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# TECNOTION
THE LINEAR MOTOR COMPANY

## UF Series Ironless

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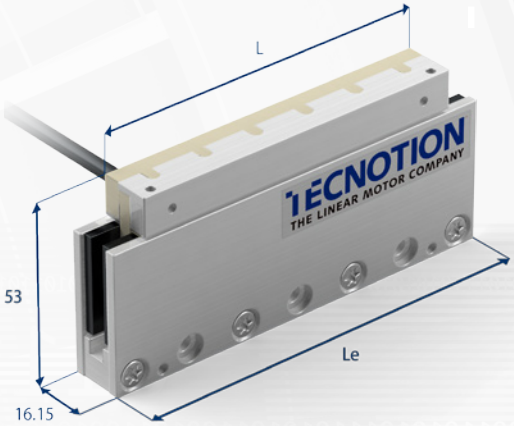
| | Parameter | Remarks | Symbol | Unit | UF3 | UF6 |
|---|---|---|---|---|---|---|
| Performance | Motortype, max voltage ph-ph | | | | 3-phase synchronous Ironless, 45$V_{ac\ rms}$ (60$V_{dc}$) | |
| | Peak Force @ 20°C/s increase | magnet @ 25°C | $F_p$ | N | 42.5 | 85 |
| | Continuous Force* | coils @ 110°C | $F_c$ | N | 19.5 | 39 |
| | Maximum Speed** | @ 60 V | $v_{max}$ | m/s | 5.1 | 5.1 |
| | Motor Force Constant | mount. sfc. @ 20°C | K | $N/A_{rms}$ | 12.3 | 12.3 |
| | Motor Constant | coils @ 25°C | S | $N^2/W$ | 14.6 | 29.2 |
| Electrical | Peak Current | magnet @ 25°C | $I_p$ | $A_{rms}$ | 3.5 | 6.9 |
| | Maximum Continuous Current | coils @ 110°C | $I_c$ | $A_{rms}$ | 1.58 | 3.17 |
| | Back EMF Phase-$Phase_{peak}$ | | $B_{emf}$ | V / m/s | 10.1 | 10.1 |
| | Resistance per Phase* | coils @ 25°C ex. cable | $R_f$ | Ω | 3.5 | 1.8 |
| | Induction per Phase | I < 0.6 Ip | $L_f$ | mH | 1.24 | 0.62 |
| | Electrical Time Constant* | coils @ 25°C | $\tau_e$ | ms | 0.36 | 0.36 |
| Thermal | Maximum Continuous Power Loss | all coils | $P_c$ | W | 35 | 70 |
| | Thermal Resistance | coils to mount. sfc. | $R_{th}$ | °C/W | 2.4 | 1.2 |
| | Thermal Time Constant | to max. coil temp. | $\tau_{th}$ | s | 34 | 34 |
| | Temperature Sensor* | | | | NTC | NTC |
| Mechanical | Coil Unit Weight | ex. cables | W | kg | 0.045 | 0.087 |
| | Coil Unit Length | ex. cables | L | mm | 49 | 97 |
| | Motor Attraction Force | | $F_a$ | N | 0 | 0 |
| | Magnet Pitch NN | | τ | mm | 24 | 24 |
| | Cable Mass | | m | kg/m | 0.07 | 0.07 |
| | Cable Type (Power and Sensor) | length 1 m | d | mm (AWG) | 4.3 (24) | |
| | Cable Life (FLEX)*** | minimum | | | 15,000,000 cycles | |
| | Bending Radius Static | minimum | | | 5x cable diameter | |
| | Bending Radius Dynamic | minimum | | | 8x cable diameter | |




*UF6 in 120mm magnet yoke shown*

Approvals

CE RoHS

| Magnet yoke dimensions | | |
|---|---|---|
| Le (mm) | 72 | 120 |
| M4 bolts | 2 | 3 |
| Mass (kg/m) | 3.2 | |
| *Magnet yokes can be butted together.* | | |

*All specifications ±10%*

** These values are only applicable when the mounting surface is at 20°C and the motor is driven at maximum continuous current. If these values differ in your application, please check our simulation tool.*

