

Multi-Turn Wirewound Potentiometer

Series MT46



• Standard Model Nos.

MT46-3 (3-turn)
MT46-5 (5-turn)
MT46-10 (10-turn)
MT46-15 (15-turn)
MT46-20 (20-turn)

• General Specifications (Note 1)

Standard Resistance

Range: 50, 100, 200, 500, 1k, 2k, 5k
10k, 20k Ω

Max. Practical

Resistance Value: 50k, 100k Ω (3-turn)
50k, 100k Ω (5-turn)
50k, 100k, 200k Ω (10,15-turn)
50k, 100k, 200k, 500k Ω (20-turn)

Total Resistance

Tolerance: Standard Class $\pm 3\%$ ($\pm 5\% < 1k$)
Precision Class $\pm 1\%$

Independent Linearity

Tolerance:

	3,5-turn	10,15,20-turn
Standard Class	$\pm 0.4\%$	$\pm 0.3\%$
Precision Class	$\pm 0.2\%$	$\pm 0.1\%$
($< 5k\Omega$)	($\pm 0.25\%$)	($\pm 0.15\%$)

Power Rating:

2.0W (3-turn)
2.5W (5-turn)
5.0W (10-turn)
7.5W (15-turn)
10.0W (20-turn)

Noise:

Within 100 Ω E.N.R.

Electrical Travel:

$360^\circ \times n \pm 5^\circ$ (n: No. of turns)

Mechanical Travel:

$360^\circ \times n \begin{matrix} +30^\circ \\ -0^\circ \end{matrix}$ (n: No. of turns)

Rotational Life:

600,000 (3-turn)
1,000,000 (5-turn)
2,000,000 (10,15,20-turn)

Protection Grade:

IP40 (IP54 optional)

Operating Temp.:

$-55^\circ\text{C} \dots +105^\circ\text{C}$

Insulation Resistance:

Over 100M Ω at 1000V.D.C.

Dielectric Strength:

1 minute at 1000V.A.C.

Starting Torque:

Within 20mN \cdot m (200gf \cdot cm)

Stopper Strength:

Approx. 0.9N \cdot m (9kgf \cdot cm)

Resist. Temperature

$\pm 20\text{p.p.m./}^\circ\text{C}$

Coefficient of Wire:

15G / 10Hz to 2,000Hz 12 hours

Vibration:

50G / 11ms 18 times

Shock:

Approx. 90g (3,5-turn)

Mass:

Approx. 120g (10-turn)

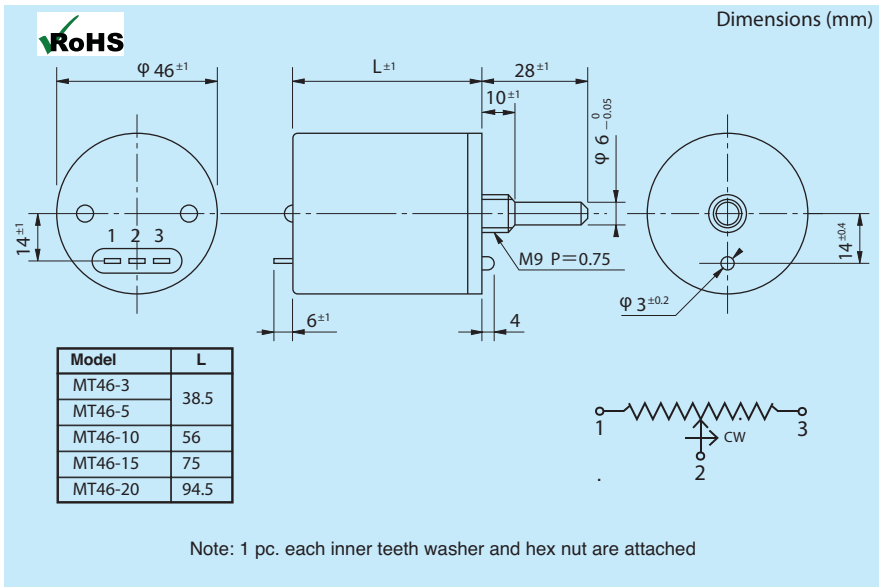
Approx. 150g (15-turn)

Approx. 180g (20-turn)

• Special Specifications Available

30-turn type (MT46-30), lower resistance values, multi-ganged (up to 2 gangs), shaft with front and rear extension (rear shaft with 6mm dia. and 28mm length), special shaft machining (flat, pin hole, length, dia., etc.), sealed housing and o-ring shaft seal for IP54 protection grade (torque increases), limit switch adaptor

Note 1: Customers should test and verify device performance in any given application. General specifications are measured at temperatures of $+15^\circ\text{C} \sim +35^\circ\text{C}$. Specifications subject to change without notice.



