Digital Torque Meter TS-2800

Compact and space-saving design with high accuracy and high response for all of phase difference type torque detectors by Ono Sokki

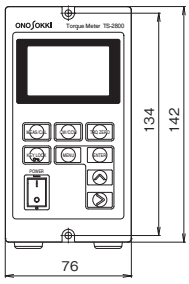
The TS-2800 performs calculation, display and output of torque and revolution speed by using signals from torque detector and rotation detector.
Can be used with our long-selling torque detectors MD/SS/DD/DSTP series (Phase difference method using gears) and TH series (Phase difference method using electromagnetic induction theory).

Notes:

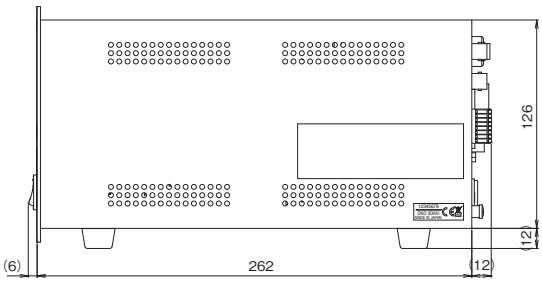
(1) The exclusive power cable (sold separately) is required when the TS-2800 is used on the voltage over 125V.
(The withstand voltage of the cable provided as standard:125V)
(2) Set up the time constant value of the analog output 63 ms or more when the TS-2800 is used with MD, SS series detectors.
(3) Please connect either one of SS type or TH type torque detector.

Option:

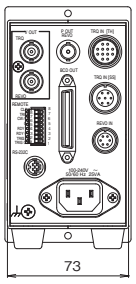
- **TS-0281** High-speed response output function for TH series:
  Adds three more selections of the response setup (0.8ms, 0.4ms or 0.16ms)
  Adds low-pass filter function (option only for the TH series)
- **TS-0282** Time constant change function for DD series:
  Replace the response setup to 63ms/16ms. (option only for the DD series)
- **TS-0283** BCD output function:
  Output digital data every second
- **TS-0284** Rotation pulse output function:
  Synchronously output 0-5V signal after waveform-shaping from a rotation detector



Front View



Side View



Rear View

Specification

■ **Applicable detector**
Torque detector
: TH type (Phase difference method using electromagnetic induction theory: TH series)
SS type (Phase difference method using gears: MD,SS, DD, DSTP Series)
Rotation detector
: Magneto-electric rotation detector (MP-981/9820)
Optical rotation detector (MD-0100series)

■ **Display**
Display : LCD
Display contents
: torque, revolution speed
Condition display
: Sensor mode, measurement ready, torque signal input, revolution signal input, revolution direction, analog output scale setting value
Display update interval
: Measurement value; 1s/10s/external
Condition display; 0.5s

■ **Torque measurement**
Number of display digits (with polarity)
: TH type: 4/5-digit selectable
Other than TH type: 4-digit
Measurement unit
: mN•m, N•m, kN•m
Measurement accuracy
: ±0.1 %/F.S. or ±0.2 %/F.S.
(depending on the accuracy of detector connected)
Compensation range of torque factor
: 0.8000 to 1.2000
N-0 compensation
: 5 points for each direction of CW/CCW
Other functions
: Zero setting, analog output calibration

■ **Torque analog output**
Output : Voltage (Signal commons of torque output and revolution speed output are isolated from main circuit of TS-2800. However, both commons are connected each other.)
Output voltage
: 0 to ±10V / F.S.
Voltage selection
: Selectable from 2V, 2.5V, 3.33V, 5V, 6.67V, 10V
Time constant
: TH type; 500ms, 63ms, 16ms, 1.6ms (standard)
0.8ms, 0.4ms, 0.16ms (added optionally)
SS type; 500ms and 63ms (standard)
63ms and 16ms (selectable either one of the pair optionally)
Low pass filter
: Available only TH type: 50Hz, 100Hz, 500Hz, 1kHz, 5kHz (added optionally)
Output accuracy
: ±0.1 %/F.S. or ±0.2 %/F.S.
(depending on the accuracy of detector connected)
Applicable connector
: C02 type (BNC) plug

■ **Revolution speed measurement**
Number of display digits
: 5-digit (0 to 99,999 r/min)
Measurement accuracy
: ±0.02%/F.S ±1 count
(10 Hz or more, 1-s average)
F.S. range : 200 to 100,000 r/min
Pulsation range of rotation detector
: 1 to 9999 P/R
Other function
: Analog output calibration
Applicable connector
: R03-PB6M

