

UTM III ROTATING TORQUE METER



Supported dual-range now!

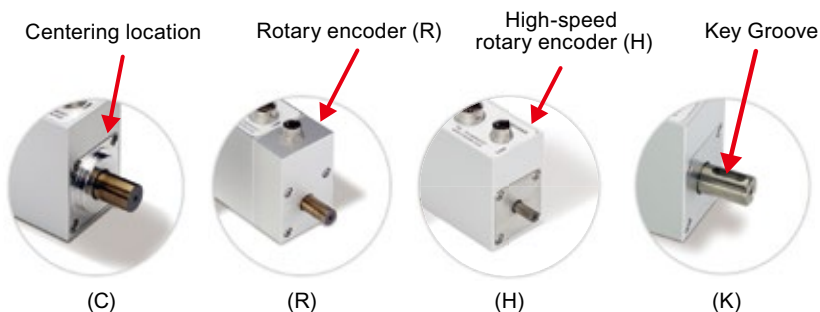


New series with 5 kHz high-speed response & noise-insensitive digital output!

- Compared to UTM II, disturbances on accuracy by radial and thrust loads and during high-speed rotation were dramatically reduced
- Maximum rotational speed 40000 rpm *1
- Available in 17 different capacities ranging from 0.05 to 10000 N m
- Analog bandwidth 5 kHz with high-speed sampling rate of 20 kHz
- Safe overload of 500%
- ± 10 V of analog output Full Scale
- Digital output via RS-485
- No need to exchange torque meter! Range-switching method capable of measuring two capacities
 - 2 N m \leftrightarrow 0.1 N m
 - 10 N m \leftrightarrow 0.5 N m
 - 5 N m \leftrightarrow 0.25 N m
- Digital zero function via external signal
- Equipped with pulse output for rotation detection (4 pulses per 1 rotation)
 - 60 pulses/revolution is available *1

*1: 10 N m or below available by custom order.

Abundant options available



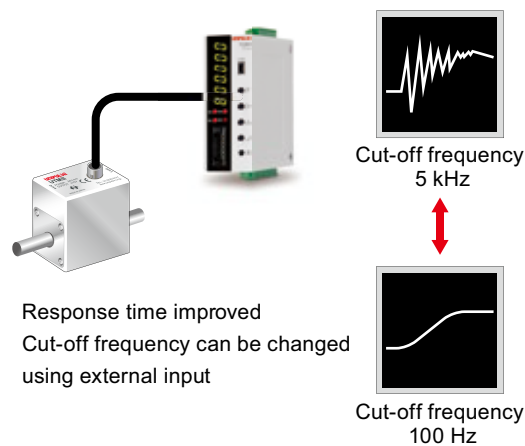
(C) Easy aligning
Ideal when applying for automatic fitting

(R) Ideal for detecting torque fluctuation along with angle change

(H) For rotational-slip prevention

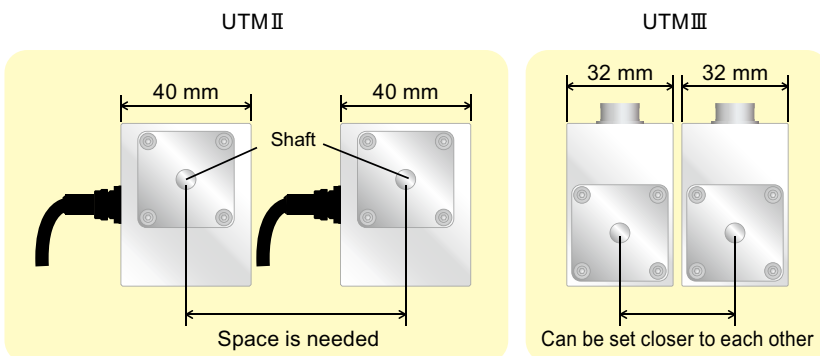
* Please check P.9 for details on centering location (C), P.8 for details on rotary encoder (R)(H) and key groove (K).

Frequency bandwidth of 5 kHz, variable filter



Response time improved
Cut-off frequency can be changed using external input

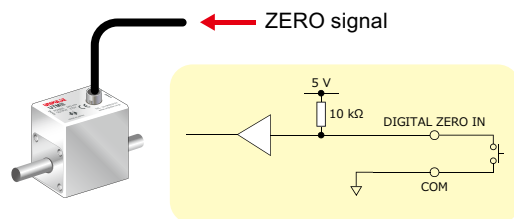
More compact for side-by-side measurement



* Dimensions above are for 0.05 to 2 N m capacity type.

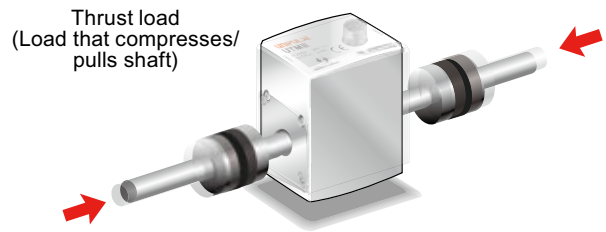
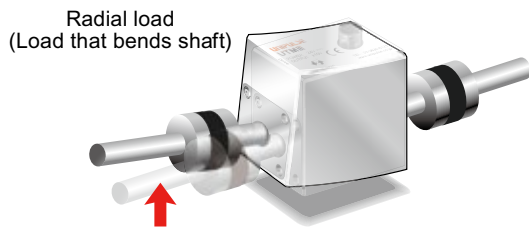
Slimmed down body and repositioned connector allow shafts to be setup closer from each other.

Added zero correction function with external signal



Shifted output due to setup conditions can be set to zero with external signal.

