## THE NIDEC MOTORS & ACTUATORS DC MOTOR RANGE

### MOTORS WITHOUT GEARING

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal Torque (Nm)</th>
<th>No Load Speed (min⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMP</td>
<td>Smaller diameter motors with single &amp; double output shafts</td>
<td>0.05 – 0.1</td>
<td>2700 – 3250</td>
</tr>
<tr>
<td>GMK</td>
<td>Higher torque single output shaft motors</td>
<td>0.12 – 0.4</td>
<td>2200 – 5250</td>
</tr>
<tr>
<td>GML</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MOTORS WITH SPUR GEAR

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal Torque (Nm)</th>
<th>No Load Speed (min⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMAG</td>
<td>Motors that can address all your in-line drive requirements where you need higher torque, lower speed rotation</td>
<td>0.2 – 4</td>
<td>17 – 200</td>
</tr>
<tr>
<td>GMPI</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MOTORS WITH WORM GEAR

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal Torque (Nm)</th>
<th>No Load Speed (min⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMPD</td>
<td>Low/medium torque with perpendicular output shafts</td>
<td>0.5 – 4</td>
<td>21 – 540</td>
</tr>
<tr>
<td>GMPG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMPS</td>
<td>Actuators fitted with a lead-screw to drive your linear motion needs</td>
<td>1 – 2</td>
<td>6</td>
</tr>
<tr>
<td>DCK31</td>
<td>Cost competitive medium torque range worm drive motors</td>
<td>3 – 6</td>
<td>14 – 270</td>
</tr>
<tr>
<td>DCK35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWMK</td>
<td>Weight optimized medium torque range</td>
<td>0.8 – 8</td>
<td>48 – 350</td>
</tr>
<tr>
<td>SW2K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW2L</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWMV</td>
<td>Powerful medium &amp; high torque worm gear motors</td>
<td>3 – 20</td>
<td>27 – 220</td>
</tr>
<tr>
<td>SWMG</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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Subject to change and error, also of a technical nature. Therefore use only product drawings for design purposes. These are available from your representative.

The catalog illustrations do not all correspond to DIN requirements. The operating values indicated are valid for 20°C ambient temperature. In all cases the motors should be tested for their suitability in the customer's particular application. Specific motor designs for special customers. Motors in this catalog are not intended for the consumer. In accordance with EU regulations, these products do not require CE certification marking. Some motors have customer specific designs. They require new tooling for new designs.

### TERMS, SYMBOLS AND UNITS ACCORDING TO DIN

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Unit</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>U_n</td>
<td>[V]</td>
<td>Rated voltage</td>
</tr>
<tr>
<td>n_n</td>
<td>[min⁻¹]</td>
<td>No-load speed ± 10%</td>
</tr>
<tr>
<td>M_n</td>
<td>[Nm]</td>
<td>Nominal torque at the output shaft</td>
</tr>
<tr>
<td>M_s</td>
<td>[Nm]</td>
<td>Starting torque</td>
</tr>
<tr>
<td>i</td>
<td></td>
<td>Gear ratio</td>
</tr>
<tr>
<td>J_s</td>
<td>[kgm²] x 10⁻⁴</td>
<td>Armature load inertia</td>
</tr>
<tr>
<td>R</td>
<td>[mΩ]</td>
<td>Armature resistance, 2/4 commutator bars</td>
</tr>
<tr>
<td>L</td>
<td>[mH]</td>
<td>Armature inductance, 2/4 commutator bars</td>
</tr>
</tbody>
</table>

### Drawing
- dimensional drawing

### Shaft
- dimensions of shaft ends

### Wiring diagram
- motor wiring diagram

### Connection
- dimensions and positions of motor connections

### Materials
- BRZ = bronze, KST = plastic, ST = steel, HGW = resinbonded fabric

### Diagrams
- Direction of rotation when looking onto motor shaft: The curves show the speed and the current as a function of the torque. These are average values at room temperature. Divergences of ± 10% are possible in the series.

- Preferred direction of rotation: Worm gear motors have a preferred direction of rotation, indicated in the drawings by a larger arrow. If the motor rotates against the preferred rotation direction, power decreases by approx. 10%.
CONVERSION OF TORQUE VALUES

<table>
<thead>
<tr>
<th>Nm</th>
<th>Ncm</th>
<th>pcm</th>
<th>kpcm</th>
<th>kpm</th>
<th>oz in</th>
<th>in lbs</th>
<th>ft lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>10.2 x 10^3</td>
<td>10.2</td>
<td>0.102</td>
<td>141.6</td>
<td>8.85</td>
<td>0.738</td>
</tr>
<tr>
<td>9.8 x 10^-5</td>
<td>9.8 x 10^-3</td>
<td>1</td>
<td>10^3</td>
<td>10^3</td>
<td>1.39 x 10^2</td>
<td>8.68 x 10^4</td>
<td>7.23 x 10^6</td>
</tr>
</tbody>
</table>

CONVERSION OF FORCES

<table>
<thead>
<tr>
<th>N</th>
<th>kp</th>
<th>p</th>
<th>oz</th>
<th>lbf</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.102</td>
<td>102</td>
<td>3.6</td>
<td>0.225</td>
</tr>
<tr>
<td>9.8 x 10^-3</td>
<td>1.02 x 10^-2</td>
<td>1.02 x 10^-3</td>
<td>1.42</td>
<td>8.85 x 10^-2</td>
</tr>
</tbody>
</table>

CONVERSION OF POWER

<table>
<thead>
<tr>
<th>kW</th>
<th>PS</th>
<th>HP</th>
<th>kpm/s</th>
<th>kcal/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.36</td>
<td>1.34</td>
<td>102</td>
<td>0.239</td>
</tr>
<tr>
<td>0.735</td>
<td>1</td>
<td>0.986</td>
<td>75</td>
<td>0.176</td>
</tr>
<tr>
<td>0.746</td>
<td>1.01</td>
<td>1</td>
<td>76</td>
<td>0.178</td>
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</tbody>
</table>

CONVERSION OF TEMPERATURES

<table>
<thead>
<tr>
<th>t_c [°C] Celsius</th>
<th>t_f [°F] Fahrenheit</th>
<th>T_c [K] Kelvin</th>
<th>T_f [°R] Rankine</th>
</tr>
</thead>
<tbody>
<tr>
<td>t_c = \frac{5}{9}(t_c - 32)</td>
<td>t_f = \frac{9}{5}t_c + 32</td>
<td>T_c = t_c + 273</td>
<td>T_f = \frac{9}{5}(t_f + 273)</td>
</tr>
<tr>
<td>t_c = \frac{5}{2}T_c - 273</td>
<td>T_c = \frac{6}{5}t_c</td>
<td>T_c = \frac{6}{5}(t_c + 255)</td>
<td></td>
</tr>
</tbody>
</table>
**TOLERANCE ZONES TO ISO/R 286**

(DIN 7150, 7151, 7152, 7154, 7155)

<table>
<thead>
<tr>
<th>Tolerance Zone</th>
<th>Dimensional Value</th>
<th>Tolerance Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1 H 13</td>
<td>+0.140 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>1,6 H 13</td>
<td>+0.140 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>2,5 H 12</td>
<td>+0.100 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>2,7 H 12</td>
<td>+0.100 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>3 H 9</td>
<td>+0.025 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>3 H 12</td>
<td>+0.100 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>3 N 9</td>
<td>-0.004 / -0.029 mm</td>
<td></td>
</tr>
<tr>
<td>3 P 8</td>
<td>-0.006 / -0.020 mm</td>
<td></td>
</tr>
<tr>
<td>3 P 9</td>
<td>-0.006 / -0.031 mm</td>
<td></td>
</tr>
<tr>
<td>3 P 10</td>
<td>-0.006 / -0.046 mm</td>
<td></td>
</tr>
<tr>
<td>3,1 JS 10</td>
<td>+0.024 / -0.024 mm</td>
<td></td>
</tr>
<tr>
<td>3,5 H 12</td>
<td>+0.120 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>3,6 H 11</td>
<td>+0.075 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>4 C 10</td>
<td>+0.118 / -0.070 mm</td>
<td></td>
</tr>
<tr>
<td>4 h 6</td>
<td>0 / -0.008 mm</td>
<td></td>
</tr>
<tr>
<td>4 h 8</td>
<td>0 / -0.018 mm</td>
<td></td>
</tr>
<tr>
<td>4 h 9</td>
<td>0 / -0.030 mm</td>
<td></td>
</tr>
<tr>
<td>4 h 10</td>
<td>0 / -0.048 mm</td>
<td></td>
</tr>
<tr>
<td>4 h 11</td>
<td>0 / -0.075 mm</td>
<td></td>
</tr>
<tr>
<td>4 H 12</td>
<td>+0.120 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>4 P 9</td>
<td>-0.012 / -0.042 mm</td>
<td></td>
</tr>
<tr>
<td>4,1 h 10</td>
<td>0 / -0.048 mm</td>
<td></td>
</tr>
<tr>
<td>4,1 H 11</td>
<td>+0.075 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>4,2 H 7</td>
<td>+0.012 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>4,2 H 12</td>
<td>+0.120 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>4,5 H 13</td>
<td>+0.180 / 0 mm</td>
<td></td>
</tr>
<tr>
<td>5 c 11</td>
<td>-0.070 / -0.145 mm</td>
<td></td>
</tr>
<tr>
<td>5 h 6</td>
<td>0 / -0.008 mm</td>
<td></td>
</tr>
<tr>
<td>5 h 9</td>
<td>0 / -0.030 mm</td>
<td></td>
</tr>
<tr>
<td>5 h 10</td>
<td>0 / -0.048 mm</td>
<td></td>
</tr>
<tr>
<td>5 h 12</td>
<td>0 / -0.120 mm</td>
<td></td>
</tr>
<tr>
<td>5 P 9</td>
<td>-0.012 / -0.042 mm</td>
<td></td>
</tr>
</tbody>
</table>

**TOLERANCE ZONES**

![Graph of Tolerance Zones and Load-Moment Curve](image)
### CHARACTERISTIC CURVES

<table>
<thead>
<tr>
<th>CR</th>
<th>Continuous running</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO</td>
<td>Short operation</td>
</tr>
<tr>
<td>VSO</td>
<td>Very short operation</td>
</tr>
<tr>
<td>P</td>
<td>Power in W</td>
</tr>
<tr>
<td>P_{2N}</td>
<td>Nominal output power in W</td>
</tr>
<tr>
<td>P_{2max}</td>
<td>Maximum output power in W</td>
</tr>
<tr>
<td>P_{VSO}</td>
<td>Output power for short operation in W</td>
</tr>
<tr>
<td>M</td>
<td>Torque inNm</td>
</tr>
<tr>
<td>M_{A}</td>
<td>Starting torque inNm</td>
</tr>
<tr>
<td>M_{N}</td>
<td>Nominal output torque inNm</td>
</tr>
<tr>
<td>M_{VSO}</td>
<td>Output torque for very short operation inNm</td>
</tr>
<tr>
<td>n</td>
<td>Rotational speed in min⁻¹</td>
</tr>
</tbody>
</table>

### RANGE OF OPERATION

- **Continuous running**
- **Short operation**
- **Very short operation**

### IMPORTANT EXPLANATORY INFORMATION

- \( n_0 \): No-load speed in min⁻¹
- \( n_N \): Rated speed in min⁻¹
- \( n_{VSO} \): Speed for very short operation in min⁻¹
- \( I \): Current in A
- \( I_0 \): No-load current in A
- \( I_A \): Starting current in A
- \( I_N \): Rated current in A
- \( I_{VSO} \): Current for very short operation in A
- \( \eta \): Efficiency in %
- \( \eta_N \): Rated efficiency in %
- \( \eta_{VSO} \): Efficiency for very short operation in %

![Characteristics Curves Diagram](image_url)
TECHNICAL DESCRIPTION

Motorhousing: sheet metal, rolled & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: –
Gear housing: –
Gear wheel material: –
Lubrication: –
Mechanical interface: steel shaft
Electric interface: connector or leads with connector
Sensor: optional
Thermal protection: optional
EMC suppression: optional

INDUSTRIAL APPLICATION
Linear drives, machine construction

AUTOMOTIVE APPLICATION
Seat track drive
### Series GMP

#### Motor type 402 944

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

#### Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 12</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 0.08</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 2,700.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 16.2</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 2.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
</tr>
</tbody>
</table>

#### Sensor data
- **Pulses**: 0
- **Output channels**: 0

#### Other data
- **Gear ratio**: 
- **Gear wheel material**: 
- **Suppression components**: 7.5µH
- **Enclosure class**: IP 30
- **Weight [kg]**: 0.550

#### Motor picture

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Motor picture](image-url)

![Output shaft drawing](image-url)

![Wiring diagrams](image-url)

![Connector layout](image-url)
### Series GMP

#### Motor type 403 187

**Design Data**
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Ball

**Performance data**
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 0.08$
- No-load speed [min$^{-1}$]: $n_0 = 2,800.0$
- Nominal power [W]: $P_N = 17.6$
- Nominal current [A]: $I_N = 1.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_3$

**Sensor data**
- Pulses: 0
- Output channels: 0

**Other data**
- Gear ratio
- Gear wheel material
- Suppression components: 7.5µH, 47nF
- Enclosure class: IP 30
- Weight [kg]: 0.550

**Remarks:**

**Characteristic curves**

- [Graph of characteristic curves](#)

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**
Series GMP
Motor type 404 476

Design Data

<table>
<thead>
<tr>
<th>Design Data</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Commutation</td>
<td>Brushed</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A:Sleeve - B:Sleeve</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 12</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 0.05</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 3,250.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 14.0</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 3.5</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
</tr>
</tbody>
</table>

Sensor data

<table>
<thead>
<tr>
<th>Sensor data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>2</td>
</tr>
<tr>
<td>Output channels</td>
<td>1</td>
</tr>
</tbody>
</table>

Other data

<table>
<thead>
<tr>
<th>Other data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear ratio</td>
<td></td>
</tr>
<tr>
<td>Gear wheel material</td>
<td></td>
</tr>
<tr>
<td>Suppression components</td>
<td>7.5µH</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 40</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.520</td>
</tr>
</tbody>
</table>

Remarks:

Characteristics curves

Output data:

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

W 256

S 82

S 92

Remarks:

I Tapered splines 5 x 6 DIN 5481
II Terminal 1, green
II Terminal 2, black
II Terminal 3, +, red
II Terminal 4, -, brown
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 211

I Terminal 1, motor, green
II Terminal 2, motor, black
III Terminal 3, Hall-IC +, red
IV Terminal 4, Hall-IC -, brown

Notes
Series GMP
Motor type 404 743

Design Data

- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

0220 F

Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s³</td>
</tr>
</tbody>
</table>

Sensor Data

- Pulses: 0
- Output channels: 0

Other Data

- Gear ratio
- Gear wheel material
- Suppression components: 2.5µH, 47nF ( )
- Enclosure class: IP 40
- Weight [kg]: 0.560

Remarks:

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- **W 266**
- **W 267**
- **S 93**
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com

Notes
Series GMP
Motor type 404 744

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

Performance data
- Rated voltage [V]: U_N = 12
- Nominal torque [Nm]: M_N = 0.10
- No-load speed [min^-1]: n_0 = 2,700.0
- Nominal power [W]: P_N = 21.2
- Nominal current [A]: I_N = 4.5
- Nominal force [kN]: F_N = 0.00
- Duty cycle: s_3

Sensor data
- Pulses: 1
- Output channels: 1

Other data
- Gear ratio
- Gear wheel material
- Suppression components: 2.5µH, 47nF
- Enclosure class: IP 40
- Weight [kg]: 0.560

Remarks:
- Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

W 266

---

W 267

---

S 86
Series GMP
Motor type 404 744

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

<table>
<thead>
<tr>
<th>Terminal 4, Hall-IC +</th>
<th>Terminal 2, Hall-IC -</th>
</tr>
</thead>
</table>
| Connector TYCO C-208-15621 (Z) mating with:
  Connector housing 1379217-3 & cover 1379218-2
  www.tycoelectronics.com |
### Notes

- **Terminal 4**, Hall-IC +
- **Terminal 2**, Hall-IC -
- Connector TYCO C-208-15621 (Z) mating with:
  - Connector housing 1379217-3 & cover 1379218-2

Visit [www.tycoelectronics.com](http://www.tycoelectronics.com) for more details.

