Minebea

Specifications

Transmitter for Optical transmission method torque transducer

OPT-563B

Spec. No.EN351563B-D 1/11

1. General

This is the transmitter for optical transmission method torque transducer.

2. Specifications

- Supply voltage for rotor DC24 V ± 2 V, 2 A
- Applicable transducer Optical transmission method torque transducer
- Input signal Signal of torque Frequency input 5 kHz ~ 15 kHz
- Output signal
  Analog output (Standard) DC ± 10 V (at - rated torque ~ + rated torque)
  Load resistance 2 kΩ or more
  Output capacitance load 0.1 µF or less
  (Select at the time of the order) Current output , Frequency output for torque
  Voltage output , Current output , Frequency output for rotation speed
  Digital output (Option) Select one from RS-232C, RS-422/485 , PROFIBUS or CANopen.
  * The standard model is not equipped with.
- Zero adjustable range ± 2 %R.O.
- Digital compensation
  Asymmetry compensation ± 10 %R.O.
  Linearize compensation 10 points at the maximum (5 points between 0 and + rated output.
  5 points between 0 and - rated output)
  Twist direction reversing compensation
  The direction of the twist and the output signal are reversed.
  (The standard is + (plus) output by a left twist.)
  * The function of lock with software is provided.
- Non-linearity 0.01 % F.S. (Voltage output)
- CHECK Approx. 80 % of rated output (Set by function)
- Frequency response range DC ~ 1 kHz (with filter W/B)
  (Changeable to 1 Hz, 10 Hz, 30 Hz, 50 Hz, 100 Hz, 300 Hz, 500 Hz or 1 kHz) Above is 10 Hz ~ 1 kHz : -3 dB±1 dB, 1 Hz : -3 dB±3 dB
- Sampling rate 10 000 times/s
- Torque display section
  Dsiplay of output 0 ~ ± 99 999 digital display (Green LED)
  Display of over [-OL] display at minus over, [OL] display at plus over.
  Display type Analog output, Torque
  Display of decimal point
  Changeable to No display, 10^1, 10^2, 10^3 or 10^4
  Condition display A/Z, LOCK, CHECK, H, M, ERROR
  Display of unit Changeable to V, Nm or kNm
  Display rate Approx. 20 times/s (Changeable to 4 times/s)
- Supply voltage for detector DC12 V ± 2 V
- Applicable rotational detector MP-9820 (by ONOSOKKI Co., Ltd)
- Non- linearity 0.01 % F.S.
- Frequency response range 10 Hz (Changeable to 1 Hz)
  Above is 10 Hz : -3 dB ± 1 dB, 1 Hz : -3 dB ± 3 dB

• Rotation speed display section

Display of output	0 ~ ± 27 500 digital display (Green LED)
Display of over	[-OS] display at minus over, [OS] display at plus over.
Display type	Rotation speed
Condition display	LOCK
Display of unit	r/min
Display rate	Approx. 20 times/s (Changeable to 4 times/s)

• Function of sheet key switch of front panel

◀	Carry up the set value / A/Z ON
▶	Carry down the set value / A/Z OFF
▲	Increment the set value
▼	Decrement the set value
CHECK	CHECK value
FUNC	Changeover the function mode
ENTER	Entry key

• External control input signal

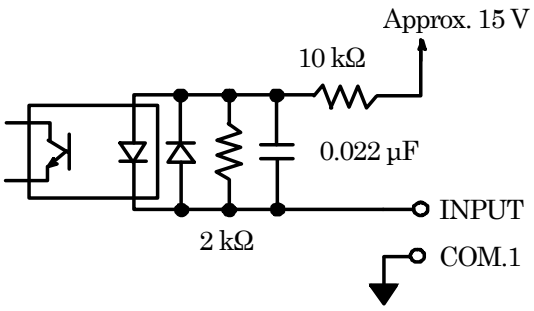
A/Z	Same as A/Z key
A/ZOFF	Same as A/Z OFF key

* Above are pulse input, and effective only once at the pulse width of 100 ms or more.

