command | FB_EN         | В    | ON, OFF                      | ON: The FB is activated. |
|                   |               |      |                              | OFF: The FB is not       |
|                   |               |      |                              | activated.               |
| Module start XY   | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY  |
| address           |               |      | range. For details, refer to | address (in hexadecimal) |
|                   |               |      | the CPU user's manual.       | where the D62 module is  |
|                   |               |      |                              | mounted. (For example,   |
|                   |               |      |                              | enter H10 for X10.)      |

| Name              | Variable name   | Data | Initial | Description                                  |  |  |
|-------------------|-----------------|------|---------|--|--|--|
|                   |                 | type | value   |  |  |  |
| Execution status  | FB_ENO          | В    | OFF     | ON: Execution command is ON.                 |  |  |
|                   |                 |      |         | OFF: Execution command is OFF.               |  |  |
| Completed without | FB_OK           | В    | OFF     | When ON, it indicates that the present value |  |  |
| error             |                 |      |         | is being read.                               |  |  |
| CH1 present value | o_PresentValue1 | D    | 0       | Store the present value of CH1.              |  |  |
| CH2 present value | o_PresentValue2 | D    | 0       | Store the present value of CH2.              |  |  |
| Error flag        | FB_ERROR        | В    | OFF     | Always OFF                                   |  |  |
| Error code        | ERROR_ID        | W    | 0       | Always 0                                     |  |  |



|   | Version | Date       | Description   |  |
|---|---------|------------|---------------|--|
| ſ | 1.00A   | 2010/08/06 | First edition |  |

#### Note

This chapter includes information related to the M+D62\_AllPresentValueStorage function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.



### 2.5 M+D62\_SetCoincidenceOutput (Coincidence output function setting)

### FB Name

M+D62\_SetCoincidenceOutput

| Item                | Description                |                           |                   |                          |              |                         |
|---------------------|----------------------------|---------------------------|-------------------|--------------------------|--------------|-------------------------|
| Function overview   | Sets a coincidence         | output poi                | nt and reset      | s counter va             | lue coind    | cidence for a specified |
|                     | channel.                   |                           |                   |                          |              |                         |
| Symbol              | M+D62_SetCoincidenceOutput |                           |                   |                          |              | 7                       |
|                     | Executi                    | ecution command — B:FB_EN |                   |                          | FB_END : I   | B — Execution status    |
|                     |                            |                           | W:i_Start_IO_No   |                          | FB OK : I    |                         |
|                     |                            | Target CH —               |                   |                          | _            | B — Error flag          |
|                     | Coincidence output         |                           |                   |                          |              | N — Error code          |
|                     | Coincidence output         |                           |                   |                          | INTON_ID . I | Error code              |
|                     |                            |                           |                   |                          |              |                         |
|                     | Coincidence output No.1    |                           |                   |                          |              |                         |
|                     | Coincidence output No.2    | point setting —           | D : i_SetPoint_No | o2                       |              |                         |
| Applicable hardware | High-Speed                 |                           |                   |                          |              |                         |
| and software        | Counter Module             | Series                    |                   | Model                    |              |                         |
|                     |                            | MELSEC                    | -Q Series         | QD62(E/D)                |              |                         |
|                     |                            | MELSEC                    | -L Series         | LD62(D)                  |              |                         |
|                     |                            |                           |                   |                          |              |                         |
|                     | CPU module                 |                           |                   | T                        |              |                         |
|                     |                            | Series                    |                   | Model                    |              |                         |
|                     |                            | MELSEC                    | -Q Series         | Basic model              |              |                         |
|                     |                            |                           |                   | High performance model * |              |                         |
|                     |                            |                           |                   | Universal model          |              |                         |
|                     |                            | MELSEC                    | -L Series         | LCPU                     |              |                         |
|                     |                            | * Not appli               | cable for QCF     | CPU (A mode)             |              |                         |
|                     | Engineering                | GX Works2                 |                   |                          |              |                         |
|                     | software                   | Series                    |                   | Language                 | Softwa       | re version              |
|                     |                            | MELSEC-Q/L S              |                   | English                  | Ver 1.3      | 31H or later            |
|                     |                            |                           |                   | Chinese                  | Ver 1.4      | 9B or later             |
|                     |                            |                           |                   |                          |              |                         |



| Item                 | Description  |  |  |  |  |
|----------------------|--|--|--|--|--|
| Programming          | Ladder   |  |  |  |  |
| language             |  |  |  |  |  |
| Number of steps      | For high performance model CPU: 199*   |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a   |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple |  |  |  |  |
|                      | Project).  |  |  |  |  |
| Function description | 1) After turning ON i_OutEnable_No1 (Coincidence output No.1 enable), turn ON FB_EN    |  |  |  |  |
|                      | (Execution command) to enable i_SetPoint_No1 (Coincidence output No.1 point            |  |  |  |  |
|                      | setting).  |  |  |  |  |
|                      | When i_OutEnable_No1 (Coincidence output No.1 enable) is not turned ON,                |  |  |  |  |
|                      | i_SetPoint_No1 (Coincidence output No.1 point setting) is not written in the buffer    |  |  |  |  |
|                      | memory and coincidence signal No. 1 reset command (Y signal) is not turned ON either.  |  |  |  |  |
|                      | (The same operation is applied to No.2)  |  |  |  |  |
|                      | Turn ON both i_OutEnable_No1 (Coincidence output No.1 enable) and                      |  |  |  |  |
|                      | i_OutEnable_No2 (Coincidence output No.2 enable) to use both No.1 and No.2.            |  |  |  |  |
|                      | 2) By turning ON FB_EN (Execution command), i_SetPoint_No1 (Coincidence output No.1    |  |  |  |  |
|                      | point setting) is written in the buffer memory and coincidence signal No. 1 reset      |  |  |  |  |
|                      | command (Y signal) is turned ON. When counter value coincidence (X signal) is turned   |  |  |  |  |
|                      | OFF, coincidence signal No. 1 reset command (Y signal) is turned OFF. (The same        |  |  |  |  |
|                      | operation is applied to No.2)  |  |  |  |  |
|                      | 3) Counter value coincidence (X signal) and external coincidence output are turned ON  |  |  |  |  |
|                      | again even if counter value coincidence (X signal) and external coincidence output are |  |  |  |  |
|                      | reset with this FB while the present value is the coincidence output point.            |  |  |  |  |
|                      | 4) FB operation is one-shot only, triggered by the FB_EN signal.                       |  |  |  |  |
|                      | 5) When the target CH setting value is out of range, the FB_ERROR output turns ON,     |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).      |  |  |  |  |
|                      | Refer to the error code explanation section for details.                               |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |



| Item                | Description   |  |  |  |  |  |
|---------------------|---|--|--|--|--|--|
| Restrictions and    | 1) The FB does not include error recovery processing. Program the error recovery  |  |  |  |  |  |
| precautions         | processing separately in accordance with the required system operation.   |  |  |  |  |  |
|                     | 2) The FB cannot be used in an interrupt program.   |  |  |  |  |  |
|                     | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do  |  |  |  |  |  |
|                     | not use this FB in programs that are only executed once such as a subroutine,   |  |  |  |  |  |
|                     | FOR-NEXT loop, etc. because it is impossible to turn OFF.   |  |  |  |  |  |
|                     | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of  |  |  |  |  |  |
|                     | the target CH.  |  |  |  |  |  |
|                     | 5) This FB uses index registers Z9, Z8, Z7, Z6, and Z5. Please do not use these index   |  |  |  |  |  |
|                     | registers in an interrupt program.  |  |  |  |  |  |
|                     | 6) Every input must be provided with a value for proper FB operation.   |  |  |  |  |  |
|                     | 7) When this FB is used in two or more places, a duplicated coil warning will occur during  |  |  |  |  |  |
|                     | compile operation due to the Y signal being operated by index modification. However   |  |  |  |  |  |
|                     | this is not a problem and the FB will operate without error.  |  |  |  |  |  |
|                     | 8) The pulse input mode, counting speed setting, and counter format must be properly  |  |  |  |  |  |
|                     | configured to match systems and devices connected to the QD62(E/D) or LD62(D).  |  |  |  |  |  |
| FB operation type   | Pulsed execution (multiple scan execution type)   |  |  |  |  |  |
| Application example | Refer to Appendix 1 - FB Library Application Examples   |  |  |  |  |  |
| Timing chart        | [When operation completes without error] [When an error occurs]   |  |  |  |  |  |
|                     | FB_EN (Execution command) (Execution command)   |  |  |  |  |  |
|                     | FB_ENO(Execution status)  |  |  |  |  |  |
|                     | i OutEnable No1 (Coincidence output enable No. 1) No. 1)  |  |  |  |  |  |
|                     | Coincidence output point No. 1 (buffer memory)  No setting  New value  Coincidence output point No. 1 (buffer memory)  No setting |  |  |  |  |  |
|                     | Counter value coincidence (X signal)  |  |  |  |  |  |
|                     | Coincidence signal reset command (Y signal)   |  |  |  |  |  |
|                     | Count enable command (Y signal)  Count enable command (Y signal)  |  |  |  |  |  |
|                     | FB_OK (Completed without error)   |  |  |  |  |  |
|                     | FB_ERROR(Error flag)  ERROR_ID(Error code)  O ERROR_ID(Error code)  O ERROR_ID(Error code)  O ERROR_ID(Error code)                |  |  |  |  |  |
|                     | ERROR_ID(Error code)  0  ERROR_ID(Error code)  0  Error code  0   |  |  |  |  |  |
| Relevant manuals    | MELSEC-Q High-Speed Counter Module User's Manual  |  |  |  |  |  |
|                     | MELSEC-L High-Speed Counter Module User's Manual  |  |  |  |  |  |



#### ■ Error code list

| Error code   | Description                                | Action   |  |
|--------------|--|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |  |
|              | The target channel is not within the       |  |  |
|              | range of 1 to 2.                           |  |  |

