

Datasheet for linear direct drive LDN-EL-0100 and servo drive Indradrive
Type of motor MGN-EL-0100
Type of axis LDN-EL-0100
Date of creation: 10.04.2018



| Description | Symbol | Unit | | comment |
|-------------|--------|------|--|---------|
|-------------|--------|------|--|---------|

Electrical data

| | | | | | |
|----------|-----------------------------------|-----------------------------|--------|--------|--|
| S-0-0141 | Type of axis | | | | |
| P-0-4014 | Type of motor | Linear synchron motor | | 0200h | |
| P-0-0512 | Temperature sensor | | | 3 | |
| | PWM frequency | | kHz | 4 | |
| S-0-0111 | Motor idle current (eff.) | I_d | A | 2,1 | |
| | Nominal motor force | F_{nom} | N | 120 | with temperature increase of 65 K inside motor |
| | Power loss | P_{const} | W | 61,3 | with temperature increase of 65 K inside motor |
| S-0-0109 | Motor peak current (eff.) | I_{max} | A | 7,5 | |
| | Motor peak force | F_{max} | N | 250 | |
| S-0-0092 | Bipolar force limit value | | % | 357,1 | |
| P-0-0109 | Force peak limit | | % | 357,1 | |
| P-0-0051 | Force constant | k_t | N/A | 58 | |
| | Motor constant | K_m | N/V | 15,3 | |
| | BEMF (velocity 1 m/s) | K_e (Phase-Phase) | V/SS | 110 | |
| | Thermal resistance | R_{th} | K/W | 1,06 | temperature increase (65 K) / P_{const} |
| S-0-0113 | Maximum motor speed | v_{max} | mm/min | 240000 | |
| | Max. frequency | f_{max} | Hz | 142,3 | |
| P-0-0018 | Number of pole pairs per distance | PWT (Npol-Npol) | mm | 28,1 | |
| | Poles | | | 7 | |
| | Type of circuit | | | Y | |
| | Max. intermediate circuit voltage | U_{DC} | V | 900 | |
| | Inductance | $L_{U-V}, L_{V-W}, L_{W-U}$ | mH | 75,00 | |
| P-0-4016 | Motor series inductance | | mH | 37,50 | |
| P-0-4017 | Motor shunt inductance | | mH | 37,50 | |
| P-0-4048 | Winding resistance by 25 °C | $R_{U-V}, R_{V-W}, R_{W-U}$ | Ohm | 7,60 | |
| | Winding resistance by 90 °C | $R_{U-V}, R_{V-W}, R_{W-U}$ | Ohm | 9,5 | |
| | Electrical time constant | | ms | 9,9 | |
| | Type of temperature sensor | | KTY | | |
| S-0-0201 | Motor warning temperature | | °C | 85 | |
| S-0-0204 | Motor shutdown temperature | | °C | 90 | |
| | Insulation class | | F | | |

Mechanical Data

| | | | | |
|--|------------------------------------|------|-----|---------------------|
| | Mass primary part without carriage | kg | 1,9 | |
| | Mass carriage | kg | 2 | |
| | Total mass primary part | kg | 3,9 | |
| | Total mass rail | kg/m | 6,2 | without attachments |

Control parameters without mass moment of inertia

| | | | | |
|----------|-------------------------------------|----|-----|-------|
| S-0-0106 | Current loop proportional gain | | V/A | 30 |
| S-0-0107 | Current loop integral action time | | ms | 8 |
| S-0-0104 | Position loop KV-Factor | kv | | 1 |
| P-0-0004 | Velocity loop smoothing time const. | | | 900 |
| S-0-0100 | Velocity loop proportional gain | kp | | 0,031 |
| S-0-0101 | Velocity loop integral action time | TN | | 5 |

Parameter of position

| | | | |
|----------|--------------------------|----|--------|
| S-0-0277 | Position feedback 1 type | | 1001 b |
| S-0-0278 | Maximum travel range | mm | 4000 |

Encoder Feedback

| | | | | | | |
|----------------------------|-----------------------|-----|----------|---------------------|------------|--|
| | Measurement principle | | magnetic | absolut magnetic | optical | |
| | Type of sensor | | LE100 | TTK 70 | LIA 22 | |
| | | | | | DOUBLEFLEX | |
| | Tape measure | | MB100 | MBA 111 | SINGLEFLEX | |
| | Manufacturer | | SIKO | Sick Stegmann | NUMERIK | |
| | Grating period | μm | 1000 | 1000 | 20 | |
| | Supply voltage | V | 5 | 7-12 | 5 | |
| | Waveform | | sin/cos | sin/cos / Hiperface | sin/cos | |
| | Reference mark | | periodic | -- | periodic | |
| | Reference mark pitch | mm | 20 | -- | 50 | |
| | Signal amplitude | Vss | 1 | 1 | 1 | |
| S-0-0116 / S-0-0602.1.3 | Feedback resolution | mm | 1,00 | 1,00 | 0,02 | |

Motor connection

| Connector | Connector | Contact |
|--|----------------------------|------------------|
| Tyco Electronic | U | thick 1 |
| Typ: 923 | V | thick 4 |
| | W | thick 3 |
| | GND | thick 2 |
| Series connection of 3* temperature switch and KTY | Switch 105 °C ; KTY 84-130 | thin C thin D |

Thermal motor protection

| | Sensor1 | Sensor2 |
|----------------|------------|-----------------|
| Type | NTC | Switch |
| Type | KTY 84-130 | normally closed |
| Characteristic | Datasheet | 105 °C |

Motor feedback

| Feedback | Signal | LE100 / LS100 Sub D plug | TTK 70 Sub D plug | LIA 22 Sub D plug | |
|---------------|------------------|-----------------------------|----------------------|----------------------|--|
| | | | | | |
| | 5V Sense | 1 (nur bei LE) | | | |
| | 0V Sense | 2 (nur bei LE) | | | |
| | Ref - / EncData- | 3 | 8 | 4 | |
| | Ref + / EncData+ | 4 | 7 | 12 | |
| | /B (COS-) | 5 | 6 | 6 | |
| | B(COS+) | 6 | 5 | 14 | |
| | A(SIN+) | 7 | 2 | 13 | |
| | /A(SIN-) | 8 | 3 | 5 | |
| | N.C. | | | | |
| | GND (0V) | 10 | 4 | 9 | |
| | N.C. | | | | |
| | Ucc | 12 | 11 | 8 | |
| | N.C. | | | | |
| | GND (Schirm) | | | | |
| | N.C. | | | | |
| Adapter cable | ID | direct | direct | 338 055 | |