LOCK	Prohibit the operation by key.

* Above is level input, and effective during the input of short for 100 ms or more.

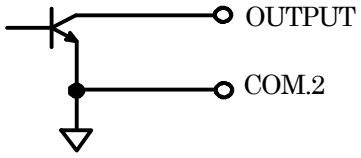
Rotation POL.	Inverting input of the rotating direction.



* An internal circuit and the photo-coupler are insulated.
* COM. 1 and COM. 2 are insulated.

• External control output signal

ERROR	Open collector turns ON when various errors occur.



Rated capacity of open collector V_{CE} = DC35 Vmax, I_c = DC40 mAmax

* An internal circuit and the photo-coupler are insulated..
* COM. 1 and COM. 2 are insulated.

- Various function
  - Digital filter: Data is stabilized by the arithmetic processing in CPU
  - Sheet key lock: The operation by an arbitrary key is prohibited.
  - Changeover of calibration data: Four kinds of calibration datas are memorized, and they can be selected by the function.
  - Indication of luminous energy decrease.: LED in the condition display section lights depending on the status of luminous energy in torque transducer. (H, M, ERROR)

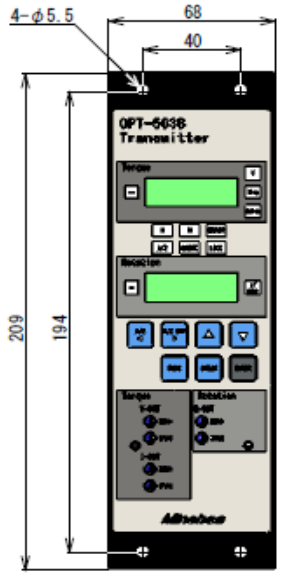
3. General specifications

- Operating temperature and humidity range
  - Temperature: -10 ℃ ~ 50 ℃
  - Humidity: 85 %RH or less (Non condensing)
- Power supply
  - Power supply voltage: AC100 V ~ AC240 V (Permisible variable range : AC85 V ~ AC264 V)
  - Power supply frequency: 50/60 Hz
  - Power consumption: Approx. 60 VA (at AC100 V)
- Insulation resistance: DC500 V, 100 MΩ or more between the power supply line and a case.
- Withstand voltage: AC1 500 V, 1 min period between power supply line and case.
- Outline dimensions: (W x H x D) : 68 mm x 209 mm x 252 mm (Excludes protruding parts)
- Weight: Approx. 2 kg

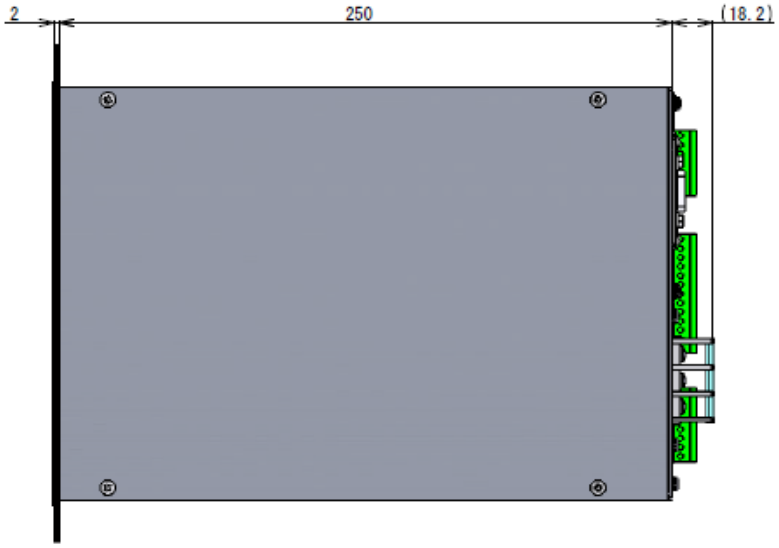
4. Accessories

- Instruction manual: 1 piece
- Time-lag fuze: 1 piece (5 A)
- I/O connecter for external control: 1 piece (plag : MC_1.5 / 13-ST-3.81)
- Connector for torque transduser and rotation detector: 1 piece (plag : MC_1.5 / 13-ST-3.81)
- Connecter for analog output: 1 piece (plag : MC_1.5 / 8-ST-3.81)
- Minus screwdriver: 1 piece