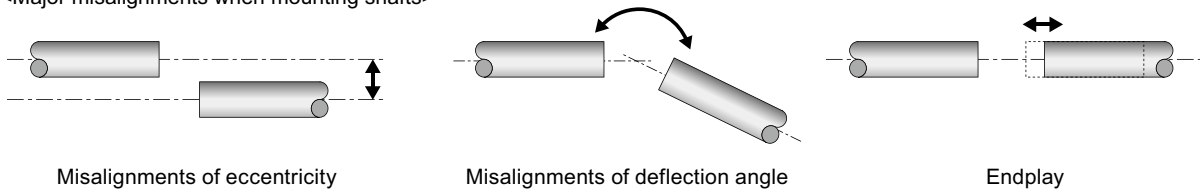
Influences that radial and thrust loads exert on effective accuracy were dramatically reduced.



■ Why is load other than torque applied at torque meter?

For torque measurement, when interlocking shafts, misalignments on shaft center as illustrated below occur by all means. The devices that absorb radial and thrust loads caused by such misalignments are couplings. However, even the couplings cannot completely absorb such radial and thrust loads, resulting in an impact on torque measurement.

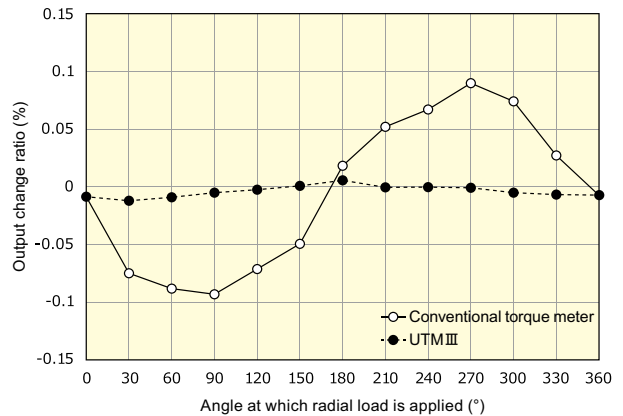
<Major misalignments when mounting shafts>



■ Experimental data

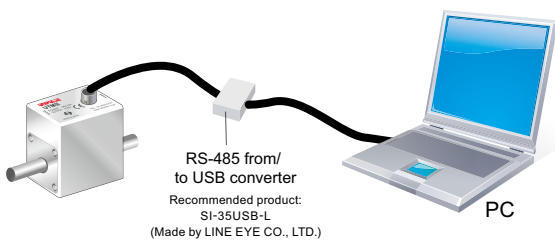
The right figure shows the change in output when one shaft end of a torque meter with a rated torque of 2 N m is fixed and a 7 N radial load is applied to the other shaft end via a bearing. Output changes depending on rotation angle. While output value changes 0.1% at maximum with conventional torque meter, output value changes less than 0.01% with UTMIII.

The table on P.7 standardizes the allowable shaft end load. UTMIII releases your concern about accuracy due to misalignment.



Digital output via RS-485

Enable to retrieve the digital signal to PC.



■ Application software for RS-485

Two type torque waveforms, before and after the filter are displayed, allowing you to check whether the filter settings are appropriate.

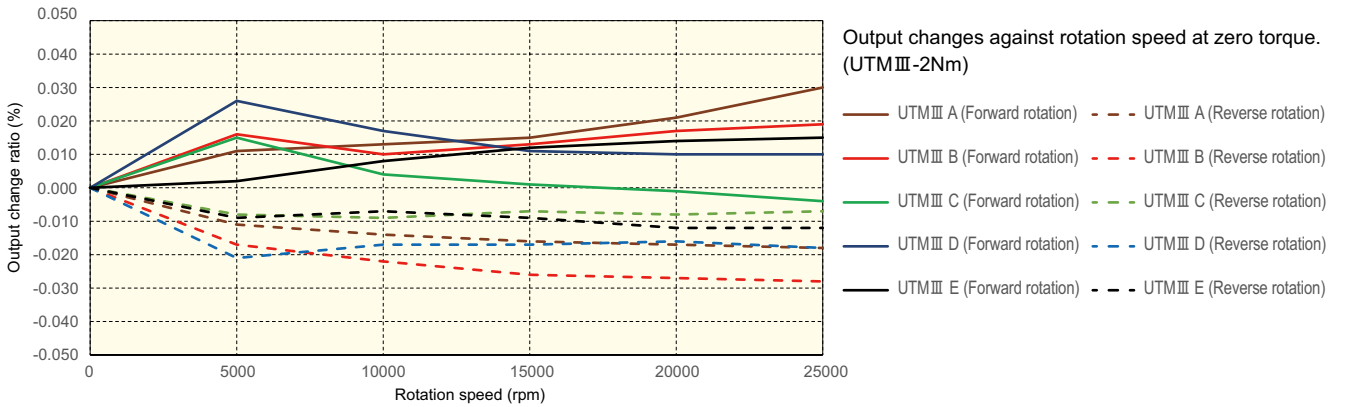
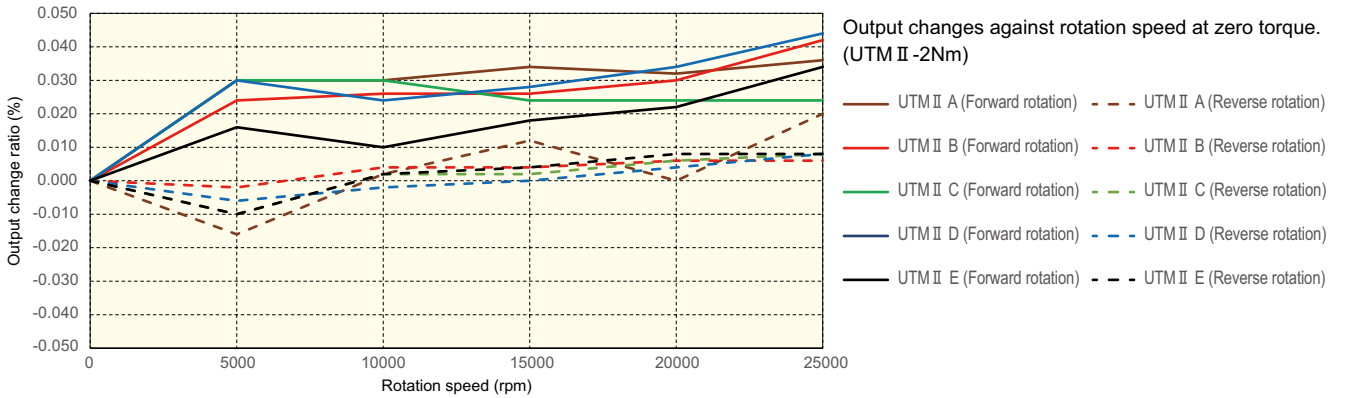
- Display waveforms of torque and rotational speed
- Waveform can be saved in CSV format
- Data of time, torque, and rotational speed can be saved.