### Labels

#### Input labels

| Input labels       |                 |      |                              |                          |
|--------------------|-----------------|------|------------------------------|--------------------------|
| Name               | Variable name   | Data | Setting range                | Description              |
|                    |                 | type |                              |                          |
| Execution command  | FB_EN           | В    | ON, OFF                      | ON: The FB is activated. |
|                    |                 |      |                              | OFF: The FB is not       |
|                    |                 |      |                              | activated.               |
| Module start XY    | i_Start_IO_No   | W    | Depends on the I/O point     | Specify the starting XY  |
| address            |                 |      | range. For details, refer to | address (in hexadecimal) |
|                    |                 |      | the CPU user's manual.       | where the D62 module is  |
|                    |                 |      |                              | mounted. (For example,   |
|                    |                 |      |                              | enter H10 for X10.)      |
| Target CH          | i_CH            | W    | 1~2                          | Specify the CH number.   |
| Coincidence output | i_OutEnable_No1 | В    | ON, OFF                      | ON: Coincidence output   |
| No.1 enable        |                 |      |                              | No.1 is used.            |
|                    |                 |      |                              | OFF: Coincidence output  |
|                    |                 |      |                              | No.1 is not used.        |
|                    |                 |      |                              | When ON, the function is |
|                    |                 |      |                              | enabled by turning on    |
|                    |                 |      |                              | FB_EN (Execution         |
|                    |                 |      |                              | command).                |



| Name               | Variable name   | Data | Setting range   | Description               |
|--------------------|-----------------|------|-----------------|---------------------------|
|                    |                 | type |                 |                           |
| Coincidence output | i_OutEnable_No2 | В    | ON, OFF         | ON: Coincidence output    |
| No.2 enable        |                 |      |                 | No.2 is used.             |
|                    |                 |      |                 | OFF: Coincidence output   |
|                    |                 |      |                 | No.2 is not used.         |
|                    |                 |      |                 | When ON, the function is  |
|                    |                 |      |                 | enabled by turning ON     |
|                    |                 |      |                 | FB_EN (Execution          |
|                    |                 |      |                 | command).                 |
| Coincidence output | i_SetPoint_No1  | D    | -2,147,483,648~ | Specify the coincidence   |
| No.1 point setting |                 |      | 2,147,483,647   | output No.1 point setting |
|                    |                 |      |                 | value.                    |
| Coincidence output | i_SetPoint_No2  | D    | -2,147,483,648~ | Specify the coincidence   |
| No.2 point setting |                 |      | 2,147,483,647   | output No.2 point setting |
|                    |                 |      |                 | value.                    |

| Name              | Variable name | Data | Initial | Description                              |
|-------------------|---------------|------|---------|--|
|                   |               | type | value   |  |
| Execution status  | FB_ENO        | В    | OFF     | ON: Execution command is ON.             |
|                   |               |      |         | OFF: Execution command is OFF.           |
| Completed without | FB_OK         | В    | OFF     | When ON, it indicates that counter value |
| error             |               |      |         | coincidence (X signal) has been reset.   |
| Error flag        | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has  |
|                   |               |      |         | occurred.                                |
| Error code        | ERROR_ID      | W    | 0       | FB error code output.                    |



|   | Version | Date       | Description   |
|---|---------|------------|---------------|
| ſ | 1.00A   | 2010/08/06 | First edition |

#### Note

This chapter includes information related to the M+D62\_SetCoincidenceOutput function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.



# 2.6 M+D62\_CoincidenceOutputEnable (Coincidence output enable setting)

### FB Name

M+D62\_CoincidenceOutputEnable

| Item                | Description             | Description  |                               |                          |                                  |  |  |  |
|---------------------|-------------------------|--|-------------------------------|--------------------------|----------------------------------|--|--|--|
| Function overview   | Enables external coi    | Enables external coincidence output for a specified channel or all channels. |                               |                          |                                  |  |  |  |
| Symbol              |                         |  | M+D62_CoincidenceOutputEnable |                          |                                  |  |  |  |
|                     | Execution command       | ı—   | B: FB_EN FB_E                 |                          | ENO : B Execution status         |  |  |  |
|                     | Module start XY address | ;  | W:i_Start_IO_No               | FE                       | B_OK : B Completed without error |  |  |  |
|                     | Target CH               | ı <del></del>  | W:i_CH                        | FB_ER                    | ROR : B Error flag               |  |  |  |
|                     |                         |  |                               | ERRO                     | R_ID : W Error code              |  |  |  |
| Applicable hardware | High-Speed              |  |                               |                          |                                  |  |  |  |
| and software        | Counter Module          | Se   | eries                         | Model                    |                                  |  |  |  |
|                     |                         | M  | ELSEC-Q Series                | QD62(E/D)                |                                  |  |  |  |
|                     |                         | M  | ELSEC-L Series                | LD62(D)                  |                                  |  |  |  |
|                     | CPU module              |  |                               |                          |                                  |  |  |  |
|                     | CPO module              | Sc   | eries                         | Model                    |                                  |  |  |  |
|                     |                         |  | ELSEC-Q Series                | Basic mode               | 1                                |  |  |  |
|                     |                         | '''  | LEGEO & CONCO                 | High performance model * |                                  |  |  |  |
|                     |                         |  |                               | Universal model          |                                  |  |  |  |
|                     |                         | ME   | ELSEC-L Series                | LCPU                     |                                  |  |  |  |
|                     |                         | * No   | ot applicable for QCI         | PU (A mode)              |                                  |  |  |  |
|                     | Engineering             | GX   | Works2                        |                          |                                  |  |  |  |
|                     | software                | Se   | eries                         | Language                 | Software version                 |  |  |  |
|                     |                         | M  | ELSEC-Q/L Series              | English                  | Ver 1.31H or later               |  |  |  |
|                     |                         |  |                               | Chinese                  | Ver 1.49B or later               |  |  |  |
| _                   |                         |  |                               |                          |                                  |  |  |  |
| Programming         | Ladder                  | Ladder   |                               |                          |                                  |  |  |  |
| language            |                         |  |                               |                          |                                  |  |  |  |



| Item                 | Description  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 139*   |  |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a   |  |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).   |  |  |  |  |  |  |
| Function description | 1) By turning ON/OFF FB_EN (Execution command), the coincidence output is  |  |  |  |  |  |  |
|                      | enabled/disabled.  |  |  |  |  |  |  |
|                      | 2) FB operation is one-shot only, triggered by the FB_EN signal.   |  |  |  |  |  |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,   |  |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).  |  |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.   |  |  |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery   |  |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.  |  |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do   |  |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,  |  |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.  |  |  |  |  |  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH.  |  |  |  |  |  |  |
|                      | 5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an   |  |  |  |  |  |  |
|                      | interrupt program.   |  |  |  |  |  |  |
|                      | 6) Every input must be provided with a value for proper FB operation.  |  |  |  |  |  |  |
|                      | 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However |  |  |  |  |  |  |
|                      | this is not a problem and the FB will operate without error.   |  |  |  |  |  |  |
|                      | 8) The pulse input mode, counting speed setting, and counter format must be properly   |  |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).   |  |  |  |  |  |  |
| FB operation type    | Pulsed execution (1 scan execution type)   |  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples  |  |  |  |  |  |  |



| Item             | Description  |   |  |  |  |  |
|------------------|--|---|--|--|--|--|
| Timing chart     | FB_EN (Execution command)  FB_ENO(Execution status)  Coincidence signal enable command (Y signal)  FB_OK (Completed without error)  FB_ERROR(Error flag) | B_EN Execution command)  B_ENO(Execution status)  Doincidence signal enable ommand (Y signal)  B_OK Completed without error)  B_ERROR(Error flag)  RRORJD(Error code)  0 Error code |  |  |  |  |
| Relevant manuals | MELSEC-Q High-Speed Counter Module User's Manual     MELSEC-L High-Speed Counter Module User's Manual  |   |  |  |  |  |

### ■ Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2 or 15.                     |  |



# Labels

### ■ Input labels

| Name              | Variable name | Data Setting range |                              | Description              |  |
|-------------------|---------------|--------------------|------------------------------|--------------------------|--|
|                   |               | type               |                              |                          |  |
| Execution command | FB_EN         | В                  | ON, OFF                      | ON: The FB is activated. |  |
|                   |               |                    |                              | OFF: The FB is not       |  |
|                   |               |                    |                              | activated.               |  |
| Module start XY   | i_Start_IO_No | W                  | Depends on the I/O point     | Specify the starting XY  |  |
| address           |               |                    | range. For details, refer to | address (in hexadecimal) |  |
|                   |               |                    | the CPU user's manual.       | where the D62 module is  |  |
|                   |               |                    |                              | mounted. (For example,   |  |
|                   |               |                    |                              | enter H10 for X10.)      |  |
| Target CH         | i_CH          | W                  | 1~2 or 15                    | 1~2: Specify the CH      |  |
|                   |               |                    |                              | number.                  |  |
|                   |               |                    |                              | 15: Specify all CHs.     |  |

| Name              | Variable name | Data | Initial | Description                             |
|-------------------|---------------|------|---------|---|
|                   |               | type | value   |   |
| Execution status  | FB_ENO        | В    | OFF     | ON: Execution command is ON.            |
|                   |               |      |         | OFF: Execution command is OFF.          |
| Completed without | FB_OK         | В    | OFF     | When ON, it indicates that coincidence  |
| error             |               |      |         | signal enable command (Y signal) is ON. |
| Error flag        | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has |
|                   |               |      |         | occurred.                               |
| Error code        | ERROR_ID      | W    | 0       | FB error code output.                   |



|   | Version | Date       | Description   |
|---|---------|------------|---------------|
| ſ | 1.00A   | 2010/08/06 | First edition |

#### Note

This chapter includes information related to the M+D62\_CoincidenceOutputEnable function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.