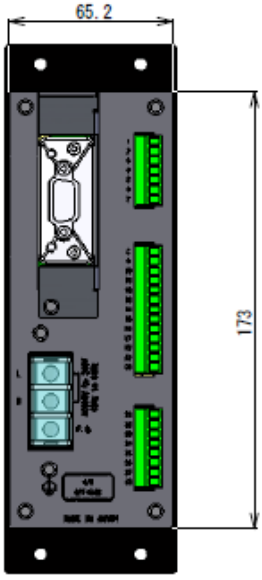
5. Outline dimensions



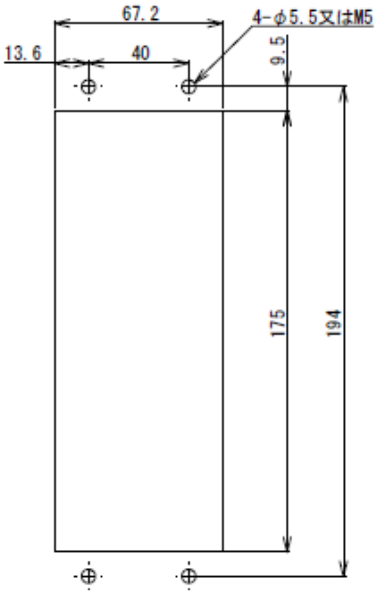
Front



Side



Rear side



Panel cut size

Unit : mm

6. Select at the time of the order

6-1.Analog output for torque

- Current output

Part No.	OPT563B-T2 (at torque zero ~ + rated torque)
	OPT563B-T3 (at - rated torque ~ + rated torque)
Output	DC 4 mA ~ DC20 mA
Load resistance	510 Ω or less
Resolution	1/12 000 or more
Non-linearity	0.05 %R.O.
Over range	[-OL] display under DC2.4 mA , [OL] display over DC21.6 mA
	* Internal circuit and photo-coupler are insulated.

- Frequency output

Part No.	OPT563B-T4
Output	5 kHz ~ 15 kHz (at - rated torque ~ + rated torque)
Resolution	0.5 Hz or more
Non-linearity	0.01 %R.O.
Over range	[-OL] display under 4 kHz , [OL] display over 16 kHz
	* Internal circuit and photo-coupler are insulated.

* The frequency output convert the torque input signal from the sensor into 0 to 5 V of the logic signal. OPT-563B cannot calibrate the zero point and sensitivity.

* The analog outputfor torque can be selectable up to two points at the maximum from among voltage output, current output or the frequency output.
(The standard is a combination of the voltage output and current output.)

6-2.Analog output for rotation speed

- Voltage output

Part No.	OPT563B-R1
Output	DC ± 10 V (at - rated rotation speed ~ + rated rotation speed)
Load resistanse	2 kΩ or more
Load Capacity	0.1 μF or less
Resolution	1/12 000 or more
Non-linearity	0.05 % R.O.
Over range	[-OS] display under DC -11 V , [OS] display over DC11 V *Internal circuit and photo -coupler are insulated.

- Current output

Part No.	OPT563B-R2 (at rotation speed zero ~ + rated rotation speed) OPT563B-R3 (at - rated rotation speed ~ + rated rotation speed)
Output	DC4 mA ~ DC20 mA
Load resistanse	510 Ω or less
Resolution	1/12 000 or more
Non-linearity	0.05 % R.O.
Over range	[-OS] display under DC2.4 mA , [OS] display over DC21.6 mA *Internal circuit and photo -coupler are insulated.

