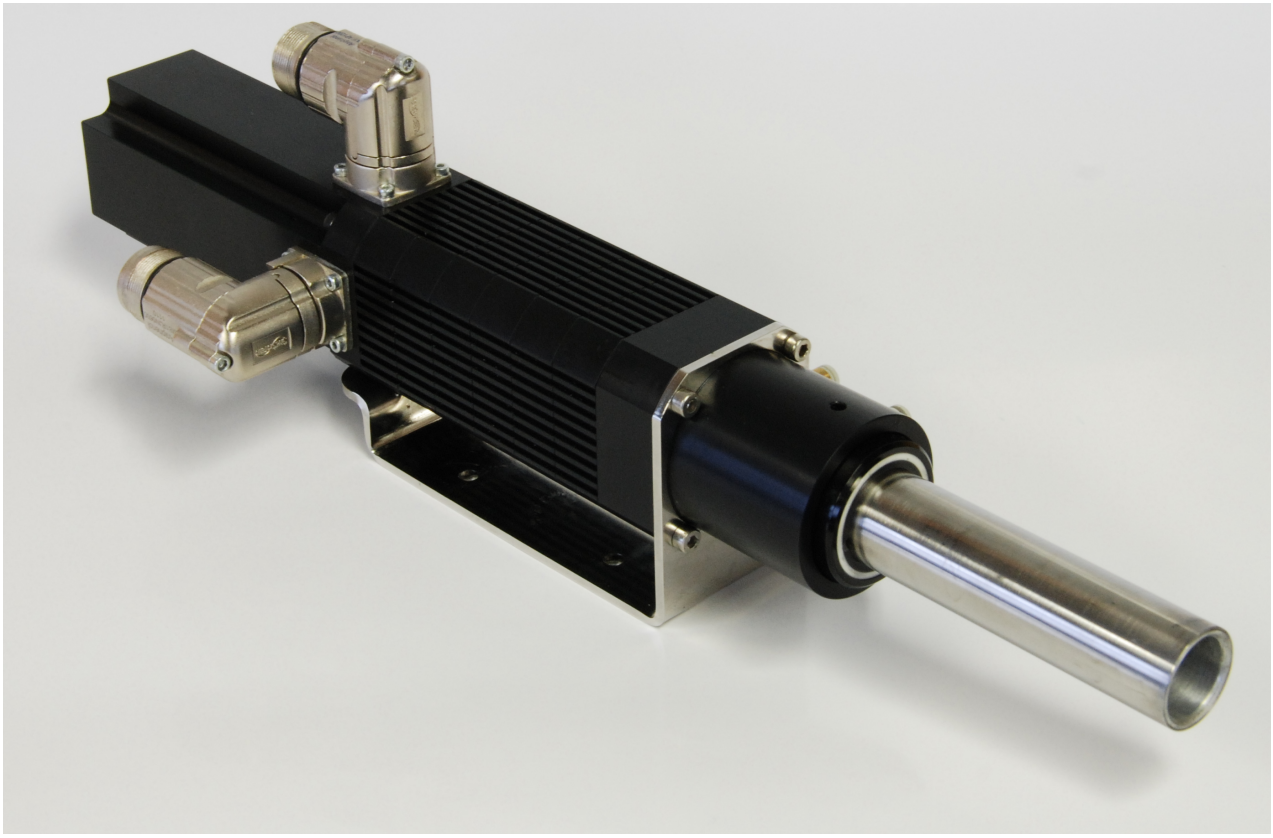
## 2 DOF AC-servomotor

sinusoidal commutation
for smooth movement



### Advantages of the Permanent Magnet Motor:

The engineers of Alliance Technologies located in Leeuwarden, the Netherlands, have set a new trend with the introduction of the so-called checkerboard motor. It is a brushless, tubular servo motor of which the removable, hollow shaft can be driven in both rotation and translation. Both movements are, in contrast to the conventional stacking method, direct driven from a single motor. Additionally the linear and rotary positions are fed back with a resolution of 10µm and 2mrad respectively. The standard stroke is 150mm but can be adjusted to any desired length.
Noteworthy is the simplicity of the control, the checkerboard motor can be controlled by any motion controller. Both axes are independently driven or can be coupled by electronic gearing. The shaft therefore can easily make a rotary, linear or screw movement. The focus has been on creating a user friendly and intuitive system. Peripheral hardware can be chosen by the user, the use of industrial standard components like standard brushless servo drives adds to the flexibility of the solution.