### 2.7 M+D62\_PresetOperation (Preset function operation)

### FB Name

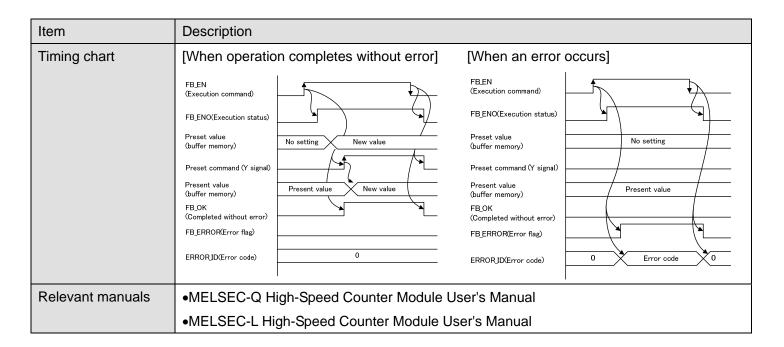
M+D62\_PresetOperation

| Item                | Description                         |                   |                       |                          |          |                           |  |
|---------------------|-------------------------------------|-------------------|-----------------------|--------------------------|----------|---------------------------|--|
| Function overview   | Performs a preset of present value. |                   |                       |                          |          |                           |  |
| Symbol              |                                     |                   | M+D62_Pres            |                          |          |                           |  |
|                     | Execution command                   |                   | B : FB_EN             | FB_ENO : B               |          | Execution status          |  |
|                     | Module start XY address             |                   | W:i_Start_IO_No       | FB                       | 3_OK : B | — Completed without error |  |
|                     | Target CH                           |                   | W:i_CH                | FB_ER                    | ROR : B  | — Error flag              |  |
|                     | Preset value                        |                   | W : i_PresetValue     | ERRO                     | R_ID:W   | Error code                |  |
| Applicable hardware | High-Speed                          |                   |                       |                          |          |                           |  |
| and software        | Counter Module                      | Se                | ries                  | Model                    |          |                           |  |
|                     |                                     | ME                | ELSEC-Q Series        | QD62(E/D)                |          |                           |  |
|                     |                                     | ME                | ELSEC-L Series        | LD62(D)                  |          |                           |  |
|                     |                                     |                   |                       |                          |          |                           |  |
|                     | CPU module                          | 1                 |                       |                          |          | 1                         |  |
|                     |                                     | Series            |                       | Model                    |          |                           |  |
|                     |                                     | ME                | ELSEC-Q Series        | Basic model              |          |                           |  |
|                     |                                     |                   |                       | High performance model * |          |                           |  |
|                     |                                     |                   |                       | Universal model          |          |                           |  |
|                     |                                     | ME                | ELSEC-L Series        | LCPU                     |          |                           |  |
|                     |                                     | * No              | ot applicable for QCI | PU (A mode)              |          |                           |  |
|                     | Engineering                         | GX                | Works2                |                          |          |                           |  |
|                     | software                            | Se                | eries                 | Language                 | Softwa   | are version               |  |
|                     |                                     | MELSEC-Q/L Series |                       | English                  | Ver 1.   | 31H or later              |  |
|                     |                                     |                   |                       | Chinese                  | Ver 1.   | 49B or later              |  |
|                     |                                     |                   |                       |                          |          |                           |  |
| Programming         | Ladder                              |                   |                       |                          |          |                           |  |
| language            |                                     |                   |                       |                          |          |                           |  |



| Item                 | Description  |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 139*   |  |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a             |  |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project). |  |  |  |  |  |  |
| Function description | 1) By turning ON FB_EN (Execution command), the present value is rewritten to                    |  |  |  |  |  |  |
|                      | i_PresetValue (Preset value).  |  |  |  |  |  |  |
|                      | 2) FB operation is one-shot only, triggered by the FB_EN signal.                                 |  |  |  |  |  |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,               |  |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).                |  |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.   |  |  |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery                 |  |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.                          |  |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do         |  |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,                    |  |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.  |  |  |  |  |  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of       |  |  |  |  |  |  |
|                      | the target CH.   |  |  |  |  |  |  |
|                      | 5) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers      |  |  |  |  |  |  |
|                      | in an interrupt program.   |  |  |  |  |  |  |
|                      | 6) Every input must be provided with a value for proper FB operation.                            |  |  |  |  |  |  |
|                      | 7) When this FB is used in two or more places, a duplicated coil warning will occur during       |  |  |  |  |  |  |
|                      | compile operation due to the Y signal being operated by index modification. However              |  |  |  |  |  |  |
|                      | this is not a problem and the FB will operate without error.                                     |  |  |  |  |  |  |
|                      | 8) The pulse input mode, counting speed setting, and counter format must be properly             |  |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).                   |  |  |  |  |  |  |
| FB operation type    | Pulsed execution (1 scan execution type)   |  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples  |  |  |  |  |  |  |





### Error codes

### Error code list

| Error code  | Description                                | Action   |
|-------------|--|--|
| 10(Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|             | The target channel is not within the       |  |
|             | range of 1 to 2.                           |  |



# Labels

# ■ Input labels

| Name              | Variable name | Data | Setting range                | Description               |
|-------------------|---------------|------|------------------------------|---------------------------|
|                   |               | type |                              |                           |
| Execution command | FB_EN         | В    | ON, OFF                      | ON: The FB is activated.  |
|                   |               |      |                              | OFF: The FB is not        |
|                   |               |      |                              | activated.                |
| Module start XY   | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY   |
| address           |               |      | range. For details, refer to | address (in hexadecimal)  |
|                   |               |      | the CPU user's manual.       | where the D62 module is   |
|                   |               |      |                              | mounted. (For example,    |
|                   |               |      |                              | enter H10 for X10.)       |
| Target CH         | i_CH          | W    | 1~2                          | Specify the CH number.    |
| Preset value      | i_PresetValue | D    | -2,147,483,648~              | Specify the preset value. |
|                   |               |      | 2,147,483,647                |                           |

# Output labels

| Name              | Variable name | Data | Initial | Description                               |  |
|-------------------|---------------|------|---------|---|--|
|                   |               | type | value   |   |  |
| Execution status  | FB_ENO        | В    | OFF     | ON: Execution command is ON.              |  |
|                   |               |      |         | OFF: Execution command is OFF.            |  |
| Completed without | FB_OK         | В    | OFF     | When ON, it indicates that preset command |  |
| error             |               |      |         | (Y signal) is ON.                         |  |
| Error flag        | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has   |  |
|                   |               |      |         | occurred.                                 |  |
| Error code        | ERROR_ID      | W    | 0       | FB error code output.                     |  |



### **FB Version Upgrade History**

| Version | Date       | Description   |
|---------|------------|---------------|
| 1.00A   | 2010/08/06 | First edition |

### Note

This chapter includes information related to the M+D62\_PresetOperation function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.



# 2.8 M+D62\_CountDisableOperation (Disable count function operation)

## FB Name

M+D62\_CountDisableOperation

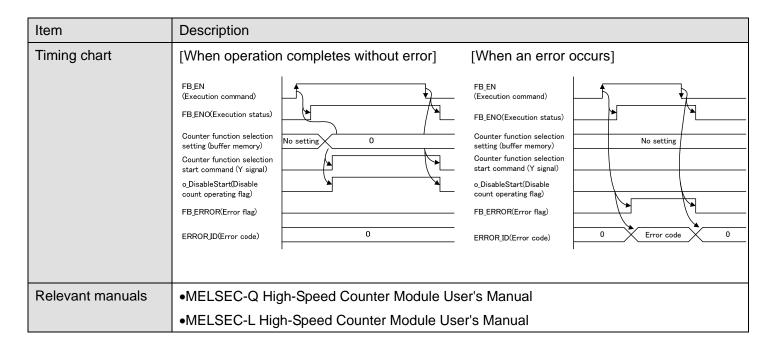
# **Function Overview**

| Item                | Description  |                   |                             |                          |          |                                 |
|---------------------|--|-------------------|-----------------------------|--------------------------|----------|---------------------------------|
| Function overview   | Executes disable count function for a specified channel or all channels. |                   |                             |                          |          |                                 |
| Symbol              |  |                   | M+D62_CountDisableOperation |                          |          |                                 |
|                     | Execution command  |                   | B : FB_EN                   | FB_E                     | NO : B   | Execution status                |
|                     | Module start XY address  |                   | W:i_Start_IO_No             | o_DisableS               | tart : B | —— Disable count operating flag |
|                     | Target CH -  |                   | W:i_CH                      | FB_ERF                   | ROR : B  | —— Error flag                   |
|                     |  |                   |                             | ERROF                    | R_ID : W | Error code                      |
| Applicable hardware | High-Speed   |                   |                             |                          |          |                                 |
| and software        | Counter Module   | Se                | ries                        | Model                    |          |                                 |
|                     |  | ME                | ELSEC-Q Series              | QD62(E/D)                |          |                                 |
|                     |  | ME                | LSEC-L Series               | LD62(D)                  |          |                                 |
|                     |  |                   |                             |                          |          |                                 |
|                     | CPU module   |                   |                             |                          |          |                                 |
|                     |  | Series            |                             | Model                    |          |                                 |
|                     |  | ME                | ELSEC-Q Series              | Basic mode               |          |                                 |
|                     |  |                   |                             | High performance model * |          |                                 |
|                     |  |                   |                             | Universal model          |          |                                 |
|                     |  | ME                | LSEC-L Series               | LCPU                     |          |                                 |
|                     |  | * No              | ot applicable for QCI       | PU (A mode)              |          |                                 |
|                     | Engineering  | GX                | Works2                      |                          |          |                                 |
|                     | software   | Se                | ries                        | Language                 | Soft     | ware version                    |
|                     |  | MELSEC-Q/L Series |                             | English                  | Ver '    | 1.31H or later                  |
|                     |  |                   |                             | Chinese                  | Ver '    | 1.49B or later                  |
|                     |  |                   |                             |                          |          |                                 |
| Programming         | Ladder   |                   |                             |                          |          |                                 |
| language            |  |                   |                             |                          |          |                                 |



| Item                 | Description   |  |  |  |  |  |
|----------------------|---|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 174*  |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a        |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple      |  |  |  |  |  |
|                      | Project).   |  |  |  |  |  |
| Function description | 1) By turning ON FB_EN (Execution command), the disable count function is executed.         |  |  |  |  |  |
|                      | 2) FB operation is one-shot only, triggered by the FB_EN signal.                            |  |  |  |  |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,          |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).           |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.                                    |  |  |  |  |  |
| Compiling method     | Macro type  |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery            |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.                     |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.   |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do    |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,               |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.                                   |  |  |  |  |  |
|                      | 4) Turn OFF the counter function selection start command (Y signal) signal when using the   |  |  |  |  |  |
|                      | FB. When the signal is ON, the disable count function of the target channel will not be     |  |  |  |  |  |
|                      | executed.   |  |  |  |  |  |
|                      | 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of  |  |  |  |  |  |
|                      | the target CH.  |  |  |  |  |  |
|                      | 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers |  |  |  |  |  |
|                      | in an interrupt program.  |  |  |  |  |  |
|                      | 7) Every input must be provided with a value for proper FB operation.                       |  |  |  |  |  |
|                      | 8) When this FB is used in two or more places, a duplicated coil warning will occur during  |  |  |  |  |  |
|                      | compile operation due to the Y signal being operated by index modification. However         |  |  |  |  |  |
|                      | this is not a problem and the FB will operate without error.                                |  |  |  |  |  |
|                      | 9) The pulse input mode, counting speed setting, and counter format must be properly        |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).              |  |  |  |  |  |
| FB operation type    | Pulsed execution (1 scan execution type)  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples                                       |  |  |  |  |  |





### **Error Codes**

### Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2 or 15.                     |  |



# Labels

# ■ Input labels

| Name                    | Variable name | Data<br>type | Setting range  | Description   |
|-------------------------|---------------|--------------|--|---|
| Execution command       | FB_EN         | В            | ON, OFF  | ON: The FB is activated.  OFF: The FB is not activated.   |
| Module start XY address | i_Start_IO_No | W            | Depends on the I/O point range. For details, refer to the CPU user's manual. | Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.) |
| Target CH               | i_CH          | W            | 1~2 or 15  | 1~2: Specify the CH number. 15: Specify all CHs.  |

# ■ Output labels

| Name             | Variable name  | Data | Initial                          | Description                              |
|------------------|----------------|------|----------------------------------|--|
|                  |                | type | value                            |  |
| Execution status | FB_ENO         | В    | OFF ON: Execution command is ON. |  |
|                  |                |      |                                  | OFF: Execution command is OFF.           |
| Disable count    | o_DisableStart | В    | OFF                              | When ON, it indicates that the execution |
| operating flag   |                |      |                                  | command for disable count is ON.         |
| Error flag       | FB_ERROR       | В    | OFF                              | When ON, it indicates that an error has  |
|                  |                |      |                                  | occurred.                                |
| Error code       | ERROR_ID       | W    | 0                                | FB error code output.                    |



### **FB Version Upgrade History**

|   | Version | Date       | Description   |
|---|---------|------------|---------------|
| ſ | 1.00A   | 2010/08/06 | First edition |

### Note

This chapter includes information related to the M+D62\_CountDisableOperation function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.