Application software can be downloaded from our official website. The dedicated software can be run multiply, and it is possible to connect multiple UTMIII's with one PC.

At high rotation speeds, the output of a rotating torque meter changes due to the rolling friction of the load-side bearing and the centrifugal force.

The figures below show the output changes against the rotation speed for the five sets of UTMII-2Nm (Upper) and UTMIII-2Nm (Lower).



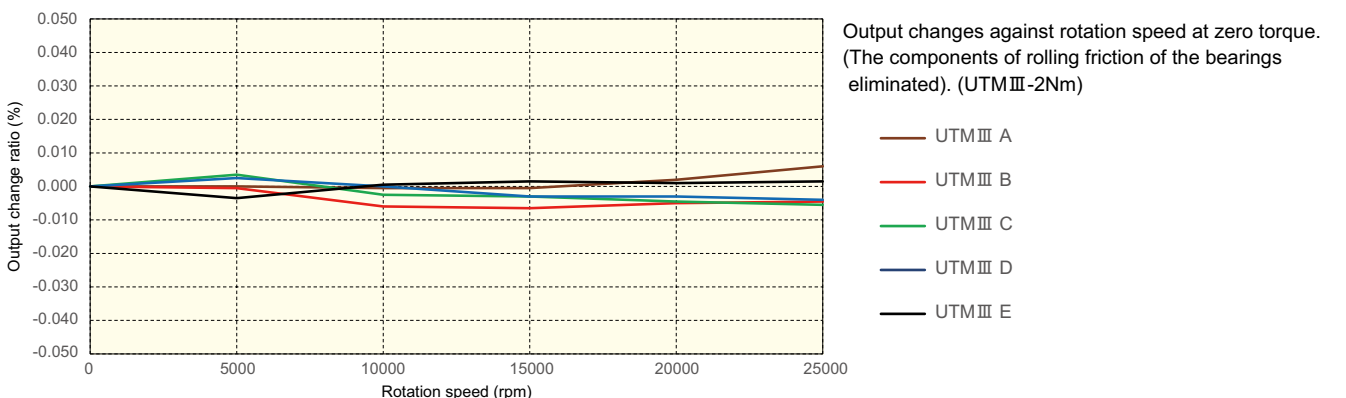
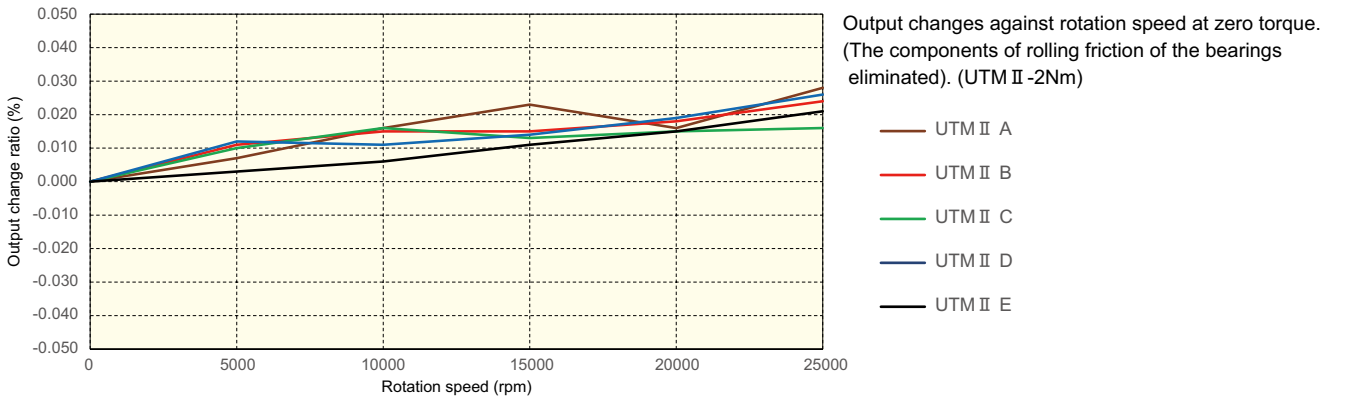
The sign of the output changes due to the rolling friction changes if the rotational direction changes, but the sign of the output due to the centrifugal force does not change.

The figures below (Upper for UTMII-2Nm and Lower for UTMIII-2Nm) are plots of the values obtained by subtracting the reverse rotation values from the forward rotation values.

For UTM II, the output changes upward according to the rotation speed, whereas for UTM III, the output changes are very small.

