

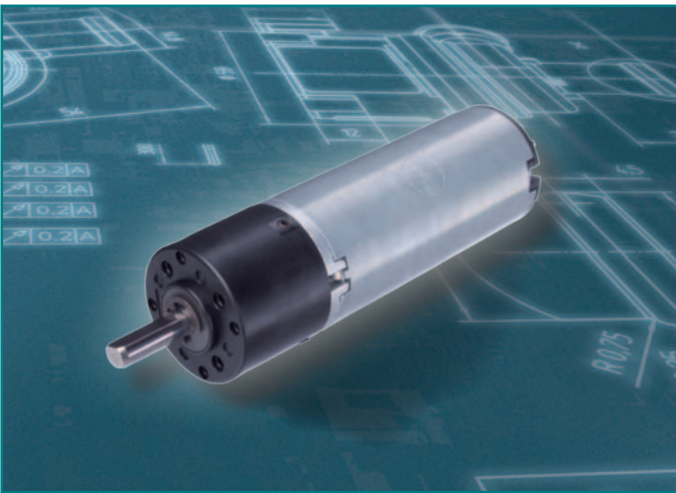
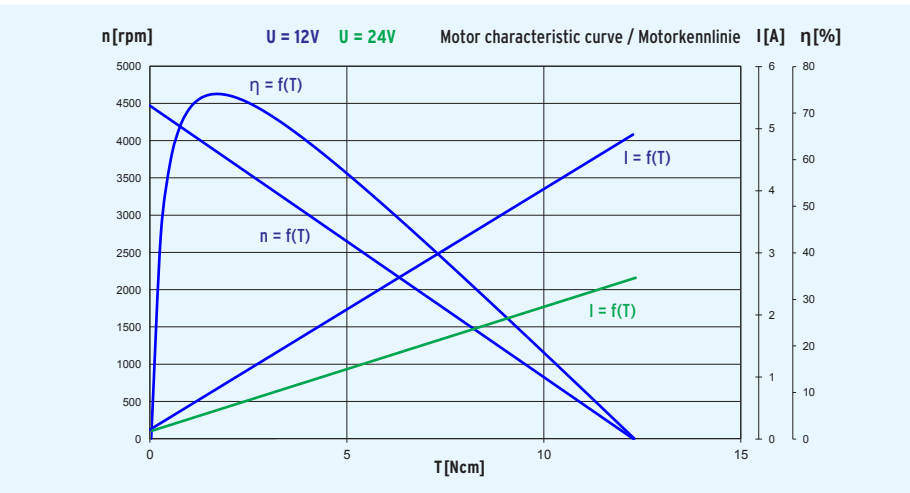


## 410

| Operational conditions                   | Einsatzbedingungen                   |                |    |           |  |
|------------------------------------------|--------------------------------------|----------------|----|-----------|--|
| Temperature range                        | Temperaturbereich                    | T              | °C | -10 – +70 |  |
| Axial force                              | Axialkraft                           | F <sub>A</sub> | N  | 10        |  |
| Radial force, 5 mm from mounting surface | Radialkraft, 5 mm ab Anschraubfläche | F <sub>R</sub> | N  | 30        |  |

\* bezogen auf 25 °C

- ▶ Building automation / Gebäudeautomation
- ▶ Vending/Banking machines / Verkaufs-/Bankautomaten
- ▶ Medical Technology / Medizintechnik