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**Series GMP**

**Motor type 404 744**

---

**Series GMPI**

**Motor type 404 722**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

- **Terminal 1**, motor, violet
- **Terminal 2**, motor, blue
TECHNICAL DESCRIPTION

Motorhousing: deep drawn & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: –
Gear housing: –
Gear wheel material: –
Lubrication: grease
Mechanical interface: steel shaft
Electric interface: leads with connector
Sensor: optional
Thermal protection: optional
EMC suppression: optional

INDUSTRIAL APPLICATION
Linear drives

AUTOMOTIVE APPLICATION
Electric torque management,
Automated manual transmission
Series GMK
Motor type 404 284

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 0.19$
- No-load speed [min$^{-1}$]: $n_0 = 3,100.0$
- Nominal power [W]: $P_N = 52.7$
- Nominal current [A]: $I_N = 5.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio
- Gear wheel material
- Suppression components: 5µH
- Enclosure class: IP 30
- Weight [kg]: 0.900

Remarks: 1 start worm

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

- no of starts 1, lead angle 9°, pressure angle 10°, module 1, pitch 3.14159 mm (0.124")
- Blade terminal receptacles 2.8 x 0.8 DIN 46 247
- green
- red
# Series GMK
## Motor type 404 382

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Sleeve - B:Sleeve

### Performance Data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 0.12</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 5,250.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 58.8</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 4.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 0
- **Output channels**: 0

### Other Data
- **Gear ratio**
- **Gear wheel material**
- **Suppression components**: 5µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 0.900

### Remarks:
- **Motor picture**
- **Characteristic curves**
- **Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

### Gear wheel material
- Receptacles for tabs 2,8 x 0,8 DIN 46 247
- black
- red
### Design Data

- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

### Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data

- **Pulses**: 0
- **Output channels**: 0

### Other data

- **Gear ratio**
- **Gear wheel material**
- **Suppression components**: 5µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 0.900

### Remarks

- 4 start worm

### Characteristic curves

![Characteristic curves](image)

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- **W 218**
- **S 30**
- **K 189**

- **no. of starts**: 4
- **Lead angle**: 30°31’35”, pressure angle: 15°, pitch: 11.6707 mm (0.459”), module: 0.8
- **Receptacle for tabs**: 2.8 x 0.8 DIN 46 247
- **red**
- **black**
Series GMK
Motor type 404 753

Design Data
Commutation  Brushed
Direction of rotation  Bi-directional
Bearing type  A:Ball - B:Sleeve

Performance data
Rated voltage [V]  $U_N$  12
Nominal torque [Nm]  $M_N$  0.35
No-load speed [min$^{-1}$]  $n_0$  3,000.0
Nominal power [W]  $P_N$  79.2
Nominal current [A]  $I_N$  9.0
Nominal force [kN]  $F_N$  0.00
Duty cycle  ±3

Sensor data
Pulses  0
Output channels  0

Other data
Gear ratio
Gear wheel material
Suppression components  5µH, 10nF
Enclosure class  IP 30
Weight [kg]  0.900

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Receptacles for tabs 2.8 x 0.8 DIN 46 247
black
red
Series GMK
Motor type 404 757

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A:Ball - B:Sleeve

Performance data
Rated voltage [V] \( U_N \): 24
Nominal torque [Nm] \( M_N \): 0.30
No-load speed [min\(^{-1}\)] \( n_0 \): 2,200.0
Nominal power [W] \( P_N \): 53.2
Nominal current [A] \( I_N \): 3.0
Nominal force [kN] \( F_N \): 0.00
Duty cycle \( s_1 \)

Sensor data
Pulses: 0
Output channels: 0

Other data
Gear ratio
Gear wheel material
Suppression components: 5µH, 10nF
Enclosure class: IP 30
Weight [kg]: 0.890

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

no of starts 2, lead angle 19°48’54”, pressure angle 15°, pitch 3,141 mm (0,124”), module 1

II black
III red
Series GMK
Motor type 404 880

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: Ball - B: Sleeve

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 0.15$
- No-load speed [min$^{-1}$]: $n_0 = 2200.0$
- Nominal power [W]: $P_N = 30.9$
- Nominal current [A]: $I_N = 2.5$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio
- Gear wheel material
- Suppression components: $5\mu H$
- Enclosure class: IP 30
- Weight [kg]: 0.900

Remarks: 3 start worm

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

W 300
- No of starts: 3
- Lead angle: 30°33'44"
- Pressure angle: 15°
- Module: 1
- Pitch: 3.141 mm (0.124")

S 27
- Receptacle for tabs 2.8 x 0.8 DIN 46 247
- Green

K 264
- Red
Series GMK
Motor type 404 880

Design Data
- Performance data
  - Commutation: Brushed
  - Rated voltage \([\text{V}]\) UN 24
  - Direction of rotation: Bi-directional
  - Nominal torque \([\text{Nm}]\) MN 0.15
  - Bearing type:
    - A: Ball
    - B: Sleeve
  - No-load speed \([\text{min}^{-1}]\) \(n_0\) 2,200.0
  - Nominal power \([\text{W}]\) PN 30.9
  - Nominal current \([\text{A}]\) IN 2.5
  - Nominal force \([\text{kN}]\) FN 0.00
  - Duty cycle \(s_1\)

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio
- Gear wheel material
- Suppression components: 5µH
- Enclosure class: IP 30
- Weight \([\text{kg}]\) 0.900
- Remarks: 3 start worm

Notes

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I
- Terminal 1, motor, violet

II
- Terminal 2, motor, blue

III
- Receptacle for tabs 2,8 x 0,8 DIN 46 247

24 Drive Technology 2011/12
Motorhousing: deep drawn & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: –
Gear housing: –
Gear wheel material: –
Lubrication: grease
Mechanical interface: steel shaft
Electric interface: leads with connector
Sensor: –
Thermal protection: optional
EMC suppression: optional

→ INDUSTRIAL APPLICATION
Linear drives

→ AUTOMOTIVE APPLICATION
Electric torque management,
Automated manual transmission
Series GML
Motor type 404 469

Design Data

<table>
<thead>
<tr>
<th>Commutation</th>
<th>Brushed</th>
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<tbody>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A: Ball - B: Sleeve</td>
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</table>

Performance data

<table>
<thead>
<tr>
<th>Rated voltage [V]</th>
<th>U_N</th>
<th>36</th>
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</thead>
<tbody>
<tr>
<td>Nominal torque [Nm]</td>
<td>M_N</td>
<td>0.20</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>n_0</td>
<td>4,100.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>P_N</td>
<td>79.7</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>I_N</td>
<td>3.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>F_N</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s_1</td>
<td></td>
</tr>
</tbody>
</table>

Sensor data

| Pulses | 0 |
| Output channels | 0 |

Other data

| Gear ratio |
| Suppression components | 5µH, 10nF |
| Enclosure class | IP 30 |
| Weight [kg] | 1.150 |

Remarks:

Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
### Design Data

<table>
<thead>
<tr>
<th>Design Data</th>
<th></th>
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<tbody>
<tr>
<td>Commutation</td>
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<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A: Ball - B: Sleeve</td>
</tr>
</tbody>
</table>

### Performance data

<table>
<thead>
<tr>
<th>Performance data</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
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</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data

<table>
<thead>
<tr>
<th>Sensor data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>0</td>
</tr>
<tr>
<td>Output channels</td>
<td>0</td>
</tr>
</tbody>
</table>

### Other data

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Gear ratio</td>
<td></td>
</tr>
<tr>
<td>Gear wheel material</td>
<td></td>
</tr>
<tr>
<td>Suppression components</td>
<td>5$\mu$H, 10nF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.150</td>
</tr>
</tbody>
</table>

### Remarks:

- Motor picture
- Characteristic curves
- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

### Electrical Characteristics

- 0273 A
- 404 536

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**W 233**
- no of starts: 2, lead angle: $19°48'54''$,
- pressure angle: $15°$,
- module: 1,
- pitch: 3.141 mm ($0.124''$)

**S 30**
- Receptacles for tabs: 2.8 x 0.8 DIN 46 247
  - I. black
  - II. red

**K 190**
- I. Receptacles for tabs: 2.8 x 0.8 DIN 46 247
  - II. black
  - III. red
Series GML
Motor type 404 596

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Sleeve

Performance data
- Rated voltage [V]: $U_N = 12$
- Nominal torque [Nm]: $M_N = 0.20$
- No-load speed [min$^{-1}$]: $n_0 = 3,750.0$
- Nominal power [W]: $P_N = 67.3$
- Nominal current [A]: $I_N = 7.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio
- Gear wheel material
- Suppression components: 5µH, 10nF
- Enclosure class: IP 30
- Weight [kg]: 1.150

Remarks:
- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Characteristics curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

no of starts 2, lead angle 19°48'54", pressure angle 15°, module 1, pitch 3.141 mm (0,124")

Receptacles for tabs 2,8 x 0,8 DIN 46 247
- I: black
- II: red
Series GML
Motor type 404 621

Design Data

<table>
<thead>
<tr>
<th>Commutation</th>
<th>Brushed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A: Ball - B: Sleeve</td>
</tr>
</tbody>
</table>

Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s1</td>
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</table>

Sensor data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>0</td>
</tr>
<tr>
<td>Output channels</td>
<td>0</td>
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</table>

Other data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear ratio</td>
<td>Gearless</td>
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<tr>
<td>Gear wheel material</td>
<td></td>
</tr>
<tr>
<td>Suppression components</td>
<td>5.0µH</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.150</td>
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</table>

Remarks:

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
**Series GML**  
**Motor type 404 890**

### Design Data
- **Commutation**: Brushed  
- **Direction of rotation**: Bi-directional  
- **Bearing type**: A: Ball - B: Sleeve

### Performance Data
<table>
<thead>
<tr>
<th></th>
<th>$U_N$</th>
<th>$M_N$</th>
<th>$n_0$</th>
<th>$P_N$</th>
<th>$I_N$</th>
<th>$F_N$</th>
<th>$s_1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>24</td>
<td>0.50</td>
<td>2,500</td>
<td>96.5</td>
<td>7.0</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td></td>
<td></td>
<td>2,500.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td></td>
<td></td>
<td></td>
<td>96.5</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Nominal current [A]</td>
<td></td>
<td></td>
<td></td>
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<td>7.0</td>
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<td></td>
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<tr>
<td>Nominal force [kN]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Duty cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>s1</td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 0  
- **Output channels**: 0

### Other Data
- **Gear ratio**: Gearless  
- **Gear wheel material**:  
- **Suppression components**: 5.0µH, 1nF  
- **Enclosure class**: IP30  
- **Weight [kg]**: 1.150

### Remarks:
- Motor picture
- Characteristic curves
- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- **S 74**:  
  - I: Receptacles for tabs 2,8 x 0,8 DIN 46 247  
  - II: black  
  - III: red

- **K 190**:  
  - (I)  
  - (II)
Series GML
Motor type 404 965

Design Data

Commutation
Brushed

Direction of rotation
Bi-directional

Bearing type
A: Ball - B: Sleeve

Performance data

Rated voltage [V] $U_N$
24

Nominal torque [Nm] $M_N$
0.30

No-load speed [min⁻¹] $n_0$
3,800.0

Nominal power [W] $P_N$
105

Nominal current [A] $I_N$
5.0

Nominal force [kN] $F_N$
0.00

Duty cycle $s_1$

Sensor data

Pulses
0

Output channels
0

Other data

Gear ratio

Gear wheel material

Suppression components
5µH, 10nF

Enclosure class
IP 30

Weight [kg]
1.100

Remarks:

-Motor picture

-Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- W 325
- S 74
- K 317

-no of starts 7, lead angle 20°, pressure angle 20°, module 0.7, pitch 2.1991 mm (0.087")
induction hardened surface

Receptacle for tabs 6.3 x 0.8
G&H 35040.213.011

-red
green
**Series GML**

**Motor type 404 966**

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

### Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data
- **Pulses**: 0
- **Output channels**: 0

### Other data
- **Gear ratio**: 
- **Gear wheel material**: 
- **Suppression components**: 5µH, 10nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.100

### Remarks:
- Motor picture

### Characteristic curves

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- **W 325**
- **S 74**
- **K 317**

#### Notes:
- no of starts 7, lead angle 20°, pressure angle 20°, module 0.7, pitch 2.1991 mm (0.087"), induction hardened surface,
- Receptacle for tabs 6.3 x 0.8
- G&H 35940.213.011
- red
- green
Series GML
Motor type 404 967

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: Ball - B: Sleeve

Performance data
- Rated voltage [V]: $U_N = 36$
- Nominal torque [Nm]: $M_N = 0.30$
- No-load speed [min⁻¹]: $n_0 = 3,900.0$
- Nominal power [W]: $P_N = 109$
- Nominal current [A]: $I_N = 7.5$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_3$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio
- Gear wheel material
- Suppression components: $5 \mu H, 10 \mu F$
- Enclosure class: IP 30
- Weight [kg]: 1.100

Remarks:
- Motor picture
- Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

G&M 39040.213.01
I II III
- Receptacle for tabs 6,3 x 0,8
- red
- green

no of starts 7, lead angle 20°, pressure angle 20°, module 0,7, pitch 2,1991 mm (0,087”), induction hardened surface,
Series GML
Motor type 404 967

Design Data Performance data
Commutation Brushed Rated voltage [V] UN 36
Direction of rotation Bi-directional Nominal torque [Nm] MN 0.30
Bearing type A: Ball - B: Sleeve No-load speed [min⁻¹] n₀ 3,900.0
Nominal power [W] PN 109
Nominal current [A] IN 7.5
Nominal force [kN] FN 0.00
Duty cycle s³
Sensor data
Pulses 0
Output channels 0
Other data
Gear ratio
Gear wheel material
Suppression components 5µH, 10nF
Enclosure class IP 30
Weight [kg] 1.100
Remarks:
Motor picture Characteristic curves
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Notes

I
Terminal 1, motor, violet

II
Terminal 2, motor, blue

III
red
green

34 Drive Technology 2011/12
NIDEC MOTORS & ACTUATORS

0202 (GMAG)

TECHNICAL DESCRIPTION

Motorhousing: sheet metal, rolled & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: spur gear
Gear housing: plastic
Gear wheel material: steel or plastic
Lubrication: grease
Mechanical interface: steel shaft
Electric interface: tinned leads or with connector
Sensor: optional
Thermal protection: optional
EMC suppression: optional

APPLICATION

Automatic machines, Constructional engineering
Business machines, Laboratory appliances
Medical appliances, Traffic & communications technology, Photographic/optical equipment
### Design Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Commutation</td>
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</tr>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
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</table>

### Performance Data

<table>
<thead>
<tr>
<th>Property</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 12</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 0.24</td>
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<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 17.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 0.37</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 0.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
</tr>
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</table>

### Sensor Data

<table>
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<tbody>
<tr>
<td>Pulses</td>
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<td>Output channels</td>
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### Other Data

<table>
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<tr>
<td>Gear wheel material</td>
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<tr>
<td>Suppression components</td>
<td></td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP40</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.180</td>
</tr>
</tbody>
</table>

### Remarks:

- Characteristic curves

### Motor picture

![Motor picture](image_url)

- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Output shaft drawing](image_url)

![Wiring diagram](image_url)

![Connector layout](image_url)
Series GMAG
Motor type 402 781

Design Data
Commutation  | Brushed
Direction of rotation  | Bi-directional
Bearing type

Performance data
Rated voltage [V]  | $U_N$ 24
Nominal torque [Nm]  | $M_N$ 0.50
No-load speed [min$^{-1}$]  | $n_0$ 55.0
Nominal power [W]  | $P_N$ 2.56
Nominal current [A]  | $I_N$ 0.5
Nominal force [kN]  | $F_N$ 0.00
Duty cycle  | $s_3$

Sensor data
Pulses  | 0
Output channels  | 0

Other data
Gear ratio  | 109/1
Gear wheel material
Suppression components
Enclosure class  | IP40
Weight [kg]  | 0.180

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Series GMAG
Motor type 402 907

### Design Data

<table>
<thead>
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<th>Value</th>
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<tbody>
<tr>
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<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td></td>
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</table>

### Performance Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 0.04</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 300.0</td>
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<td>Nominal power [W]</td>
<td>$P_N$ 1.07</td>
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<td>Nominal current [A]</td>
<td>$I_N$ 0.2</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$\varepsilon_3$</td>
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### Sensor Data

<table>
<thead>
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<th>Feature</th>
<th>Value</th>
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<tbody>
<tr>
<td>Pulses</td>
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</tr>
<tr>
<td>Output channels</td>
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### Other Data

<table>
<thead>
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<th>Feature</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Gear ratio</td>
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<tr>
<td>Gear wheel material</td>
<td></td>
</tr>
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<td>Suppression components</td>
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<tr>
<td>Enclosure class</td>
<td>IP40</td>
</tr>
<tr>
<td>Weight [kg]</td>
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</table>

### Remarks:

#### Motor picture

- [Motor picture]

#### Characteristic curves

- [Characteristic curves]

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- [Output shaft drawing (W)]
- [Wiring diagrams (S)]
- [Connector layout (K)]

**Connector Burndy**

<table>
<thead>
<tr>
<th>Pins</th>
<th>Housing</th>
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<tbody>
<tr>
<td>SWM 1EF TV2</td>
<td>SMS 2p-1</td>
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</tbody>
</table>

37
Series GMAG
Motor type 404 326

Design Data

<table>
<thead>
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<th>Design Data</th>
<th>Performance data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commutation</td>
<td>Rated voltage [V]</td>
</tr>
<tr>
<td>Bi-directional</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Nominal torque [Nm]</td>
</tr>
<tr>
<td></td>
<td>$M_N$ 0.20</td>
</tr>
<tr>
<td>Bearing type</td>
<td>No-load speed [min⁻¹]</td>
</tr>
<tr>
<td></td>
<td>$n_0$ 135.0</td>
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<tr>
<td></td>
<td>Nominal power [W]</td>
</tr>
<tr>
<td></td>
<td>$P_N$ 2.26</td>
</tr>
<tr>
<td></td>
<td>Nominal current [A]</td>
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<td></td>
<td>$I_N$ 0.3</td>
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<tr>
<td></td>
<td>Nominal force [kN]</td>
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<td></td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td></td>
<td>Duty cycle $s_3$</td>
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Sensor data