# 2.9 M+D62\_LatchCounterOperation (Latch counter function operation)

## FB Name

M+D62\_LatchCounterOperation

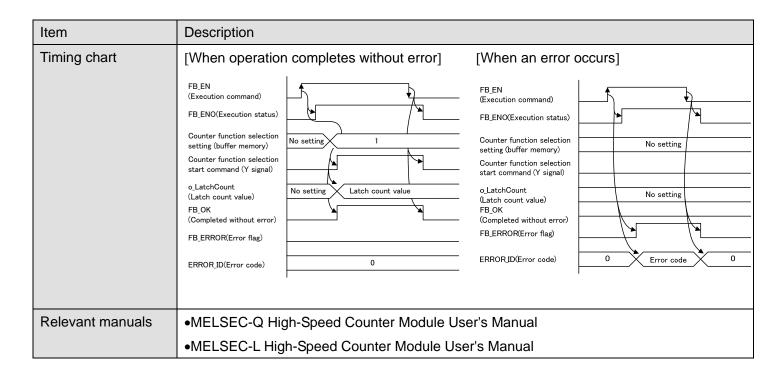
# **Function Overview**

| Item                             | Description                      |                 |                             |                          |                                  |  |
|----------------------------------|----------------------------------|-----------------|-----------------------------|--------------------------|----------------------------------|--|
| Function overview                | Executes latch counter function. |                 |                             |                          |                                  |  |
| Symbol                           |                                  |                 | M+D62_LatchCounterOperation |                          |                                  |  |
|                                  | Execution command                |                 | B : FB_EN                   | FB                       | _ENO : B Execution status        |  |
|                                  | Module start XY address          |                 | W : i_Start_IO_No           | F                        | B_OK : B Completed without error |  |
|                                  | Target CH                        |                 | W : i_CH                    | o_Latch(                 | Count : D Latch count value      |  |
|                                  |                                  |                 |                             | FB_EF                    | RROR : B Error flag              |  |
|                                  |                                  |                 |                             | ERRO                     | DR_ID : W Error code             |  |
| Applicable bardware              | High Spood                       |                 |                             |                          |                                  |  |
| Applicable hardware and software | High-Speed Counter Module        | 80              | ries                        | Model                    |                                  |  |
| and software                     | Counter Module                   | -               | ELSEC-Q Series              | QD62(E/D)                |                                  |  |
|                                  |                                  | -               | LSEC-Q Series               | LD62(D)                  |                                  |  |
|                                  |                                  | IVIL            | LOC-L Selles                | LD02(D)                  |                                  |  |
|                                  | CPU module                       |                 |                             |                          |                                  |  |
|                                  |                                  | Series N        |                             | Model                    |                                  |  |
|                                  |                                  | MELSEC-Q Series |                             | Basic model              |                                  |  |
|                                  |                                  |                 |                             | High performance model * |                                  |  |
|                                  |                                  |                 |                             | Universal model          |                                  |  |
|                                  |                                  | ME              | LSEC-L Series               | LCPU                     |                                  |  |
|                                  |                                  | * No            | t applicable for QCI        | PU (A mode)              |                                  |  |
|                                  | Engineering                      | GX              | Works2                      |                          |                                  |  |
|                                  | software                         | Se              | ries                        | Language                 | Software version                 |  |
|                                  |                                  | ME              | LSEC-Q/L Series             | English                  | Ver 1.31H or later               |  |
|                                  |                                  |                 |                             | Chinese                  | Ver 1.49B or later               |  |
|                                  |                                  |                 |                             |                          |                                  |  |
| Programming                      | Ladder                           |                 |                             |                          |                                  |  |
| language                         |                                  |                 |                             |                          |                                  |  |



| Item                 | Description   |  |  |  |  |
|----------------------|---|--|--|--|--|
| Number of steps      | For high performance model CPU: 144*  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a        |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple      |  |  |  |  |
|                      | Project).   |  |  |  |  |
| Function description | 1) By turning ON FB_EN (Execution command), the latch counter function is executed.         |  |  |  |  |
|                      | 2) FB operation is one-shot only, triggered by the FB_EN signal.                            |  |  |  |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,          |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).           |  |  |  |  |
|                      | Refer to the error code explanation section for details.                                    |  |  |  |  |
| Compiling method     | Macro type  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery            |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.                     |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.   |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do    |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,               |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.                                   |  |  |  |  |
|                      | 4) Turn OFF the counter function selection start command (Y signal) signal when using the   |  |  |  |  |
|                      | FB. When the signal is ON, the latch counter function of the target channel will not be     |  |  |  |  |
|                      | executed.   |  |  |  |  |
|                      | 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of  |  |  |  |  |
|                      | the target CH.  |  |  |  |  |
|                      | 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers |  |  |  |  |
|                      | in an interrupt program.  |  |  |  |  |
|                      | 7) Every input must be provided with a value for proper FB operation.                       |  |  |  |  |
|                      | 8) When this FB is used in two or more places, a duplicated coil warning will occur during  |  |  |  |  |
|                      | compile operation due to the Y signal being operated by index modification. However         |  |  |  |  |
|                      | this is not a problem and the FB will operate without error.                                |  |  |  |  |
|                      | 9) The pulse input mode, counting speed setting, and counter format must be properly        |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).              |  |  |  |  |
| FB operation type    | Pulsed execution (multiple scan execution type)   |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples                                       |  |  |  |  |





### **Error Codes**

#### Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2.                           |  |



# Labels

# ■ Input labels

| Name              | Variable name | Data | Setting range                | Description              |
|-------------------|---------------|------|------------------------------|--------------------------|
|                   |               | type |                              |                          |
| Execution command | FB_EN         | В    | ON, OFF                      | ON: The FB is activated. |
|                   |               |      |                              | OFF: The FB is not       |
|                   |               |      |                              | activated.               |
| Module start XY   | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY  |
| address           |               |      | range. For details, refer to | address (in hexadecimal) |
|                   |               |      | the CPU user's manual.       | where the D62 module is  |
|                   |               |      |                              | mounted. (For example,   |
|                   |               |      |                              | enter H10 for X10.)      |
| Target CH         | i_CH          | W    | 1~2                          | Specify the CH number.   |

## Output labels

| Name              | Variable name | Data | Initial | Description                              |  |
|-------------------|---------------|------|---------|--|--|
|                   |               | type | value   |  |  |
| Execution status  | FB_ENO        | В    | OFF     | ON: Execution command is ON.             |  |
|                   |               |      |         | OFF: Execution command is OFF.           |  |
| Completed without | FB_OK         | В    | OFF     | When ON, it indicates that the execution |  |
| error             |               |      |         | command for latch counter is ON.         |  |
| Latch count value | o_LatchCount  | D    | 0       | Store the latch count value.             |  |
| Error flag        | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has  |  |
|                   |               |      |         | occurred.                                |  |
| Error code        | ERROR_ID      | W    | 0       | FB error code output.                    |  |



### **FB Version Upgrade History**

|   | Version | Date       | Description   |
|---|---------|------------|---------------|
| ſ | 1.00A   | 2010/08/06 | First edition |

### Note

This chapter includes information related to the M+D62\_LatchCounterOperation function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.



# 2.10 M+D62\_SamplingOperation (Sampling counter function operation)

## FB Name

M+D62\_SamplingOperation

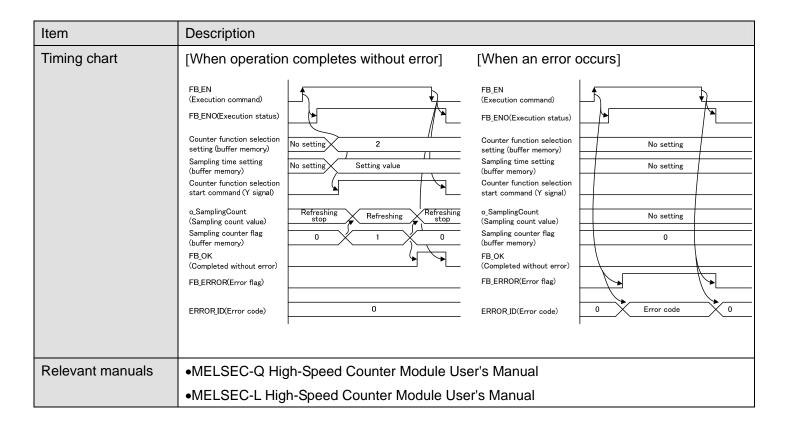
# **Function Overview**

| Item                | Description                         |                           |                       |                            |           |                         |  |
|---------------------|-------------------------------------|---------------------------|-----------------------|----------------------------|-----------|-------------------------|--|
| Function overview   | Executes sampling counter function. |                           |                       |                            |           |                         |  |
| Symbol              | M+D62_Sam                           |                           |                       | plingOperation             |           |                         |  |
|                     | Execution command                   |                           | B : FB_EN             | FB_ENO : B                 |           | Execution status        |  |
|                     | Module start XY address             |                           | -W:i_Start_IO_No      | FI                         | B_OK : B  | Completed without error |  |
|                     | Target CH                           |                           | W:i_CH                | o_SamplingC                | Count : D | Sampling count value    |  |
|                     | Sampling time setting               |                           | W : i_SamplingTime    | FB_ER                      | ROR : B   | Error flag              |  |
|                     |                                     |                           |                       | ERRC                       | R_ID : W  | —— Error code           |  |
| Applicable hardware | High-Speed                          |                           |                       |                            |           |                         |  |
| and software        | Counter Module                      | Se                        | eries                 | Model                      |           |                         |  |
|                     |                                     | ME                        | ELSEC-Q Series        | QD62(E/D)                  | QD62(E/D) |                         |  |
|                     |                                     | ME                        | ELSEC-L Series        | LD62(D)                    |           |                         |  |
|                     | CPU module                          |                           |                       |                            |           |                         |  |
|                     |                                     | Se                        | eries                 | Model                      |           |                         |  |
|                     |                                     | ME                        | ELSEC-Q Series        | Basic model                |           |                         |  |
|                     |                                     |                           |                       | High performance model *   |           |                         |  |
|                     |                                     |                           |                       | Universal model            |           |                         |  |
|                     |                                     | ME                        | ELSEC-L Series        | LCPU                       |           |                         |  |
|                     |                                     | * No                      | ot applicable for QCI | PU (A mode)                |           |                         |  |
|                     | Engineering                         | GX                        | Works2                |                            | 1         |                         |  |
|                     | software                            | Series  MELSEC-Q/L Series |                       | Language                   |           | are version             |  |
|                     |                                     |                           |                       | English                    |           |                         |  |
|                     |                                     |                           |                       | Chinese Ver 1.49B or later |           | 49B or later            |  |
| D :                 |                                     |                           |                       |                            |           |                         |  |
| Programming         | Ladder                              |                           |                       |                            |           |                         |  |
| language            |                                     |                           |                       |                            |           |                         |  |



