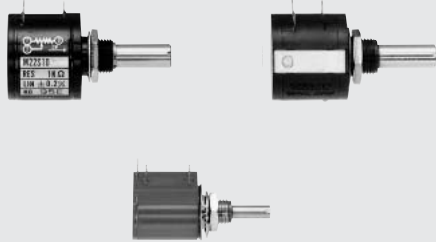
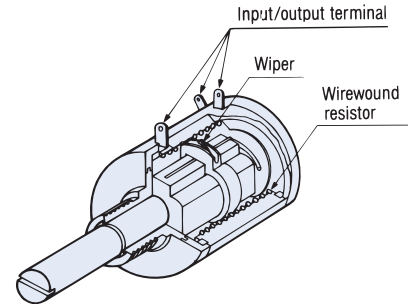


# WIREWOUND MULTITURN TYPE **M** series

**RoHS compliant**



**Basic construction  
Wirewound multiturn type**



**FEATURES**

- Line-up includes products ranging from 3 to 10 turns
- Cost effective (M-22E10) in house comparison
- Dial can be attached (M-22 series only)
- RoHS compliant

**PART NUMBER DESIGNATION**

M - 1 3 0 3    1 0 0

Series name

M-1303, M-1305, M-22S10  
M-22E10, M-22E10-050

Nominal resistance value (Ω)

100, 200, 500, 1 k, 2 k, 5 k, 10 k, 20 k, 50 k

**LIST OF PART NUMBERS**

| No. of turn | Item | Nominal resistance value (Ω)                   | Part number                                   |
|-------------|------|--|---|
| 3 turns     |      | 100, 200, 500, 1 k, 2 k, 5 k, 10 k, 20 k       | M-1303    Resistance value ※1                 |
|             |      |  | M-1305    Resistance value                    |
| 5 turns     |      | 100, 200, 500, 1 k, 2 k, 5 k, 10 k, 20 k, 50 k | M-22S10    Resistance value                   |
|             |      |  | M-22E10<br>M-22E10-050    Resistance value ※2 |

※1: M-1303 200 Ω model is manufactured upon receipt of order basis.

※2: For M-22E10 series, please refer to the drawing for its shaft size.

※Verify the above part numbers when placing orders.

**STANDARD SPECIFICATIONS**

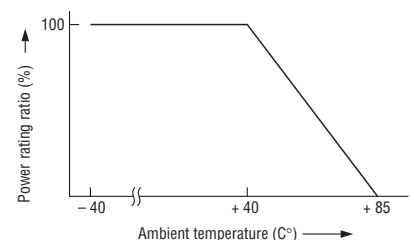
| Item                         | Part number          | M-13 series                      |            | M-22 series                        |                          |                          |
|------------------------------|----------------------|----------------------------------|------------|------------------------------------|--------------------------|--------------------------|
|                              |                      | M-1303                           | M-1305     | M-22S10                            | M-22E10                  |                          |
| Resistance tolerance         | %                    | ± 5                              |            |                                    |                          |                          |
| Independent linearity        | %                    | ± 0.5                            |            | ± 0.2                              |                          |                          |
| End resistance, maximum      |                      | 2 % or 4 Ω, whichever is greater |            | 0.5 % or 1 Ω, whichever is greater |                          |                          |
| Effective electrical angle   |                      | 1080°                            | 1800°      | 3600°                              |                          |                          |
| Mechanical angle             |                      | 1080° ±10°                       | 1800° ±10° | 3600° <sup>+10°</sup> <sub>0</sub> |                          |                          |
| Power rating                 | W                    | 0.75                             | 1          | 2                                  |                          |                          |
| Dielectric strength          | Vrms                 | 1000 1 min                       |            |                                    |                          |                          |
| Insulation resistance        | MΩ minimum           | 1000 (at DC 500 V)               |            |                                    |                          |                          |
| Rotational torque            | mN·m {gf·cm} maximum | 14.7 {150}                       |            | 9.81 {100}                         |                          |                          |
| Strength of tighten screw    | N·m {kgf·cm} maximum | 0.98 {10}                        |            |                                    | M-22E10-000<br>0.784 {8} | M-22E10-050<br>0.588 {6} |
| Stop strength                | N·m {kgf·cm} maximum | 0.147 {1.5}                      |            | 0.196 {2}                          |                          |                          |
| Peak noise                   | Ω maximum            | 20 (at 4 min <sup>-1</sup> )     |            |                                    |                          |                          |
| Temp. coefficient resistance | ppm/°C               | ± 50                             |            |                                    |                          |                          |
| Operating temp. range        | °C                   | -40 ~ 85                         |            |                                    |                          |                          |
| Rotational life              |                      | 15000 cycles                     |            | 25000 cycles                       |                          |                          |
| Net weight                   | g                    | Approx. 7                        |            | Approx. 19                         | Approx. 17               |                          |
| Protection grade             |                      | IP-40                            |            |                                    |                          |                          |