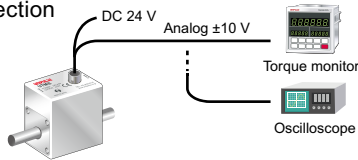
In bearingless UTM III, in principle, any rolling friction does not occur.

In UTM III, the output changes due to the centrifugal force are tiny, so it can accurately measure rotating torque at high rotation speed.

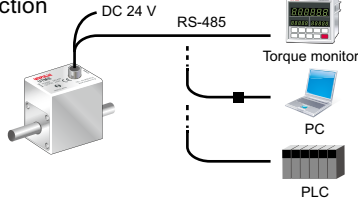


Connection example

● Analog connection

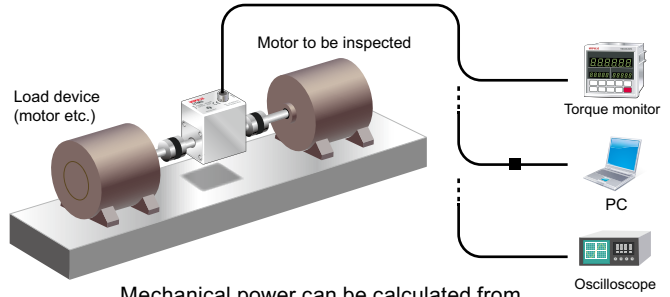


● Digital connection



Sample application

● Motor test bench



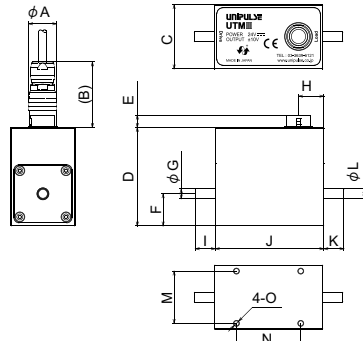
Mechanical power can be calculated from torque and rotation speed of UTMIII

Specifications

Measurement range	±0.05 N m	±0.1 N m	±0.2 N m	±0.5 N m	±1 N m	±2 N m ¹	±5 N m ¹	±10 N m ¹	±20 N m	±50 N m	±100 N m	±200 N m	±500 N m	±1000 N m	±2000 N m	±5000 N m	±10000 N m							
Power supply	DC 24 V ±15%																							
Consumption current	100 mA or less									150 mA or less				180 mA or less										
Output range	±10 V DC Load resistance must be more than 5 kΩ																							
Responsivity	5 kHz																							
Rotation signal	4 pulses per 1 rotation Open collector Max. ratings 30 V, 10 mA																							
Digital filter	1 Hz to 1 kHz (Depending on settings) PASS 5 kHz																							
Safe overload	500% FS																							
Non-linearity	0.03% FS or less																							
Hysteresis	0.03% FS or less																							
Repeatability	0.03% FS or less																							
Operation temperature	-10 to +50°C																							
Temperature effect on zero	0.01% FS/°C or below																							
Temperature effect on span	0.01% FS/°C or below																							
Maximum rotation speed	25000 rpm ²								20000 rpm		15000 rpm	12000 rpm	10000 rpm	7000 rpm	6000 rpm	5000 rpm	4000 rpm							
Torsional spring constant (N m/rad)	5.67	11.57	26.10	93.1	188	414	691	1851	5386	8428	17.3×10 ³	41.7×10 ³	117×10 ³	377×10 ³	717×10 ³	1649×10 ³	3255×10 ³							
Maximum torsional angle (rad)	8.81 ×10 ⁻³ (0.505°)	8.64 ×10 ⁻³ (0.495°)	7.66 ×10 ⁻³ (0.439°)	5.37 ×10 ⁻³ (0.308°)	5.32 ×10 ⁻³ (0.305°)	4.83 ×10 ⁻³ (0.277°)	7.24 ×10 ⁻³ (0.415°)	5.40 ×10 ⁻³ (0.310°)	3.71 ×10 ⁻³ (0.213°)	5.93 ×10 ⁻³ (0.340°)	5.78 ×10 ⁻³ (0.331°)	4.79 ×10 ⁻³ (0.275°)	4.28 ×10 ⁻³ (0.246°)	2.65 ×10 ⁻³ (0.152°)	2.79 ×10 ⁻³ (0.160°)	3.03 ×10 ⁻³ (0.174°)	3.07 ×10 ⁻³ (0.176°)							
Inertia moment (kg m ²)	8.48×10 ⁻⁷	8.58×10 ⁻⁷	8.70×10 ⁻⁷	1.46×10 ⁻⁶	1.49×10 ⁻⁶	1.39×10 ⁻⁶	3.56×10 ⁻⁶	3.66×10 ⁻⁶	2.59×10 ⁻⁶	2.66×10 ⁻⁶	6.59×10 ⁻⁶	1.40×10 ⁻⁵	4.70×10 ⁻⁵	2.90×10 ⁻⁵	5.89×10 ⁻⁵	2.01×10 ⁻⁴	5.16×10 ⁻⁴							
Permissible shaft end load ³	Radial	0.12 N	0.25 N	0.3 N	0.5 N	1 N	8 N	15 N	20 N	23 N	60 N	60 N	90 N	160 N	300 N	400 N	500 N	1000 N	1200 N					
	Thrust	3 N	4 N	5 N	6 N	8 N	30 N	40 N	100 N	100 N	360 N	400 N	500 N	800 N	1800 N	3000 N	4500 N	7000 N	11000 N					
	Radial (R, RC, RK, RCK)	0.07 N	0.14 N	0.17 N	0.3 N	0.6 N	5 N	7 N	13 N	20 N	25 N	60 N	100 N	200 N	-	-	-	-	-					
	Thrust (R, RC, RK, RCK)	3 N	4 N	5 N	6 N	8 N	30 N	40 N	100 N	360 N	400 N	500 N	800 N	1800 N	-	-	-	-	-					
Dimension (case size) W×H×D (mm)	54×49×32				57×54×37				70×63×47		67×63.5×56		67×68×61		67×78×71		86×103×98		86×119×111		97×141×137		103×166×162	
Total length	74 mm			84 mm			97 mm		150 mm	170 mm	177 mm	187 mm	217 mm	286 mm	306 mm	387 mm	447 mm							
Shaft diameter	φ 5 mm			φ 8 mm ⁴			φ 12 mm ⁴		φ 20 mm	φ 25 mm	φ 30 mm	φ 40 mm	φ 60 mm	φ 70 mm	φ 70 mm	φ 90 mm	φ 110 mm							
Approx. weight	140 g			160 g			250 g		670 g	1.1 kg	1.4 kg	2.6 kg	7.4 kg	10.6 kg	21.7 kg	36.2 kg								
Supplied cable	12-conductor flexible cable (2 m) Cable end: 13 wires → Cable length is switchable to 5 m (Option: UTMIII-L5)																							
Optionally available cable	CATM351: 12-conductor flexible cable (5 m) Cable end: 13 wires CATM312: 12-conductor flexible cable (10 m) Cable end: 13 wires																							
Option	Key groove																							
	Rotary encoder	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Key groove & Rotary encoder	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Centering location	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Key groove & Centering location	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Rotary encoder & Centering location	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Key groove & Rotary encoder & Centering location	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CE marking certification	2011/65/EU+(EU)2015/863, 2014/30/EU(EN61326-1, EN61326-2-3)																							