The checkerboard motor is suitable for applications in for example: the pick & place industry, assembly units, precision manipulation and robotics.

## 2 DOF AC-servomotor

sinusoidal commutation
for smooth movement

### Series DB

| | | 025-03 | 025-06 | 050-06 | |
|---|---|---|---|---|---|
| Continous force [1] | $F_{e\ max}$ | 8 | 20 | 90 | N |
| Peak force [1) 2)] | $F_{p\ max}$ | 24 | 60 | 280 | N |
| Continous current [1] | $I_{e\ max}$ | 1,3 | 2,6 | 9,8 | A |
| Peak current [1) 2)] | $I_{p\ max}$ | 3,9 | 7,8 | 29,4 | A |
| Peak torque [1] | $N_{e\ max}$ | 0,2 | 0,4 | 3,2 | Nm |
| Peak torque [1) 2)] | $N_{p\ max}$ | 0,6 | 1,2 | 9,6 | Nm |
| Stroke Length | $S_{max}$ | 150 | 150 | 250 | mm |
| Terminal resistance | $R_{p-p}$ | | | | Ω |
| Linear resolution [3] | Z | | < 10 | | µm |
| Rotary | Y | | < 2 | | mrad |
| Speed linear | u | | > 2 | | m/s |
| Speed rotary | n | | 1500 | | rpm |
| Acceleration | $a_{max}$ | | > 10 | | $m/s^2$ |
| Phase-phase induction | L | | | 3,2 | mH |
| Motor constante linear[4] | $k_F$ | 6,1 | 7,7 | 9,2 | N/A |
| Motor constante rotation | | | | 0,4 | Nm/A |
| Rod mass | $m_m$ | 0,6 | 0,6 | 4 | Kg |
| Total mass | $m_T$ | 0,7 | 0,8 | 10 | Kg |
| Rod bearings | | polymer sleeves/ air bearing (optional) | | | |
| Housing material | | metal | | | |
| Direction of movement | | electronically reversible | | | |

1) Thermal resistance $R_{th}$ by 50% reduced
2) for max. 1 second with a duty cycle of 20%
3) typical values with integrated linear Hall sensors/ The values depend on conditions of use
4) with sinus commutation
5) theoretical value, referring only to the motor
6) with a S-curve speed profile a the max. stroke
7) rounded value, for reference only

Notes:
These motors are for operation with DC-voltage <50V DC
The given values are for free standing fixed motors
The mounting with magnetic conductive metal can influence the characteristics of the motor