<table>
<thead>
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<th>Sensor data</th>
<th>Other data</th>
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<tbody>
<tr>
<td>Pulses</td>
<td>Gear ratio 43/1</td>
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<tr>
<td>Output channels</td>
<td>Gear wheel material</td>
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<td>Suppression components</td>
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Other data

<table>
<thead>
<tr>
<th>Other data</th>
<th>Characteristic curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure class</td>
<td>Housing: AMP-Nr.: 1-480 700-0</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>Pins: AMP-Nr.: 350 570-1</td>
</tr>
<tr>
<td></td>
<td>I: black</td>
</tr>
<tr>
<td></td>
<td>II: yellow/green</td>
</tr>
<tr>
<td></td>
<td>III: red</td>
</tr>
</tbody>
</table>

Remarks:

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
**Series GMAG**

**Motor type 404 327**

### Design Data

- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Rated voltage [V]</td>
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<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
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</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
<td>0.4</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor Data

- **Pulses**: 0
- **Output channels**: 0

### Other Data

- **Gear ratio**: 109/1
- **Gear wheel material**
- **Suppression components**
- **Enclosure class**: IP40
- **Weight [kg]**: 0.180

### Remarks:

- Motor picture

### Characteristic curves

- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

**Housing**: AMP-Nr. 1-480 700-0

**Pins**: AMP-Nr. 350 687-1
**TECHNICAL DESCRIPTION**

- **Motorhousings:** sheet metal, rolled & corrosion protected
- **Excitation field:** permanent magnet
- **Type of gear mesh:** spur gear
- **Gear housing:** plastic
- **Gear wheel material:** plastic
- **Lubrication:** grease
- **Mechanical interface:** steel shaft
- **Electric interface:** connector or leads with connector
- **Sensor:** optional
- **Thermal protection:** optional
- **EMC suppression:** optional

**INDUSTRIAL APPLICATION**
Linear actuators, home automation

**AUTOMOTIVE APPLICATION**
Spoiler adjustment
Series GMPI
Motor type 404 465

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A:Sleeve - B:Sleeve

Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>4.00</td>
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<tr>
<td>No-load speed [min⁻¹]</td>
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<td>Nominal power [W]</td>
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<td>Nominal current [A]</td>
<td>$I_N$</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s₃</td>
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Sensor data
Pulses: 0
Output channels: 0

Other data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
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<tr>
<td>Gear wheel material</td>
<td>plastic</td>
</tr>
<tr>
<td>Suppression components</td>
<td>7.5µH, 1nF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.630</td>
</tr>
</tbody>
</table>

Remarks: $d = 3.3 \text{mm}$, for selftapping screw 4mm (shape Remform)

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

W 268
S 30
K 117

I Blade terminal ends 4.8 x 0.8 DIN 46 244
II Blade terminal ends 6.3 x 0.8 DIN 46 244
### Design Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commutation</td>
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</tr>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A:Sleeve - B:Sleeve</td>
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</tbody>
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### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
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</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
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### Sensor Data

<table>
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<tr>
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<th>Value</th>
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<tbody>
<tr>
<td>Pulses</td>
<td>20</td>
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<tr>
<td>Output channels</td>
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### Other Data

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<tr>
<td>Gear ratio</td>
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<tr>
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<tr>
<td>Suppression components</td>
<td>4µH, 1nF</td>
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<td>Enclosure class</td>
<td>IP 30</td>
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<tr>
<td>Weight [kg]</td>
<td>0.750</td>
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</tbody>
</table>

Remarks: $d = 3.3\text{mm}$, for self-cutting screw 4mm (shape Remform)

### Characteristic curves

**Motor picture**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

**W 249**

**S 30**

**S 109**

I Terminal 1, OUT A1, grey  
II Terminal 2, OUT A2, black  
III Terminal 3, +, white  
IV Terminal 4, -, red
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 244

Crimp housing 0009501061 (3.06mm, 0.156"),
Crimp terminals 008701031 mating with PCB headers 0026481066
1 grey encoder out ch1, 2 black encoder out ch2, 3 white encoder +, 4 red encoder -, 5 violet motor, 6 blue motor
www.molex.com

Notes
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: sleeve bearing

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 4.00</td>
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<td>No-load speed [min⁻¹]</td>
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<td>Nominal power [W]</td>
<td>$P_N$ 69.8</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 8.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_2$</td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 39
- **Output channels**: 2

### Other Data
- **Gear ratio**: 39.7/1
- **Gear wheel material**: plastic
- **Suppression components**: 4.0µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 0.650
- **Remarks**: $d = 3.3$mm, for self-cutting screw 4mm

### Characteristic curves

![Characteristic curves](image)

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**W 249**

**S 30**

**S 109**

- Terminal 1, OUT A1, grey
- Terminal 2, OUT A2, black
- Terminal 3, +, white
- Terminal 4, -, red
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 216

I Terminal 1, motor, violet
II Terminal 2, motor, blue

Notes
### Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

### Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
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</thead>
<tbody>
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<td>n_0</td>
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<td>P_N</td>
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<td>I_N</td>
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<tr>
<td>Nominal force [kN]</td>
<td>F_N</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s_3</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor data
- Pulses: 116
- Output channels: 1

### Other data
- Gear ratio: 116/1
- Gear wheel material: plastic
- Suppression components: 2.5µH, 47nF, ( )
- Enclosure class: IP 30
- Weight [kg]: 0.800

### Remarks:
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com

Notes
TECHNICAL DESCRIPTION

Motorhousing: sheet metal, rolled & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: combination of worm and spur gear
Gear housing: plastic
Gear wheel material: plastic
Lubrication: grease
Mechanical interface: hollow shaft with profile
Electric interface: connector or leads with connector
Sensor: optional
Thermal protection: optional
EMC suppression: optional

INDUSTRIAL APPLICATION
Machine construction

AUTOMOTIVE APPLICATION
Seat Recline Adjustment
Series GMPD
Motor type 404 682

<table>
<thead>
<tr>
<th>Design Data</th>
<th>Performance data</th>
</tr>
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<tbody>
<tr>
<td>Commutation</td>
<td>Rated voltage [V]</td>
</tr>
<tr>
<td>Brushed</td>
<td>$U_N$</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Nominal torque [Nm]</td>
</tr>
<tr>
<td>Bi-directional</td>
<td>$M_N$</td>
</tr>
<tr>
<td>Bearing type</td>
<td>No-load speed [min$^{-1}$]</td>
</tr>
<tr>
<td>A:Sleeve - B:Sleeve</td>
<td>$n_0$</td>
</tr>
<tr>
<td></td>
<td>Nominal power [W]</td>
</tr>
<tr>
<td></td>
<td>$P_N$</td>
</tr>
<tr>
<td></td>
<td>Nominal current [A]</td>
</tr>
<tr>
<td></td>
<td>$I_N$</td>
</tr>
<tr>
<td></td>
<td>Nominal force [kN]</td>
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<tr>
<td></td>
<td>$F_N$</td>
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<tr>
<td></td>
<td>Duty cycle</td>
</tr>
<tr>
<td></td>
<td>$s_3$</td>
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<table>
<thead>
<tr>
<th>Sensor data</th>
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<tbody>
<tr>
<td>Pulses</td>
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<tr>
<td></td>
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<tr>
<td>Output channels</td>
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<tr>
<td>Enclosure class</td>
<td>IP 40</td>
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<tr>
<td>Weight [kg]</td>
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Remarks:

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Other data

Gear ratio 210/1
Gear wheel material plastic
Suppression components 7.5µH, 1nF
Enclosure class IP 40
Weight [kg] 0.440
Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Other data

Gear ratio 210/1
Gear wheel material plastic
Suppression components 7.5µH, 1nF
Enclosure class IP 40
Weight [kg] 0.440
Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Other data

Gear ratio 210/1
Gear wheel material plastic
Suppression components 7.5µH, 1nF
Enclosure class IP 40
Weight [kg] 0.440
Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Series GMPD
Motor type 404 747

### Design Data

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<tr>
<td>Bearing type</td>
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### Performance data

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<td>No-load speed [min⁻¹]</td>
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<td>Nominal power [W]</td>
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<tr>
<td>Nominal current [A]</td>
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<tr>
<td>Nominal force [kN]</td>
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<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
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### Sensor data

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<th>Value</th>
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### Other data

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<td>plastic</td>
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<tr>
<td>Suppression components</td>
<td>$5.5\mu H, 47nF, (0.47\mu F)$</td>
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<td>Enclosure class</td>
<td>IP 40</td>
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<td>Weight [kg]</td>
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### Remarks:

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Motor picture**

**Characteristics Curves**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

**W 270**

**S 93**

**K 220**

*Connector TYCO C-208-15621 (Z) mating with:*
*Connector housing 1379217-3 & cover 1379218-2*

www.tycoelectronics.com
### Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

### Performance data
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<td>Nominal current [A]</td>
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<tr>
<td>Nominal force [kN]</td>
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<td>Duty cycle</td>
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### Sensor data
- Pulses: 210
- Output channels: 1

### Other data
- Gear ratio: 210/1
- Gear wheel material: plastic
- Suppression components: 5.5\(\mu\)H, 47nF, (0.47\(\mu\)F)
- Enclosure class: IP 40
- Weight [kg]: 0.440

### Remarks:
- Motor picture
- Characteristic curves
- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoontronics.com

Notes
Series GMPD
Motor type 404 764

Design Data

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<td>Bearing type</td>
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Performance data

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<td>Duty cycle</td>
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Sensor data

<table>
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<th>Specification</th>
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<td>Output channels</td>
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Other data

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<td>Suppression components</td>
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<td>Enclosure class</td>
<td>IP 40</td>
</tr>
<tr>
<td>Weight [kg]</td>
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Remarks:

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Characteristics curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I through Profile KRC 316928 AEIZ 01
II Terminal 1, black
III Terminal 2, blue

Tap housing 365007-1, timer contacts 928781-5
Mating with receptacle housing 365005-1,
timer contacts 927788-1
1 black motor, 2 blue motor

53
Series GMPD
Motor type 404 904

### Design Data
- **Commutation:** Brushed
- **Direction of rotation:** Bi-directional
- **Bearing type:** A:Sleeve - B:Sleeve

### Performance Data
- **Rated voltage [V]:** $U_N$ 12
- **Nominal torque [Nm]:** $M_N$ 2.00
- **No-load speed [min$^{-1}$]:** $n_0$ 21.0
- **Nominal power [W]:** $P_N$ 3.95
- **Nominal current [A]:** $I_N$ 3.0
- **Nominal force [kN]:** $F_N$ 0.00
- **Duty cycle:** $s_3$

### Sensor Data
- **Pulses:** 0
- **Output channels:** 0

### Other Data
- **Gear ratio:** 210/1
- **Gear wheel material:** plastic
- **Suppression components:** 5.5µH, 47nF
- **Enclosure class:** IP 40
- **Weight [kg]:** 0.440

### Remarks:
- Motor picture
- Characteristic curves
- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

### Connector Information
- **Connector TYCO C-208-15621 (Z) mating with:**
  - Connector housing 1379217-3 & cover 1379218-2
  - www.tycoelectronics.com

---

54 Drive Technology 2011/12
Series GMPD
Motor type 404 905

**Design Data**
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

**Performance data**
- Rated voltage [V] \( U_N \): 12
- Nominal torque [Nm] \( M_N \): 2.00
- No-load speed [min⁻¹] \( n_0 \): 21.0
- Nominal power [W] \( P_N \): 3.95
- Nominal current [A] \( I_N \): 3.0
- Nominal force [kN] \( F_N \): 0.00
- Duty cycle \( s_2 \)

**Sensor data**
- Pulses: 210
- Output channels: 1

**Other data**
- Gear ratio: 210/1
- Gear wheel material: plastic
- Suppression components: 5.5µH, 47nF
- Enclosure class: IP 40
- Weight [kg]: 0.440

**Remarks:**
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Characteristic curves**

---

![Motor picture](image)

![Output shaft drawing](image)

![Wiring diagrams](image)

---

1. through Profile KRC 316928 AEIZ 01
2. Terminal 1
3. Terminal 5
4. Terminal 4; Hall-IC +
5. Terminal 2; Hall-IC -
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com

Notes
Series GMPD
Motor type 404 907

Design Data

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Performance data

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<td>Nominal power [W]</td>
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<td>I_N 3.5</td>
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<td>Nominal force [kN]</td>
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<td>Duty cycle</td>
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Sensor data

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Other data

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<td>Suppression components</td>
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<td>Enclosure class</td>
<td>IP 40</td>
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<td>Weight [kg]</td>
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Remarks: Plastic gearbox

Other data

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<td>Enclosure class</td>
<td>IP 40</td>
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<tr>
<td>Weight [kg]</td>
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</table>

Remarks: Plastic gearbox

Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Output shaft drawing (W)

W 224

Output shaft drawing (W)

Output shaft drawing (W)

Output shaft drawing (W)

Wiring diagrams (S)

S 138

Wiring diagrams (S)

S 140
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com

Notes
Series GMPD
Motor type 404 980

Design Data

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Performance data

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<td>Duty cycle</td>
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Sensor data

| Pulses              | 0                          |
| Output channels     | 0                          |

Other data

| Gear ratio          | 210/1                      |
| Gear wheel material | plastic                    |
| Suppression components | 7.5µH, 1nF             |
| Enclosure class     | IP40                       |
| Weight [kg]         | 0.440                      |

Remarks:

Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Terminal 1
Terminal 5
Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com
### Series GMPD

**Motor type 405 031**

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Sleeve - B-Sleeve

#### Performance data

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<td>Nominal force [kN]</td>
<td>$F_N$</td>
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<tr>
<td>Duty cycle</td>
<td>s3</td>
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</tbody>
</table>

#### Sensor data
- **Pulses**: 210
- **Output channels**: 1

#### Other data
- **Gear ratio**: 210/1
- **Gear wheel material**: plastic
- **Suppression components**: 5.5µH, 47nF
- **Enclosure class**: IP 40
- **Weight [kg]**: 0.000

#### Remarks:

#### Characteristic curves

![Characteristic curves](image)

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

### Motor picture

![Motor picture](image)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com
### Series GMPD
#### Motor type 405 061

#### Performance data
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<td>Nominal torque [Nm]</td>
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<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 21.0</td>
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<tr>
<td>Nominal power [W]</td>
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<tr>
<td>Nominal current [A]</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$\delta$ 3</td>
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#### Sensor data
- **Pulses**: 210
- **Output channels**: 2

#### Other data
- **Gear ratio**: 210/1
- **Gear wheel material**: plastic
- **Suppression components**: 5.5µH, 47nF
- **Enclosure class**: IP 40
- **Weight [kg]**: 0.000

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Sleeve - B:Sleeve

**Motor picture**

---

**Characteristics**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

---

1. Through Profile KRC 316928 AEIZ 01
2. Terminal 1
3. Terminal 5
K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover
1379218-2
www.tycoelectronics.com
### Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

### Performance data
- Rated voltage \([V]\): \(U_N\) 24
- Nominal torque \([Nm]\): \(M_N\) 4.00
- No-load speed \([\text{min}^{-1}]\): \(n_0\) 20.0
- Nominal power \([W]\): \(P_N\) 6.70
- Nominal current \([A]\): \(I_N\) 2.0
- Nominal force \([kN]\): \(F_N\) 0.00
- Duty cycle \(s_3\)

### Sensor data
- Pulses: 0
- Output channels: 0

### Other data
- Gear ratio: 246.75/1
- Gear wheel material: plastic
- Suppression components: 7.5\(\mu\), 47nF
- Enclosure class: IP 40
- Weight \([kg]\): 0.440

### Remarks:
- Motor picture
- Characteristic curves

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- Motor picture
- Characteristic curves

---

**Series GMPD**

**Motor type 405 228**

---

Features:
- **Rated voltage:** \(U_N\) 24 V
- **Nominal torque:** \(M_N\) 4.00 Nm
- **No-load speed:** \(n_0\) 20.0 rpm
- **Nominal power:** \(P_N\) 6.70 W
- **Nominal current:** \(I_N\) 2.0 A
- **Nominal force:** \(F_N\) 0.00 kN

**Performance Data**

- **Bearing Type:** A:Sleeve - B:Sleeve
- **No-load Speed:** \(n_0\) 20.0 rpm
- **Nominal Torque:** \(M_N\) 4.00 Nm
- **Rated Voltage:** \(U_N\) 24 V
- **Nominal Power:** \(P_N\) 6.70 W
- **Nominal Current:** \(I_N\) 2.0 A
- **Nominal Force:** \(F_N\) 0.00 kN

**Sensor Data**
- **Pulses:** 0
- **Output Channels:** 0

**Other Data**
- **Gear Ratio:** 246.75/1
- **Gear Wheel Material:** Plastic
- **Suppression Components:** 7.5\(\mu\), 47nF
- **Enclosure Class:** IP 40
- **Weight:** 0.440 kg