*1 The measurement range can be changed to the dual-range specification of 20% FS. Please consult with us for capacities other than 2, 5 and 10 N m.
 *2 0.05 to 10 N m can be changed to a maximum rotation speed of 40000 rpm.
 *3 The allowable shaft end load (N) for radial and thrust is the value that guarantees that the torque output will not be affected by 0.03% FS or less when these loads are applied.
 *4 The shaft can be changed to a hollow shaft. Contact us for more details.

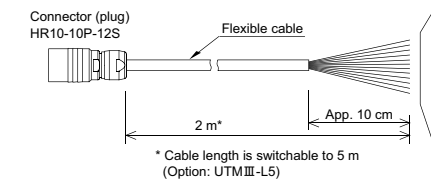
External dimension



Unit: mm

Measurement range	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0.05 N m															
0.1 N m							5h7		10		10	5h7			
0.2 N m			32	49		16		12		54			26		
0.5 N m														32	M3 Depth 5
1 N m							8h7		15		15	8h7			
2 N m															
5 N m															
10 N m															
20 N m	14	31.5			6.1		24	20h7	23	40	70	40	40		M3 Depth 6
50 N m			47	63			56	63.5	28	25h7	55	55	25h7	46	38
100 N m			61	68			61	68	30	30h7	18.5	60	67	60	30h7
200 N m			71	78			71	78	35	40h7	75	75	40h7	63	30
500 N m			98	103			98	103	49	60h7	28	100	60h7	86	66
1000 N m			111	119			111	119	57.5	70h7	28	110	60h7	100	69
2000 N m			137	141			137	141	68.5	90h7	33.5	145	97	145	90h7
5000 N m			162	166			162	166	81	110h7	36.5	172	103	172	110h7
10000 N m															M8 Depth 12

■ Supplied cable Flexible cable



- 1 : Red PWR (+24 V)
- 2 : Black PWR (0 V)
- 3 : Green SIG OUT (+10 V)
- 4 : White SIG GND
- 5 : Yellow PULSE OUT +
- 6 : Brown PULSE OUT -
- 7 : Orange DIGITAL ZERO IN
- 8 : Purple RS-485 TX +
- 9 : Gray RS-485 TX -
- 10 : Pink RS-485 RX +
- 11 : Light blue RS-485 RX -
- 12 : Blue COM

2 PWR (0 V), 4 SIG GND & 6 PULSE OUT - are separate isolated ground.
 2 PWR (0 V) & 12 COM are connected internally.

Full of measuring instruments dedicated for UTMIII

TM320

High-speed sampling Torque, rotation speed, and power are displayed simultaneously.

More details: P.27

TM380

High-speed sampling Torque, rotation speed, and angle are displayed simultaneously.

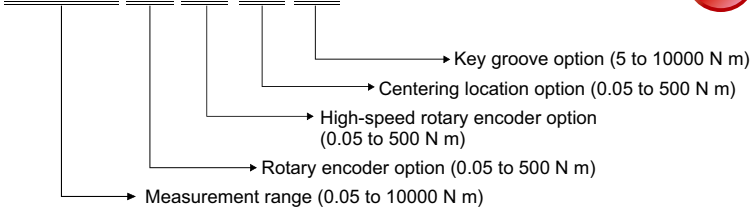
More details: P.28

TC80

High-speed sampling Torque, rotation speed, and torque-angle curve can be monitored.

More details: P.29

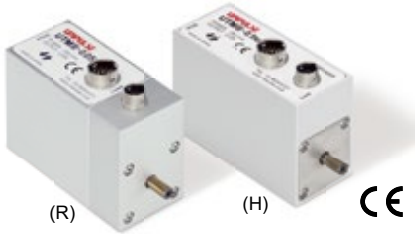
UTM III-0.05Nm (R) (H) (C) (K)



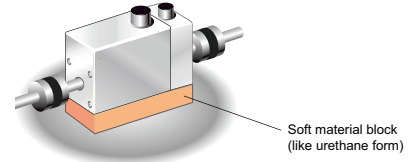
Measurable rotation speed is significantly improved!
High-speed rotary encoder option is now available
 The lineup is planned to expand to 10000 N m

- For 0.05 to 500 N m, a rotary encoder option and centering location option can be added. Model numbers are UTM III - ○Nm(RC) respectively.
- You can add both rotary encoder and key groove options for 5 to 500 N m capacity type. Model numbers are UTM III - ○Nm(RK) respectively.
- You can add both centering location and key groove options for 20 to 500 N m capacity type. Model numbers are UTM III - ○Nm(CK) respectively.
- For 20 to 500 N m, a rotary encoder option, centering location option and key groove option can be added. Model numbers are UTM III - ○Nm(RCK) respectively.