| Item                 | Description  |  |  |  |
|----------------------|--|--|--|--|
| Number of steps      | For high performance model CPU: 176*   |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a                 |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple               |  |  |  |
|                      | Project).  |  |  |  |
| Function description | 1) By turning ON FB_EN (Execution command), the sampling count starts with the preset                |  |  |  |
|                      | i_SamplingTime (Sampling time setting (unit: 10ms)), and the sampling count value is                 |  |  |  |
|                      | read from the buffer memory.   |  |  |  |
|                      | 2) When the sampling time period elapses, FB_OK (Completed without error) is turned ON,              |  |  |  |
|                      | and the processing is completed.   |  |  |  |
|                      | 3) When the target CH setting value is out of range, the FB_ERROR output turns ON,                   |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).                    |  |  |  |
|                      | Refer to the error code explanation section for details.   |  |  |  |
| Compiling method     | Macro type   |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery                     |  |  |  |
| precautions          | processing separately in accordance with the required system operation.                              |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do             |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,                        |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.  |  |  |  |
|                      | 4) Turn OFF the counter function selection start command (Y signal) signal when using the            |  |  |  |
|                      | FB. When the signal is ON, the sampling counter function of the target channel will not be executed. |  |  |  |
|                      | 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of           |  |  |  |
|                      | the target CH.   |  |  |  |
|                      | 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers          |  |  |  |
|                      | in an interrupt program.   |  |  |  |
|                      | 7) Every input must be provided with a value for proper FB operation.                                |  |  |  |
|                      | 8) When this FB is used in two or more places, a duplicated coil warning will occur during           |  |  |  |
|                      | compile operation due to the Y signal being operated by index modification. However                  |  |  |  |
|                      | this is not a problem and the FB will operate without error.   |  |  |  |
|                      | 9) The pulse input mode, counting speed setting, and counter format must be properly                 |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).                       |  |  |  |
| FB operation type    | Pulsed execution (multiple scan execution type)  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples  |  |  |  |





### **Error Codes**

### Error code list

| Error code   | Description                                | Action   |  |
|--------------|--|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |  |
|              | The target channel is not within the       |  |  |
|              | range of 1 to 2.                           |  |  |



# Labels

# ■ Input labels

| Name                 | Variable name  | Data | Setting range                | Description                |
|----------------------|----------------|------|------------------------------|----------------------------|
|                      |                | type |                              |                            |
| Execution command    | FB_EN          | В    | ON, OFF                      | ON: The FB is activated.   |
|                      |                |      |                              | OFF: The FB is not         |
|                      |                |      |                              | activated.                 |
| Module start XY      | i_Start_IO_No  | W    | Depends on the I/O point     | Specify the starting XY    |
| address              |                |      | range. For details, refer to | address (in hexadecimal)   |
|                      |                |      | the CPU user's manual.       | where the D62 module is    |
|                      |                |      |                              | mounted. (For example,     |
|                      |                |      |                              | enter H10 for X10.)        |
| Target CH            | i_CH           | W    | 1~2                          | Specify the CH number.     |
| Sampling time        | i_SamplingTime | W    | 1~65,535*1                   | Set the sampling time.     |
| setting (unit: 10ms) |                |      |                              | (unit: 10ms)               |
|                      |                |      |                              | *1: Setting method         |
|                      |                |      |                              | •1~32,767: Set in decimal. |
|                      |                |      |                              | •32,768~65,535: Set after  |
|                      |                |      |                              | converted into             |
|                      |                |      |                              | hexadecimal.               |

# ■ Output labels

| Name              | Variable name   | Data | Initial | Description                                  |  |
|-------------------|-----------------|------|---------|--|--|
|                   |                 | type | value   |  |  |
| Execution status  | FB_ENO          | В    | OFF     | ON: Execution command is ON.                 |  |
|                   |                 |      |         | OFF: Execution command is OFF.               |  |
| Completed without | FB_OK           | В    | OFF     | When ON, it indicates that the sampling time |  |
| error             |                 |      |         | period elapses, and sampling counter         |  |
|                   |                 |      |         | function is ended.                           |  |
| Sampling count    | o_SamplingCount | D    | 0       | Store the sampling count value.              |  |
| value             |                 |      |         |  |  |
| Error flag        | FB_ERROR        | В    | OFF     | When ON, it indicates that an error has      |  |
|                   |                 |      |         | occurred.                                    |  |
| Error code        | ERROR_ID        | W    | 0       | FB error code output.                        |  |



### **FB Version Upgrade History**

| Version | Date       | Description   |
|---------|------------|---------------|
| 1.00A   | 2010/08/06 | First edition |

### Note

This chapter includes information related to the M+D62\_SamplingOperation function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.



# 2.11 M+D62\_PeriodicPulseCounter (Periodic pulse counter function operation)

# FB Name

M+D62\_PeriodicPulseCounter

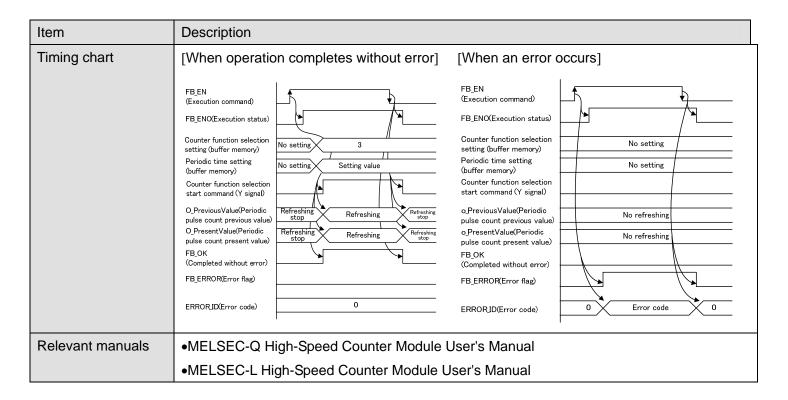
# **Function Overview**

| Item                | Description                               |                        |                          |                                       |  |
|---------------------|---|------------------------|--------------------------|---------------------------------------|--|
| Function overview   | Executes periodic pulse counter function. |                        |                          |                                       |  |
| Symbol              |   | M+D62_PeriodicPu       | lseCounter               |                                       |  |
|                     | Execution command —                       | B : FB_EN              | FB_ENO :                 | B Execution status                    |  |
|                     | Module start XY address —                 | W:i_Start_IO_No        | FB_OK :                  | B Completed without error             |  |
|                     | Target CH —                               | W : i_CH               | o_PreviousValue :        | D Periodic pulse count previous value |  |
|                     | Periodic time setting —                   | W : i_PeriodTime       | o_PresentValue :         | D Periodic pulse count present value  |  |
|                     |   |                        | FB_ERROR :               | B Error flag                          |  |
|                     |   |                        | ERROR_ID:                | W Error code                          |  |
| Applicable hardware | High-Speed                                |                        |                          |                                       |  |
| and software        | Counter Module                            | Series                 | Model                    |                                       |  |
|                     |   | MELSEC-Q Series        | QD62(E/D)                |                                       |  |
|                     |   | MELSEC-L Series        | LD62(D)                  |                                       |  |
|                     | CPU module                                |                        |                          |                                       |  |
|                     |   | Series                 | Model                    |                                       |  |
|                     |   | MELSEC-Q Series        | Basic model              |                                       |  |
|                     |   |                        | High performance model * |                                       |  |
|                     |   |                        | Universal me             | odel                                  |  |
|                     |   | MELSEC-L Series        | LCPU                     |                                       |  |
|                     | *   | Not applicable for QCI | PU (A mode)              |                                       |  |
|                     | Engineering                               | GX Works2              | 1                        |                                       |  |
|                     | software                                  | Series                 | Language                 | Software version                      |  |
|                     |   | MELSEC-Q/L Series      | English                  | Ver 1.31H or later                    |  |
|                     |   |                        | Chinese                  | Ver 1.49B or later                    |  |
|                     |   |                        |                          |                                       |  |
| Programming .       | Ladder                                    |                        |                          |                                       |  |
| language            |   |                        |                          |                                       |  |



| Item                 | Description  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 169*   |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a                                 |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple                               |  |  |  |  |  |
|                      | Project).  |  |  |  |  |  |
| Function description | 1) By turning ON FB_EN (Execution command), the periodic pulse count starts with the                                 |  |  |  |  |  |
|                      | preset i_PeriodTime (Periodic time setting (unit: 10ms)), and the periodic pulse count                               |  |  |  |  |  |
|                      | previous value and periodic pulse count present value are read from the buffer memory.                               |  |  |  |  |  |
|                      | 2) When the target CH setting value is out of range, the FB_ERROR output turns ON,                                   |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).                                    |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.   |  |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery                                     |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.  |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do                             |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,  |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.  |  |  |  |  |  |
|                      | 4) Turn OFF the counter function selection start command (Y signal) signal when using the                            |  |  |  |  |  |
|                      | FB. When the signal is turned ON, the periodic pulse counter function of the target channel will not be executed.    |  |  |  |  |  |
|                      | 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH.            |  |  |  |  |  |
|                      | 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. |  |  |  |  |  |
|                      | 7) Every input must be provided with a value for proper FB operation.  |  |  |  |  |  |
|                      | 8) When this FB is used in two or more places, a duplicated coil warning will occur during                           |  |  |  |  |  |
|                      | compile operation due to the Y signal being operated by index modification. However                                  |  |  |  |  |  |
|                      | this is not a problem and the FB will operate without error.   |  |  |  |  |  |
|                      | 9) The pulse input mode, counting speed setting, and counter format must be properly                                 |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).                                       |  |  |  |  |  |
| FB operation type    | Pulsed execution (multiple scan execution type)  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples  |  |  |  |  |  |