- Frequency output

Part No.	OPT563B-R4
Output	50 000 Hz (at rotation speed of 25 000 rpm)
Non-linearity	0.01 %R.O.

* The frequency output outputs the input signal from the rotation detecter directry. OPT-563B cannot calibrate the zero and the sensitibity.
* The analog output on the rotational detecting function can be selected by the combination with either the voltage output or the current output and whether an frequency output exists.

7. Options

7-1.RS-232C interface

Part No. OPT563B-P74

Specifications

Baud rate	Selectable from 1 200, 2 400, 4 800, 9 600, 19 200, 38 400, 57 600 or 115 200 bps
Data bit length	Selectable from 7 bit or 8 bit
Parity bit	Selectable from none, even or odd number
Stop bit	Selectable from 1 bit or 2 bit
Terminator	Selectable from CR + LF or CR
Communication method	Half duplex
Synchronous method	Start-stop synchronous method
Transmission data	ASCII code

Pin configuration of RS-232 connector

Applicable plug : DE-9S-NR (by JAE)

Pin No.	Signal name
1	CD
2	TXD
3	RXD
4	N.C.
5	S.G.
6	N.C.
7	RTS
8	CTS
9	N.C.

* Plug for connector is not attached.
* The engagement fixation screw is inch type.
* Do not connect with N.C. pin.
* The internal circuit and the photo-coupler are insulated.

Functions

1) Reads out the torque value
2) Reads out the rotation speed value
3) Reads out the condition
4) Change of condition (A/Z, A/Z OFF, CHECK)
5) Reads out the function data
6) Change of function data
7) Communication error code (Error code for the communication)

7-2.RS-422/485 interface

Part No. OPT563B-P76

Specifications

Baud rate	Selectable from 1 200, 2 400, 4 800, 9 600, 19 200, 38 400, 57 600 or 115 200 bps
Data bit length	Selectable from 7 bit or 8 bit
Parity bit	Selectable from none, even or odd number
Stop bit	Selectable from 1 bit or 2 bit
Terminator	Selectable from CR+ LF or CR
Communication method	Half duplex
Synchronous method	Start-stop synchronous method
Address	Select one from 0 to 31
Transmission data	ASCII code
Cable length	Approx. 1 km
Numbers of connectable units	32 unit at the maximum (RS-422 : 10 units)
Termination	Built-in (Selects the presence by the connection of terminal board.)
Changeover of RS-422 and RS-485	Set by function
Equipped with the LED for I/O monitor	

Terminal configuration of RS-422/485

SDA	Differential output
SDB	Differential output
RDA	Differential input
RDB	Differential input
TRM	Termination resistance
S.G.	Signal ground

* The internal circuit and the photo-coupler are insulated.

Functions

1) Reads out the torque value
2) Reads out the rotation speed value
3) Reads out the condition
4) Change of condition (A/Z, A/Z OFF, CHECK)
5) Reads out the function data
6) Change of function data
7) Communication error code (Error code for the communication)

7-3.PROFIBUS interface

Part No. OPT563B-P70

Version PROFIBUS DP

Specifications

Baud rate: Selectable from 9.6 k, 19.2 k, 93.75 k, 187.5 k, 500 k, 1.5 M, 3 M, 6 M or 12 Mbps

Communication type: RS-485 bus

Station address: Select one from 0 to 125

Cable length

Baud rate (bps)	Total extension length (m)
9.6 k	1 200 or less
19.2 k	1 200 or less
93.75 k	1 000 or less
187.5 k	1 000 or less
500 k	400 or less
1.5 M	200 or less
3 M	100 or less
6 M	100 or less
12 M	100 or less

Connectable cable: Use the special cable for PROFIBUS

Connectable connector: Use the special cable for PROFIBUS

Termination: Use the connector with termination resistance.