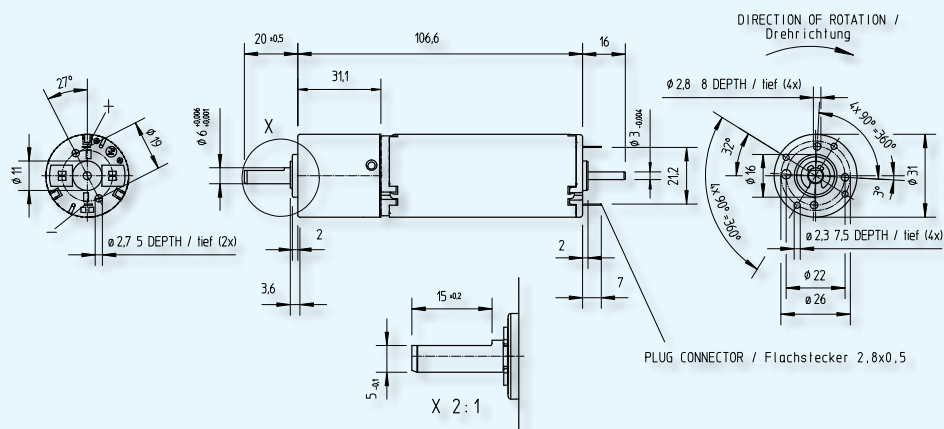
420

|  |            |
|--|------------|
|  |            |
|  | 24         |
|  | 0.700      |
|  | 10         |
|  | 900        |
|  |            |
|  | 1215       |
|  | 0.100      |
|  |            |
|  | 10         |
|  | 10         |
|  | 3.4        |
|  | 1          |
|  | 270        |
|  | 0.05 - 0.6 |
|  |            |
|  | -10 - +70  |
|  | 10         |
|  | 30         |

| Design                  |                                            |
|-------------------------|--------------------------------------------|
| Gear housing            | Plastic                                    |
| Commutator              | Copper / 7-segments                        |
| RFI protection          | 2 chokes                                   |
| Insulation class        | Winding H, otherwise A                     |
| Protection class        | IP40                                       |
| Commutation             | Carbon brushes                             |
| Armature                | straight slot                              |
| Magnet system           | Permanent magnets, 2-pole                  |
| Bearings                | 2 sintered bronze bearings                 |
| Motor housing           | Steel, corrosion protected                 |
| Motor end shields       | brush end plastic, drive end zinc die-cast |
| Planetary gear          | Plastic gears                              |
| Typical life expectancy | 800 h                                      |

| Aufbau               |                                                          |
|----------------------|----------------------------------------------------------|
| Getriebegehäuse      | Kunststoff                                               |
| Kollektor            | Kupfer / 7-teilig                                        |
| Grundentstörung      | 2 Drosseln                                               |
| Isolierstoffklasse   | Wicklung H, ansonsten A                                  |
| Schutzart            | IP40                                                     |
| Kommutierung         | Kohlebürsten                                             |
| Anker                | gerade Nut                                               |
| Magnetsystem         | Permanentmagnete, 2-polig                                |
| Motorlager           | 2 ölgetränkte Sinterbronzelager                          |
| Motorgehäuse         | Stahl, korrosionsgeschützt                               |
| Motorlagerschilde    | kollektorseitig Kunststoff, abtriebsseitig Zinkdruckguss |
| Planetengetriebe     | Zahnräder aus Kunststoff                                 |
| Typische Lebensdauer | 800 h                                                    |

**Gear Motor 31 x 106**  
**1.61.077.4XX**



■ Type / Baureihe 1.61.077.XXX

411

412

413

| Characteristics* | Nenndaten*      |           |                       |       |       |       |  |
|------------------|-----------------|-----------|-----------------------|-------|-------|-------|--|
| Rated voltage    | Nennspannung    | U/V       | V                     | 12    | 12    | 12    |  |
| Rated current    | Nennstrom       | $I_N$     | A                     | 1.400 | 1.400 | 1.400 |  |
| Rated torque     | Nenn Drehmoment | $T_N/M_N$ | Ncm                   | 30    | 55    | 100   |  |
| Rated speed      | Nenn Drehzahl   | $n_N$     | rpm/min <sup>-1</sup> | 260   | 140   | 75    |  |

| No load characteristics* | Leerlaufdaten*    |       |                       |       |       |       |  |
|--------------------------|-------------------|-------|-----------------------|-------|-------|-------|--|
| No load speed            | Leerlauf Drehzahl | $n_0$ | rpm/min <sup>-1</sup> | 355   | 190   | 105   |  |
| No load current          | Leerlaufstrom     | $I_0$ | A                     | 0.230 | 0.270 | 0.150 |  |