**Motor Picture**

- **Output Shaft Drawing (W)**
- **Wiring Diagrams (S)**
- **Connector Layout (K)**

---

**Motor Specifications**

- **Commutation:** Brushed
- **Direction of Rotation:** Bi-directional
- **Bearing Type:** A:Sleeve - B:Sleeve

---

**Output Shaft Drawing**

- **W 224**
- **S 74**
- **K 227**

---

**Interchange Information**

- **Tap Housing:** 365057-1
- **Timer Contacts:** 928781-5
- **Mating with Receptacle Housing:** 365058-1
- **Timer Contacts:** 927768-1
- **1 Black Motor, 2 Blue Motor**
Series GMPD
Motor type 405 228

Design Data Performance data
Commutation Brushed Rated voltage [V] UN 24
Direction of rotation Bi-directional Nominal torque [Nm] MN 4.00
Bearing type A:Sleeve - B:Sleeve No-load speed [min⁻¹] n0 20.0
Nominal power [W] PN 6.70
Nominal current [A] IN 2.0
Nominal force [kN] FN 0.00
Duty cycle s3

Sensor data
Pulses 0
Output channels 0

Other data
Gear ratio 246.75/1
Gear wheel material plastic
Suppression components 7,5µ, 47nF
Enclosure class IP 40
Weight [kg] 0.440

Remarks:
Motor picture Characteristic curves
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Notes

Terminal 1, motor, violet

Terminal 2, motor, blue
**TECHNICAL DESCRIPTION**

- **Motorhousing:** sheet metal, rolled & corrosion protected
- **Excitation field:** permanent magnet
- **Type of gear mesh:** worm gear
- **Gear housing:** zinc die cast
- **Gear wheel material:** plastic
- **Lubrication:** grease
- **Mechanical interface:** steel shaft or hollow shaft with profile
- **Electric interface:** connector or leads with connector
- **Sensor:** optional
- **Thermal protection:** optional
- **EMC suppression:** optional

**INDUSTRIAL APPLICATION**

- Catering, Office machines, Furniture Adjustment, Machine Construction

**AUTOMOTIVE APPLICATION**

- Sunroof adjustment
Series GMPG
Motor type 404 156

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 1.00$
- No-load speed [min$^{-1}$]: $n_0 = 80.0$
- Nominal power [W]: $P_N = 7.33$
- Nominal current [A]: $I_N = 1.5$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s = 3$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 62/1
- Gear wheel material: plastic
- Suppression components: optional
- Enclosure class: IP 30
- Weight [kg]: 0.610

Remarks: d=selftapping screw M5

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Gear ratio: 62/1
Gear wheel material: plastic
Enclosure class: IP 30
Weight [kg]: 0.610

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor housing: sheet metal, rolled & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: worm gear
Gear housing: zinc die cast
Gear wheel material: plastic
Lubrication: grease
Mechanical interface: steel shaft or hollow shaft with profile
Electric interface: connector or leads with connector
Sensor: optional
Thermal protection: optional
EMC suppression: optional

Industrial application:
- Catering, Office machines, Furniture Adjustment, Machine Construction

Automotive application:
- Sunroof adjustment

Motor series:
- DC MOTORS WITH WORM GEAR
Series GMPG
Motor type 404 157

<table>
<thead>
<tr>
<th>Design Data</th>
<th>Performance data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commutation</td>
<td>Rated voltage [V]</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Nominal torque [Nm]</td>
</tr>
<tr>
<td>Bearing type</td>
<td>No-load speed [min⁻¹]</td>
</tr>
<tr>
<td>A:Sleeve - B:Sleeve</td>
<td>Nominal power [W]</td>
</tr>
<tr>
<td></td>
<td>Nominal current [A]</td>
</tr>
<tr>
<td></td>
<td>Nominal force [kN]</td>
</tr>
<tr>
<td></td>
<td>Duty cycle</td>
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<table>
<thead>
<tr>
<th>Sensor data</th>
<th>Other data</th>
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<tr>
<td>Pulses</td>
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</tr>
<tr>
<td>0</td>
<td>Gear wheel material</td>
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<tr>
<td>Output channels</td>
<td>Suppression components</td>
</tr>
<tr>
<td>0</td>
<td>Enclosure class</td>
</tr>
<tr>
<td></td>
<td>Weight [kg]</td>
</tr>
</tbody>
</table>

Remarks: d = for thread-forming screw M 5 DIN 7500

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- Tapered splines 7 x 8 DIN 5481 continuous
- Blade terminal ends 4.8 x 0.8 DIN 46 244
- Blade terminal ends 6.3 x 0.8 DIN 46 244
### Series GMPG

**Motor type 404 166**

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

#### Performance data
- **Rated voltage [V]**: $U_N = 12$
- **Nominal torque [Nm]**: $M_N = 0.50$
- **No-load speed [min⁻¹]**: $n_0 = 60.0$
- **Nominal power [W]**: $P_N = 2.83$
- **Nominal current [A]**: $I_N = 2.0$
- **Nominal force [kN]**: $F_N = 0.00$
- **Duty cycle**: $s_1$

#### Sensor data
- **Pulses**: 0
- **Output channels**: 0

#### Other data
- **Gear ratio**: 62/1
- **Gear wheel material**: Plastic
- **Suppression components**
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710

#### Remarks:

#### Characteristic curves

- **Output shaft drawing (W)**
- **Wiring diagrams (S)**
- **Connector layout (K)**

#### Output shaft drawing (W)
- **W 148**

#### Wiring diagrams (S)
- **S 28**
- **K 117**

---

1. Tapered splines 7 x 8 DIN 5481 continuous
2. Blade terminal ends 6.3 x 0.8 DIN 46 244
3. Blade terminal ends 4.8 x 0.8 DIN 46 244
Series GMPG
Motor type 404 603

### Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

### Performance Data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 1.00$
- No-load speed [min$^{-1}$]: $n_0 = 80.0$
- Nominal power [W]: $P_N = 7.39$
- Nominal current [A]: $I_N = 2.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_3$

### Sensor Data
- Pulses: 0
- Output channels: 0

### Other Data
- Gear ratio: 62/1
- Gear wheel material: plastic
- Suppression components: 7.5µH, 1nF
- Enclosure class: IP30
- Weight [kg]: 0.710

**Remarks:** $d =$ for thread-forming screw M 5 DIN 7500

### Characteristic curves

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**
Series GMPG
Motor type 404 694

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 1.00$
- No-load speed [min⁻¹]: $n_0 = 28.0$
- Nominal power [W]: $P_N = 2.48$
- Nominal current [A]: $I_N = 1.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_2$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 72/1
- Gear wheel material: plastic
- Suppression components: 7.5µH, 1nF
- Enclosure class: IP 30
- Weight [kg]: 0.710

Remarks: d=selftapping screw M5

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

W 229
S 30
K 117

1. Blade terminal ends 4.8 x 0.8 DIN 46 244
2. Blade terminal ends 6.3 x 0.8 DIN 46 244
## Series GMPG
### Motor type 404 763

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Sleeve - B:Sleeve

#### Performance data
- **Rated voltage [V]**: $U_N$ 24
- **Nominal torque [Nm]**: $M_N$ 2.00
- **No-load speed [min$^{-1}$]**: $n_0$ 140.0
- **Nominal power [W]**: $P_N$ 25.1
- **Nominal current [A]**: $I_N$ 5.0
- **Nominal force [kN]**: $F_N$ 0.00
- **Duty cycle**: s3

#### Sensor data
- **Pulses**: 62
- **Output channels**: 2

#### Other data
- **Gear ratio**: 62/1
- **Gear wheel material**: plastic
- **Suppression components**: 4µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 0.710

**Remarks**: d = for thread-forming screw M5 DIN 7500

#### Characteristic curves

#### Motor picture

![Motor picture](image)

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**W 148**

**S 30**

**S 109**

1. Tapered splines 7 x 8 DIN 5481 continuous
2. Terminal 1, OUT A1, grey
3. Terminal 2, OUT A2, black
4. Terminal 3, +, white
5. Terminal 4, -, red
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 205

1. Connector housing AMP 929505-2 mating with connector AMP 929504-2
   blue motor, violet motor, white encoder +, red encoder -, grey A1, black A2

Notes
Series GMPG
Motor type 404 774

**Design Data**
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

**Performance data**
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 1.30$
- No-load speed [min$^{-1}$]: $n_0 = 35.0$
- Nominal power [W]: $P_N = 3.94$
- Nominal current [A]: $I_N = 1.5$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_3$

**Sensor data**
- Pulses: 0
- Output channels: 0

**Other data**
- Gear ratio: 72/1
- Gear wheel material: plastic
- Suppression components: 7.5µH, 1nF
- Enclosure class: IP 30
- Weight [kg]: 0.570
- Remarks: d = for self-tapping screw M5 DIN 7500

**Characteristic curves**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

- **W 229**
- **S 30**
- **K 117**

  I  Blade terminal ends 4.8 x 0.8 DIN 46 244
  II Blade terminal ends 6.3 x 0.8 DIN 46 244

Drive Technology 2011/12
Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A:Sleeve - B:Sleeve

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 1.50$
- No-load speed [min$^{-1}$]: $n_0 = 35.0$
- Nominal power [W]: $P_N = 4.47$
- Nominal current [A]: $I_N = 1.5$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $\sigma_3$

Sensor data
- Pulses: 288
- Output channels: 1

Other data
- Gear ratio: 72/1
- Gear wheel material: plastic
- Suppression components: 7.5µH
- Enclosure class: IP 30
- Weight [kg]: 0.710

Remarks: d = for thread-forming screw M5 DIN 7500

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 268

plug housing Molex minifit jr 39-01-2066
(4.2mm -.165"), terminals Molex 39-00-0430
(18-24AWG, gold plated)
1 violet motor, 2 black encoder gnd, 3 white
encoder +, 4 blue motor, 6 red encoder out

Notes
Notes

---

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Series GMPG**

Motor type 404 910

**Notes**

---

**Series GMPI**

Motor type 404 722

**Notes**

---

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Motor, violet</td>
</tr>
<tr>
<td>2</td>
<td>Motor, blue</td>
</tr>
<tr>
<td>47</td>
<td>77</td>
</tr>
</tbody>
</table>
**TECHNICAL DESCRIPTION**

- **Motorhousing:** sheet metal, rolled & corrosion protected
- **Excitation field:** permanent magnet
- **Type of gear mesh:** worm gear
- **Gear housing:** zinc die cast
- **Gear wheel material:** plastic or resinbonded fabric
- **Lubrication:** grease
- **Mechanical interface:** output shaft
- **Electric interface:** connector or leads with connector
- **Sensor:** optional
- **Thermal protection:** optional
- **EMC suppression:** optional

**APPLICATION**

- General machine construction, Automatic machines,
- Agricultural technology, Business machines,
- Laboratory appliances, Medical appliances,
- Traffic & communications technology,
- Photographic/optical equipment
**Series SWMP**

**Motor type 403 194**

<table>
<thead>
<tr>
<th>Performance data</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage ([V])</td>
<td>(U_N)</td>
</tr>
<tr>
<td>Nominal torque ([Nm])</td>
<td>(M_N)</td>
</tr>
<tr>
<td>No-load speed ([\text{min}^{-1}])</td>
<td>(n_0)</td>
</tr>
<tr>
<td>Nominal power ([W])</td>
<td>(P_N)</td>
</tr>
<tr>
<td>Nominal current ([A])</td>
<td>(I_N)</td>
</tr>
<tr>
<td>Nominal force ([kN])</td>
<td>(F_N)</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
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<tr>
<td>Output channels</td>
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<table>
<thead>
<tr>
<th>Other data</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gear ratio</td>
<td>85/1</td>
</tr>
<tr>
<td>Gear wheel material</td>
<td>Resinbonded fabric</td>
</tr>
<tr>
<td>Suppression components</td>
<td></td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP30</td>
</tr>
<tr>
<td>Weight ([kg])</td>
<td>0.710</td>
</tr>
</tbody>
</table>

Remarks: \(d = M6\)

**Motor picture**

<table>
<thead>
<tr>
<th>Characteristic curves</th>
<th></th>
</tr>
</thead>
</table>

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**
**Series SWMP**

**Motor type 403 279**

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
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<td>Rated voltage [V]</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>2.00</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
<td>54.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
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</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 0
- **Output channels**: 0

### Other Data
- **Gear ratio**: 85/1
- **Gear wheel material**: Plastic
- **Suppression components**: 7.5µH, 47nF
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710

**Remarks**: d = 7.5mm, Ball bearing

### Characteristic curves

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

**S 30**

Spade connector 4.8 DIN 46 247
Series SWMP
Motor type 403 280

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type

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<thead>
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<tbody>
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<tr>
<td>Nominal torque [Nm]</td>
<td>M_N  2.00</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>n_0 52.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>P_N  9.57</td>
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<tr>
<td>Nominal current [A]</td>
<td>I_N  0.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>F_N  0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s1</td>
</tr>
</tbody>
</table>

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 85/1
- Gear wheel material: Plastic
- Suppression components
- Enclosure class: IP30
- Weight [kg]: 0.710

Remarks: d = 7.5mm, Ball bearing

Motor picture

Difference curves
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
## Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**:

## Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
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<td>( U_N ) 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>( M_N ) 2.00</td>
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<tr>
<td>No-load speed [min(^{-1})]</td>
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<td>Nominal power [W]</td>
<td>( P_N ) 9.34</td>
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<tr>
<td>Nominal current [A]</td>
<td>( I_N ) 1.5</td>
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<tr>
<td>Nominal force [kN]</td>
<td>( F_N ) 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>( s_1 )</td>
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</tbody>
</table>

## Sensor data
- **Pulses**: 0
- **Output channels**: 0

## Other data
- **Gear ratio**: 85/1
- **Gear wheel material**: Plastic
- **Suppression components**:
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710
- **Remarks**: d = M6, Ball bearing

## Characteristic curves

![Characteristic curves](image)

- **Output shaft drawing (W)**, **Wiring diagrams (S)** and **Connector layout (K)**
Series SWMP
Motor type 403 290

**Design Data**
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

---

**Performance data**
- **Rated voltage [V]**: $U_N = 24$
- **Nominal torque [Nm]**: $M_N = 2.00$
- **No-load speed [min$^{-1}$]**: $n_0 = 52.0$
- **Nominal power [W]**: $P_N = 9.34$
- **Nominal current [A]**: $I_N = 1.5$
- **Nominal force [kN]**: $F_N = 0.00$
- **Duty cycle**: $s_1$

**Sensor data**
- **Pulses**: 0
- **Output channels**: 0

**Other data**
- **Gear ratio**: 85/1
- **Gear wheel material**: Plastic
- **Suppression components**: IP30
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710

**Remarks**: d = M6, Ball bearing

---

**Motor picture**

---

**Characteristic curves**

---

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

---

**S 28**

---

**I**: green
**II**: black

---

83
**Series SWMP**

**Motor type 403 304**

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

### Performance data
- **Rated voltage [V]**: $U_N = 24$
- **Nominal torque [Nm]**: $M_N = 1.30$
- **No-load speed [min⁻¹]**: $n_0 = 110.0$
- **Nominal power [W]**: $P_N = 12.2$
- **Nominal current [A]**: $I_N = 2.6$
- **Nominal force [kN]**: $F_N = 0.00$
- **Duty cycle**: $s_1$

### Sensor data
- **Pulses**: 0
- **Output channels**: 0

### Other data
- **Gear ratio**: 83/2
- **Gear wheel material**: Plastic
- **Suppression components**
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710

### Remarks
- $d = M6$, Ball bearing

### Characteristic curves

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

![Output shaft drawing](image1)

![Wiring diagrams](image2)

![Connector layout](image3)
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

### Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 1.30</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 100.0</td>
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<td>Nominal power [W]</td>
<td>$P_N$ 11.1</td>
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<td>Nominal current [A]</td>
<td>$I_N$ 3.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data
- **Pulses**: 0
- **Output channels**: 0

### Other data
- **Gear ratio**: 83/2
- **Gear wheel material**: Plastic
- **Suppression components**
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710

**Remarks**: d = M6, Ball bearing

### Characteristic curves

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

**S 28**

I: black
II: green
Series SWMP
Motor type 404 003

Design Data

<table>
<thead>
<tr>
<th>Commutation</th>
<th>Brushed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td></td>
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</table>

Performance data

<table>
<thead>
<tr>
<th>Rated voltage [V]</th>
<th>$U_N$</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>2.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
<td>50.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
<td>8.98</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
<td>2.5</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s1</td>
<td></td>
</tr>
</tbody>
</table>

Sensor data

<table>
<thead>
<tr>
<th>Pulses</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output channels</td>
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Other data

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Gear wheel material</td>
<td>Resinbonded fabric</td>
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<tr>
<td>Suppression components</td>
<td></td>
</tr>
<tr>
<td>Enclosure class</td>
<td></td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.710</td>
</tr>
<tr>
<td>Remarks: d = M6, Ball bearing</td>
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</tr>
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</table>