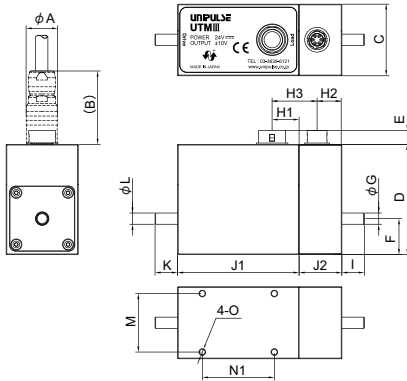
(R) (H) Rotary encoder option: 0.05 to 500 N m



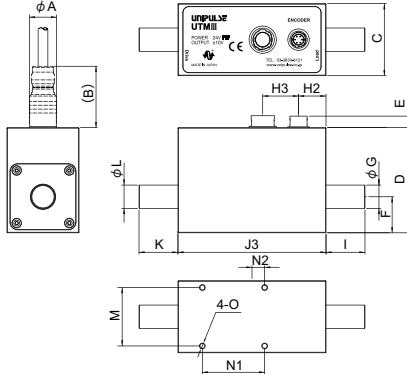
- Optical encoder
- Ideal for detecting torque versus angle
- Mounting instruction
Fix the main unit to prevent it from moving in rotational direction.
- Torque signal (analog ± 10 V) and rotation angle signals (A and B phase line driver outputs) are outputted.



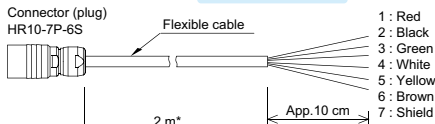
UTM III-0.05Nm(R) to 500Nm(R)



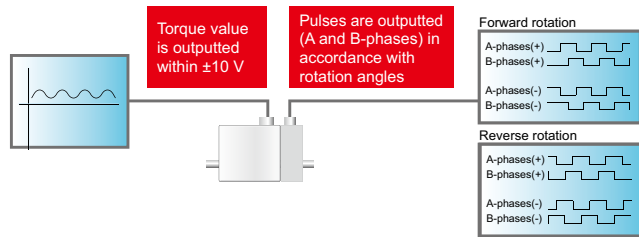
UTM III-0.05Nm(H) to 500Nm(H)



Supplied cable Flexible cable



* Cable length is switchable to 5 m (Option: UTM III-R5)



Measurement range	Pulses per rev.		Maximum measurable rotation speed (rpm)		Torsional spring constant (N m/rad)	Maximum torsional angle (rad)		Inertia moment (kg m ²)		Approx. weight (g)		
	(R)	(H)	(R)	(H)		(R)/(H)common	(R)/(H)common	(R)	(H)	(R)	(H)	
0.05 N m	3600	360	5000	25000	5.55	$9.01 \times 10^{-3} (0.516^\circ)$	1.39×10^{-6}	1.26×10^{-6}	190	185		
0.1 N m					11.08	$9.02 \times 10^{-3} (0.517^\circ)$	1.40×10^{-6}	1.27×10^{-6}				
0.2 N m					23.73	$8.43 \times 10^{-3} (0.483^\circ)$	1.41×10^{-6}	1.28×10^{-6}				
0.5 N m					88.32	$5.66 \times 10^{-3} (0.324^\circ)$	1.90×10^{-6}	1.81×10^{-6}	210	207		
1 N m					169.41	$5.90 \times 10^{-3} (0.338^\circ)$	1.93×10^{-6}	1.84×10^{-6}				
2 N m					333.57	$6.00 \times 10^{-3} (0.344^\circ)$	1.83×10^{-6}	1.74×10^{-6}				
5 N m					831	$6.02 \times 10^{-3} (0.345^\circ)$	4.18×10^{-6}	4.16×10^{-6}	320	306		
10 N m					1492	$6.70 \times 10^{-3} (0.384^\circ)$	4.28×10^{-6}	4.26×10^{-6}				
20 N m					4390	$4.56 \times 10^{-3} (0.261^\circ)$	2.85×10^{-5}	3.03×10^{-5}				
50 N m					720	2500	20000	7578	$6.60 \times 10^{-3} (0.378^\circ)$	2.92×10^{-5}	3.10×10^{-5}	780
100 N m	15000	15.9×10^3	$6.28 \times 10^{-3} (0.36^\circ)$	7.49×10^{-5}				1.11×10^{-4}	1.2 kg	1.19 kg		
200 N m	12000	37.6×10^3	$5.32 \times 10^{-3} (0.305^\circ)$	1.55×10^{-4}				1.54×10^{-4}	1.7 kg	1.59 kg		
500 N m	1080	10000	106 $\times 10^3$	$4.71 \times 10^{-3} (0.27^\circ)$	5.10×10^{-4}	5.16×10^{-4}	2.9 kg	2.78 kg				

