Controlling motors the easy way...

Motor control system for the drylin® E drive technology

plastics for longer life®... igus:

dryve...

www.igus.eu/dryve
The dryve motor control system can either be connected to your network or you can connect it directly to the control unit (PC or PLC) by means of a network cable. You can then start the control system directly in the browser without software installation. Settings can be changed quickly.

Due to standardised communication protocols such as CANopen or Modbus TCP, it is very easy to connect the system to industrial controllers such as the Siemens S7 or Beckhoff.

The ten digital inputs and outputs enable extremely easy communication with industrial controllers but also with low-price open-source modules such as Arduino or Raspberry Pi.

Drylin® linear system supplemented with the addition of the motor control. Easy to operate via web-based user interface, without installation of any software or app.

- Control via laptop, tablet or smartphone
- Suitable for all drylin® E axes
- For DC, EC and stepper motors
- Communication by means of CANopen, Ethernet and digital inputs and outputs
- Compatible with many industrial control systems
- Cost-effective

Try online
www.igus.eu/dryve

Ready to use immediately
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Industry standards
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The ten digital inputs and outputs enable extremely easy communication with industrial controllers but also with low-price open-source modules such as Arduino or Raspberry Pi.

Easy control
You can use the simple intuitive user interface to parameterise travel distances, position, feed and operating time of your linear axis even as an amateur.

Movements that are continuously repeated are known as looping can be set in just a few seconds. A teach function enables position settings to be made with just one mouse click.

Powerful technology
Dryve supports DC, EC and stepper motors in open loop and closed loop technology.
The supply voltage of up to 48 V ensures high motor speeds. The nominal current of 7 A and the peak current of 20 A results in powerful and dynamic movements.
Try out the user interface

By using the simple browser-based user interface, you can set the travel mode, positions, rates of acceleration, speed and pause times of your linear axis without having to have any previous knowledge.
Test the user interface here, using a simulated linear axis. In exactly the same way as in this simulator, your input is transmitted directly when you use the real control system. There is no separate upload.

Product finder and service life calculation

drylin® E linear axis – with lead screw or toothed belt drive, including motor, connecting cables and built-on parts – can be configured online and delivered ready to install. You can also order the dryve control system at the same time with just one click.
Technical data ...

1. Voltage supply
2. Digital inputs
3. Digital outputs
4. Analogue inputs
5. Motor & brake connection
6. Encoder
7. CANopen
8. Ethernet
9. Status display

Nominal voltage of logic supply: 12 – 24 VDC
Nominal voltage of load supply: 12 – 48 VDC
Motor types:
- 2-phase stepper motor: bipolar (ST), direct current motor (DC), electrically commutated motor (EC)
Continuous motor current: 7A
Peak motor current:
- ST: 10A, DC: 14A, EC: 21A
- max. 2 sec depending on frequency of movement
Load power output: max. 340 W continuous
Output current of digital outputs: max. 200 mA per output
Holding brake: 24VDC / 1A
Encoder:
- Hall sensor (2 or 3 pole), encoder (line driver-RS422 or single ended), analogue feedback via analogue inputs
Digital inputs:
- 10 digital inputs, pre-assigned function, choice of NPN or PNP, short-circuit-proof, electrically separated, 5 – 24 V DC (external)
Digital outputs:
- 5 digital outputs, pre-assigned function, choice of NPN or PNP, short-circuit-proof, electrically separated, 5 – 24 V DC (external)
Analogue inputs:
- 2 analogue inputs, ±10 V DC signal (12 bit), 0-10 V DC signal (11 bit), 10 V DC voltage supply
Interfaces:
- CANopen (DS402), Modbus TCP, Ethernet, bit coding, step/direction
Operating modes (motor):
- Open-loop with/without position monitoring, closed-loop
Travelling modes:
- Binary: 32 travelling movements
- Jog/teach: 8 travelling movements with external teaching
CE symbol:
- Acc. to EMC guideline
Ambient temperature:
- -20 °C to +45 °C
Relative humidity:
- ≤ 90 %, non-condensing
Maximum temperature of the power unit:
- 90 °C
Bearing temperature:
- -40 °C to +60 °C
Protection class:
- IP 30
Protective functions:
- I²t monitoring, power-unit temperature monitoring, current monitoring, undervoltage and overvoltage protection, contouring error detection, encoder control
Mounting:
- Screwed on, DIN rail mounting
D x W x H in mm (incl. connectors and mounting elements):
- 123.5 x 31.2 x 139
### Technical data ...

### Ethernet Modbus TCP

- **Status display**: X9
- **Ethernet**: X8

### CANopen

- **Power supply rotary encoder**: Connection motor
- **Hall sensor**: Hall sensor

### Analogue inputs

- **10 VDC**: Provided by control unit
- **Signal 1**: Speed and position
- **Signal 2**: Position feedback, mechanics

### Encoder

- **1**: 5 VDC
- **2**: 0 VDC
- **3**: A
- **4**: A/
- **5**: B
- **6**: B0
- **7**: N
- **8**: N/
- **9**: H1 EC, +DC
- **10**: H2 EC, - DC
- **11**: H3 EC

### Motor brake

- **1**: 24 VDC motor stop brake
- **2**: 0 VDC motor stop brake

### Digital inputs

- **Pin 1**: Binary
- **Pin 2**: Tipp
- **Pin 3**: Teach
- **Pin 4**: Step
- **Pin 5**: Direction

