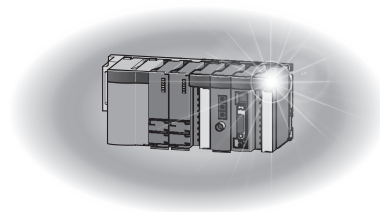


Programmable Controller

MELSEC **Q** series

High-Speed Counter Module User's Manual

- QD62
- QD62E
- QD62D
- GX Configurator-CT (SW0D5C-QCTU-E)



PACKING LIST

The product package contains the following.

Model Name	Product	Quantity
QD62	Type QD62 high-speed counter module	1
QD62E	Type QD62E high-speed counter module	1
QD62D	Type QD62D high-speed counter module	1
SW0D5C-QCTU-E	GX Configurator-CT Version 1 (1-license product) (CD-ROM)	1
SW0D5C-QCTU-EA	GX Configurator-CT Version 1 (Multiple-license product) (CD-ROM)	1

1 OVERVIEW

MELSEC-Q

1 OVERVIEW

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This User's Manual describes the specifications, handling and programming method for the QD62, QD62E and QD62D high-speed counter modules (QD62 (E/D)) used together with the MELSEC-Q series CPUs.

The QD62(E/D) modules are available with the following I/O types, maximum counting speeds and number of channels.

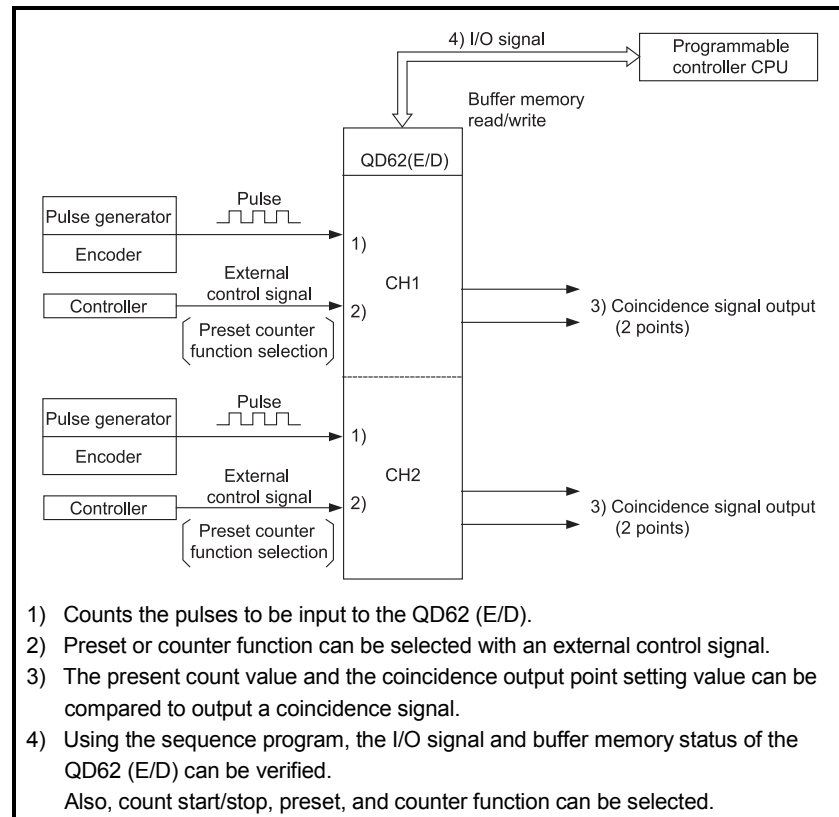
Item	QD62	QD62E	QD62D
I/O type	DC input sinking output	DC input sourcing output	Differential input sinking output
Maximum counting speed	200 kPPS		500 kPPS
Number of channels	2 channels		

The QD62(E/D) modules have the following input methods for 1 phase/2 phase pulse input:

- Phase 1 pulse input multiple of 1 • Phase 1 pulse input multiple of 2 • CW/CCW
- Phase 2 pulse input multiple of 1 • Phase 2 pulse input multiple of 2
- Phase 2 pulse input multiple of 4

See Section 5.1 for details on the input methods.

An overview of QD62 (E/D) operation is shown in the figure below.