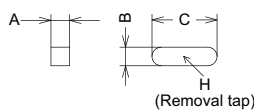
Measurement range	A	B	C	D	E	F	G	H1	H2	H3	I	J1	J2	J3	K	L	M	N1	N2	O
0.05 N m																				
0.1 N m						5h7									10	5h7				
0.2 N m																				
0.5 N m																				
1 N m						8h7														
2 N m																				
5 N m	14	31.5			6.1	18.5	12h7	13.5	11	14	21.5	18.4	20	57	76	20	12h7	30		
10 N m																				
20 N m						24	20h7	23	10	21	30	19.4	40	70	87	40	20h7	40	40	11.5
50 N m																				
100 N m						28	25h7		11		25	55		17	55	25h7	46	38	11	
200 N m						30	30h7	18.5	8	10	27.5	24.1	60	67	84	60	30h7	50	50	
500 N m						35	40h7			12	23.9	75			75	40h7	63	30	6.5	M4 Depth8

(K) Key groove option: 5 to 10000 N m

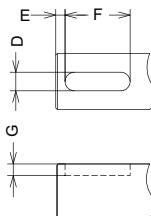
UTM III-5Nm(K) to 10000Nm(K)



Key (Included in (K) option)



Key groove



Measurement range	A	B	C	D	E	F	G	H
5 N m	$4^{+0.03}$	$4h9^{+0.03}$	$14^{+0.18}$	$4^{-0.012}$	2	$14^{+0.3}$	$2.5^{+0.1}$	—
10 N m								
20 N m								
50 N m								
100 N m								
200 N m								
500 N m								
1000 N m								
2000 N m								
5000 N m								
10000 N m								

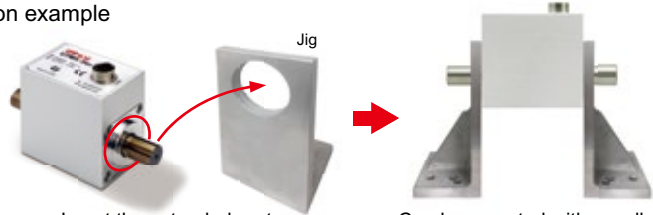
* During high-speed rotation, consider the imbalance caused by the key and adjust the rotation balance of the entire device.

Unit: mm

Centering location type suitable for mounting a main unit

- In a scene like this... ● Wants center point of axis as reference for installation
● Wants to stop vibration & fix main unit

Installation example



Insert the extended part.

Can be mounted with excellent centering effect.



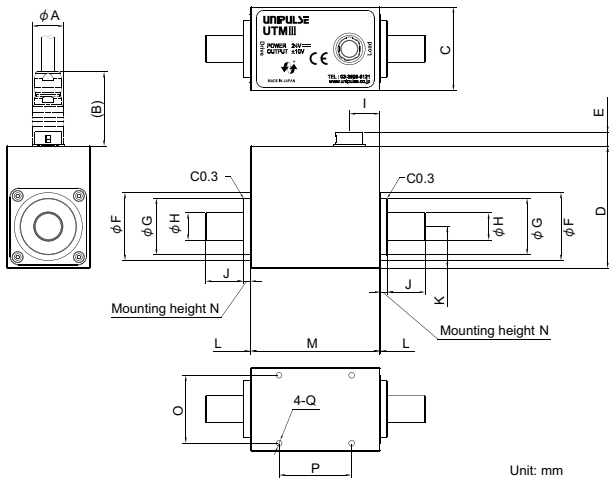
* For this setup use double disc couplings on both sides.

* If the main unit rotates, please install a stopper to avoid excessive force on the main unit.

* Jig is not included. Please prepare an installation jig that fits the convex part of UTMIII.

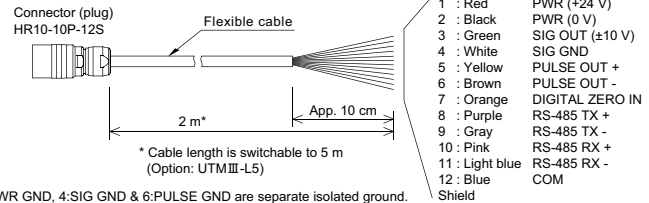
■ UTMIII-0.05Nm(C) to 500Nm(C)

Measurement range	±0.05 N m	±0.1 N m	±0.2 N m	±0.5 N m	±1 N m	±2 N m	±5 N m	±10 N m	±20 N m	±50 N m	±100 N m	±200 N m	±500 N m
Torsional spring constant (N m/rad)	5.67	11.57	26.10	93.1	188	414	691	1851	5386	8428	17.3×10 ³	41.7×10 ³	117×10 ³
Maximum torsional angle (rad)	8.81×10 ⁻³ (0.505°)	8.64×10 ⁻³ (0.495°)	7.66×10 ⁻³ (0.439°)	5.37×10 ⁻³ (0.308°)	5.32×10 ⁻³ (0.305°)	4.83×10 ⁻³ (0.277°)	7.24×10 ⁻³ (0.415°)	5.40×10 ⁻³ (0.310°)	3.71×10 ⁻³ (0.213°)	5.93×10 ⁻³ (0.340°)	5.78×10 ⁻³ (0.331°)	4.79×10 ⁻³ (0.275°)	4.28×10 ⁻³ (0.246°)
Inertia moment (kg m ²)	8.48×10 ⁻⁷	8.58×10 ⁻⁷	8.7×10 ⁻⁷	1.46×10 ⁻⁶	1.49×10 ⁻⁶	1.39×10 ⁻⁶	3.56×10 ⁻⁶	3.66×10 ⁻⁶	2.59×10 ⁻⁵	2.66×10 ⁻⁵	6.59×10 ⁻⁵	1.40×10 ⁻⁴	4.70×10 ⁻⁴
Approx. weight	150 g			170 g			260 g		690 g		1.1 kg	1.5 kg	2.6 kg