### **Error Codes**

### Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2.                           |  |



# Labels

# ■ Input labels

| Name                  | Variable name | Data | Setting range                | Description                |
|-----------------------|---------------|------|------------------------------|----------------------------|
|                       |               | type |                              |                            |
| Execution command     | FB_EN         | В    | ON, OFF                      | ON: The FB is activated.   |
|                       |               |      |                              | OFF: The FB is not         |
|                       |               |      |                              | activated.                 |
| Module start XY       | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY    |
| address               |               |      | range. For details, refer to | address (in hexadecimal)   |
|                       |               |      | the CPU user's manual.       | where the D62 module is    |
|                       |               |      |                              | mounted. (For example,     |
|                       |               |      |                              | enter H10 for X10.)        |
| Target CH             | i_CH          | W    | 1~2                          | Specify the CH number.     |
| Periodic time setting | i_PeriodTime  | W    | 1~65,535*1                   | Set periodic time setting. |
| (unit: 10 ms)         |               |      |                              | (unit: 10ms)               |
|                       |               |      |                              | *1: Setting method         |
|                       |               |      |                              | •1~32,767: Set in decimal. |
|                       |               |      |                              | •32,768~65,535: Set after  |
|                       |               |      |                              | converted into             |
|                       |               |      |                              | hexadecimal.               |

# ■ Output labels

| Name                 | Variable name   | Data | Initial | Description                                   |
|----------------------|-----------------|------|---------|---|
|                      |                 | type | value   |   |
| Execution status     | FB_ENO          | В    | OFF     | ON: Execution command is ON.                  |
|                      |                 |      |         | OFF: Execution command is OFF.                |
| Completed without    | FB_OK           | В    | OFF     | When ON, it indicates that the periodic pulse |
| error                |                 |      |         | counter function is started.                  |
| Periodic pulse count | o_PreviousValue | D    | 0       | Store the periodic pulse count previous       |
| previous value       |                 |      |         | value.  |
| Periodic pulse count | o_PresentValue  | D    | 0       | Store the periodic pulse count present        |
| present value        |                 |      |         | value.  |
| Error flag           | FB_ERROR        | В    | OFF     | When ON, it indicates that an error has       |
|                      |                 |      |         | occurred.                                     |
| Error code           | ERROR_ID        | W    | 0       | FB error code output.                         |



### **FB Version Upgrade History**

|   | Version | Date       | Description   |
|---|---------|------------|---------------|
| ſ | 1.00A   | 2010/08/06 | First edition |

### Note

This chapter includes information related to the M+D62\_PeriodicPulseCounter function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.



# 2.12 M+D62\_OverflowDetection (Overflow detection)

# FB Name

M+D62\_OverflowDetection

# **Function Overview**

| Item                | Description             |                 |                             |                          |           |                          |
|---------------------|-------------------------|-----------------|-----------------------------|--------------------------|-----------|--------------------------|
| Function overview   | Detects overflow.       |                 |                             |                          |           |                          |
| Symbol              |                         |                 | M+D62_OverflowDetection     |                          |           |                          |
|                     | Execution command       |                 | B:FB_EN FB_ENO:B            |                          | ENO : B   | Execution status         |
|                     | Module start XY address |                 | W:i_Start_IO_No o_Overflow: |                          | rflow : B | Overflow occurrence flag |
|                     | Target CH               |                 | W : i_CH                    | FB_ER                    | ROR : B   | Error flag               |
|                     |                         |                 |                             | ERRO                     | R_ID: W   | Error code               |
| Applicable hardware | High-Speed              |                 | •                           |                          |           |                          |
| and software        | Counter Module          | Se              | ries                        | Model                    |           |                          |
|                     |                         | ME              | ELSEC-Q Series              | QD62(E/D)                |           |                          |
|                     |                         | ME              | ELSEC-L Series              | LD62(D)                  |           |                          |
|                     |                         |                 |                             |                          |           |                          |
|                     | CPU module              |                 |                             |                          |           |                          |
|                     |                         | Series          |                             | Model                    |           |                          |
|                     |                         | MELSEC-Q Series |                             | Basic model              |           |                          |
|                     |                         |                 |                             | High performance model * |           |                          |
|                     |                         |                 |                             | Universal m              | odel      |                          |
|                     |                         | ME              | ELSEC-L Series              | LCPU                     |           |                          |
|                     |                         | * No            | ot applicable for QCI       | CPU (A mode)             |           |                          |
|                     | Engineering             | GX              | Works2                      |                          |           |                          |
|                     | software                | Se              | ries                        | Language                 | Softw     | vare version             |
|                     |                         | ME              | ELSEC-Q/L Series            | English                  | Ver 1     | .31H or later            |
|                     |                         |                 |                             | Chinese                  | Ver 1     | .49B or later            |
|                     |                         |                 |                             |                          |           |                          |
| Programming         | Ladder                  |                 |                             |                          |           |                          |
| language            |                         |                 |                             |                          |           |                          |



| Item                 | Description  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|
| Number of steps      | For high performance model CPU: 100*   |  |  |  |  |  |
| (maximum value)      | *The value is the number of steps in the label program, and is therefore stated as a       |  |  |  |  |  |
|                      | reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple     |  |  |  |  |  |
|                      | Project).  |  |  |  |  |  |
| Function description | 1) While FB_EN (Execution command) is ON, o_Overflow (Overflow occurrence flag) turns      |  |  |  |  |  |
|                      | ON if overflow occurs.   |  |  |  |  |  |
|                      | 2) When the target CH setting value is out of range, the FB_ERROR output turns ON,         |  |  |  |  |  |
|                      | processing is interrupted, and the error code is stored in ERROR_ID (Error code).          |  |  |  |  |  |
|                      | Refer to the error code explanation section for details.                                   |  |  |  |  |  |
| Compiling method     | Macro type   |  |  |  |  |  |
| Restrictions and     | 1) The FB does not include error recovery processing. Program the error recovery           |  |  |  |  |  |
| precautions          | processing separately in accordance with the required system operation.                    |  |  |  |  |  |
|                      | 2) The FB cannot be used in an interrupt program.  |  |  |  |  |  |
|                      | 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do   |  |  |  |  |  |
|                      | not use this FB in programs that are only executed once such as a subroutine,              |  |  |  |  |  |
|                      | FOR-NEXT loop, etc. because it is impossible to turn OFF.                                  |  |  |  |  |  |
|                      | 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of |  |  |  |  |  |
|                      | the target CH.   |  |  |  |  |  |
|                      | 5) This FB uses index registers Z9, Z8, and Z7. Please do not use these index registers in |  |  |  |  |  |
|                      | an interrupt program.  |  |  |  |  |  |
|                      | 6) Every input must be provided with a value for proper FB operation.                      |  |  |  |  |  |
|                      | 7) The pulse input mode, counting speed setting, and counter format must be properly       |  |  |  |  |  |
|                      | configured to match systems and devices connected to the QD62(E/D) or LD62(D).             |  |  |  |  |  |
| FB operation type    | Real-time execution  |  |  |  |  |  |
| Application example  | Refer to Appendix 1 - FB Library Application Examples                                      |  |  |  |  |  |
| Timing chart         | [When operation completes without error] [When an error occurs]                            |  |  |  |  |  |
|                      | FB_EN (Execution command)  FB_EN (Execution command)                                       |  |  |  |  |  |
|                      | FB_ENO(Execution status)  FB_ENO(Execution status)   |  |  |  |  |  |
|                      | Overflow detection flag (buffer memory)  Overflow detection flag (buffer memory)           |  |  |  |  |  |
|                      | o_Overflow (Overflow occurrence flag)  |  |  |  |  |  |
|                      | FB_ERROR(Error flag)  FB_ERROR(Error flag)   |  |  |  |  |  |
|                      | ERROR_ID(Error code) 0 ERROR_ID(Error code) 0 Error code                                   |  |  |  |  |  |
| Relevant manuals     | MELSEC-Q High-Speed Counter Module User's Manual   |  |  |  |  |  |
|                      | MELSEC-L High-Speed Counter Module User's Manual   |  |  |  |  |  |
|                      |  |  |  |  |  |  |



# **Error Codes**

### ■ Error code list

| Error code   | Description                                | Action   |
|--------------|--|--|
| 10 (Decimal) | The specified target channel is not valid. | Please try again after confirming the setting. |
|              | The target channel is not within the       |  |
|              | range of 1 to 2.                           |  |

# Labels

## ■ Input labels

| Name              | Variable name | Data | Setting range                | Description              |
|-------------------|---------------|------|------------------------------|--------------------------|
|                   |               | type |                              |                          |
| Execution command | FB_EN         | В    | ON, OFF                      | ON: The FB is activated. |
|                   |               |      |                              | OFF: The FB is not       |
|                   |               |      |                              | activated.               |
| Module start XY   | i_Start_IO_No | W    | Depends on the I/O point     | Specify the starting XY  |
| address           |               |      | range. For details, refer to | address (in hexadecimal) |
|                   |               |      | the CPU user's manual.       | where the D62 module is  |
|                   |               |      |                              | mounted. (For example,   |
|                   |               |      |                              | enter H10 for X10.)      |
| Target CH         | i_CH          | W    | 1~2                          | Specify the CH number.   |

## Output labels

| Name                | Variable name | Data | Initial | Description                             |
|---------------------|---------------|------|---------|---|
|                     |               | type | value   |   |
| Execution status    | FB_ENO        | В    | OFF     | ON: Execution command is ON.            |
|                     |               |      |         | OFF: Execution command is OFF.          |
| Overflow occurrence | o_Overflow    | В    | OFF     | ON: Overflow being occurred.            |
| flag                |               |      |         | OFF: No overflow detected.              |
| Error flag          | FB_ERROR      | В    | OFF     | When ON, it indicates that an error has |
|                     |               |      |         | occurred.                               |
| Error code          | ERROR_ID      | W    | 0       | FB error code output.                   |



## **FB Version Upgrade History**

| Version | Date       | Description   |
|---------|------------|---------------|
| 1.00A   | 2010/08/06 | First edition |

### Note

This chapter includes information related to the M+D62\_OverflowDetection function block.

It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.



## Appendix 1 - FB Library Application Examples

D62 FB Application examples

### **System Configuration Example**

| Power<br>Supply<br>Module | CPU<br>Module | LD62(D),<br>QD62(E/D)<br>( X/Y00 ~<br>X/Y0F ) |
|---------------------------|---------------|---|
|---------------------------|---------------|---|

#### Reminder

- 1) Every input must be provided with a value for proper FB operation.