*** Actual values depend on bus voltage. Please check the F/V diagram in our simulation tool.*

**** Depending on radius, velocity and acceleration.*

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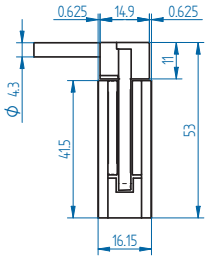
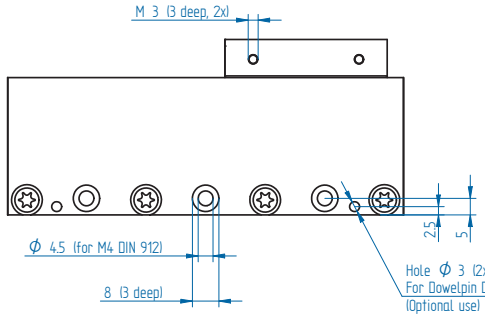
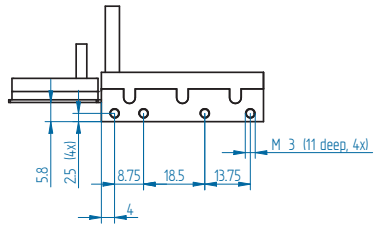
# MAGNET YOKES

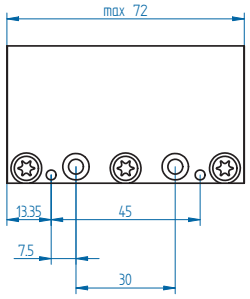
*Mounting instructions and flatness or parallelism requirements can be found in the Ironless installation manual. CAD files and 3D models can be downloaded from our website.*

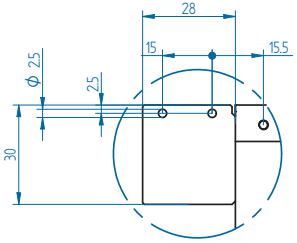


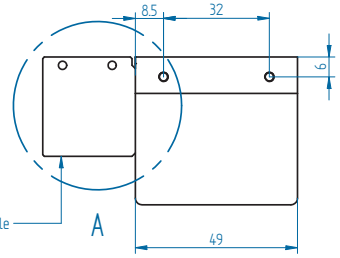

UF 72mm




DETAIL A

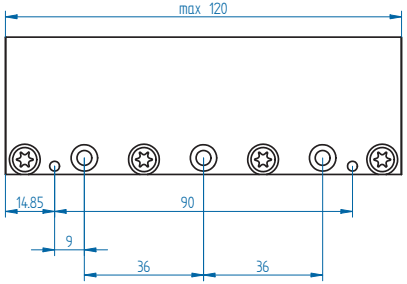
UF 3

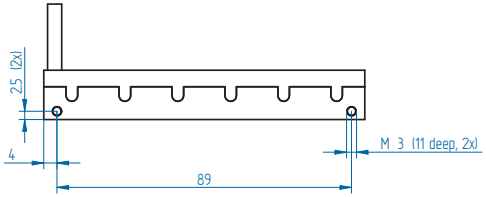



Optional: Digital Hall Module

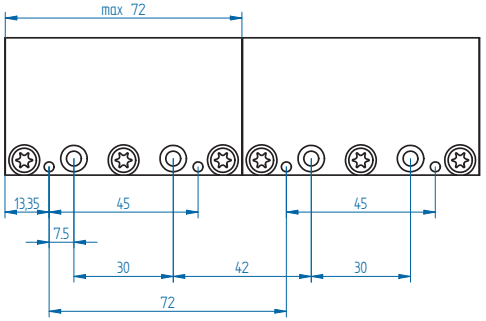
A

UF 120mm

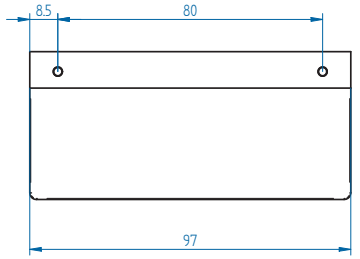



2x UF 72mm




UF 6

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