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I: Housing RDST OCE: 2645082
II: Pins RD OCE: 2642354

Notes
### Series SWMP
#### Motor type 404 127

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

![Motor picture](image)

#### Performance Data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
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<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>2.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
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</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
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</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s1$</td>
<td></td>
</tr>
</tbody>
</table>

#### Sensor Data
- **Pulses**: 0
- **Output channels**: 0

#### Other Data
- **Gear ratio**: 85/1
- **Gear wheel material**: Resinbonded fabric
- **Suppression components**
- **Enclosure class**: IP30
- **Weight [kg]**: 0.710
- **Remarks**: d = M6, Ball bearing

#### Characteristic curves

![Characteristic curves](image)

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

- **Spade connector**: 6.3 x 0.8 DIN 46 244
- I: black
- II: green

---

Drive Technology 2011/12
### Design Data Performance data

- **Commutation**: Brushed
- **Rated voltage**: UN 24
- **Direction of rotation**: Bi-directional
- **Nominal torque**: MN 2.00 Nm
- **No-load speed**: n0 50.0 min⁻¹
- **Nominal power**: PN 8.38 W
- **Nominal current**: IN 2.3 A
- **Nominal force**: FN 0.00 kN
- **Duty cycle**: s1

### Sensor data

- **Pulses**: 0
- **Output channels**: 0

### Other data

- **Gear ratio**: 85/1
- **Gear wheel material**: Resinbonded fabric
- **Enclosure class**: IP30
- **Weight**: 0.710 kg
- **Remarks**: d = M6, Ball bearing

---

**Notes**

---

- Terminal 1, motor, violet
- Terminal 2, motor, blue

---

89
**TECHNICAL DESCRIPTION**

- **Motorhousing**: sheet metal, rolled & corrosion protected
- **Excitation field**: permanent magnet
- **Type of gear mesh**: worm gear
- **Gear housing**: zinc die cast
- **Gear wheel material**: plastic
- **Lubrication**: grease
- **Mechanical interface**: steel lead screw
- **Electric interface**: connector
- **Sensor**: optional
- **Thermal protection**: optional
- **EMC suppression**: optional

**INDUSTRIAL APPLICATION**

- Home automation

**AUTOMOTIVE APPLICATION**

- Seat tilt and height adjustment
Series GMPS
Motor type 404 846

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Sleeve - B:Sleeve

Performance data

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<td>No-load speed [min⁻¹]</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 21.3</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 9.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 2.00</td>
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<tr>
<td>Duty cycle</td>
<td>$\varepsilon$3</td>
</tr>
</tbody>
</table>

Sensor data
- Pulses: 29
- Output channels: 1

Other data
- Gear ratio: 29/1
- Gear wheel material: plastic
- Suppression components: 5.5µH, 47nF, (0.47µF)
- Enclosure class: IP 40
- Weight [kg]: 0.880
- Remarks: $L = 116\text{mm}$, 1 start worm

Characteristic curves

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Shape: 7/16-8 STUB ACME RH, pressure angle 20°, pitch 3.175mm (0.125°), no of starts 1

W 288

S 93

S 85
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com

Notes
Series GMPS
Motor type 404 847

Design Data

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<td>Direction of rotation</td>
<td>Bi-directional</td>
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<tr>
<td>Bearing type</td>
<td>A:Sleeve - B:Sleeve</td>
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Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>( U_N ) 12</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>( M_N ) 1.50</td>
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<tr>
<td>No-load speed [min(^{-1})]</td>
<td>( n_0 ) 180.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>( P_N ) 21.3</td>
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<tr>
<td>Nominal current [A]</td>
<td>( I_N ) 6.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>( F_N ) 2.00</td>
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<tr>
<td>Duty cycle</td>
<td>( \varepsilon_3 )</td>
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Sensor data

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<th>Specification</th>
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<td>Output channels</td>
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Other data

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<tr>
<td>Enclosure class</td>
<td>IP 40</td>
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<tr>
<td>Weight [kg]</td>
<td>0.880</td>
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Remarks: L = 116mm, 1 start worm

Other data

<table>
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<th>Specification</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>Suppression components</td>
<td>5.5( \mu )H, 47nF, (0.47( \mu )F)</td>
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<td>Enclosure class</td>
<td>IP 40</td>
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<tr>
<td>Weight [kg]</td>
<td>0.880</td>
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</table>

Remarks: L = 116mm, 1 start worm

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Motor type 404 847

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Terminal 1</td>
</tr>
<tr>
<td>II</td>
<td>Terminal 5</td>
</tr>
</tbody>
</table>

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Motor type 404 847

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Terminal 1</td>
</tr>
<tr>
<td>II</td>
<td>Terminal 2, Hall-IC +</td>
</tr>
<tr>
<td>III</td>
<td>Terminal 4, Hall-IC +</td>
</tr>
<tr>
<td>IV</td>
<td>Terminal 6</td>
</tr>
</tbody>
</table>
Series GMPS
Motor type 404 847

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com

Notes

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Series GMPS  
Motor type 405 091

**Design Data**
- Commutation: none
- Direction of rotation: Bi-directional
- Bearing type: A: Sleeve - B: Sleeve

**Performance data**
- Rated voltage [V]: $U_N$ 12
- Nominal torque [Nm]: $M_N$ 1.50
- No-load speed [min$^{-1}$]: $n_0$ 145.0
- Nominal power [W]: $P_N$ 16.6
- Nominal current [A]: $I_N$ 6.0
- Nominal force [kN]: $F_N$ 1.50
- Duty cycle: $\delta$ 3

**Sensor data**
- Pulses: 29
- Output channels: 1

**Other data**
- Gear ratio: 29/1
- Gear wheel material
- Suppression components: 5.5$\mu$H, 47nF, (0.47$\mu$F)
- Enclosure class: IP40
- Weight [kg]: 0.880

Remarks: 1 start worm

**Characteristic curves**

**Motor picture**

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Output spindle: 7/16 Stub ACME RH  
Terminal 1  
Terminal 5  
Terminal 4, Hall IC +  
Terminal 2, Hall IC +
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 220

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover
1379218-2
www.tycoelectronics.com

Notes

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Series GMPS
Motor type 405 092

**Design Data**
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: Sleeve - B: Sleeve

**Performance data**
- Rated voltage [V]: $U_N$ = 12
- Nominal torque [Nm]: $M_N$ = 1.50
- No-load speed [min$^{-1}$]: $n_0$ = 145.0
- Nominal power [W]: $P_N$ = 16.6
- Nominal current [A]: $I_N$ = 6.0
- Nominal force [kN]: $F_N$ = 1.50
- Duty cycle: $s_3$

**Sensor data**
- Pulses: 0
- Output channels: 0

**Other data**
- Gear ratio: 29/1
- Gear wheel material
- Suppression components: 5.5µH, 47nF, (0.47µF)
- Enclosure class: IP40
- Weight [kg]: 0.880
- Remarks: 1 start worm

**Characteristic curves**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

- Output spindle: 7 / 16 Stub ACME RH
- Terminal 1
- Terminal 5
- Connector TYCO C-208-15621 (Z) mating with: Connector housing 1379217-3 & cover 1379218-2
  - www.tycoelectronics.com
Series GMPS
Motor type 405 237

Design Data

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<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
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<tr>
<td>Bearing type</td>
<td>A: Sleeve - B: Sleeve</td>
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Performance data

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<tr>
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<th>Value</th>
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<tbody>
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<tr>
<td>Duty cycle</td>
<td>$s_3$</td>
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Sensor data

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<th>Value</th>
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<tbody>
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<td>Pulses</td>
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<td>Output channels</td>
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Other data

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<td>Gear wheel material</td>
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<td>Suppression components</td>
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<td>Enclosure class</td>
<td>IP40</td>
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<tr>
<td>Weight [kg]</td>
<td>0.880</td>
</tr>
</tbody>
</table>

Remarks: L = 116mm

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Output spindle: 7 / 16 Stub ACME RH

Connector TYCO C-208-15621 (Z) mating with:
Connector housing 1379217-3 & cover 1379218-2
www.tycoelectronics.com
Series GMPS
Motor type 405 237

Design Data Performance data
Commutation Brushed Rated voltage [V] UN 24
Direction of rotation Bi-directional Nominal torque [Nm] MN 1.50
Bearing type A: Sleeve - B: Sleeve No-load speed [min⁻¹] n₀ 145.0
Nominal power [W] PN 17.2
Nominal current [A] IN 4.5
Nominal force [kN] FN 1.50
Duty cycle s₃
Sensor data
Pulses 0
Output channels 0
Other data
Gear ratio 29/1
Gear wheel material
Suppression components
Enclosure class IP40
Weight [kg] 0.880
Remarks: L = 116mm

Motor picture
Characteristic curves
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Notes

- Terminal 1, motor, violet
- Terminal 2, motor, blue
**TECHNICAL DESCRIPTION**

- Motorhousing: deep drawn & corrosion protected
- Excitation field: permanent magnet
- Type of gear mesh: worm gear
- Gear housing: zinc die cast
- Gear wheel material: plastic, steel
- Lubrication: grease
- Mechanical interface: steel shaft
- Electric interface: connector or leads with connector
- Sensor: optional
- Thermal protection: optional
- EMC suppression: optional

**INDUSTRIAL APPLICATION**
Door & gate openers, pumps, lubricating technology, appliance, linear actuators

**AUTOMOTIVE APPLICATION**
Trunk & tailgate opening & closing
Series DCK31
Motor type 404 854

### Design Data

- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A: ball - B: sleeve

### Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
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<tbody>
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<td>Rated voltage [V]</td>
<td>$U_N$</td>
<td>24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
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</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
<td>65.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
<td>25.0</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor data

- **Pulses**: 69
- **Output channels**: 1

### Other data

- **Gear ratio**: 69/1
- **Gear wheel material**: plastic
- **Suppression components**: 6 µH
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.250

**Remarks**: d=for selftapping screw M6 DIN ISO 965-2

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

1. **Gearing (rolled)**: 
   - no of teeth 28
   - pitch circle dia 9 mm
   - tip circle dia 9.6 mm
   - root circle dia 8.26 mm
   - space width angle 60° - go/no go
2. **gauge Frenco 33906**: www.frenco.de
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 320

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part# F183917, drwg# C-1899078. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

K 325

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-xx-x or CEP100 F-22-xx-xx-x www.itwpancon.com

K 312

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.1mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSBB244 158 F 6.3-1.5 www.stocko.de

Notes
Series DCK31
Motor type 404 864

Design Data

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<td>Direction of rotation</td>
<td>Bi-directional</td>
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<tr>
<td>Bearing type</td>
<td>A: ball - B: sleeve</td>
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Performance data

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<th>Details</th>
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<td>Rated voltage [V]</td>
<td>( U_N ) 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>( M_N ) 4.00</td>
</tr>
<tr>
<td>No-load speed [min(^{-1})]</td>
<td>( n_0 ) 66.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>( P_N ) 25.4</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>( I_N ) 4.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>( F_N ) 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>( s_1 )</td>
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Sensor data

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<td>Output channels</td>
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Other data

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<td>Gear ratio</td>
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<td>Gear wheel material</td>
<td>plastic</td>
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<tr>
<td>Suppression components</td>
<td>3.5( \mu )H, 1( \mu )F</td>
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<tr>
<td>Enclosure class</td>
<td>IP 30</td>
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<td>Weight [kg]</td>
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<tr>
<td>Remarks: d = for thread-forming screw M6 DIN ISO 965-2</td>
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Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I Circlip

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, dwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, dwg# 925603 www.tycoelectronics.com
Series DCK31
Motor type 404 865

Design Data
Commutation Brushed
Direction of rotation Bi-directional
Bearing type A: Ball - B: Sleeve

Performance data
Rated voltage [V] \( U_N \) 24
Nominal torque [Nm] \( M_N \) 4.00
No-load speed [min\(^{-1}\)] \( n_0 \) 75.0
Nominal power [W] \( P_N \) 28.9
Nominal current [A] \( I_N \) 5.5
Nominal force [kN] \( F_N \) 0.00
Duty cycle \( s_1 \)

Sensor data
Pulses 69
Output channels 2

Other data
Gear ratio 69/1
Gear wheel material Plastic
Suppression components 6.0µH, 1nF
Enclosure class IP30
Weight [kg] 1.210

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-1809078 Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg#925603  www.tycoelectronics.com

K 320

K 321

Notes
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:ball - B:sleeve

### Performance Data

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<th>Parameter</th>
<th>Value</th>
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<td>Rated voltage [V]</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 4.00</td>
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<td>No-load speed [min$^{-1}$]</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 24.4</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 4.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 0
- **Output channels**: 0

### Other Data
- **Gear ratio**: 69/1
- **Gear wheel material**: plastic
- **Suppression components**: 6µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.216

### Remarks
- d = for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Output shaft drawing](image1)

![Wiring diagrams](image2)

![Connector layout](image3)

<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 222</td>
<td>Output shaft drawing (W)</td>
</tr>
<tr>
<td>S 30</td>
<td>Wiring diagrams (S)</td>
</tr>
</tbody>
</table>

*Only for connection of encoder*
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 320

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part# 180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

Notes
Series DCK31
Motor type 404 867

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: ball - B: sleeve

Motor picture

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 6.00$
- No-load speed [min$^{-1}$]: $n_0 = 35.0$
- Nominal power [W]: $P_N = 19.2$
- Nominal current [A]: $I_N = 3.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 69/1
- Gear wheel material: plastic
- Suppression components: $6\mu H, 1nF$
- Enclosure class: IP 30
- Weight [kg]: 1.210

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Flat plug (DIN 46244) 6,3x0,8 mating with receptacle housing part#180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0,5-1,5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com
Series DCK31
Motor type 404 868

Performance data
- Rated voltage [V] \( U_N \) 24
- Nominal torque [Nm] \( M_N \) 4.00
- No-load speed [min\(^{-1}\)] \( n_0 \) 21.0
- Nominal power [W] \( P_N \) 7.79
- Nominal current [A] \( I_N \) 2.0
- Nominal force [kN] \( F_N \) 0.00
- Duty cycle \( s_1 \)

Sensor data
- Pulses 0
- Output channels 0

Other data
- Gear ratio 69/1
- Gear wheel material plastic
- Suppression components 3.5\mu H, 1\mu F
- Enclosure class IP 30
- Weight [kg] 1.210

Design Data
- Commutation Brushed
- Direction of rotation Bi-directional
- Bearing type A: ball - B: sleeve

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristics curves

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part #180907, dwg # C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part # 925603-x, dwg # 925603 www.tycoelectronics.com
Series DCK31
Motor type 404 872

Design Data

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<th>Details</th>
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<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
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<tr>
<td>Bearing type</td>
<td>A:Ball - B:Sleeve</td>
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Performance data

<table>
<thead>
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<td>U_N = 12</td>
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<td>No-load speed [min^-1]</td>
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<td>Nominal power [W]</td>
<td>P_N = 10.8</td>
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<td>Nominal current [A]</td>
<td>I_N = 3.0</td>
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<td>Nominal force [kN]</td>
<td>F_N = 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>s_1</td>
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Sensor data

<table>
<thead>
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<th>Details</th>
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<td>Output channels</td>
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Other data

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<th>Details</th>
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<tr>
<td>Gear wheel material</td>
<td>plastic</td>
</tr>
<tr>
<td>Suppression components</td>
<td>6µH</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.210</td>
</tr>
</tbody>
</table>

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603- x, drwg# 925603 www.tycoelectronics.com
**Series DCK31**

**Motor type 404 961**

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

### Performance Data
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</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
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</tbody>
</table>

### Sensor Data
- **Pulses**: 1
- **Output channels**: 2

### Other Data
- **Gear ratio**: 53/2
- **Gear wheel material**: plastic
- **Suppression components**: 6µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.210

**Remarks**: d= for thread forming screw M6 DIN ISO 965-2

### Characteristic curves

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

1. **Serration (rolled)**: No teeth 28, pitch circle dia 9 mm, tip circle dia 9.6 mm, root circle dia 8.26 mm, space width angle 60° - go/no go
   - gauge Frenco 33906 - www.frenco.de

2. Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

111
Series DCK31
Motor type 404 987

Performance data

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<tr>
<td>Nominal torque [Nm]</td>
<td>( M_N ) 3.00</td>
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<td>No-load speed [min(^{-1})]</td>
<td>( \omega_0 ) 14.0</td>
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<td>Nominal power [W]</td>
<td>( P_N ) 3.60</td>
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<td>Nominal current [A]</td>
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<td>Nominal force [kN]</td>
<td>( F_N ) 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>( s_1 )</td>
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Sensor data

- Pulses: 234
- Output channels: 1

Other data

- Gear ratio: 78/1
- Gear wheel material: bronze
- Suppression components: 6µH, 1nF
- Enclosure class: IP 30
- Weight [kg]: 1.210

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 320

K 321

K 326

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-1809078. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

I Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244

MAS-CON solder tail MLAS 100-3435 mating with end connector CE 100F-22-x-x-x or CEP 100F-22-x-x-x

Notes
### Design Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Commutation</td>
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<td>Direction of rotation</td>
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<tr>
<td>Bearing type</td>
<td>A: ball - B: sleeve</td>
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### Performance data