■ **Revolution speed analog output**
Output : Voltage (Signal commons of torque output and revolution speed output are isolated from main circuit of TS-2800. However, both commons are connected each other.)
Output voltage : 0 to +10 V / F.S.
Time constant : TH type; 0.16 ms
SS type; 63 ms
Output accuracy
: ±0.1 %/F.S.
Applicable connector
: C02 type (BNC) plug

■ **Revolution pulse output (added optionally)**
Number of output pulses
: Same as the input pulse
Output level : Lo; +0.5 V or less, Hi; +5±0.5 V
Applicable connector
: C02 type (BNC) plug

■ **Remote function**
Input signal : CW/CCW changeover, display/output clear, display/BCD trigger
Output signal
: Trigger output (synchronous updating), measurement ready
Signal format
: See page 15
Applicable connector
: FK-MC0.5/8-ST-2.5 (Made by Phoenix Contact) provided as standard

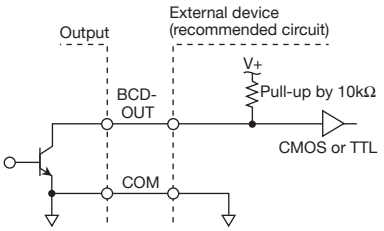
■ **RS-232C**
Function : Readout of measurement value and setting condition, setting of zero value, N-0 value, readout of other functions
Baud rate : 9600 bps (fixed)
Applicable cable
: AX-5022 (2m) with D-sub 9-pins one of the cable ends

■ **BCD output (added optionally)**
Function : Output of torque/revolution speed
Output update
: Every display update time
Signal format
: See [BCD Pin assignment] on this page
Applicable connector
: DX40-50P or DX30-50P(Made by HIROSE)

■ **General specification**
Power supply voltage
: AC 100 to 240 V, 50/60 Hz
Power consumption
: 28 VA
Operating temperature range
: 0 to +40 °C
Weight : Approx. 2 kg
Conforming standard
: CE marking, Low Voltage Directive, EMC directive
Accessory
: Remote terminal connector
Rubber foot x 4
Power cable (1.9 m)
Instruction manual

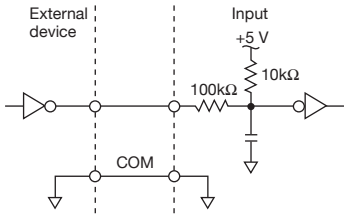
■ **Recommended Interface for BCD**

①**BCD output, polarity output, print command output**



Output format	Open collector
IC	74LS07
Withstand voltage	24 V max.
Sink current	32mA max.
Remained voltage	0.6 V max.

②**Hold input, busy input**



Lo level input voltage	0 to 1.4 V
Hi level input voltage	3 to 5.25 V
Input impedance	1 kΩ

■ **BCD Pin Assignments**

Pin No.	Signal name		Pin No.	Signal name	
1	Data output (torque)	1×10^{0}	26	Data output (revolution)	2×10^{1}
2		2×10^{0}	27		4×10^{1}
3		4×10^{0}	28		8×10^{1}
4		8×10^{0}	29		1×10^{2}
5		1×10^{1}	30		2×10^{2}
6		2×10^{1}	31		4×10^{2}
7		4×10^{1}	32		8×10^{2}
8		8×10^{1}	33		1×10^{3}
9		1×10^{2}	34		2×10^{3}
10		2×10^{2}	35		4×10^{3}
11		4×10^{2}	36		8×10^{3}
12		8×10^{2}	37		1×10^{4}
13		1×10^{3}	38		2×10^{4}
14		2×10^{3}	39		4×10^{4}
15		4×10^{3}	40		8×10^{4}
16		8×10^{3}	41		N.C. (not connected)
17		1×10^{4}	42		Torque polarity output "-"
18		2×10^{4}	43		Torque polarity output "+"
19		4×10^{4}	44		N.C. (not connected)
20		8×10^{4}	45		N.C. (not connected)
21	Data output (revolution)	1×10^{0}	46		N.C. (not connected)
22		2×10^{0}	47		Hold input
23		4×10^{0}	48		Busy input
24		8×10^{0}	49		Print command output
25		1×10^{1}	50		Common

■ **RS-232C Pin Assignments**

Pin No.	Signal name	Pin No.	Signal name
1	–	5	RST (Transmission request)
2	RxD (Data reception)	6	–
3	TxD (Data transmission)	7	SG (Signal ground)
4	CTS (Clear to transmission)	8	–