  If not set, the values will be unspecified.
- 2) Abbreviations may be used in the label comments due to the limitation on the number of the characters to display in GX Works2.



# List of devices

External input (commands)

| Device   | FB function name                   | Application(ON details)        |
|--|------------------------------------|--------------------------------|
| M0   | Ring counter setting               | Ring counter setting request   |
| M10  | Count enable operation             | Count enable command           |
| M20  | Present value monitoring           | Present value read request     |
| M30  | Present value monitoring (All CHs) | Present value read request     |
| M40  | Coincidence output function        | Coincidence output set command |
| M41  | setting                            | Coincidence output No.1 enable |
| M42  | Setting                            | Coincidence output No.2 enable |
| M50  | Coincidence output enable setting  | Coincidence enable command     |
| M60  | Preset function operation          | Preset function execution cmd  |
| M70  | Disable count function operation   | Disable count command          |
| M80  | Latch counter function operation   | Latch counter command          |
| M90 Sampling counter function operation        |                                    | Sampling count command         |
| M100 Periodic pulse counter function operation |                                    | Periodic pulse count command   |
| M110   | Overflow detection                 | Overflow detection command     |

| Data registe | er                                  |                                  |  |  |
|--------------|-------------------------------------|----------------------------------|--|--|
| Device       | FB function name                    | Application(ON details)          |  |  |
| D0           | Ring counter setting                | Ring counter setting error code  |  |  |
| D10          | Count enable operation              | Count enable FB error code       |  |  |
| D20          |                                     | Present value                    |  |  |
| D21          | Present value monitoring            | resent value                     |  |  |
| D22          |                                     | monitoring error code            |  |  |
| D30          |                                     | CH1 present value                |  |  |
| D31          | Present value monitoring            |                                  |  |  |
| D32          | (All CHs)                           | CH2 present value                |  |  |
| D33          |                                     | OTIZ present value               |  |  |
| D40          | Coincidence output function setting | setting FB error code            |  |  |
| D50          | Coincidence output enable setting   | Coincidence enable set err code  |  |  |
| D60          | Preset function operation           | Preset fcn execution error code  |  |  |
| D70          | Disable count function operation    | Disable count execution err code |  |  |
| D80          | Latch counter function              | Latch count value                |  |  |
| D81          | operation                           |                                  |  |  |
| D82          | орегалоп                            | Latch counter execution err code |  |  |
| D90          | Sampling counter function           | Sampling count value             |  |  |
| D91          | operation                           |                                  |  |  |
| D92          | operation                           | Sampling execution error code    |  |  |
| D100         |                                     | Periodic pls cnt previous value  |  |  |
| D101         | Periodic pulse counter              | r enoure pis ent previous value  |  |  |
| D102         | function operation                  | Periodic pls cnt present value   |  |  |
| D103         | - and a sportation                  |                                  |  |  |
| D104         |                                     | Periodic pls counter error code  |  |  |
| D110         | Overflow detection                  | Overflow detection FB error code |  |  |

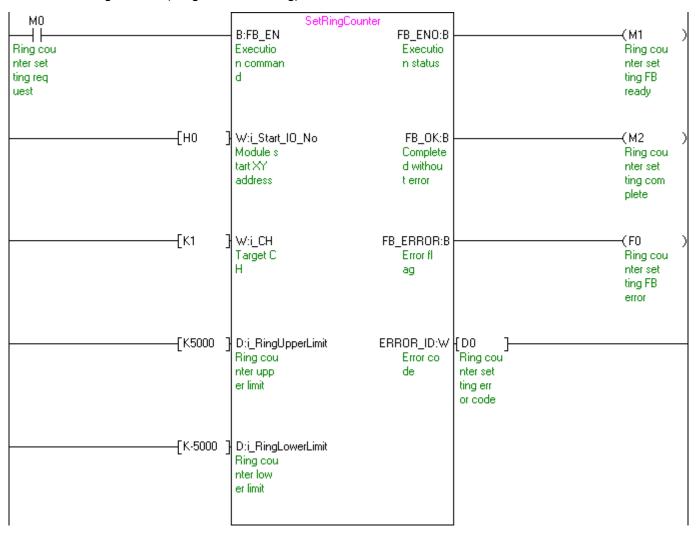
External output (checks)

| xternal outp | out (checks)  FB function name      | Application(ON details)          |  |  |
|--------------|-------------------------------------|----------------------------------|--|--|
| M1           | 1 B ranetion frame                  | Ring counter setting FB ready    |  |  |
| M2           | Ring counter setting                | Ring counter setting complete    |  |  |
| F0           | 1 9 00 00                           | Ring counter setting FB error    |  |  |
| M11          |                                     | Count enable FB ready            |  |  |
| M12          | Count enable operation              | Count operating flag             |  |  |
| F5           | 1                                   | Count enable FB error            |  |  |
| M21          |                                     | Present value monitoring ready   |  |  |
| M22          | Present value monitoring            | Present value read OP complete   |  |  |
| F10          | ď                                   | •                                |  |  |
| F10          |                                     | Present value monitoring error   |  |  |
| M31          | Present value monitoring            | Present value monitoring ready   |  |  |
| M32          | (All CHs)                           | Present value read OP complete   |  |  |
| M43          | Coincidence output function         | Coincidence output fcn set ready |  |  |
| M44          | setting                             | Coincidence output fcn set comp  |  |  |
| F15          |                                     | Coincidence output fcn set error |  |  |
| M51          | Coincidence output enable           | Coincidence enable set ready     |  |  |
| M52          | setting                             | Coincidence enable set complete  |  |  |
| F20          | setting                             | Coincidence enable set error     |  |  |
| M61          |                                     | Preset function execution ready  |  |  |
| M62          | Preset function operation           | Preset function execution comp   |  |  |
| F25          |                                     | Preset function execution error  |  |  |
| M71          | Disable count function              | Disable count execution ready    |  |  |
| M72          | operation                           | Disable count operating flag     |  |  |
| F30          | operation                           | Disable count execution error    |  |  |
| M81          |                                     | Latch counter execution ready    |  |  |
| M82          | Latch counter function opera        | Latch counter execution complete |  |  |
| F35          |                                     | Latch counter execution error    |  |  |
| M91          | Compling counter function           | Sampling counter execution ready |  |  |
| M92          | Sampling counter function operation | Sampling counter execution com   |  |  |
| F40          |                                     | Sampling counter execution error |  |  |
| M101         | Periodic pulse counter              | Periodic pls counter ready       |  |  |
| M102         | function operation                  | Periodic pls counter complete    |  |  |
| F45          | 1                                   | Periodic pls counter error       |  |  |
| M111         |                                     | Overflow detection FB ready      |  |  |
| M112         | Overflow detection                  | Overflow being detected          |  |  |
| F50          | 1                                   | Overflow detection FB error      |  |  |
|              |                                     |                                  |  |  |