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<td>No-load speed [min⁻¹]</td>
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<td>Nominal power [W]</td>
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<td>$F_N$</td>
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<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
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### Sensor data

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### Other data

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<td>Gear ratio</td>
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<td>Gear wheel material</td>
<td>plastic</td>
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<tr>
<td>Suppression components</td>
<td>6µH, 1nF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.210</td>
</tr>
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</table>

Remarks: $d = $ for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

#### Diagrams

- Output shaft drawing (W)
- Wiring diagrams (S)
- Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part# 180907, drwg# C-180907. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

MAS-CON solder tail MLAS 100-3435 mating with end connector CE 100F-22-xx-xx or CEP 100F-22-xx-xx

I Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244
### Design Data

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<thead>
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<th>Characteristic</th>
<th>Value</th>
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<tbody>
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<td>Commutation</td>
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<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
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<tr>
<td>Bearing type</td>
<td>A:Ball - B:Sleeve</td>
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### Performance data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
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<td>No-load speed [min$^{-1}$]</td>
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<td>Nominal force [kN]</td>
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</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>207</td>
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<tr>
<td>Output channels</td>
<td>1</td>
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### Other data

<table>
<thead>
<tr>
<th>Characteristic</th>
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<tbody>
<tr>
<td>Gear ratio</td>
<td>53/2</td>
</tr>
<tr>
<td>Gear wheel material</td>
<td>plastic</td>
</tr>
<tr>
<td>Suppression components</td>
<td>6µH, 1nF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.210</td>
</tr>
</tbody>
</table>

### Remarks

- d = for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Notes
Series DCK31
Motor type 404 991

Design Data
Commutation
Brushed
Direction of rotation
Bi-directional
Bearing type
A: Ball- B: Sleeve

Performance data
Rated voltage [V] $U_N$ 24
Nominal torque [Nm] $M_N$ 1.00
No-load speed [min$^{-1}$] $n_0$ 270.0
Nominal power [W] $P_N$ 24.5
Nominal current [A] $I_N$ 3.0
Nominal force [kN] $F_N$ 0.00
Duty cycle $s_1$

Sensor data
Pulses 10.25
Output channels 1

Other data
Gear ratio 41/4
Gear wheel material plastic
Suppression components 6µH, 1nF
Enclosure class IP 30
Weight [kg] 1.250

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

<table>
<thead>
<tr>
<th>K 320</th>
<th>K 325</th>
<th>K 312</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram K 320" /></td>
<td><img src="image2" alt="Diagram K 325" /></td>
<td><img src="image3" alt="Diagram K 312" /></td>
</tr>
</tbody>
</table>

**Notes**

- Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907&. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603- x, drwg# 925603 [www.tycoelectronics.com](http://www.tycoelectronics.com)
- MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-x-x or CEP100 F-22-xx-x-x [www.itwpancon.com](http://www.itwpancon.com)
- Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-1.0mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB8240.158 F 6.3-1.5 [www.stocko.de](http://www.stocko.de)
Series DCK31
Motor type 405 002

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Sleeve

Performance data
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<td>$U_N$ 12</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 4.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 21.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 7.79</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 3.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 69/1
- Gear wheel material: plastic
- Suppression components: 3.5µH, 1µF
- Enclosure class: IP 30
- Weight [kg]: 1.210

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Flat plug (DIN 46244) 6,3x0.8 mating with receptacle housing part#180907, drwg# C-180907& Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 69
- **Output channels**: 2

### Other Data
- **Gear ratio**: 69/1
- **Gear wheel material**: plastic
- **Suppression components**: 6µH
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.250

### Remarks:
- $d =$ for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

1. Hall-IC A1, terminal 3
2. Hall-IC A2, terminal 4
3. Hall-IC +, terminal 5
4. Hall-IC -, terminal 6
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**K 320**

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part# 180907, drwg# C-180907. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

**K 324**

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-xx or CEP100 F-22-xx-xx www.itwpancon.com

**K 312**

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.1mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB8240.158 F 6.3-1.5 www.stocko.de

Notes
Series DCK31
Motor type 405 054

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: Ball - B: Sleeve

Performance data
- Rated voltage [V]: \( U_N \) = 24
- Nominal torque [Nm]: \( M_N \) = 4.00
- No-load speed [min\(^{-1}\)]: \( n_0 \) = 195.0
- Nominal power [W]: \( P_N \) = 59.9
- Nominal current [A]: \( I_N \) = 8.0
- Nominal force [kN]: \( F_N \) = 0.00
- Duty cycle: \( s_1 \)

Sensor data
- Pulses: 26.5
- Output channels: 2

Other data
- Gear ratio: 53/2
- Gear wheel material: Plastic
- Suppression components: 6.0µH, 1nF
- Enclosure class: IP30
- Weight [kg]: 1.210

Remarks: d = for thread-forming screw M6 DIN ISO 965-2

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

- Hall-IC A1, terminal 3
- Hall-IC A2, terminal 4
- Hall-IC +, terminal 5
- Hall-IC -, terminal 6
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244

Mating connector: Panduit CE100 F22-04

Notes
Series DCK31
Motor type 405 072

**Design Data**
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

**Performance data**
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 4.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 55.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 21.5</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 5.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

**Sensor data**
- **Pulses**: 78
- **Output channels**: 1

**Other data**
- **Gear ratio**: 78/1
- **Gear wheel material**: plastic
- **Suppression components**: 6µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.210

**Remarks**: d= for thread forming screw M6 DIN ISO 965-2

**Characteristic curves**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

**Motor picture**

---

Insertion (rolled)
- **no of teeth**: 28
- **pitch circle dia**: 9 mm
- **tip circle dia**: 9.6 mm
- **root circle dia**: 8.26 mm
- **space width angle**: 60°
- **goes with go/no go gauge Frenco 33906**
- www.frenco.de
Series DCK31
Motor type 405 072

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**K 320**

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

**K 312**

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.9mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB240.158 F 6.3-1.5 www.stock.de

**K 325**

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-x-x or CEP100 F-22-xx-x-x www.itwpancon.com

Notes
**Design Data**
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A: Ball - B: Sleeve

<table>
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<tr>
<th>Performance data</th>
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<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 4.00</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 90.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 35.9</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 5.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s1</td>
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</table>

**Sensor data**
- **Pulses**: 69
- **Output channels**: 1

**Other data**
- **Gear ratio**: 69/1
- **Gear wheel material**: plastic
- **Suppression components**: 6µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.210

**Remarks**: d=for thread forming screws M6 DIN-ISO 965-2

**Characteristic curves**

**Motor picture**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

- **W 277**
- **S 30**
- **S150**

---

*Serration (rolled)*
- **no of teeth**: 28
- **pitch circle dia**: 9 mm
- **tip circle dia**: 9.6 mm
- **root circle dia**: 8.26 mm
- **space width angle**: 60°
- **goes with go/no go gauge Frenco 33906**

www.frenco.de
Notes
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A: Ball - B: Sleeve

### Performance data
<table>
<thead>
<tr>
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<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 2.00</td>
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<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 120.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 22.0</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 4.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data
- **Pulses**: 79.5
- **Output channels**: 1

### Other data
- **Gear ratio**: 53/2
- **Gear wheel material**: Plastic
- **Suppression components**: $6.0 \mu H, 1 nF$
- **Enclosure class**: IP30
- **Weight [kg]**: 1.210

### Remarks:
- d = for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

### Motor picture

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### Other data
- **Gear ratio**: 53/2
- **Gear wheel material**: Plastic
- **Suppression components**: $6.0 \mu H, 1 nF$
- **Enclosure class**: IP30
- **Weight [kg]**: 1.210

### Remarks:
- d = for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

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### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

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Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 320

Flat plug (DIN 46244) 6,3x0,8 mating with receptacle housing part#180907, dwg# C-180907. Receptacles for tabs, conductor cross section 0,5-1,5 sqmm (20-18AWG) part# 925603- x, dwg# 925603, www.tycoelectronics.com

K 325

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-xx or CEP100 F-22-xx-xx www.itwpancon.com

K 312

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.1mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB8240.158 F 6.3-1.5, www.stocko.de

Notes
Series DCK31
Motor type 405 251

Notes

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Flat plug (DIN 46244) 6,3x0,8 mating with receptacle housing part#180907, drwg# C-180907

Receptacles for tabs, conductor cross section 0,5-1,5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-x-x or CEP100F-22-xx-x-x www.itwpancon.com

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.1mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB8240.158 F 6.3-1.5 www.stocko.de
**TECHNICAL DESCRIPTION**

- **Motor housing:** deep drawn & corrosion protected
- **Excitation field:** permanent magnet
- **Type of gear mesh:** worm gear
- **Gear housing:** zinc die cast
- **Gear wheel material:** plastic
- **Lubrication:** grease
- **Mechanical interface:** steel shaft
- **Electric interface:** connector
- **Sensor:** optional
- **Thermal protection:** optional
- **EMC suppression:** optional

**INDUSTRIAL APPLICATION**

- Home automation, machine construction

**AUTOMOTIVE APPLICATION**

- Trunk & tailgate opening & closing
**Series DCK35**

**Motor type 404 885**

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 5.00</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 62.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 29.8</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 5.5</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>s1</td>
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</table>

### Sensor Data
- **Pulses**: 63
- **Output channels**: 2

### Other Data
- **Gear ratio**: 63/1
- **Gear wheel material**: plastic
- **Suppression components**: 3.5µH
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.250
- **Remarks**: d = for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

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1. **Serration (rolled)**: no of teeth 28, pitch circle dia 9 mm, tip circle dia 9.6 mm, root circle dia 8.26 mm, space width angle 60° - go/no go
2. **gauge Frenco 33906**: [www.frenco.de](http://www.frenco.de)

---

**I Hall-IC A1, terminal 3**  
**II Hall-IC A2, terminal 4**  
**III Hall-IC +, terminal 5**  
**IV Hall-IC -, terminal 6**
Series DCK35
Motor type 404 885

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 320

I Hall-IC A1, terminal 3
II Hall-IC A2, terminal 4
III Hall-IC +, terminal 5
IV Hall-IC -, terminal 6
V Mating connector: Panduit CE100 F22 - 04

K 319

I Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244

K 314

Notes

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603- x, drwg# 925603 www.tycoelectronics.com

Drive Technology 2011/12
## Design Data

<table>
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<tbody>
<tr>
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</tr>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A:Ball - B:Sleeve</td>
</tr>
</tbody>
</table>

## Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>U&lt;sub&gt;N&lt;/sub&gt; 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>M&lt;sub&gt;N&lt;/sub&gt; 6.00</td>
</tr>
<tr>
<td>No-load speed [min&lt;sup&gt;-1&lt;/sup&gt;]</td>
<td>n&lt;sub&gt;0&lt;/sub&gt; 50.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>P&lt;sub&gt;N&lt;/sub&gt; 28.7</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>I&lt;sub&gt;N&lt;/sub&gt; 4.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>F&lt;sub&gt;N&lt;/sub&gt; 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s&lt;sub&gt;1&lt;/sub&gt;</td>
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## Sensor Data

<table>
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<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
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</tr>
<tr>
<td>Output channels</td>
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## Other Data

<table>
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<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Gear ratio</td>
<td>63/1</td>
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<tr>
<td>Gear wheel material</td>
<td>plastic</td>
</tr>
<tr>
<td>Suppression components</td>
<td>3,5µH, 1nF</td>
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<tr>
<td>Enclosure class</td>
<td>IP 30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.250</td>
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</table>

## Remarks

- d=for thread forming screws M6 DIN ISO 965-2

## Characteristic Curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

1 reflection (rolled): no of teeth 28, pitch circle
dia 9 mm, tip circle dia 9.6 mm, root circle
dia 8.26 mm space width angle 60°, go/no go
gauge Frenco 33906 - www.frenco.de

Flat plug (DIN 46244) 6.3x0.8 mating with
tap, part#180907, www.tycoelectronics.com
Series DCK35
Motor type 404 983

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A:Ball - B:Sleeve

Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>U_N 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>M_N 5.00</td>
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<tr>
<td>No-load speed [min^-1]</td>
<td>n_0 70.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>P_N 33.5</td>
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<tr>
<td>Nominal current [A]</td>
<td>I_N 4.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>F_N 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>s 1</td>
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Sensor data
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Other data
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<tbody>
<tr>
<td>Gear ratio</td>
<td>55/1</td>
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<tr>
<td>Gear wheel material</td>
<td>plastic</td>
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<tr>
<td>Suppression components</td>
<td>3.5µH, 1nF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 30</td>
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<tr>
<td>Weight [kg]</td>
<td>1.250</td>
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<td>Remarks: d = for thread-forming screw M6 DIN ISO 965-2</td>
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</table>

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907 & Receipohces for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-
x, drwg# 925603 www.tycoelectronics.com
Series DCK35
Motor type 404 992

Design Data

- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Sleeve

Performance data

<table>
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<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 6.00</td>
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<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 60.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 29.3</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 7.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

Sensor data

- Pulses: 0
- Output channels: 0

Other data

- Gear ratio: 63/1
- Gear wheel material: plastic
- Suppression components: 3.5µH
- Enclosure class: IP 30
- Weight [kg]: 1.376

Remarks:

- Motor picture
- Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Output shaft drawing (W): 
- Serration (rolled): 28 teeth, pitch circle dia 9 mm, tip circle dia 9.6 mm, root circle dia 8.26 mm, space width angle 60°
- Go/no go gauge: Frenco 33906 - www.frenco.de

Wiring diagrams (S) and Connector layout (K):
- Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, dwg# C-180907 & Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603- x, dwg# 925603 - www.tycoelectronics.com

Motor picture

137
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 314

I Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244

Notes
### Design Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Commutation</td>
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</tr>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td>A: Ball - B: Sleeve</td>
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</tbody>
</table>

### Performance Data

<table>
<thead>
<tr>
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<th>Details</th>
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<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 8.00</td>
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<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 75.0</td>
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<td>$P_N$ 37.7</td>
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<td>Nominal current [A]</td>
<td>$I_N$ 7.0</td>
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<td>Nominal force [kN]</td>
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<td>Duty cycle</td>
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### Sensor Data

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### Other Data

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<td>Suppression components</td>
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<td>Enclosure class</td>
<td>IP30</td>
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<tr>
<td>Weight [kg]</td>
<td>1.250</td>
</tr>
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</table>

### Remarks

d = for thread-forming screw M6 DIN ISO 965-2

### Characteristic curves

![Characteristic curves](image)

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Output shaft drawing](image)

**Serration (rolled):**
- no of teeth 28
- pitch circle dia 9 mm
- tip circle dia 9.6 mm
- root circle dia 8.26 mm
- space width angle 60°
- go/no go

Gauge Frenco 33966 - [www.frenco.de](http://www.frenco.de)

**Terminal 3, A**
- R1
- C1
- Hall

**Terminal 4, +**
- R2
- C2

**Terminal 5, -**
- R+x
- 5 kΩ / 24 V
- 2 kΩ / 12 V
- 1 kΩ / 5 V

![Wiring diagrams](image)

![Connector layout](image)
Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-180907. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, drwg# 925603 www.tycoelectronics.com

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-x-x or CEP100F-22-xx-x-x www.itwpancon.com

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.1mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB244.158 F 6.3-1.5 www.stocko.de
Series DCK35
Motor type 405 033

Design Data

- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: Ball - B: Sleeve

Performance Data

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<tr>
<td>Nominal torque [Nm]</td>
<td>$T_N$ 8.00</td>
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<tr>
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<tr>
<td>Nominal force [kN]</td>
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<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
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</tbody>
</table>

Sensor Data

- Pulses: 91
- Output channels: 1

Other Data

- Gear ratio: 91/1
- Gear wheel material: plastic
- Suppression components: 3.5µH, 1nF
- Enclosure class: IP 30
- Weight [kg]: 1.250

Remarks: d= for thread forming screws M6 DIN ISO 965-2

Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Splines: 8 x 10 (according to DIN 5481)
Output shaft length = 28mm
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**K 320**

Flat plug (DIN 46244) 6,3x0,8 mating with receptacle housing part#180907, drwg# C-180907. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603- x, drwg# 925603 www.tycoelectronics.com

**K 325**

MAS-CON Solder tail MLAS 100-3435 mating with end connector CE100F-22-xx-x-x or CEP100 F-22-xx-x-x www.itwpancon.com

**K 312**

Ground connection 6.3 x 0.8 DIN 46 244, d=0.9-0.1mm, mating with receptacle for tab, conductor cross section 0.5-1.5 sqmm/20-16 AWG, part# RSB8240.158 F 6.3-1.5 www.stocko.de

Notes
## Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A: Ball - B: Sleeve

## Performance Data
<table>
<thead>
<tr>
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<th>Value</th>
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<tr>
<td>Rated voltage [V]</td>
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<tr>
<td>Nominal torque [Nm]</td>
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<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
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</tbody>
</table>

## Sensor Data
- **Pulses**: 91
- **Output channels**: 1

## Other Data
- **Gear ratio**: 91/1
- **Gear wheel material**: plastic
- **Suppression components**: 3.5µ, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 0.000