Caution:
Presence of strong magnetic fields, static sensitive device

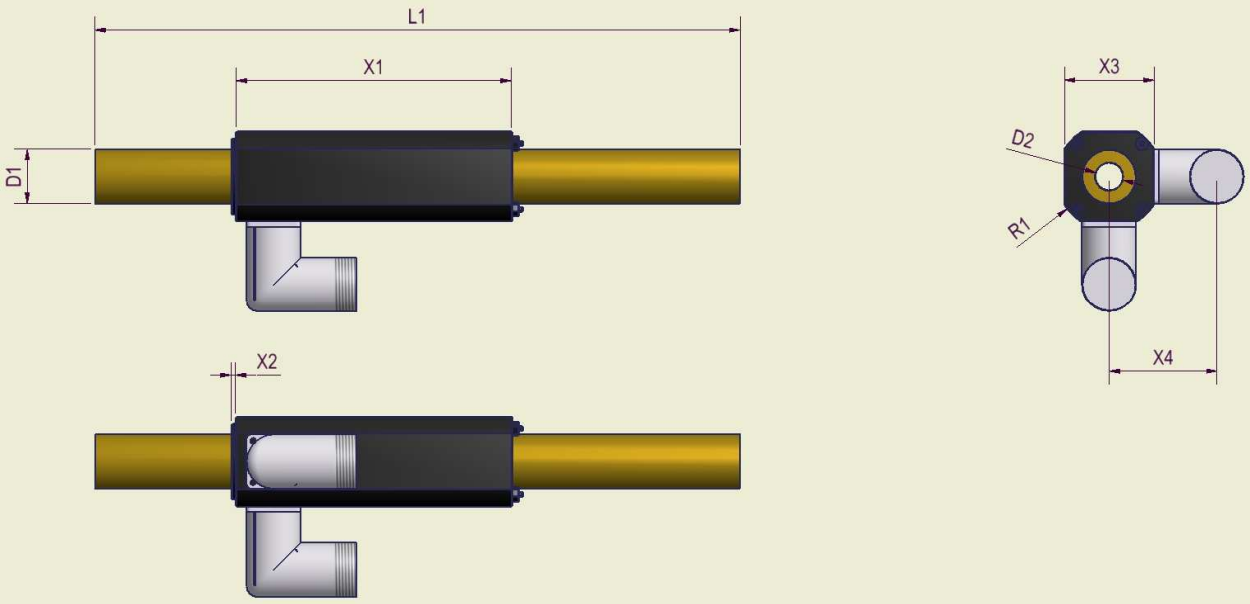
 

## 2 DOF AC-servomotor

sinusoidal commutation
for smooth movement

### Dimensions

| | 025-03 | 025-06 | 050-06 | |
|---|---|---|---|---|
| L1 | 200 | 300 | 350 | mm |
| X1 | 83 | 131 | 270 | mm |
| X2 | 2 | 2 | 5 | mm |
| X3 | 42,5 | 42,5 | 120 | mm |
| X4 | 51 | 51 | 90,8 | mm |
| D1 | 25,6 | 25,6 | 50 | mm |
| D2 | 13 | 13 | 38 | mm |
| R1 | 25 | 25 | 79 | mm |



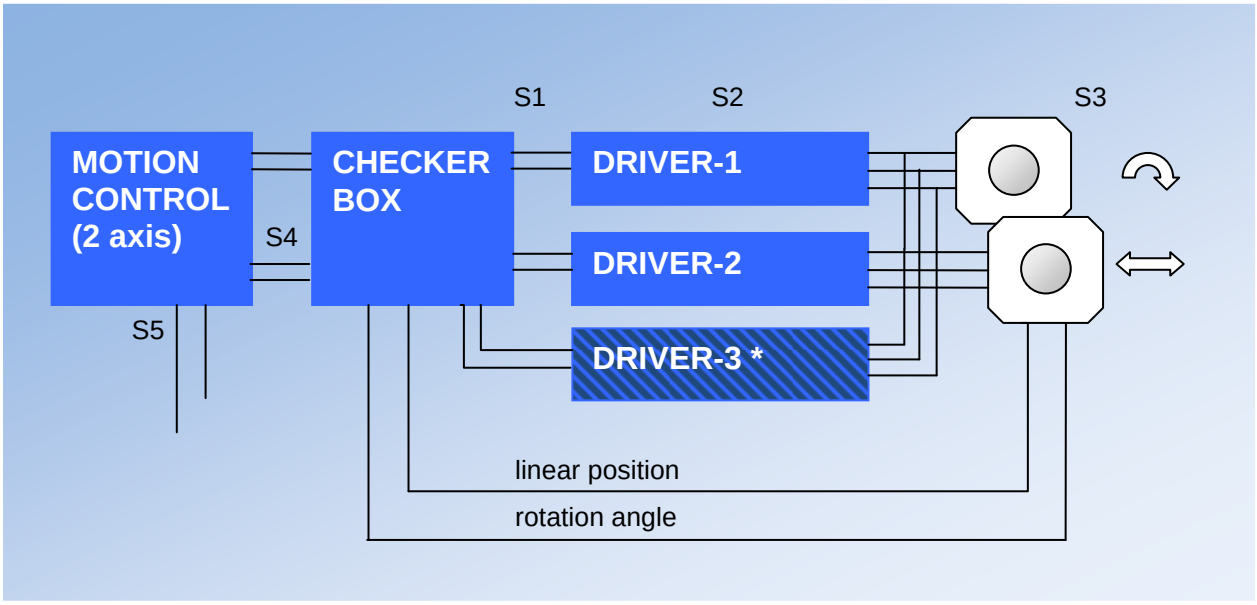
## 2 DOF AC-servomotor

sinusoidal commutation
for smooth movement

### Electrical

| | |
|---|---|
| S1 | +10V/ -10V |
| S2 | phase-1/ phase-2; +10V/ -10V |
| S3 | phase-1/ phase-2/ phase-3; +50Vdc/ -50Vdc |
| S4 | encoder: Quadrature; Step/ Dir; sin/cos 1Vpp (optional) |
| S5 | end switch Left/ Right |

*) type 050-06




Alliance Technologies BV
Hidalgoweg 6
8938 BA LEEUWARDEN
Tel: +31(0)58 289 5918
Fax: +31(0)58 289 5899
e-mail: info@the-alliance.eu
web: www.the-alliance.eu