| Features*               | Kenndaten*               |                   |     |            |            |            |  |
|-------------------------|--------------------------|-------------------|-----|------------|------------|------------|--|
| max. Torque             | max. Drehmoment          | $T_{max}/M_{max}$ | Ncm | 42         | 77         | 140        |  |
| Terminal resistance     | Anschlusswiderstand      | R                 | Ohm | 2.7        | 2.7        | 2.7        |  |
| Gear ratio              | Untersetungsverhältnis   | i                 |     | 11.6       | 21.4       | 39.7       |  |
| Stages                  | Stufen                   |                   |     | 2          | 2          | 2          |  |
| Weight                  | Gewicht                  | W                 | g   | 275        | 275        | 275        |  |
| Axial play output shaft | Axialspiel Abtriebswelle |                   | mm  | 0.05 - 0.6 | 0.05 - 0.6 | 0.05 - 0.6 |  |

| Operational conditions                   | Einsatzbedingungen                   |       |    |           |           |           |  |
|------------------------------------------|--------------------------------------|-------|----|-----------|-----------|-----------|--|
| Temperature range                        | Temperaturbereich                    | T     | °C | -10 - +70 | -10 - +70 | -10 - +70 |  |
| Axial force                              | Axialkraft                           | $F_A$ | N  | 10        | 10        | 10        |  |
| Radial force, 5 mm from mounting surface | Radialkraft, 5 mm ab Anschraubfläche | $F_R$ | N  | 30        | 30        | 30        |  |

\* at 25 °C

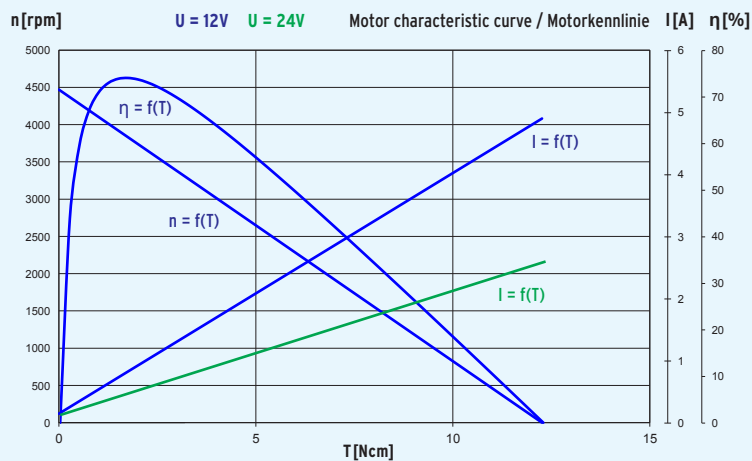
\* bezogen auf 25 °C

**Customized Bühler drives / Maßgeschneiderte Bühler Antriebe**

- Variants: p. 84 / Varianten: S. 84
- Customer specific developments: p. 88 / Kundenspezifische Entwicklungen: S. 88

**Application Examples / Applikationsbeispiele**

- Building automation / Gebäudeautomation
- Vending/Banking machines / Verkaufs-/Bankautomaten
- Medical Technology / Medizintechnik



421

422

423

|  |       |       |       |
|--|-------|-------|-------|
|  |       |       |       |
|  | 24    | 24    | 24    |
|  | 0.700 | 0.700 | 0.700 |
|  | 30    | 55    | 100   |
|  | 260   | 140   | 75    |

|  |       |       |       |
|--|-------|-------|-------|
|  |       |       |       |
|  | 355   | 190   | 105   |
|  | 0.115 | 0.135 | 0.075 |

