

**TOSHIBA**

(裏面は日本語)

# Integrated Controller Vseries

model 2000 I/O Module

## Change detect DC input CD633

### USER'S GUIDE

16 Points change detect DC input module :CD633 (GCD633\*\*S)

Thank you for purchasing the TOSHIBA product. Check the package contents, and use this product according to the instructions described in this guide.

- Before using this product, carefully read "Safety Precautions" included in the package.

- This guide describes the minimum information and instructions required to use the CD633. For the system design for the CD633, refer to the following related manuals.

- Integrated Controller Vseries User's Manual :6F8C0905
- S2T User's Manual - Basic Hardware :6F8C0926
- S2T User's Manual - Functions :6F8C0928
- S2 User's Manual - Basic Hardware :6F8C0836
- S2 User's Manual - functions :6F8C0837

- The contents of this guide are subject to change without prior notice.

6F8C1040  
2002-9(0)

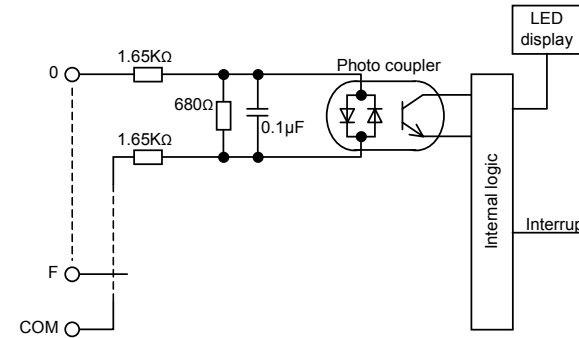
### Overview

The change detect DC input module CD633 is an 16 points 12-24 Vdc input module with interrupt generation function. When the input signal status of the CD633 is changed, the CD633 generates an interrupt for the controller (S2T/S2).

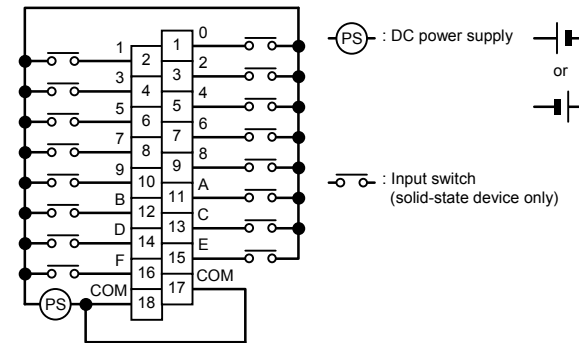
### Specification

Item	Specifications
Type	CD633
Category	DC input with interrupt generation
Input type	Current sinking/sourcing
Number of input points	16 points, 1-word input [not update in the batch I/O processing]
Insulating method	Photo-coupler
Rated input voltage	12 to 24 Vdc
Range input voltage	10.2 to 26.4 Vdc
Rated input current	7mA (at 24 Vdc)
Input impedance	3.3KΩ
Operating voltage	Min ON voltage 9.6 V Max OFF voltage 3.6 V
Delay	OFF to ON 1 ms or less ON to OFF 1 ms or less
Minimum input pulse width	1ms
Internal sampling cycle	32μs
Input signal display	LED display for all points, lit at ON, internal logic side
Configuration of common	No. of common 1
	No. of input points per common 16 points/common
	Polarity of common No polarity
External connection	18 points terminal block (removable)
Derating condition	None
Internal current consumption	200 mA or less (5 Vdc)
Insulation resistance	10MΩ or more (at 500 Vdc)
Withstand voltage	1500 Vac, 1 minutes (between internal and external circuits)
Weight	Approximately 200 g

### Internal circuit



### Terminal connections



### Precautions

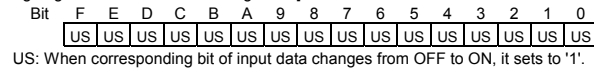
- I/O interrupt function is available only in the main unit. Mount the CD633 on the basic unit.
- If input wiring is long, take measures to prevent erroneous input caused by noise, as follows.
  - Wiring length must be minimized. Do not make unnecessary loops.
  - Keep the input wires away, at least 200 mm, from power cables and high frequency lines, or shield the input cables with a metal plate.
  - To improve noise immunity, use a shielded cable and/or twisted-pair cable.
  - Install a bleeder resistor to reduce input impedance.
- Because the input filter time constant of CD633 is set to small, CD633 may read the wrong input due to chattering of mechanical-contact. Use solid-state device for the CD633. Also, take measures to suppress noise.
- Check the leakage current and the voltage drop of the connected solid-state devices. It must be within the CD633 specification.
- The change detection status of CD633 is cleared to '0', when the controller read the change detection status and input data. Therefore make the application program to read the change detection status and input data (3 words) at the same time by the direct I/O instruction, in the I/O interrupt program.
- CD633 is executing the change detection operation even in the controller is HALT. In order to clear the change detection status at the beginning of RUN mode, make the application program to read the change detection status and input data (3 words) at the first scan.
- As for details of interrupt handling and programming, refer to S2T or S2 user's manual.