Remarks: $d$ for thread forming screw M6 DIN ISO 964-2

## Characteristic curves
![Characteristic curves](image)

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Splines**: 8 x 10 (according to DIN 5481)
Output shaft length = 28mm

**Hall-IC A1**: terminal 3
**Hall-IC A2**: terminal 4
**Hall-IC +**: terminal 5
**Hall-IC -**: terminal 6

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Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 320

K 321

- + A2 A1

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, dwg# C-180907&. Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603-x, dwg# 925603 www.tycoelectronics.com

I Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244

I Mating connector: Panduit CE100 F22-04

Notes

Ground connection
Blade terminal 6.3 x 0.8 DIN 46 244

Mating connector: Panduit CE100 F22-04
Series DCK35
Motor type 405 063

**Design Data**
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A:Ball - B:Sleeve

**Performance data**
- **Rated voltage [V]**: $U_N$ 24
- **Nominal torque [Nm]**: $M_N$ 3.00
- **No-load speed [min$^{-1}$]**: $n_0$ 240.0
- **Nominal power [W]**: $P_N$ 65.6
- **Nominal current [A]**: $I_N$ 8.0
- **Nominal force [kN]**: $F_N$ 0.00
- **Duty cycle**: $s_1$

**Sensor data**
- **Pulses**: 17.5
- **Output channels**: 2

**Other data**
- **Gear ratio**: 70/4
- **Gear wheel material**: plastic
- **Suppression components**: 6µH, 1nF
- **Enclosure class**: IP 30
- **Weight [kg]**: 1.366

**Remarks**: $d=$for thread forming screw M6 DIN ISO 965-2

**Characteristic curves**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

**I** Hall-IC A1, terminal 3
**II** Hall-IC A2, terminal 4
**III** Hall-IC +, terminal 5
**IV** Hall-IC -, terminal 6
Series DCK35
Motor type 405 063

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Notes**

Flat plug (DIN 46244) 6.3x0.8 mating with receptacle housing part#180907, drwg# C-189097& Receptacles for tabs, conductor cross section 0.5-1.5 sqmm (20-18AWG) part# 925603- x, drwg# 925603 www.tycoelectronics.com

- Ground connection
- Blade terminal 6.3 x 0.8 DIN 46 244
- Mating connector: Panduit CE100 F22-04

Drive Technology 2011/12
TECHNICAL DESCRIPTION

Motorhousing: rolled, corrosion protected
Excitation field: permanent magnet
Type of gear mesh: worm gear
Gear housing: aluminium die cast
Gear wheel material: plastic
Lubrication: grease
Mechanical interface: steel shaft
Electric interface: connector or tinned leads
Sensor: optional
Thermal protection: optional
EMC suppression: optional

APPLICATION

Industry, Linear drives, General machinery,
Vending machines, Agricultural technology,
Office machines, Laboratory devices,
Medical technology, Traffic & communications technology, Film/optics
**Series SWMK**

**Motor type 402 600**

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

### Performance data
- **Rated voltage [V]**: $U_N = 24$
- **Nominal torque [Nm]**: $M_N = 4.00$
- **No-load speed [min$^{-1}$]**: $n_0 = 50.0$
- **Nominal power [W]**: $P_N = 17.7$
- **Nominal current [A]**: $I_N = 2.5$
- **Nominal force [kN]**: $F_N = 0.00$
- **Duty cycle**: $s_1$

### Sensor data
- **Pulses**: 0
- **Output channels**: 0

### Other data
- **Gear ratio**: 55/1
- **Gear wheel material**: Plastic
- **Suppression components**
- **Enclosure class**: IP30
- **Weight [kg]**: 1.200

### Remarks:

### Characteristic curves

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Series SWMK
Motor type 402 743

Design Data

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<td>Bearing type</td>
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Performance data

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<td>Nominal torque [Nm]</td>
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<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
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Sensor data

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Other data

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<td>Enclosure class</td>
<td>IP30</td>
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<tr>
<td>Weight [kg]</td>
<td>1.200</td>
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</table>

Remarks:

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

S 27

I: Spade connector 2.8 x 0.8 DIN 46 247
Series SWMK
Motor type 402 887

### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

### Performance data

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<tr>
<td>Duty cycle</td>
<td>s₁</td>
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### Sensor data
- **Pulses**: 0
- **Output channels**: 0

### Other data
- **Gear ratio**: 55/1
- **Gear wheel material**: Plastic
- **Suppression components**: 4.7µH, 1nF
- **Enclosure class**: IP30
- **Weight [kg]**: 1.200

### Remarks:

### Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Series SWMK
Motor type 403 389

**Design Data**
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type:

**Performance data**

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<td>Duty cycle</td>
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**Sensor data**
- Pulses | 0 |
- Output channels | 0 |

**Other data**
- Gear ratio | 41/4 |
- Gear wheel material | Plastic |
- Suppression components |
- Enclosure class | IP30 |
- Weight [kg] | 1.200 |

**Remarks:**

**Characteristic curves**

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

1. Blade terminal ends
   6.3 x 0.8 DIN 46 244
2. green
3. red
Series SWMK
Motor type 403 438

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A: Ball - B: Sleeve

Motor picture

Performance data
- Rated voltage [V]: $U_N = 36$
- Nominal torque [Nm]: $M_N = 2.00$
- No-load speed [min$^{-1}$]: $n_0 = 100.0$
- Nominal power [W]: $P_N = 18.3$
- Nominal current [A]: $I_N = 3.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: ±1

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 53/2
- Gear wheel material: Plastic
- Suppression components: 4.7µH, 1nF
- Enclosure class: IP30
- Weight [kg]: 1.200

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

W 159
S 30
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Series SWMK
Motor type 403 474

Design Data

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<td>Bearing type</td>
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Performance data

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<td>Duty cycle</td>
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Sensor data

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<tbody>
<tr>
<td>Pulses</td>
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<td>Output channels</td>
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Other data

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<tbody>
<tr>
<td>Gear ratio</td>
<td>41/4</td>
</tr>
<tr>
<td>Gear wheel material</td>
<td>plastic</td>
</tr>
<tr>
<td>Suppression components</td>
<td>--</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.200</td>
</tr>
</tbody>
</table>

Remarks:

Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Series SWMK
Motor type 403 475

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type

Motor picture

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 0.80$
- No-load speed [min⁻¹]: $n_0 = 350.0$
- Nominal power [W]: $P_N = 27.0$
- Nominal current [A]: $I_N = 4.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 41/4
- Gear wheel material: plastic
- Suppression components: 1nF
- Enclosure class: IP 30
- Weight [kg]: 1.200

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

A: housing MST AMP No. 2-021055-2
B: spade terminals 6.3 x 0.8 DIN 46 244
I: red
II: green
Series SWMK
Motor type 403 559

Design Data

<table>
<thead>
<tr>
<th>Commutation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
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<tr>
<td>Bearing type</td>
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Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
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</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 2.00</td>
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<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 110.0</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 20.8</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 3.0</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>s 1</td>
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Sensor data

<table>
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<th>Value</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Output channels</td>
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Other data

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<th>Value</th>
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</thead>
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<td>Plastic</td>
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<tr>
<td>Suppression components</td>
<td>4.7µH, 1nF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.200</td>
</tr>
</tbody>
</table>

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Motor picture

A: housing MST AMP No. 2-021055-2
B: spade terminals 6.3 x 0.8 DIN 46 244
I: red
II: green
**Series SWMK**

**Motor type 403 567**

### Performance data

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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 1.00</td>
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<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 260.0</td>
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<td>Nominal power [W]</td>
<td>$P_N$ 23.0</td>
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<td>Nominal current [A]</td>
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<td>Nominal force [kN]</td>
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| Duty cycle                | $s_1$ |

### Sensor data

<table>
<thead>
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<th>Parameter</th>
<th>Value</th>
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<td>Pulses</td>
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<tr>
<td>Output channels</td>
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### Other data

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<tr>
<td>Enclosure class</td>
<td></td>
</tr>
<tr>
<td>Weight [kg]</td>
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</table>

### Remarks:

- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

### Characteristic curves

![Characteristic curves](image)

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Motor picture**

![Motor picture](image)
Series SWMK
Motor type 403 790

Design Data

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<th>Feature</th>
<th>Details</th>
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<td>Commutation</td>
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<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Bearing type</td>
<td></td>
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</table>

Performance data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 2.50</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 21.0</td>
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<td>Nominal power [W]</td>
<td>$P_N$ 4.87</td>
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<td>Nominal current [A]</td>
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<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
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</tbody>
</table>

Sensor data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Pulses</td>
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<tr>
<td>Output channels</td>
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Other data

<table>
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<th>Details</th>
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<tbody>
<tr>
<td>Gear ratio</td>
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<td>Plastic</td>
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<tr>
<td>Suppression components</td>
<td>4.7µH, 1µF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP30</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>1.200</td>
</tr>
</tbody>
</table>

Remarks:

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Characteristic curves:

- Graph showing the relationship between speed (n/min) and torque (Nm)
- Graph showing the efficiency ($\eta$) vs. torque (Nm)

Motor picture

- Diagram of the motor showing AR
- Diagram showing the motor as a whole

Other diagrams:

- Output shaft drawing (W)
- Wiring diagrams (S)
- Connector layout (K)

Output terminal endings:

- Blade terminal ends 6.3 x 0.8 DIN 46 244
- Green
- Red
### Series SWMK
#### Motor type 404 203

**Performance data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
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<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>1.00</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
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<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
<td>23.2</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
<td>4.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
</tr>
</tbody>
</table>

**Sensor data**

- Pulses: 10.25
- Output channels: 1

**Other data**

- Gear ratio: 41/4
- Gear wheel material: Plastic
- Suppression components:
- Enclosure class: IP30
- Weight [kg]: 1.200

**Remarks:**

- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

**Motor picture**

[Image of motor picture]

---

**Characteristic curves**

[Graph showing characteristic curves]
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A:</td>
<td>housing MST AMP No. 2-521055-2</td>
</tr>
<tr>
<td>B:</td>
<td>spade terminals 6.3 x 0.8 DIN 46 244</td>
</tr>
<tr>
<td>I:</td>
<td>red</td>
</tr>
<tr>
<td>II:</td>
<td>green</td>
</tr>
</tbody>
</table>

Notes
**TECHNICAL DESCRIPTION**

- **Motorhousing:** deep drawn & corrosion protected
- **Excitation field:** permanent magnet
- **Type of gear mesh:** worm gear
- **Gear housing:** aluminium die cast
- **Gear wheel material:** plastic
- **Lubrication:** grease
- **Mechanical interface:** steel shaft
- **Electric interface:** connector or tinned leads
- **Sensor:** optional
- **Thermal protection:** optional
- **EMC suppression:** optional

**APPLICATION**

- Industry, Linear drives, General machinery,
- Vending machines, Agricultural technology,
- Office machines, Laboratory devices,
- Medical technology, Traffic & communications technology, Film/optics
### Design Data
- **Commutation:** Brushed
- **Direction of rotation:** Bi-directional
- **Bearing type:**

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 5.00</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 40.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 16.8</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 3.5</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses:** 0
- **Output channels:** 0

### Other Data
- **Gear ratio:** 78/1
- **Gear wheel material:** Plastic
- **Suppression components:** 4.7µH, 1nF
- **Enclosure class:** IP40
- **Weight [kg]:** 1.200
- **Remarks:** Ball bearing

### Characteristic curves

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Motor picture](image)

![Graph](image)

![Output shaft drawing](image)

![Wiring diagram](image)

![Connector layout](image)
Series SW2K
Motor type 403 854

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 144

I  Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244

Notes
### Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type

### Performance Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 2.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 230.0</td>
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<td>$P_N$ 44.2</td>
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<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor Data
- Pulses: 0
- Output channels: 0

### Other Data
- Gear ratio: 70/4
- Gear wheel material: plastic
- Suppression components: 
- Enclosure class: IP 40
- Weight [kg]: 1.200
- Remarks: Ball bearing

### Characteristic Curves

![Characteristic Curves](image)

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![W 191](image) ![S 28](image)

1 Lefthand thread
Series SW2K
Motor type 403 930

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 144

I Blade terminal ends 6,3 x 0,8 DIN 46 244
II Blade terminal ends 4,8 x 0,8 DIN 46 244

Notes

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________________________________________________________________________
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________________________________________________________________________
### Series SW2K

**Motor type 403 931**

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

#### Performance data
<table>
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<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
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<tr>
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<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>2.00</td>
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<tr>
<td>No-load speed [min⁻¹]</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
<td>3.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
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</table>

#### Sensor data
- **Pulses**: 0
- **Output channels**: 0

#### Other data
- **Gear ratio**: 70/4
- **Gear wheel material**: plastic
- **Suppression components**: 4.7µH, 1nF
- **Enclosure class**: IP 40
- **Weight [kg]**: 1.200
- **Remarks**: Ball bearing

#### Characteristic curves

---

**Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)**

---

1. Lefthand thread
Series SW2K
Motor type 403 931

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 144

I Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244

Notes

________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________

Drive Technology 2011/12
Series SW2K
Motor type 403 933

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional

Performance data
- Rated voltage [V]: \( U_N = 24 \)
- Nominal torque [Nm]: \( M_N = 2.00 \)
- No-load speed [min\(^{-1}\)]: \( n_0 = 230.0 \)
- Nominal power [W]: \( P_N = 44.2 \)
- Nominal current [A]: \( I_N = 6.0 \)
- Nominal force [kN]: \( F_N = 0.00 \)
- Duty cycle: \( s_1 \)

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 70/4
- Gear wheel material: plastic
- Suppression components: 
- Enclosure class: IP 40
- Weight [kg]: 1.200
- Remarks: Ball bearing

Characteristic curves

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Motor picture](image)

![W 191](image)

![S 30](image)

† Lefthand thread
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I  Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244

Notes
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**

![Motor picture](image)

### Performance data
<table>
<thead>
<tr>
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<tbody>
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<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
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<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
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</table>

### Sensor data
- **Pulses**: 0
- **Output channels**: 0

### Other data
- **Gear ratio**: 78/1
- **Gear wheel material**: plastic
- **Suppression components**: 5µH, 1nF
- **Enclosure class**: IP 40
- **Weight [kg]**: 1.200

### Remarks:

### Characteristic curves

![Characteristic curves](image)

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

#### W 194
![Output shaft drawing](image)

#### S 30
![Wiring diagram](image)

#### K 144
![Connector layout](image)

---

- Blade terminal ends 6.3 x 0.8 DIN 46 244
- Blade terminal ends 4.8 x 0.8 DIN 46 244

---

171
Series SW2K
Motor type 403 939

Design Data

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<tr>
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<td>Bearing type</td>
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Performance data

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<td>Rated voltage [V]</td>
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<tr>
<td>Nominal torque [Nm]</td>
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<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 40.0</td>
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<tr>
<td>Nominal power [W]</td>
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<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 3.0</td>
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<td>$F_N$ 0.00</td>
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<tr>
<td>Duty cycle</td>
<td>$\pm 1$</td>
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Sensor data

<table>
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<th>Value</th>
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<tbody>
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Other data

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<tbody>
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Remarks:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic curves</td>
<td></td>
</tr>
</tbody>
</table>

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Notes

I  Blade terminal ends 6,3 x 0,8 DIN 46 244
II Blade terminal ends 4,8 x 0,8 DIN 46 244
Series SW2K
Motor type 403 957

**Design Data**

- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional

**Performance data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>5.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$</td>
<td>65.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
<td>27.2</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
<td>4.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
</tr>
</tbody>
</table>

**Sensor data**

- **Pulses**: 0
- **Output channels**: 0

**Other data**

- **Gear ratio**: 63/1
- **Gear wheel material**: Plastic
- **Suppression components**: 4.7µH, 1nF
- **Enclosure class**: IP40
- **Weight [kg]**: 1.200

**Remarks**: Ball bearing

**Characteristic curves**

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

1 Lefthand thread
Notes

I  Blade terminal ends 6,3 x 0,8 DIN 46 244
II Blade terminal ends 4,8 x 0,8 DIN 46 244
### Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: No-load speed [min⁻¹] $n_0 = 65.0$

### Performance Data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
<td>5.00</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
<td>65.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
<td>27.2</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$</td>
<td>4.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor Data
- Pulses: 0
- Output channels: 0

### Other Data
- Gear ratio: 63/1
- Gear wheel material: Plastic
- Suppression components: 4.7µH, 1nF
- Enclosure class: IP40
- Weight [kg]: 1.200

### Remarks
- Ball bearing

### Characteristic curves

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

![Motor picture](image)

![Characteristic curve](image)

† Lefthand thread
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244

Notes

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
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____________________________________________________________________
____________________________________________________________________

177
### Design Data
- **Commutation:** Brushed
- **Direction of rotation:** Bi-directional
- **Bearing type:**

### Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 12</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 3.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 270.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 68.9</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 15.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$s_1$</td>
</tr>
</tbody>
</table>

### Sensor data
- **Pulses:** 0
- **Output channels:** 0

### Other data
- **Gear ratio:** 70/4
- **Gear wheel material:** plastic
- **Suppression components:** 1.9µH, 1µF
- **Enclosure class:** IP 40
- **Weight [kg]:** 1.200
- **Remarks:** Ball bearing