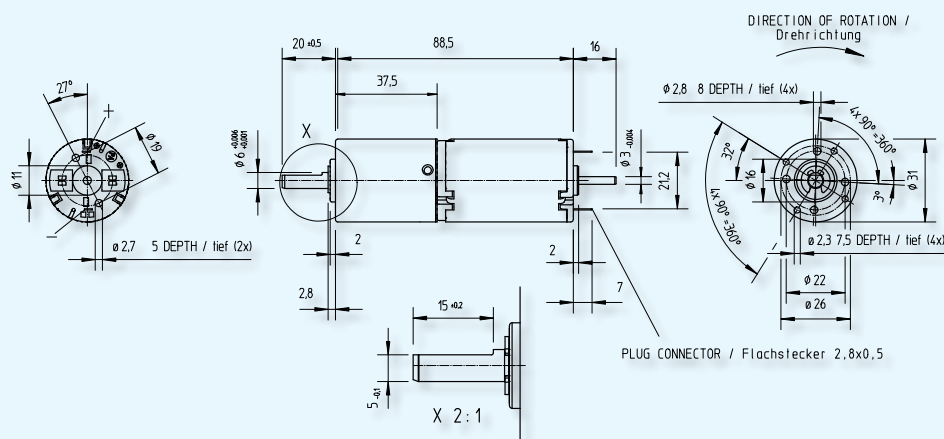
|  |            |            |            |
|--|------------|------------|------------|
|  |            |            |            |
|  | 42         | 77         | 140        |
|  | 10         | 10         | 10         |
|  | 11.6       | 21.4       | 39.7       |
|  | 2          | 2          | 2          |
|  | 275        | 275        | 275        |
|  | 0.05 - 0.6 | 0.05 - 0.6 | 0.05 - 0.6 |

|  |           |           |           |
|--|-----------|-----------|-----------|
|  |           |           |           |
|  | -10 - +70 | -10 - +70 | -10 - +70 |
|  | 10        | 10        | 10        |
|  | 30        | 30        | 30        |

| Design                  |                                            |
|-------------------------|--------------------------------------------|
| Gear housing            | Plastic                                    |
| Commutator              | Copper / 7-segments                        |
| RFI protection          | 2 chokes                                   |
| Insulation class        | Winding H, otherwise A                     |
| Protection class        | IP40                                       |
| Commutation             | Carbon brushes                             |
| Armature                | straight slot                              |
| Magnet system           | Permanent magnets, 2-pole                  |
| Bearings                | 2 sintered bronze bearings                 |
| Motor housing           | Steel, corrosion protected                 |
| Motor end shields       | brush end plastic, drive end zinc die-cast |
| Planetary gear          | Plastic gears                              |
| Typical life expectancy | 800 h                                      |

| Aufbau               |                                                          |
|----------------------|----------------------------------------------------------|
| Getriebegehäuse      | Kunststoff                                               |
| Kollektor            | Kupfer / 7-teilig                                        |
| Grundentstörung      | 2 Drosseln                                               |
| Isolierstoffklasse   | Wicklung H, ansonsten A                                  |
| Schutzart            | IP40                                                     |
| Kommutierung         | Kohlebürsten                                             |
| Anker                | gerade Nut                                               |
| Magnetsystem         | Permanentmagnete, 2-polig                                |
| Motorlager           | 2 ölgetränkte Sinterbronzelager                          |
| Motorgehäuse         | Stahl, korrosionsgeschützt                               |
| Motorlagerschilde    | kollektorseitig Kunststoff, abtriebsseitig Zinkdruckguss |
| Planetengetriebe     | Zahnräder aus Kunststoff                                 |
| Typische Lebensdauer | 800 h                                                    |

**Gear Motor 31 x 88**  
**1.61.077.4XX**



■ Type / Baureihe 1.61.077.XXX

414

415

416

| Characteristics* | Nenndaten*      |           |                       |       |       |       |  |
|------------------|-----------------|-----------|-----------------------|-------|-------|-------|--|
| Rated voltage    | Nennspannung    | U/V       | V                     | 12    | 12    | 12    |  |
| Rated current    | Nennstrom       | $I_N$     | A                     | 0.850 | 0.850 | 0.550 |  |
| Rated torque     | Nenn Drehmoment | $T_N/M_N$ | Ncm                   | 100   | 180   | 200   |  |
| Rated speed      | Nenn Drehzahl   | $n_N$     | rpm/min <sup>-1</sup> | 40    | 23    | 14    |  |

| No load characteristics* | Leerlaufdaten*    |       |                       |       |       |       |  |
|--------------------------|-------------------|-------|-----------------------|-------|-------|-------|--|
| No load speed            | Leerlauf Drehzahl | $n_0$ | rpm/min <sup>-1</sup> | 60    | 33    | 18    |  |
| No load current          | Leerlaufstrom     | $I_0$ | A                     | 0.150 | 0.140 | 0.140 |  |