### Data format

(1) Basic registers  
Change detection status and Input data

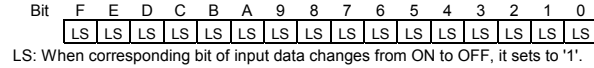
S2T	S2	Description
XWn	%IWn	Rising edge detection status
XWn+1	%IWn+1	Falling edge detection status
XWn+2	%IWn+2	Input data
XWn+3	%IWn+3	No use (reserved)

[Rising edge detection status bit assignment]



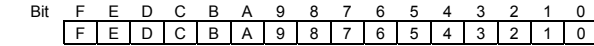
US: When corresponding bit of input data changes from OFF to ON, it sets to '1'.

[Falling edge detection status bit assignment]



LS: When corresponding bit of input data changes from ON to OFF, it sets to '1'.

[Input data bit assignment]



This register reflects the current input signal status.

When the interrupt enable flag is set to ON (DE='1') and the rising edge detection is selected (UE='1'), the CD633 sets corresponding bit of the change detection status register (US) and generates interrupt to the controller at the time of input signal change from OFF to ON.

As same manner, when the falling edge detection is selected (LE='1'), the CD633 generates interrupt at the time of input signal change from ON to OFF. If both UE and LE are set '1', the interrupt is generated at the time of both change from OFF to ON and from ON to OF

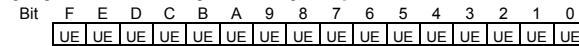
The change detection status is cleared to '0', when the controller is read the change detection status and input data. Therefore make the application program to read the change detection status and input data (3 words) at the same time by the direct I/O instruction, in the I/O interrupt program.

(2) Mode selection registers

These registers are accessed by the special module data write instruction (WRITE instruction in S2T, MWRITE instruction in S2).

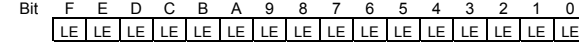
Address	Description
0	Rising edge detection select register
1	Falling edge detection select register
2	Change detection enable register

[Rising edge detection select register bit assignment]



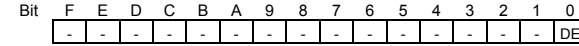
UE: When '1', the interrupt is generated at the time of corresponding input is changed OFF to ON. ( Initial value is all '1' )

[Falling edge detection select register bit assignment]



LE: When '1', the interrupt is generated at the time of corresponding input is changed ON to OFF. ( Initial value is all '0' )

[Change detection enable register bit assignment]



DE: When '1', change detection is enabled. When '0', change detection is disabled and change detection status is cleared. ( Initial value is '1' )

[Caution]  
I/O interrupt is not generated when the bit DE is '0'.

After power on initializing, the change detection mode of all bits is set only rising edge detection is enabled.

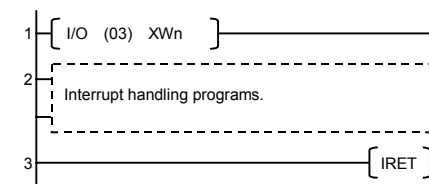
In order to change the mode of change detection, write data in the mode register by the special module data write instruction (WRITE instruction in S2T, MWRITE instruction in S2) in the user program.

Refer to the instruction manual for details of the special module data write instruction.

### Sample programs

(1) S2T

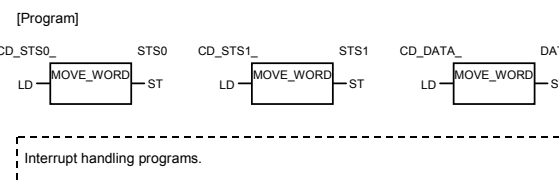
In the I/O interrupt program



(2) S2

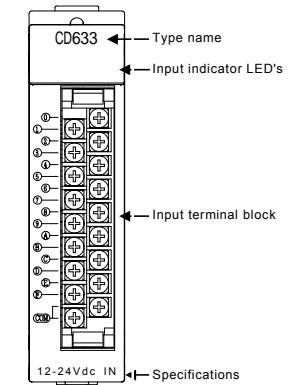
In the interrupt task

[Variable declaration]  
 VER\_EXTERNAL VER\_TEMP  
 CD\_STS0 :WORD; STS0 :WORD;  
 CD\_STS1 :WORD; STS1 :WORD;  
 CD\_DATA :WORD; DATA :WORD;  
 END\_VER END\_VER

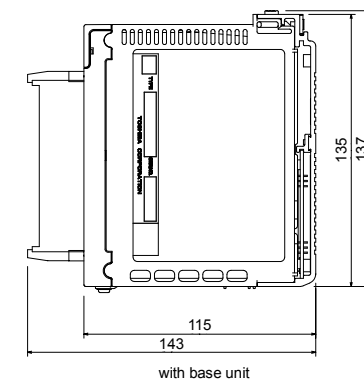


Refer to the engineering tool manual and the instruction manual for details of the programming.

### Front view



### External dimensions



Dimensions in millimeters.