### Digital outputs

- **Pin 1**: Digital output 1
- **Pin 2**: Digital output 5

### Logic/load voltage

- **1**: 12-48 VDC load
- **2**: 0 VDC load/logic
- **3**: 12-24 VDC logic

### Socket PIN Layout Bezeichnung

<table>
<thead>
<tr>
<th>Socket</th>
<th>PIN</th>
<th>Layout</th>
<th>Bezeichnung</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>1</td>
<td>Logic/load voltage</td>
<td>Power supply motors (necessary for operation)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0 VDC load/logic</td>
<td>Common mass (necessary for operation)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>12-24 VDC logic</td>
<td>Power supply control unit (necessary for operation)</td>
</tr>
<tr>
<td>X2</td>
<td>1</td>
<td>Digital input 1</td>
<td>Bit 0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Digital input 2</td>
<td>Bit 1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Digital input 3</td>
<td>Bit 2</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Digital input 4</td>
<td>Bit 3</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Digital input 5</td>
<td>Bit 4</td>
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<tr>
<td></td>
<td>6</td>
<td>Digital input 6</td>
<td>Start</td>
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<tr>
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<td>7</td>
<td>Digital input 7</td>
<td>Enable</td>
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<td></td>
<td>8</td>
<td>Digital input 8</td>
<td>Ref./LS positive</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Digital input 9</td>
<td>Ref./LS negative</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Digital input 10</td>
<td>Stop/Reset</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>5-24 VDC</td>
<td>Power supply external (necessary for operation)</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>0 VDC</td>
<td>Power supply external (necessary for operation)</td>
</tr>
<tr>
<td>X3</td>
<td>1</td>
<td>Digital output 1</td>
<td>Ready</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Digital output 2</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Digital output 3</td>
<td>Referenced</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Digital output 4</td>
<td>Alert</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Digital output 5</td>
<td>Error</td>
</tr>
<tr>
<td>X4</td>
<td>1</td>
<td>10 VDC</td>
<td>Provided by control unit</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Signal 1</td>
<td>Speed and position</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Signal 2</td>
<td>Position feedback, mechanics</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0 VDC</td>
<td>Provided by control unit</td>
</tr>
<tr>
<td>X5</td>
<td>1</td>
<td>A [ST], U [EC], +DC</td>
<td>Connection motor</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>A [ST], V [EC], -DC</td>
<td>Connection motor</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>B [ST], W [EC]</td>
<td>Connection motor</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>B (ST)</td>
<td>Connection motor</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Mass</td>
<td>Mass</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>24 VDC motor stop brake</td>
<td>Connection motor stop brake</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>0 VDC motor stop brake</td>
<td>Connection motor stop brake</td>
</tr>
<tr>
<td>X6</td>
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<td>-</td>
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<tr>
<td></td>
<td>2</td>
<td>CAN_L</td>
<td>CAN Signal Low</td>
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<tr>
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<td>3</td>
<td>CAN_GND</td>
<td>CAN Mass</td>
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<tr>
<td></td>
<td>5</td>
<td>-</td>
<td>Not use</td>
</tr>
<tr>
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<td>6</td>
<td>-</td>
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<tr>
<td></td>
<td>7</td>
<td>CAN_H</td>
<td>CAN Signal High</td>
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<tr>
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<td>8</td>
<td>-</td>
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<tr>
<td></td>
<td>9</td>
<td>-</td>
<td>Not use</td>
</tr>
<tr>
<td>X7</td>
<td>1</td>
<td>-</td>
<td>Not use</td>
</tr>
</tbody>
</table>

The arrows indicate Pin 1 of the respective connector.
drylin® E drive technology includes completely lubrication-free linear modules, ready to install as single-axis or multi-axis systems. A self-locking trapezoidal thread, a fast high helix thread or toothed belts and dynamic racks serve as the drive. The stroke length can be freely selected and each system can be delivered ready for connection, together with the appropriate motor.

Linear axes with motor from 24h
- Pre-configured linear axes available from stock
- Drive: lead screw or toothed belt
- NEMA stepper motor included

Individual linear axes with motor
- Online configurable linear axes
- Drive: lead screw, toothed belt or rack
- With stepper and DC motors

GRW cantilever axis
- Direct drive via rack
- Stroke lengths up to 300 mm
- Ideal as z axis in multi-axis gantries

GRQ in lift/swivel unit
- GRQ in lift/swivel unit HSQ
- Compact unit for lifting and swivelling tasks
- Ready to install with NEMA stepper motors

Cartesian robots
- Pre-configured assembly kits available from stock
- 3 different types: linear / flat / room
- Workspaces up to 500 x 500 x 100 mm

Intelligent drylin® predicts the date when in needs to be replaced while it runs
Predictive maintenance becomes reality with smart drylin®. The intelligent linear slide monitors its life autonomously. If isense DL.W (intelligent sensor module) recognises that a failure due to wear is likely, the user is automatically informed. Machine availability rises while maintenance costs decrease.

For the world’s largest system for linear guides with sliding plastic components, there are already numerous configurators for calculating service life. The data for the calculation come from the igus® test laboratory. In an area of more than 2,700 m², approx. 15,000 tests with bearings are performed every year. The results are incorporated into the igus® database, thus forming the basis for service life calculation and continuous improvement of the products. With its new smart plastics, igus® is now taking the next steps for even more protection against sudden, unexpected failures.

Reduce costs:
- Predictable maintenance
- Prevention of unplanned down-times
- Optimal machine availability
igus® is certified in accordance with ISO 9001:2008 and ISO/TS 16949:2009 in the field of energy supply systems, cables and harnessing, as well as plastic bearings.

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