

# TM320

## HIGH-SPEED TORQUE MONITOR FOR UTM III / UTM II / UTM V



### Suitable torque meter UTM III UTM II UTM V

- High-speed sampling at 16000 times/sec.
- Equipped with display and comparison function for connection data\*1 of UTM III
- Torque, rotation speed and power(\*2) are displayed simultaneously.
- Hold function (Sample, Peak, Bottom, P-P, Average)
- Upper/lower comparators function (ALM HI, HI, OK, LO, ALM LO)
- Equipped with data memory function (Torque, rotation speed, power, the latest 30 items are recorded)
- The unit supplies electric power to UTM III / UTM II / UTM V.

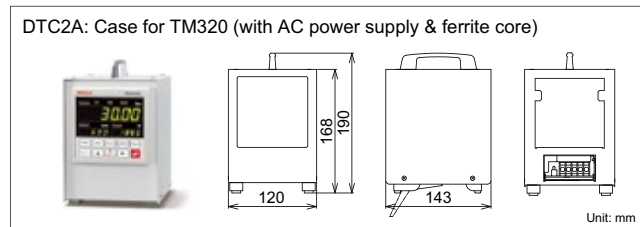
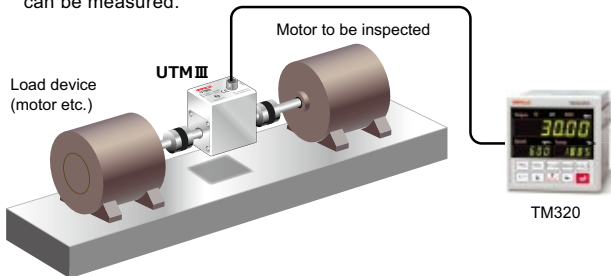
\*1 RS-485 interface (torque, rotation speed)

\*2 Power (W) = 2π × Torque (N m) × Rotation speed (rpm) / 60

\* Please consult us when connecting to UTF II.

### ■ Application: Quality test of small size motor

Torque and dynamic attribution against rotation speed can be measured.

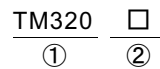


### Specifications

Analog section	Torque sensor input (voltage input)	-10 to +10 V (UTM III) Input resistance 1 MΩ or more -5 to +5 V (UTM II / UTM V) Input resistance 1 MΩ or more
	Signal input range	Accuracy Non-linearity: Within 0.02% FS±1 digit Zero drift: Within 0.2 mV/°C RTI Gain drift: Within 0.01%/°C
A/D converter	A/D converter	Speed: 16000 times/sec. Resolution: 24 bit (binary) 1/30000 with respect to 10 V
	Digital low pass filter	PASS, 3 Hz to 1 kHz
Voltage monitor output	Linked to the output voltage of the torque meter	
	Pulse input for rotation speed (Open collector) (UTM III / UTM II / UTM V)	Conforming to the maximum rotation speed of UTM III / UTM II / UTM V
	Maximum input frequency	Selectable from 15, 10, 5, 3, or 2 rpm (when pulse rate is 4 ppr)
	Minimum input frequency	Selectable from 60, 40, 20, 12, or 8 rpm (when pulse rate is 1 ppr)
Minimum detection pulse width	50 μs	
	Circuit configuration	No-voltage contact input (minus common) Open collector connectable (Ic = Approx. 10 mA)
Display section	Display	Main display: Character height 15 mm Numerical display by 7-segment green LED (5-digit+sign) Sub display: Character height 8 mm Numerical display by 7-segment green LED (5-digit)
	Indicated value	Main display: 5-digit -99999 to +99999 Signs: Minus sign on most significant digit Sub display: 5-digit -19999 to +99999 Signs: Minus sign on most significant digit (No minus sign for rotational speed)
	Decimal point	0, 0.0, 0.00, 0.000 (Only a torque and a power. Not available for rotation speed)
	Display frequency	Selectable from 3, 6, 13, and 25 times/sec.
	Status display	HI / LO / HOLD
Hold	Sample, Peak, Bottom, P-P, Average	
	Hold section setting (All section · External signal · External signal+Time · Level+Time)	
External I/O section	External input (4)	Hold control / Hold reset / Digital Zero / Record data clear Dry contact input circuit (minus common type), Ic = 10 mA or less
	External output (13)	Torque HI/LO limit comparison (alarm HI · HI · OK · LO · alarm LO) / Rotation speed HI/LO limit comparison (alarm HI · HI · OK · LO · alarm LO) / Hold complete / RUN / Timing output / Absolute value display Open collector output circuit (sink type), Vceo = 30 V (max) Ic = 30 mA (max)
Interface	SIF: 2-wire serial interface	
	BCO: BCD parallel data output interface (Option)	
	D3V: D/A converter voltage output (3 ch) (Option)	
	DAV: D/A converter voltage output (Option)	
	DAI: D/A converter current output (Option)	
232: RS-232C communication interface (Option)		
USB: USB interface (Option)		
* Only one option can be installed.		
General performance	Power supply voltage	DC 24 V±15%
	Power consumption	8 W typ.
	Operating conditions	Operation temperature: -10 to +50°C Storage temperature: -40 to +80°C Humidity: 85% RH or less (non-condensing)
	Dimension	96(W) × 96(H) × 138(D) mm (Not including projections)
Weight	Approx. 1.2 kg	
	Attachments	Operation manual ..... 1 Unit seal ..... 1 External input/output connector ..... 1 Operating tool ..... 1 Connector for BCD output (with BCO option) ..... 1 (with D/A converter (3 ch) option) ..... 1 Mini screwdriver (with D/A converter option) ..... 1 Ferrite core ..... 1
Optional accessories	CA372-I/O: Cable with FCN connector at one-end 3 m	CA81-USB: miniUSB-computer USB cable 1.8 m
	CATM321-M: Cable for UTM III connection 2 m	CATM351-M: Cable for UTM III connection 5 m
	CATM21-M: Cable for UTM II / UTM V connection 2 m	CATM51-M: Cable for UTM II / UTM V connection 5 m
	CN34: D-Sub9p connector for RS-232C	CN50: FCN series I/O connector (with cover)
	CN51: BCD output connector	(Same as the attachment)
	CN73: D/A converter (3 ch) connector	CN55: FCN series I/O connector (with diagonal cover)
	CN90: Waterproof plastic connector for UTM II / UTM V	DTC2A: Case for TM320 (with AC power supply & ferrite core)
	E04SR21132: Ferrite core (Same as the attachment)	CN92: UTM III connector
TSU03: Lightning surge protector (DC)	GMP96x96: Rubber packing	
CE marking certification	EMC directives EN61326-1	

\* Please note that there are possibilities of individual differences in a color tone on display devices such as LEDs, fluorescent display tubes and LCDs due to manufacturing process or production lots.

### Structure of product code



① Standard unit

#### ② Interface

Sign	Interface
Standard	SI/F

↓ One optional interface can be added in addition to the standard interface.

BCO	BCD output (Sink type)
D3V	D/A converter voltage output (3 ch)
DAV	D/A converter voltage output
DAI	D/A converter current output
232	RS-232C
USB	USB

### External dimension