### Characteristic curves

### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

<table>
<thead>
<tr>
<th>W 317</th>
<th>S 30</th>
<th>K 144</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Output shaft drawing" /></td>
<td><img src="image" alt="Wiring diagram" /></td>
<td><img src="image" alt="Connector layout" /></td>
</tr>
</tbody>
</table>

- **W 317**
  - Tapered splines 8 x 10 f
  - (similar DIN 5481)

- **S 30**
  - Blade terminal ends 6.3 x 0.8 DIN 46 244

- **K 144**
  - Blade terminal ends 4.8 x 0.8 DIN 46 244
<table>
<thead>
<tr>
<th><strong>Series</strong></th>
<th>SW2K</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor type</strong></td>
<td>404 925</td>
</tr>
</tbody>
</table>

### Design Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage ([V])</td>
<td>UN 12</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Nominal torque ([Nm])</td>
<td>MN 3.00</td>
</tr>
<tr>
<td>No-load speed ([\text{min}^{-1}])</td>
<td>n0 270.0</td>
</tr>
<tr>
<td>Nominal power ([W])</td>
<td>PN 68.9</td>
</tr>
<tr>
<td>Nominal current ([A])</td>
<td>IN 15.0</td>
</tr>
<tr>
<td>Nominal force ([kN])</td>
<td>FN 0.00</td>
</tr>
</tbody>
</table>

### Sensor Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>0</td>
</tr>
<tr>
<td>Output channels</td>
<td>0</td>
</tr>
</tbody>
</table>

### Other Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear ratio</td>
<td>70/4</td>
</tr>
<tr>
<td>Gear wheel material</td>
<td>plastic</td>
</tr>
<tr>
<td>Suppression components</td>
<td>1.9µH, 1µF</td>
</tr>
<tr>
<td>Enclosure class</td>
<td>IP 40</td>
</tr>
<tr>
<td>Weight ([kg])</td>
<td>1.200</td>
</tr>
</tbody>
</table>

**Remarks:** Ball bearing

### Notes

- Terminal 1, motor, violet
- Terminal 2, motor, blue

---

**Series GMPI**

**Motor type 404 722**

### Notes

- Terminal 1, motor, violet
- Terminal 2, motor, blue
**TECHNICAL DESCRIPTION**

Motorhousing: deep drawn & corrosion protected
Excitation field: permanent magnet
Type of gear mesh: worm gear
Gear housing: aluminium die cast
Gear wheel material: plastic
Lubrication: grease
Mechanical interface: steel shaft
Electric interface: connector
Sensor: optional
Thermal protection: optional
EMC suppression: optional

**INDUSTRIAL APPLICATION**
Gate Opener, Patient Hoist,
Machine construction
Series SW2L
Motor type 404 148

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A:Ball - B:Sleeve

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 6.00$
- No-load speed [min$^{-1}$]: $n_0 = 48.0$
- Nominal power [W]: $P_N = 27.9$
- Nominal current [A]: $I_N = 6.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 74/1
- Gear wheel material: plastic
- Suppression components: 4.7µH, 1µF
- Enclosure class: IP40
- Weight [kg]: 1.716

Remarks:
Characteristic curves

Motor picture

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

S 30
K 144

I Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244
Series SW2L
Motor type 404 360

Design Data
Commutation: Brushed
Direction of rotation: Bi-directional
Bearing type: A: Ball - B: Sleeve

Motor picture

Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 8.00</td>
</tr>
<tr>
<td>No-load speed [min$^{-1}$]</td>
<td>$n_0$ 48.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 36.3</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 5.5</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>±1</td>
</tr>
</tbody>
</table>

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 74/1
- Gear wheel material: Plastic
- Suppression components: 4.7µH, 1µF
- Enclosure class: IP40
- Weight [kg]: 1.700

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244
Series SW2L
Motor type 404 385

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Sleeve

Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>UN</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>MN</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>n0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>P_N</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>I_N</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>F_N</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>s1</td>
</tr>
</tbody>
</table>

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 103/4
- Gear wheel material: plastic
- Suppression components: 4.7μH, 1nF
- Enclosure class: IP 40
- Weight [kg]: 1.700

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

1 Lefthand thread
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I  Blade terminal ends 6.3 x 0.8 DIN 46 244
II Blade terminal ends 4.8 x 0.8 DIN 46 244

Notes
Series SW2L
Motor type 404 386

Design Data

- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Sleeve

Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$ 24</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$ 4.00</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$ 190.0</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$ 73.1</td>
</tr>
<tr>
<td>Nominal current [A]</td>
<td>$I_N$ 7.0</td>
</tr>
<tr>
<td>Nominal force [kN]</td>
<td>$F_N$ 0.00</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>$S_1$</td>
</tr>
</tbody>
</table>

Sensor data

- Pulses: 0
- Output channels: 0

Other data

- Gear ratio: 103/4
- Gear wheel material: plastic
- Suppression components: $4.7\mu$H, 1nF
- Enclosure class: IP 40
- Weight [kg]: 1.700

Remarks:

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

1 Lefthand thread
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I Blade terminal ends 6.3 x 0.8 DIN 46 244

II Blade terminal ends 4.8 x 0.8 DIN 46 244

Notes
### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A: Ball - B: Sleeve

### Performance Data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V] ( U_N )</td>
<td>24</td>
</tr>
<tr>
<td>Nominal torque [Nm] ( M_N )</td>
<td>6.00</td>
</tr>
<tr>
<td>No-load speed [min⁻¹] ( n_0 )</td>
<td>48.0</td>
</tr>
<tr>
<td>Nominal power [W] ( P_N )</td>
<td>21.9</td>
</tr>
<tr>
<td>Nominal current [A] ( I_N )</td>
<td>4.0</td>
</tr>
<tr>
<td>Nominal force [kN] ( F_N )</td>
<td>0.00</td>
</tr>
<tr>
<td>Duty cycle ( s_1 )</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor Data
- **Pulses**: 74
- **Output channels**: 1

### Other Data
- **Gear ratio**: 74/1
- **Gear wheel material**: Plastic
- **Suppression components**: 4.7µH, 1nF
- **Enclosure class**: IP40
- **Weight [kg]**: 1.730

### Remarks:
- Motor picture
- Characteristic curves
- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

### Splines:
10 x 12f (according to DIN 5481)
Series SW2L
Motor type 404 642

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

K 144

I  Blade terminal ends 6,3 x 0,8 DIN 46 244
II Blade terminal ends 4,8 x 0,8 DIN 46 244

Notes
Series SW2L
Motor type 404 642

Notes

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

I
Blade terminal ends 6,3 x 0,8 DIN 46 244

II
Blade terminal ends 4,8 x 0,8 DIN 46 244

I
Terminal 1, motor, violet

II
Terminal 2, motor, blue

190 Drive Technology 2011/12
**TECHNICAL DESCRIPTION**

- Motorhousing: sheet metal, rolled & corrosion protected
- Excitation field: permanent magnet
- Type of gear mesh: worm gear
- Gear housing: zinc die cast
- Gear wheel material: plastic, resin bonded fabrics, steel
- Lubrication: grease
- Mechanical interface: steel shaft
- Electric interface: connector or leads
- Sensor: –
- Thermal protection: –
- EMC suppression: optional

**INDUSTRIAL APPLICATION**

Machine construction
Series SWMV
Motor type 402 523

Design Data
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A: Ball - B: Sleeve

Performance data
- Rated voltage [V]: $U_N = 24$
- Nominal torque [Nm]: $M_N = 6.00$
- No-load speed [min$^{-1}$]: $n_0 = 67.0$
- Nominal power [W]: $P_N = 38.5$
- Nominal current [A]: $I_N = 5.0$
- Nominal force [kN]: $F_N = 0.00$
- Duty cycle: $s_1$

Sensor data
- Pulses: 0
- Output channels: 0

Other data
- Gear ratio: 46/1
- Gear wheel material: Bronze
- Suppression components
- Enclosure class: IP20
- Weight [kg]: 2.900

Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

A: keyway 5 - P9 width tolerance
B: undercut E 0.6 x 0.2 to DIN 509

A: spade ends 6.3 x 0.8 (according to DIN 46 244)
### Series SWMV
#### Motor type 402 525

<table>
<thead>
<tr>
<th><strong>Design Data</strong></th>
<th><strong>Performance data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Commutation</td>
<td>Rated voltage [V]</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Nominal torque [Nm]</td>
</tr>
<tr>
<td>Bearing type</td>
<td>No-load speed [min⁻¹]</td>
</tr>
<tr>
<td></td>
<td>Nominal power [W]</td>
</tr>
<tr>
<td></td>
<td>Nominal current [A]</td>
</tr>
<tr>
<td></td>
<td>Nominal force [kN]</td>
</tr>
<tr>
<td></td>
<td>Duty cycle</td>
</tr>
<tr>
<td></td>
<td>Sensor data</td>
</tr>
<tr>
<td></td>
<td>Pulses</td>
</tr>
<tr>
<td></td>
<td>Output channels</td>
</tr>
<tr>
<td></td>
<td>Other data</td>
</tr>
<tr>
<td></td>
<td>Gear ratio</td>
</tr>
<tr>
<td></td>
<td>Gear wheel material</td>
</tr>
<tr>
<td></td>
<td>Suppression components</td>
</tr>
<tr>
<td></td>
<td>Enclosure class</td>
</tr>
<tr>
<td></td>
<td>Weight [kg]</td>
</tr>
</tbody>
</table>

### Comments:
- d = M6x16mm

### Characteristic curves

- Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

**Motor picture**

**Motor data**

- Rated voltage: $U_N = 24$ V
- Nominal torque: $M_N = 8.00$ Nm
- No-load speed: $n_0 = 78.0$ min⁻¹
- Nominal power: $P_N = 58.5$ W
- Nominal current: $I_N = 6.0$ A
- Nominal force: $F_N = 0.00$ kN
- Duty cycle: $s = 1$
- Pulses: $0$
- Output channels: $0$
- Gear ratio: $46/1$
- Gear wheel material: Resinbonded fabric
- Enclosure class: IP 20
- Weight: $2.900$ kg

**Remarks:**
- d = M6x16mm

**Fault plug 6,8x0,8 DIN 46244 mating with receptacle for tabs and connector housing 163 006-1, dwg C163006, www.tycoelectronics.com**

---

**Drive Technology 2011/12**
Series SWMV
Motor type 402 826

<table>
<thead>
<tr>
<th>Design Data</th>
<th>Performance data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commutation</td>
<td>Rated voltage [V] ( U_N ) 12</td>
</tr>
<tr>
<td>Direction of rotation</td>
<td>Nominal torque [Nm] ( M_N ) 6.00</td>
</tr>
<tr>
<td>Bearing type</td>
<td>No-load speed ( \text{[min}^{-1}] ) ( n_0 ) 52.0</td>
</tr>
<tr>
<td></td>
<td>Nominal power [W] ( P_N ) 29.7</td>
</tr>
<tr>
<td></td>
<td>Nominal current ( [A] ) ( I_N ) 6.0</td>
</tr>
<tr>
<td></td>
<td>Nominal force ( [kN] ) ( F_N ) 0.00</td>
</tr>
<tr>
<td></td>
<td>Duty cycle ( s_1 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>0</td>
</tr>
<tr>
<td>Output channels ( [0] )</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear ratio ( 59/1 )</td>
<td></td>
</tr>
<tr>
<td>Gear wheel material</td>
<td>Resinbonded fabric</td>
</tr>
<tr>
<td>Suppression components</td>
<td></td>
</tr>
<tr>
<td>Enclosure class ( IP 20 )</td>
<td></td>
</tr>
<tr>
<td>Weight ( [kg] ) 2.900</td>
<td></td>
</tr>
</tbody>
</table>

| Remarks: \( d = M6x16mm \)       |                                  |

<table>
<thead>
<tr>
<th>Characteristic curves</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Output shaft drawing (W)</td>
<td></td>
</tr>
<tr>
<td>Wiring diagrams (S)</td>
<td></td>
</tr>
<tr>
<td>Connector layout (K)</td>
<td></td>
</tr>
</tbody>
</table>

Flat plug 6.8x0.8 DIN 46244 mating with receptacle for tabs and connector housing 163 006-1, drwg C163006, www.tycoelectronics.com
## Series SWMV
### Motor type 403 179

#### Design Data
- **Commutation**: Brushed
- **Direction of rotation**: Bi-directional
- **Bearing type**: A: Ball - B: Sleeve

#### Performance data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [V]</td>
<td>$U_N$</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>$M_N$</td>
</tr>
<tr>
<td>No-load speed [min⁻¹]</td>
<td>$n_0$</td>
</tr>
<tr>
<td>Nominal power [W]</td>
<td>$P_N$</td>
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#### Sensor data
- **Pulses**: 0
- **Output channels**: 0

#### Other data
- **Gear ratio**: 59/1
- **Gear wheel material**: Bronze
- **Suppression components**: 5.0µH
- **Enclosure class**: IP20
- **Weight [kg]**: 2.900

#### Remarks:
- **Motor picture**
- **Characteristic curves**

#### Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
- **A**: keyway 5 - P9 width tolerance
- **B**: undercut E 0.6 x 0.2 to DIN 509
- **I**: red
- **II**: green
Series SWMV
Motor type 403 334

Design Data
Commutation
Brushed
Direction of rotation
Bi-directional
Bearing type
A: Ball - B: Sleeve

Performance data
Rated voltage [V]  \( U_N \)
24
Nominal torque [Nm]  \( M_N \)
3.00
No-load speed [min\(^{-1}\)]  \( n_0 \)
220.0
Nominal power [W]  \( P_N \)
65.7
Nominal current [A]  \( I_N \)
8.0
Nominal force [kN]  \( F_N \)
0.00
Duty cycle  \( s_1 \)

Sensor data
Pulses
0
Output channels
0

Other data
Gear ratio 44/2
Gear wheel material plastic
Suppression components 6.5\( \mu \)H, 1nF
Enclosure class IP 20
Weight [kg] 2.900

Remarks: d = M8 x 16 mm

Motor picture

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

W 070
S 30
K 274

red
green
Series SWMV
Motor type 403 362

**Design Data**
- Commutation: Brushed
- Direction of rotation: Bi-directional
- Bearing type: A:Ball - B:Sleeve

**Performance data**

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**Sensor data**
- Pulses: 0
- Output channels: 0

**Other data**
- Gear ratio: 59/1
- Gear wheel material: Resinbonded fabric
- Suppression components
- Enclosure class: IP 20
- Weight [kg]: 2.900

**Remarks:** $d = M8 \times 23mm$

**Characteristic curves**

**Motor picture**

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

**Flat plug 6,8x0,8 DIN 46244 mating with receptacle for tabs and connector housing 163 006-1, dwg C163006, www.tycoelectronics.com**
Design Data

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Performance data

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Sensor data

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Other data

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Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)
**TECHNICAL DESCRIPTION**

- **Motorhousing:** sheet metal, rolled & corrosion protected
- **Excitation field:** permanent magnet
- **Type of gear mesh:** worm gear
- **Gear housing:** zinc die cast
- **Gear wheel material:** plastic, resin bonded fabrics, steel
- **Lubrication:** grease
- **Mechanical interface:** steel shaft
- **Electric interface:** leads with connector
- **Sensor:** optional
- **Thermal protection:** optional
- **EMC suppression:** optional

**INDUSTRIAL APPLICATION**

- Machine construction
Series SWMG
Motor type 402 853

Design Data

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Sensor data

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Remarks:

Characteristic curves

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Groove for feather key A 5x3x12  DIN 6885
### Series SWMG
#### Motor type 403 460

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**Remarks:**

**Characteristic curves**

Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

Drive Technology 2011/12
Series SWMG
Motor type 403 460

Commutation Brushed
Rated voltage [V] UN 24
Direction of rotation Bi-directional
Nominal torque [Nm] MN 10.0
Bearing type A:Ball - B:Sleeve
No-load speed [min⁻¹] n₀ 165.0
Nominal power [W] PN 156
Nominal current [A] IN 5.0
Nominal force [kN] FN 0.00
Duty cycle s₁

Sensor data
Pulses 0
Output channels 0

Other data
Gear ratio 43/3
Gear wheel material plastic
Suppression components
Enclosure class IP 20
Weight [kg] 4.200

Remarks:
Motor picture Characteristic curves
Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

Notes
Notes

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Output shaft drawing (W), Wiring diagrams (S) and Connector layout (K)

---

Terminal 1, motor, violet

Terminal 2, motor, blue

---

Commutation

Brushed

Rated voltage [V] UN 24

Direction of rotation Bi-directional

Nominal torque [Nm] MN 10.0

Bearing type

A:Ball - B:Sleeve

No-load speed [min-1] n0 165.0

Nominal power [W] PN 156

Nominal current [A] IN 5.0

Nominal force [kN] FN 0.00

Duty cycle s1

Sensor data

Pulses 0

Output channels 0

Other data

Gear ratio 43/3

Gear wheel material plastic

Suppression components

Enclosure class IP 20

Weight [kg] 4.200

Remarks:

Motor picture

Characteristic curves

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Notes

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</table>
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