1 OVERVIEW

MELSEC-Q

1.1 Features

The features of the QD62(E/D) are as follows:

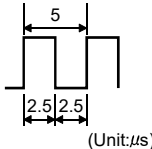
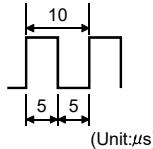
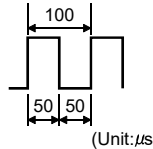
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- (1) Counting can be performed in a wide range (The count value can be expressed within the range between -2147483648 and 2147483647)
 - A count value is stored in 32-bit signed binary.
 - The number of channels is 2.
- (2) The maximum counting speed can be changed
 The maximum speed of the QD62D can be changed by selecting from among 500 k, 200 k, 100 k and 10 k, while that of the QD62 and QD62E can be selected from among 200 k, 100 k and 10 k. This allows an error-free count even with gradual rise/fall pulses.
- (3) Pulse input can be selected
 The pulse input can be selected from 1 phase multiple of 1, 1 phase multiple of 2, 2 phase multiple of 1, 2 phase multiple of 2, 2 phase multiple of 4, CW and CCW.
- (4) Counter format can be selected
 Either one of the following counter formats can be selected.
 - (a) Linear counter format
 A count from -2147483648 to 2147483647 is possible and if the count exceeds the range, an overflow will be detected.
 - (b) Ring counter format
 This type counts pulses repeatedly within the range between the ring counter upper limit and the ring counter lower limit.
- (5) Coincidence output is possible
 Any channel coincidence output point can be preset to compare with the present counter value to output the ON/OFF signal output, or to start an interrupt program.
- (6) Selection can be made from four counter functions
 One of the following four functions can be selected.
 - (a) Count disable function
 This function stops counting pulses by inputting a signal while CH□ Count enable command (Y4, YC) is on.
 - (b) Latch counter function
 This function latches the present value of the counter when the signal was input.
 - (c) Sampling counter function
 This function counts the pulses that were input within the preset time period from the signal input.
 - (d) Periodic pulse counter function
 This function stores the present and previous values of the counter at each preset time interval while the signal is being input.

3 SPECIFICATIONS

MELSEC-Q

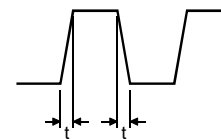
(2) QD62E (DC input sourcing output type) performance specifications

Model name		QD62E		
Item				
Counting speed switch settings *1		200 k (100 k to 200 kPPS)	100 k (10 k to 100 kPPS)	10 k (10 kPPS or less)
I/O occupied points		16 points (I/O assignment: Intelligent 16 points)		
Number of channels		2 channels		
Count input signal	Phase	1-phase input (1 multiple/2 multiples), 2-phase input (1 multiple/2 multiples/4 multiples), CW/CCW input		
	Signal level (ϕA , ϕB)	5/12/24 V DC 2 to 5 mA		
Counter	Counting speed (max) *2	200 kPPS	100 kPPS	10 kPPS
	Counting range	32-bit signed binary values (-2147483648 to 2147483647)		
	Model	UP/DOWN Preset counter + Ring counter function		
	Minimum count pulse width (Duty ratio 50 %)	 (Unit: μs) (Min. phase differential for 2-phase input: 1.25 μs)	 (Unit: μs) (Min. phase differential for 2-phase input: 2.5 μs)	 (Unit: μs) (Min. phase differential for 2-phase input: 25 μs)
Coincidence output	Comparison range	32-bit signed binary values		
	Comparison result	Set value < Count value Set value = Count value Set value > Count value		
External input	Preset	5/12/24 V DC		
	Function start	2 to 5 mA		
External output	Coincidence output	Transistor (sourcing type) output: 2 points/channel 12/24 V DC 0.1 A/point 0.4 A/common		
5 V DC internal current consumption		0.33 A		
Weight		0.11 kg		

*1: The counting speed switch settings can be set using the intelligent function module switch.

*2: Counting speed is affected by pulse rise and fall time. Possible counting speeds are shown in the following table. Note that if a pulse that has a large rise and/or fall time is counted, a miscount may occur.

Counting speed switch settings	200 k	100 k	10 k
Rise/fall time	Both 1 and 2 phase input		
$t = 1.25 \mu s$ or less	200 kPPS	100 kPPS	10 kPPS
$t = 2.5 \mu s$ or less	100 kPPS	100 kPPS	10 kPPS
$t = 25 \mu s$ or less	—	10 kPPS	10 kPPS
$t = 500 \mu s$	—	—	500 PPS





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