

# TM320

## HIGH-SPEED TORQUE MONITOR FOR UTMⅢ/UTMⅡ



### Suitable torque meter UTMⅢ UTMⅡ UTMV UTF

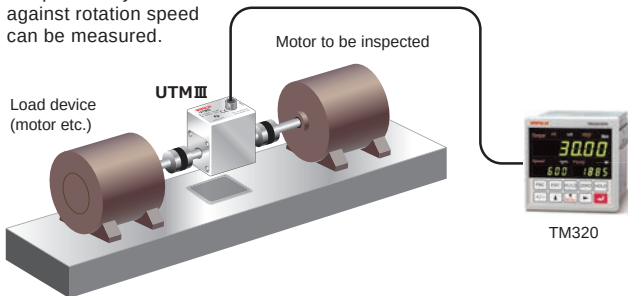
- High-speed sampling at 16kS/s!!
- Equipped with display connection data(\*1) of UTMⅢ/UTF and comparison function
- Torque, rotation speed and power(\*2) are displayed simultaneously.
- Hold function (Sample, Peak, Valley, P-P, Average)
- Upper/lower comparators function (ALM HI, HI, OK, LO, ALM LO)
- Equipped with data memory function (Torque, rotation speed, power, the latest 30 items are recorded)
- The unit supplies electric power to UTMⅢ/UTMⅡ/UTMV.

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

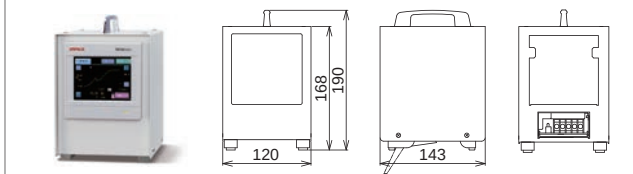
\*2 Power(W) = 2π×Torque(Nm)×Rotation speed(rpm)/60

### Application : Quality test of small size motor

Torque and dynamic attribution against rotation speed can be measured.



DTC2A : Case for TM320 (with AC power supply & ferrite core)



### Specifications

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analog section       | • Torque sensor input (voltage input)<br>Signal input range<br>-10 to +10V (UTMⅢ/UTF (Option) ) Input resistance 1MΩ or more<br>-5 to +5V (UTMⅡ/UTMV) Input resistance 1MΩ or more<br>Accuracy<br>Non-linearity : Within 0.02%/FS±1digit<br>Zero drift : Within 0.2mV/°C RTI<br>Gain drift : Within 0.01%/°C<br>A/D converter<br>• Speed...16000 times/sec.<br>• Resolution...24bit (binary) 1/30000 with respect to 10V<br>Digital low pass filter PASS, 3Hz to 1kHz.                                                                                                                                                     |
|                      | • Voltage output Input voltage cuff (For test point)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Display section      | • Pulse input for rotation speed (Open collector) (UTMⅢ/UTMⅡ/UTMV)<br>Maximum input frequency Based on UTMⅢ/UTMⅡ/UTMV<br>Minimum input frequency Select from 15, 10, 5, 3, or 2 rpm (when pulse rate is 4 ppr)<br>Select from 60, 40, 20, 12, 8 rpm (when pulse rate is 1 ppr)<br>Minimum detection pulse width 50μs<br>Circuit configuration No-voltage contact input (minus common)<br>Open collector connectable (Ic = Approx. 10mA)                                                                                                                                                                                    |
|                      | • Pulse input for rotation speed (Line driver compliant with RS-422A)(UTF(Option))<br>Maximum input frequency Based on UTF<br>Circuit configuration Line driver compliant with RS-422A                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Hold                 | Display Main display : Character height 15mm Numerical display by 7-segment green LED (5-digit+sign)<br>Sub display : Character height 8mm Numerical display by 7-segment green LED (5-digit)<br>Indicated value Main display : 5-digit -99999 to +99999 Signs : Minus sign on most significant digit<br>Sub display : 5-digit -19999 to +99999 Signs : Minus sign on most significant digit<br>(No minus sign for rotational speed)<br>Decimal point 0, 0.0, 0.00, 0.000 (Only a torque and a power. Rotation speed is nothing)<br>Display frequency Select from 3, 6, 13, and 25 times/sec.<br>Status display HI/LO/HOLD |
|                      | Sample, Peak, Valley, P-P, Average<br>Hold section setting (All section • External signal • External signal+Time • Level+Time)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| External I/O section | External input Hold control / Hold reset / Digital Zero / Record data clear<br>(4) Dry contact input circuit (minus common type), Ic = 10mA or less<br>External output Torque HI/LO limit comparison (alarm HI • HI • OK • LO • alarm LO) /<br>(13) Rotation speed HI/LO limit comparison (alarm HI • HI • OK • LO • alarm LO) /<br>Hold complete / RUN / Timing output / Absolute value display<br>Open collector output circuit (sink type), Vceo = 30V (max) Ic = 30mA (max)                                                                                                                                            |
|                      | Interface SIF : 2-wire serial interface 485 : RS-485 interface (UTMⅢ/UTF designated)<br>BCO : BCD parallel data output interface (Option)<br>232 : RS-232C communication interface (Option)<br>D3V : D/A converter voltage output (3ch) (Option)<br>DAV : D/A converter voltage output (Option) DAI : D/A converter current output (Option)<br>USB : USB interface (Option) * Only one option can be installed.                                                                                                                                                                                                            |
| Option               | UTF : UTF-dedicated specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                      | General performance Power supply voltage DC24V±15%<br>Power consumption 8W typ.<br>Operating conditions Operation : -10 to +50°C Storage -40 to +80°C<br>Humidity : 85%RH or less (non-condensing)                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Attachments          | Dimensions 96(W)×96(H)×138(D) mm (Projections excluded)<br>Weight Approx. 1.2kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                      | Operation manual ..... 1 Unit seal ..... 1<br>External input/output connector ..... 1 Operating tool ..... 1<br>Connector for BCD output (with BCO option) ..... 1 (with D/A converter (3ch) option) ..... 1<br>Mini screwdriver (with D/A converter option) ..... 1 Ferrite core ..... 1                                                                                                                                                                                                                                                                                                                                  |
| Optional accessories | CA372-I/O: Cable with FCN connector at one-end 3m<br>CATM321-M: Cable for UTMⅢ/UTF connection 2m<br>CATF-COM-2M-M: Communication cable for UTF 2m<br>CATM21-M: Cable for UTMⅡ/UTMV connection 2m<br>CN34-D-Sub9p connector for RS-232C<br>CN51-BCD output connector<br>CN73-D/A converter (3ch) connector<br>CN90-Waterproof plastic connector for UTMⅡ/UTMV<br>E04SR21132 : Ferrite core<br>TSU03: Lightning surge protector (DC)                                                                                                                                                                                         |
|                      | CE marking certification EMC directives EN61326-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

### Structure of product code

TM320



①

②

③

#### ① Standard unit

#### ② Suitable torque meter

| Sign     | Specification     |
|----------|-------------------|
| Standard | UTMⅢ/UTMⅡ/UTMV    |
| UTF      | UTF specification |

Note 1) UTMⅢ/UTMⅡ/UTMV cannot be connected simultaneously.

Note 2) If UTF is selected, UTMⅢ/UTMⅡ/UTMV cannot be connected.

#### ③ Interface

| Sign     | Interface                                                      |
|----------|----------------------------------------------------------------|
| Standard | Standard unit : SIF, RS-485<br>UTF specification : SIF, RS-485 |

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

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

### External dimension