Measurement range	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
0.05 N m	14	31.5	32	49	6.1	25	20h7	5h7	12	6.8	16	0.2	54	26	32	M3	Depth 5
0.1 N m																	
0.2 N m																	
0.5 N m																	
1 N m																	
2 N m																	
5 N m																	
10 N m																	
20 N m																	
50 N m																	
100 N m																	
200 N m																	
500 N m																	

■ Supplied cable (C), (RC) common Flexible cable

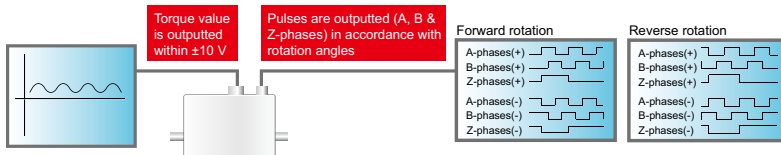


- 1 : Red PWR (+24 V)
- 2 : Black PWR (0 V)
- 3 : Green SIG OUT (±10 V)
- 4 : White SIG GND
- 5 : Yellow PULSE OUT +
- 6 : Brown PULSE OUT -
- 7 : Orange DIGITAL ZERO IN
- 8 : Purple RS-485 TX +
- 9 : Gray RS-485 TX -
- 10 : Pink RS-485 RX +
- 11 : Light blue RS-485 RX -
- 12 : Blue COM

* 2: PWR GND, 4:SIG GND & 6:PULSE GND are separate isolated ground.
* 2: PWR GND & 12:COM are connected internally.

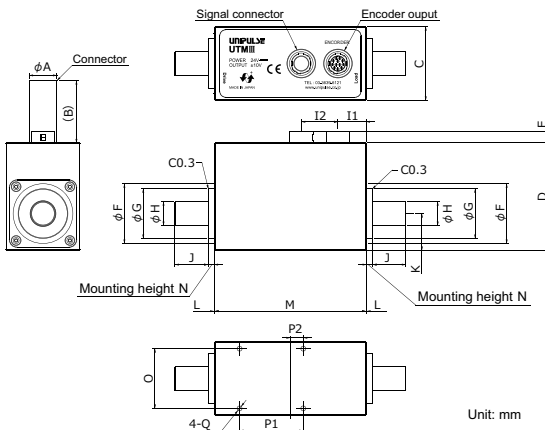
■ UTMIII-0.05Nm(RC) to 500Nm(RC)

- Torque signal (analog±10 V) and rotation angle signals (A, B & Z phase line driver outputs) are outputted.



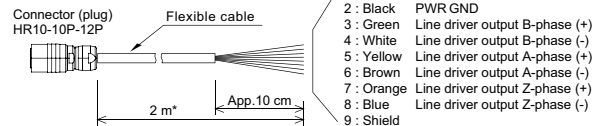
- Angular resolution: 3600 per rotation
- Maximum measurable rotation speed:
5000 rpm (0.05 to 50 N m)
2500 rpm (100, 200, 500 N m)

Measurement range	±0.05 N m	±0.1 N m	±0.2 N m	±0.5 N m	±1 N m	±2 N m	±5 N m	±10 N m	±20 N m	±50 N m	±100 N m	±200 N m	±500 N m
Torsional spring constant (N m/rad)	5.55	11.08	23.73	88.32	169.41	333.57	831	1492	4390	7578	15.9×10 ³	37.6×10 ³	106×10 ³
Maximum torsional angle (rad)	9.01×10 ⁻³ (0.516°)	9.02×10 ⁻³ (0.517°)	8.43×10 ⁻³ (0.483°)	5.66×10 ⁻³ (0.324°)	5.90×10 ⁻³ (0.338°)	6.00×10 ⁻³ (0.344°)	6.02×10 ⁻³ (0.345°)	6.70×10 ⁻³ (0.384°)	4.56×10 ⁻³ (0.261°)	6.60×10 ⁻³ (0.378°)	6.28×10 ⁻³ (0.360°)	5.32×10 ⁻³ (0.305°)	4.71×10 ⁻³ (0.270°)
Inertia moment (kg m ²)	1.39×10 ⁻⁶	1.40×10 ⁻⁶	1.41×10 ⁻⁶	1.92×10 ⁻⁶	1.95×10 ⁻⁶	1.85×10 ⁻⁶	4.26×10 ⁻⁶	4.36×10 ⁻⁶	2.86×10 ⁻⁵	2.93×10 ⁻⁵	7.56×10 ⁻⁵	1.56×10 ⁻⁴	5.12×10 ⁻⁴
Approx. weight	190 g			210 g			320 g		770 g		1.2 kg	1.6 kg	2.8 kg



Measurement range	A	B	C	D	E	F	G	H	I1	I2	J	K	L	M	N	O	P1	P2	Q
0.05 N m	14	31.3	32	49	5.9	25	20h7	5h7	10.1	20.9	6.8	16	0.2	73	26	32	6.5	M3	Depth 5
0.1 N m																			
0.2 N m																			
0.5 N m																			
1 N m																			
2 N m																			
5 N m																			
10 N m																			
20 N m																			
50 N m																			
100 N m																			
200 N m																			
500 N m																			

■ Supplied cable (RC) Flexible cable



- 1 : Red PWR (+5 to +24 V)
- 2 : Black PWR GND
- 3 : Green Line driver output B-phase (+)
- 4 : White Line driver output B-phase (-)
- 5 : Yellow Line driver output A-phase (+)
- 6 : Brown Line driver output A-phase (-)
- 7 : Orange Line driver output Z-phase (+)
- 8 : Blue Line driver output Z-phase (-)
- 9 : Shield

* For key and key groove of RCK option, see P.8 for details.

* Cable length is switchable to 5 m (Option: UTMIII-RC5)