| Features*               | Kenndaten*               |                   |     |            |            |            |  |
|-------------------------|--------------------------|-------------------|-----|------------|------------|------------|--|
| max. Torque             | max. Drehmoment          | $T_{max}/M_{max}$ | Ncm | 140        | 252        | 280        |  |
| Terminal resistance     | Anschlusswiderstand      | R                 | Ohm | 4.8        | 4.8        | 4.8        |  |
| Gear ratio              | Untersetungsverhältnis   | i                 |     | 72.0       | 135.0      | 250.0      |  |
| Stages                  | Stufen                   |                   |     | 3          | 3          | 3          |  |
| Weight                  | Gewicht                  | W                 | g   | 200        | 200        | 200        |  |
| Axial play output shaft | Axialspiel Abtriebswelle |                   | mm  | 0.05 - 0.6 | 0.05 - 0.6 | 0.05 - 0.6 |  |

| Operational conditions                   | Einsatzbedingungen                   |       |    |           |           |           |  |
|------------------------------------------|--------------------------------------|-------|----|-----------|-----------|-----------|--|
| Temperature range                        | Temperaturbereich                    | T     | °C | -10 - +70 | -10 - +70 | -10 - +70 |  |
| Axial force                              | Axialkraft                           | $F_A$ | N  | 10        | 10        | 10        |  |
| Radial force, 5 mm from mounting surface | Radialkraft, 5 mm ab Anschraubfläche | $F_R$ | N  | 30        | 30        | 30        |  |

\* at 25 °C

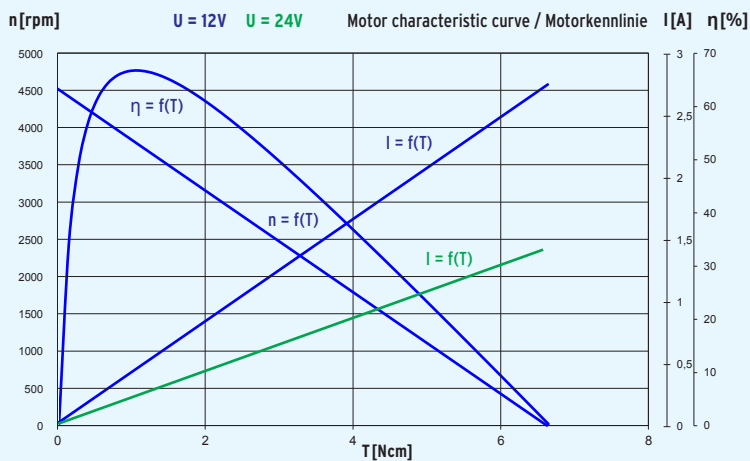
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424

425

426

|  |       |       |       |
|--|-------|-------|-------|
|  |       |       |       |
|  | 24    | 24    | 24    |
|  | 0.425 | 0.425 | 0.275 |
|  | 100   | 180   | 200   |
|  | 40    | 23    | 14    |

|  |       |       |       |
|--|-------|-------|-------|
|  |       |       |       |
|  | 60    | 33    | 18    |
|  | 0.075 | 0.070 | 0.070 |

|  |            |            |            |
|--|------------|------------|------------|
|  |            |            |            |
|  | 140        | 252        | 280        |
|  | 18         | 18         | 18         |
|  | 72.0       | 135.0      | 250.0      |
|  | 3          | 3          | 3          |
|  | 200        | 200        | 200        |
|  | 0.05 - 0.6 | 0.05 - 0.6 | 0.05 - 0.6 |

|  |           |           |           |
|--|-----------|-----------|-----------|
|  |           |           |           |
|  | -10 - +70 | -10 - +70 | -10 - +70 |
|  | 10        | 10        | 10        |
|  | 30        | 30        | 30        |

| Design                  |                                            |
|-------------------------|--------------------------------------------|
| Gear housing            | Plastic                                    |
| Commutator              | Copper / 7-segments                        |
| RFI protection          | 2 chokes                                   |
| Insulation class        | Winding H, otherwise A                     |
| Protection class        | IP40                                       |
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| Typical life expectancy | 800 h                                      |

| Aufbau               |                                                          |
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| Planetengetriebe     | Zahnräder aus Kunststoff                                 |
| Typische Lebensdauer | 800 h                                                    |