Status LED: The state of the communication is indicated by two LED. (OP and ST)

Pin configuration of PROFIBUS connector

Pin No.	Signal name
1	N.C.
2	N.C.
3	RXD / TXD-P
4	CNTR-P
5	DGND
6	VP
7	N.C.
8	RXD / TDX-N
9	N.C.

* Plug for connector is not attached.

*Please use the connector,cable,etc,recommended by the PROFIBUS Organization.

* Do not connect with N.C. pin.

* The internal circuit and photo-coupler are insulated.

Functions

1) Reads out the torque value
2) Reads out the rotation speed value
3) Reads out the condition
4) Change the condition (A/Z, A/Z OFF, CHECK)
5) Reads out the function data
6) Change of the function data
7) Communication error code (Error code for the communication.)

7-4.CANopen interface

Part No. OPT563B-P71

Specifications

Baud rate	Selectable from 10 k, 20 k, 50 k, 100 k, 125 k, 250 k, 500 k, 800 k or 1 Mbps	
Node ID	Select one from 1 to 127.	
Cable length	Baud rate(bps)	Total extension length (m)
	10 k	1 000 or less
	20 k	1 000 or less
	50 k	1 000 or less
	100 k	600 or less
	125 k	500 or less
	250 k	250 or less
	500 k	100 or less
	800 k	50 or less
	1 M	25 or less
Connectable cable	Use the special cable for CANopen	
Connectable connector	Use the special cable for CANopen	
Termination	Use the connector built-in termination resistance.	
Status LED	The state of the communication is indicated by two LED. (RUN and ERR)	

Pin configuration of CANopen connector

Pin No.	Signal name
1	N.C.
2	CAN_L
3	CAN_GND
4	N.C.
5	CAN_SHLD
6	N.C.
7	CAN_H
8	N.C.
9	N.C.

* Plug for connector and cable are not attached.
* Use the connector and the cable conformed to CANopen standard CiA DR-303-1.
* Do not connect with N.C. pin.
* The internal circuit and photo-coupler are insulated.

Functions

1) Reads out the torque value
2) Reads out the rotation speed value
3) Reads out the condition
4) Communication error code (Error code for the communication.)

7-5.Combination of the options

OPT−563B−＊＊＊−＊＊＊−＊＊

1) Analog output type for torque

2) Analog output type for rotation speed

3) Type of digital output

1)
- T2: Current output for torque (at torque zero ~ + rated torque)
- T3: Current output for torque (at - rated torque ~ + rated torque)
- T4: Frequency output for torque
- T24: Current output for torque (at torque zero ~ + rated torque) + Frequency output for torque
- T34: Current output for torque (at - rated torque ~ + rated torque) + Frequency output for torque

2)
- R1: Voltage output for rotation speed
- R2: Current output for rotation speed (at rotation speed zero ~ + rated rotation speed)
- R3: Current output for rotation speed (at - rated rotation speed ~ + rated rotation speed)
- R4: Frequency output for rotation speed
- R14: Voltage output for rotation speed + Frequency output for rotation speed
- R24: Current output for rotation speed (at rotation speed zero ~ + rated rotation speed) + Frequency output for rotation speed
- R34: Current output for rotation speed (at - rated rotation speed ~ + rated rotation speed) + Frequency output for rotation speed

3)
- P70: PROFIBUS interface
- P71: CANopen interface
- P74: RS-232C interface
- P76: RS-422/485 interface

The analog output for torque can be selectable up to two points at the maximum from among voltage output, current output or the frequency output. (The standard is the voltage output.)
The analog output on the rotational detecting function can be selected by the combination with either the voltage output or the current output and whether an frequency output exists.
The digital output, one point is selectable from PROFIBUS, CANopen, RS-232C, RS-422/485 interface.

* Specifications and outline dimensions and so on which have printed may subject to change for the purpose of improvement without notice.