**NOMINAL RESISTANCE • RESOLUTION • RATED VOLTAGE • RATED CURRENT**

| Nominal resistance value (Ω) | Resolution (%) |         | Rated voltage (V) |         | Rated current (mA) |         |
|------------------------------|----------------|---------|-------------------|---------|--------------------|---------|
|                              | M-22S10        | M-22E10 | M-22S10           | M-22E10 | M-22S10            | M-22E10 |
| 100                          | 0.041          |         | 14.1              |         | 141.8              |         |
| 200                          | 0.036          |         | 20.0              |         | 100.0              |         |
| 500                          | 0.029          |         | 31.6              |         | 63.2               |         |
| 1 k                          | 0.025          |         | 44.7              |         | 44.7               |         |
| 2 k                          | 0.020          |         | 63.2              |         | 31.6               |         |
| 5 k                          | 0.014          |         | 100.0             |         | 20.0               |         |
| 10k                          | 0.018          |         | 141.1             |         | 14.1               |         |
| 20 k                         | 0.014          |         | 200.1             |         | 10.1               |         |
| 50 k                         | 0.011          |         | 316.2             | 200.0   | 6.3                |         |
| 100 k                        | ↻ 0.009        |         | ↻ 450.0           | ↻ 200.0 | ↻ 4.47             |         |

| Nominal resistance value (Ω) | Resolution (%) |        | Rated voltage (V) |        | Rated current (mA) |        |
|------------------------------|----------------|--------|-------------------|--------|--------------------|--------|
|                              | M-1303         | M-1305 | M-1303            | M-1305 | M-1303             | M-1305 |
| 100                          | 0.190          | 0.137  | 8.7               | 10.0   | 86.2               | 100.0  |
| 200                          | ↻ 0.154        | 0.095  | ↻ 12.2            | 14.1   | ↻ 61.5             | 70.9   |
| 500                          | 0.115          | 0.078  | 19.4              | 22.4   | 38.7               | 44.6   |
| 1 k                          | 0.072          | 0.057  | 27.4              | 31.6   | 28.5               | 31.6   |
| 2 k                          | 0.056          | 0.047  | 38.7              | 44.7   | 19.4               | 22.4   |
| 5 k                          | 0.069          | 0.051  | 61.2              | 70.7   | 12.3               | 14.1   |
| 10 k                         | 0.053          | 0.039  | 86.6              | 100.0  | 8.7                | 10.0   |
| 20 k                         | 0.038          | 0.032  | 122.5             | 141.4  | 6.1                | 7.1    |

**RATED POWER DERATING CURVE**



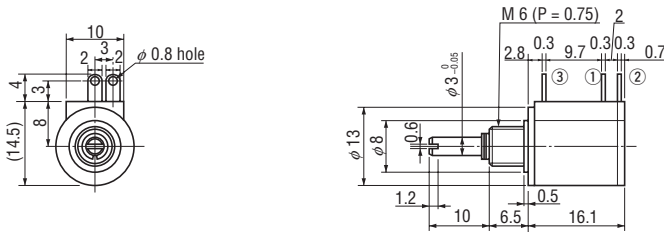
The products indicated by ↻ mark are manufactured upon receipt of order basis.

# M series POTENTIOMETERS

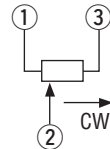
## OUTLINE DIMENSIONS

(Unit: mm)

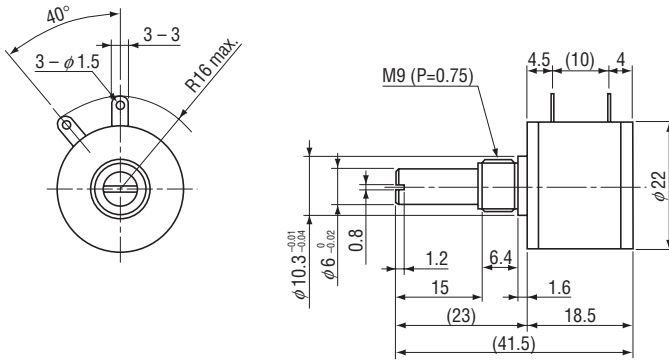
- M-1303 (3 turns)
- M-1305 (5 turns)



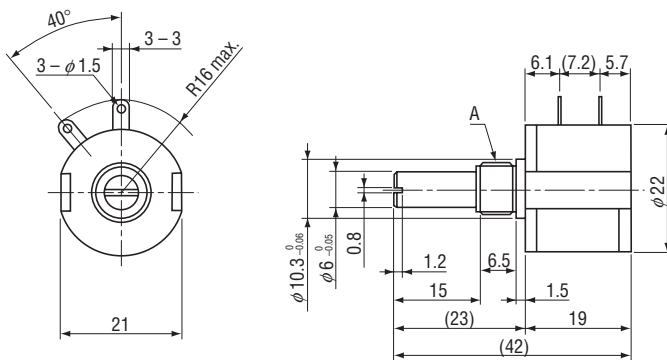
Wiring diagram



- M-22S10 (10 turns)



- M-22E10 (10 turns)



| Part number | Mark | A              |
|-------------|------|----------------|
| M-22E10     |      | 3/8" 32 UNEF   |
| M-22E10-050 |      | M 9 (P = 0.75) |

- MC1003, JC10, M-1303, M-1305 in common
- For mm size (M-22E10-050, M-22S10 in common)
- For inch size (M-22E10)