Resolution Chart (%)

Resist Value (Ω)	10	20	50	100	200	500	1k	2k	5k
MT46-3	0.18	0.15	0.10	0.084	0.067	0.048	0.04	—	—
MT46-5	*	0.11	0.08	0.078	0.048	0.035	0.029	—	—
MT46-10	*	*	0.05	0.04	0.031	0.023	0.019	0.015	—
MT46-15	*	*	0.039	0.031	0.024	0.018	0.013	0.011	—
MT46-20	*	*	0.033	0.026	0.020	0.014	0.011	0.008	0.007
Resist Wire Used	Cu-Ni System								

Resist Value (Ω)	2k	5k	10k	20k	50k	100k	200k	500k
MT46-3	0.043	0.031	0.026	0.019	0.015	0.012	—	—
MT46-5	0.031	0.024	0.017	0.013	0.009	0.008	—	—
MT46-10	—	0.015	0.012	0.009	0.007	0.005	0.004	—
MT46-15	—	0.011	0.009	0.007	0.005	0.004	0.003	—
MT46-20	—	—	0.008	0.006	0.004	0.003	0.0026	0.0018
Resist Wire Used	Ni-Cu System							

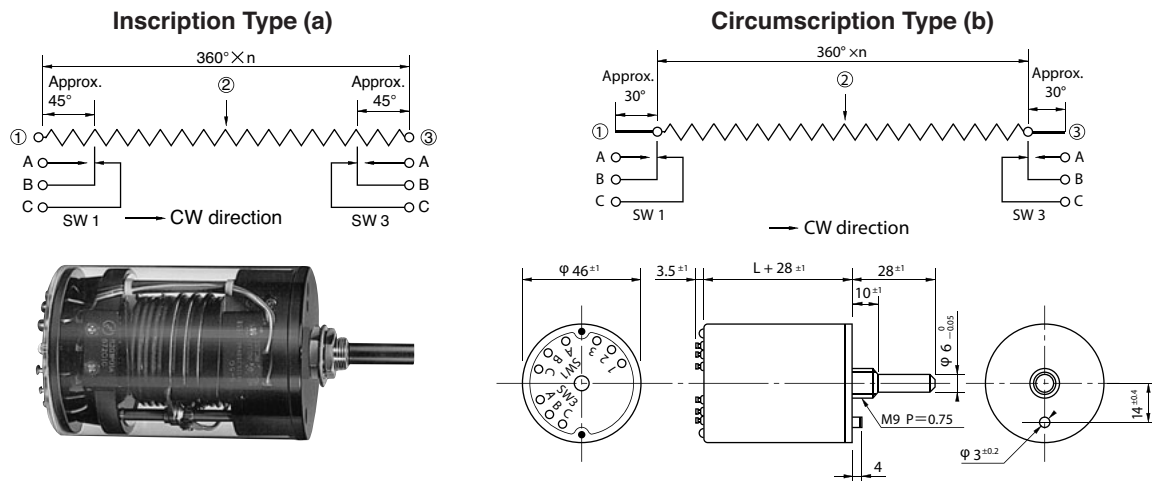
Note: Mark *shows the pot. with a single-wire resistive element, which gives an essentially infinite solution.

MT46 Series with LIMIT-SWITCHES

Special MT46 Series Helicalohm potentiometer with incorporated Limit-Switch can automatically control the circuit. It can conveniently be used for minifying the instrument in which this model is employed. The construction of the Limit-Switch is given in the within figure and its function limit, either upper or lower, or to either side, can be freely determined according to customer's requirement. Its capacity is 5 A, 125V.A.C. (or 2.5A, 250V.A.C.) This model is most recommended to all kinds of automatic control equipment.

Note. Functioning position of Limit-Switch...

In case of this model being coupled to servo-motor, an over-rotation of the servo-motor due to its inertia, after the power source being OFF, may sometimes break the Helicalohm Pot. unless an adequate precaution is made. In order to avoid such failure, two kinds of the Helicalohm Potentiometer with limit-switch are offered: one is an inscription type (a) limit-switch having its function position slightly this side from the stopper of Helicalohm Pot. and the other is a circumscription type (b) for which a special overtravel is prepared in the Helicalohm Pot.



Note. Unless otherwise specified, we will supply the circumscription type (b).

- Life expectancy of Limit-Switch is up to 50,000 operations.
- Outer dimensions of these special versions are the same as those of standard model MT46 Series except its body length which is longer than the latter by 28 mm.
- Electrical and mechanical specifications and mounting dimensions are also the same as those of standard model MT46 series.