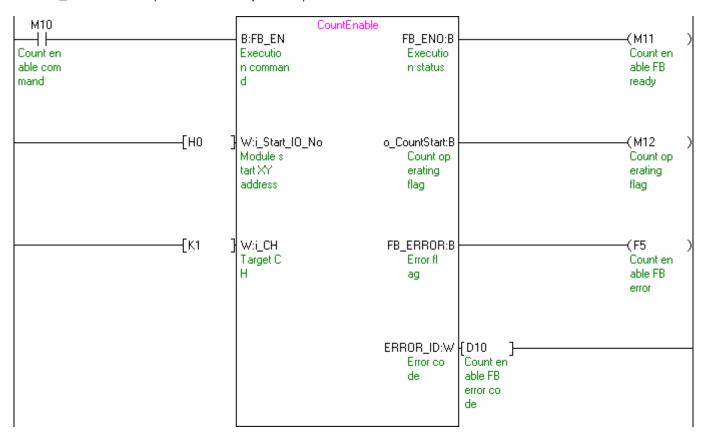
### Program

### M+D62\_SetRingCounter (Ring counter setting)



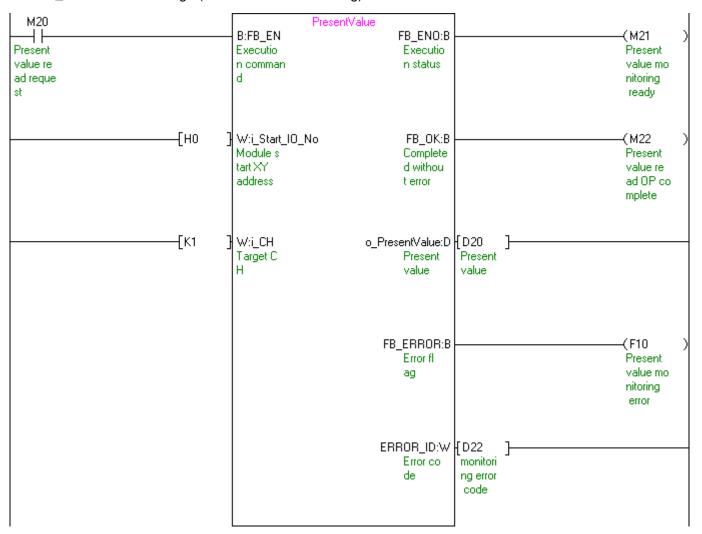


### M+D62\_CountEnable (Count enable operation)



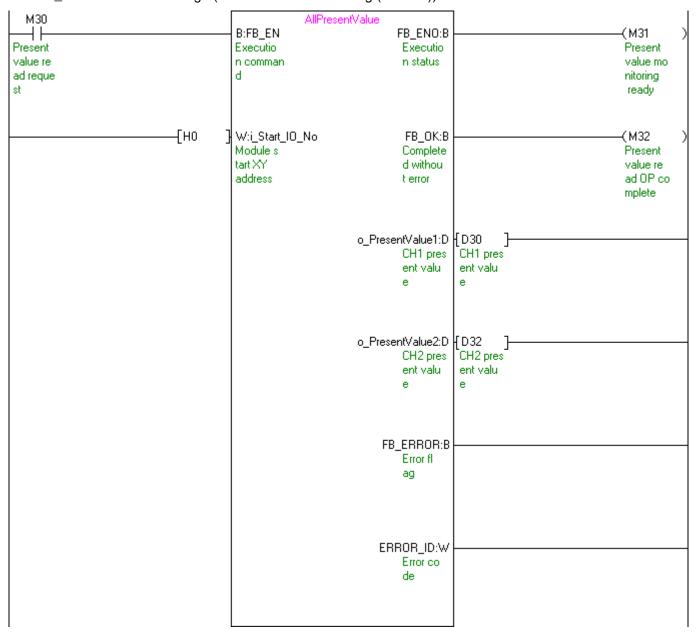


## M+D62\_PresentValueStorage (Present value monitoring)



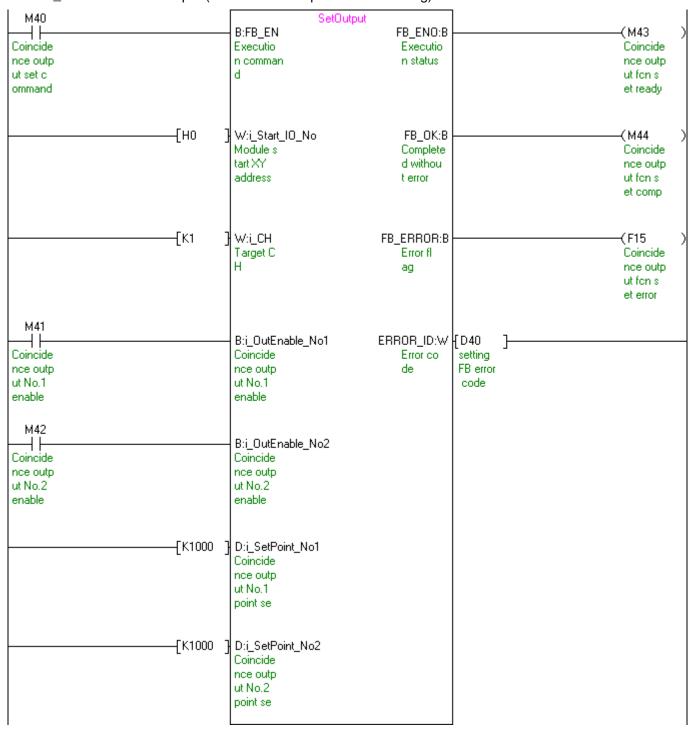


### M+D62\_AllPresentValueStorage (Present value monitoring (All CHs))



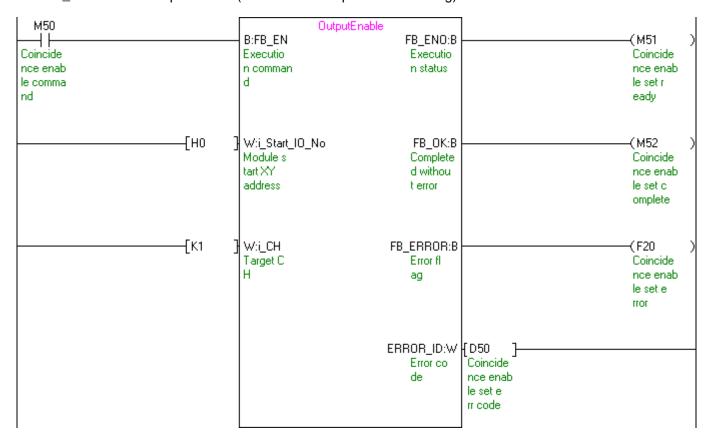


### M+D62\_SetCoincidenceOutput (Coincidence output function setting)





### M+D62\_CoincidenceOutputEnable (Coincidence output enable setting)



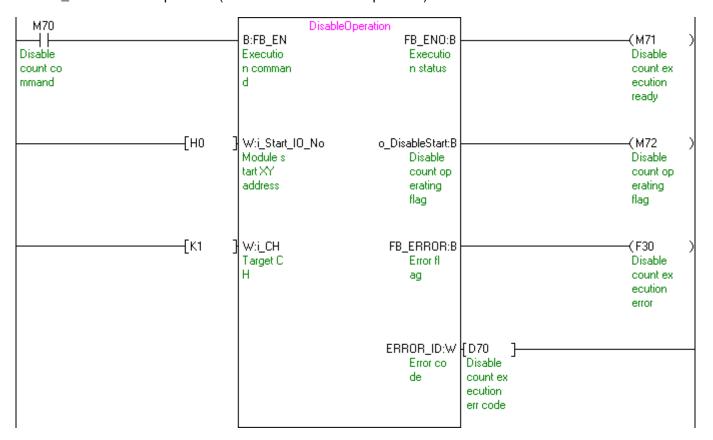


# M+D62\_PresetOperation (Preset function operation)

| M60                             | PresetOpera   | ition  |  |  | - [ |
|---------------------------------|---|--|--|--|-----|
| Preset f unction executio n cmd | B:FB_EN<br>Executio<br>n comman<br>d                | FB_ENO:B -<br>Executio<br>n status           |  | —( M61<br>Preset f<br>unction<br>executio<br>n ready | )   |
| (H0                             | ] W:i_Start_IO_No<br>Module s<br>tart XY<br>address | FB_OK:B -<br>Complete<br>d withou<br>t error |  | —(M62<br>Preset f<br>unction<br>executio<br>n comp   | )   |
|                                 | } W:i_CH<br>Target C<br>H                           | FB_ERROR:B -<br>Error fl<br>ag               |  | F25 Preset f unction executio n error                | )   |
|                                 | D:i_PresetValue<br>Preset v<br>alue                 | ERROR_ID:W  <br>Error co<br>de               | [D60] Preset f cn execu tion err or code |  |     |

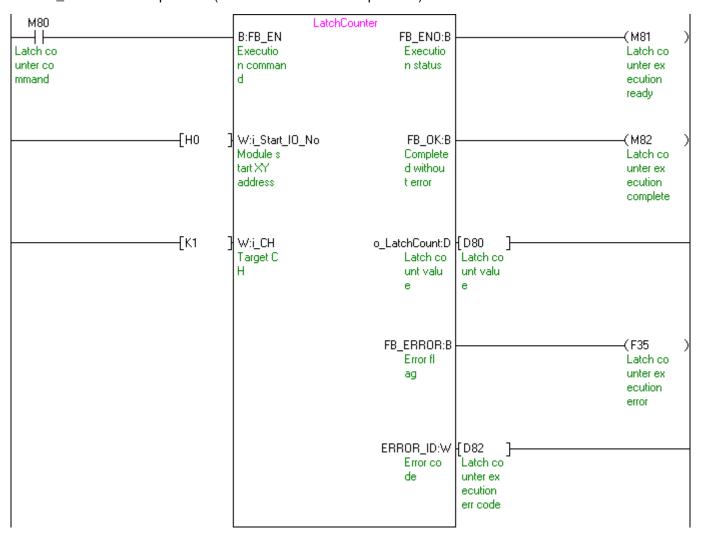


### M+D62\_CountDisableOperation (Disable count function operation)





### M+D62\_LatchCounterOperation (Latch counter function operation)



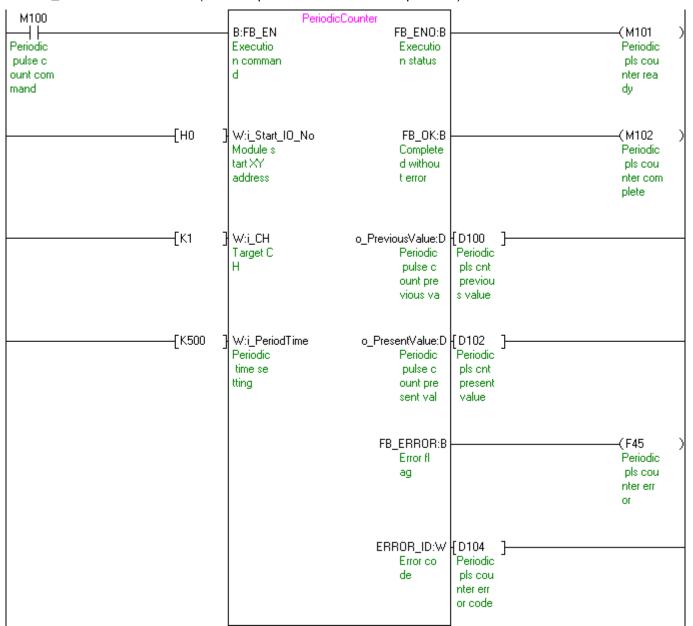


# M+D62\_SamplingOperation (Sampling counter function operation)

| M90<br> | Sampling<br>- B:FB_EN<br>Executio<br>n comman<br>d | Operaton<br>FB_ENO:B<br>Executio<br>n status     |   | ——( M91<br>Sampling<br>counter<br>executi<br>on ready | ) |
|---------|--|--|---|---|---|
|         | W:i_Start_IO_No<br>Module s<br>tart XY<br>address  | FB_OK:B<br>Complete<br>d withou<br>t error       |   | M92 Sampling counter executi on comp                  | > |
|         | W:i_CH<br>Target C<br>H                            | o_SamplingCount:D<br>Sampling<br>count v<br>alue | {D90 }<br>Sampling<br>count v<br>alue             |   |   |
|         | W:i_SamplingTime Sampling time se tting            | FB_ERROR:B<br>Error fl<br>ag                     |   | F40 Sampling counter executi on error                 | ) |
|         |  | ERROR_ID:W<br>Error co<br>de                     | {D92 }<br>Sampling<br>executi<br>on error<br>code |   |   |

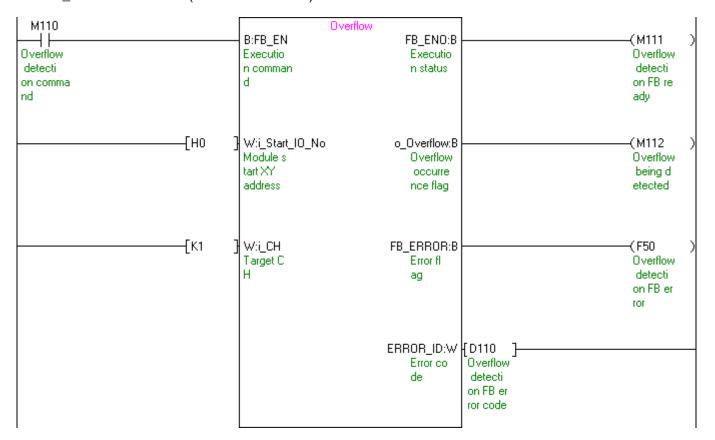


### M+D62\_PeriodicPulseCounter (Periodic pulse counter function operation)





## M+D62\_OverflowDetection (Overflow detection)





### Appendix 2 - Note for using index registers in a program

#### (1) Note

When a program uses the same index register as the FB, an OPERATION ERROR (error code: 4101) may be detected by an index modification consistency check (to see whether a device address exceeds a device range).

### (2) Countermeasures

Take either of these countermeasures to prevent this problem from occurring.

- 1) Do not use an index register that is used by an FB.
- 2) When using an index register in a program that is already used by an FB, please deselect the "Check Device Range at Indexing" checkbox in the PLC RAS tab of the L Parameter Setting dialog window.

