Positioning systems made to measure.

OEM Machines	Positioning Systems	Modules	Components

Hydra CM

Hydra RM

Hydra TT

Hydra DT with Joystick

Hydra Series

The controllers of the Hydra series are optimally designed to control the positioning systems from ITK. A new motor design ensures maximum performance in the smallest space. The controllers achieve high dynamics with minimal heat losses thanks to ITK's power stage technology. Stepper motor, servo motor, torque motor or DC motor can be combined with a linear motor on the Hydra. Axis output stages can be specifically switched off for manual or motorised displacement of the axes.

Key Features.

- Control for linear, stepper and servo motors up to 500 W (each axis individually configurable)
- Vectorial and individual movement of the axes
- Stepper motor operation: 2 or 3 phases
- Linear motor operation: 2 or 3 phases
- Interfaces: RS-232, Ethernet 10/100 MBit, USB
- Measuring system interfaces: NanoStar (absolute measuring), optional: MiniStar (magnetic incremental) or optional: DeltaStar (1 Vss sin/cos signal or TTL) with trigger input and output
- Digital inputs/outputs
- Analogue outputs
- CAN bus for I/O extensions (handwheel, joystick, etc.)
- ASCII command language Venus 3

Your Advantages.

- High performance requiring smallest space
- Up to 500 W for each axis
- Maximum 15 Ampere for each phase
- All-rounder in communication
- Supports different motor types from piezo motor (with an analogue output stage) to dynamic linear motor
- Automatic commutation on power-up – eliminates the need for Hall sensors on torque, servo or linear motors
- 24 or 48 volt power supply, output stages galvanically decoupled
- Emergency stop support
- Digital inputs and outputs
- Tabletop version TT with 500 W power supply unit or for rack mounting as CM version
- Motionscript programs can be executed directly on the controller without PC coupling

Highlights**.**

Realtime Data Capture**.**

Motion sequences can be simulated in the MotionManager. Currents, power, voltage and travel profiles are displayed. In interaction with the MotionManager, the Quicklog function in the Hydra controller allows the realtime data to be displayed as in the simulation shown. This provides a direct comparison between target and actual values. This is the prerequisite for optimally adjusting the servo controller.

MotionManager 2
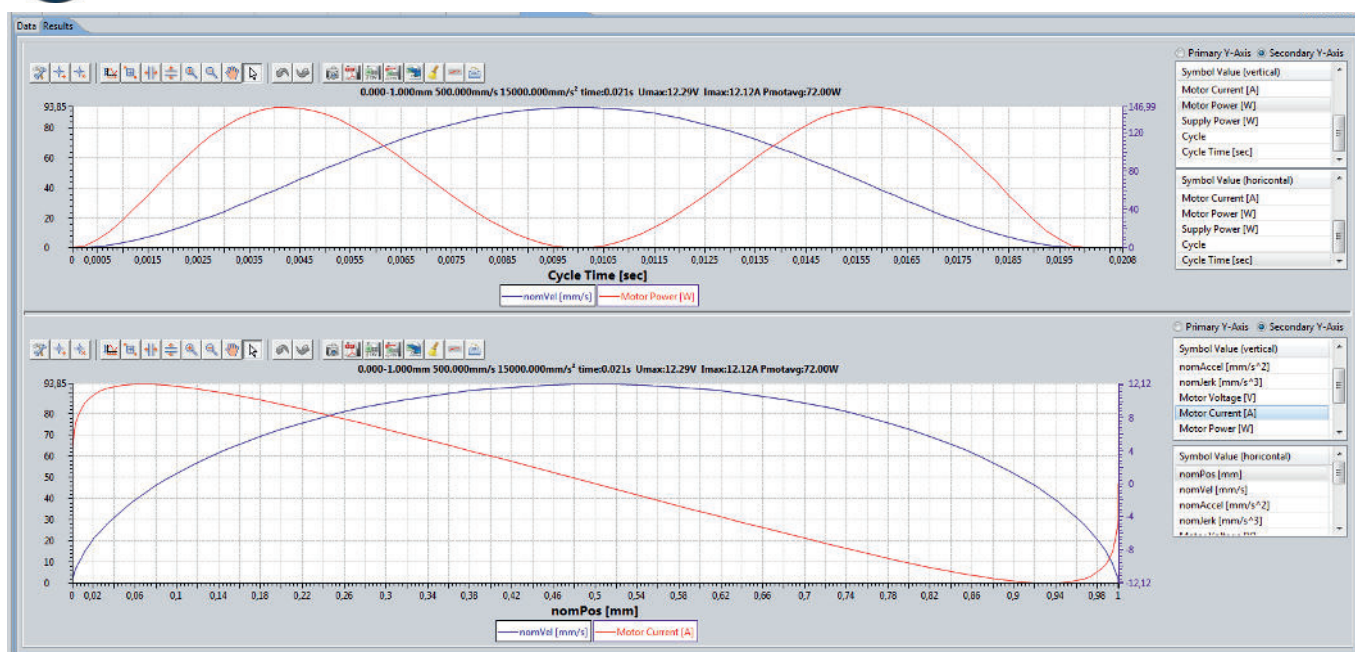
Fast Response Technology (FRT)**.**

FRT defines a package of diverse measures for highly dynamic positioning while reducing mechanical vibrations and power requirements. The vibration time and amplitude at the target location has been reduced by a factor of 5 - 10 compared to conventional PID controllers. **FRT does positioning audibly better!**

Event Manager.

Internal and external events are managed by the Event Manager and sets of commands associated with the events are instructed to be executed.

The behaviour after power up can be defined, e. g. calibration, move to position, etc. Eight sequencers, each with eight levels are available; each stage can be stored with Venus commands. Each sequencer can be switched to next position from any event (up or down). Events can be defined as „push buttons", „switches" or „toggles" with different polarities (active edges). The switches on the joystick and handwheel can be used as events.

Internal events (e. g.)
- power up completed (controller ready)
- target position reached
- emergency stop or limit switch activated

External events (e. g.)
- switches of manual devices such as joystick or hand wheel
- events of I/O modules via CAN bus. Any Venus commands can be processesd in parallel to the normal communication.

Technical Data.

Parameter	Value
Operating voltage	24 or 48 Volt
Motor phase current (peak)	15 Ampere
Stepper motor positions/revolution	600,000
Communication	Ethernet 10/100, RS232 (max. 460 Kbaud), CAN, USB
Ethernet protocols	TCP/IP, UDP, TFTP, FTP, SNTP, HTTP
Firmware update	via RS232 or Ethernet

| Parameter	Value
Measurement system interface	max. 6x SinCos Sensor (12 Bit) max. 3* nanoStar Sensor (16 Bit) max. 3* betaStar Sensor (16 Bit)
Input/output	via CAN Bus
Processor	400 MHz Power PC
Memory / Flash memory	64 MByte / 8 MByte
Parameter memory with TFTP and FTP access	Journaling Flash File System

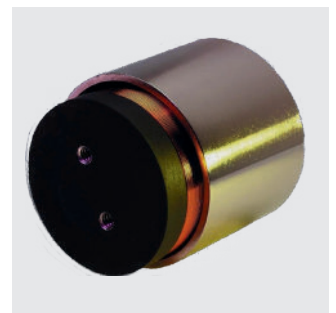# Supported Motor Types.

Stepper motors with / without sensors
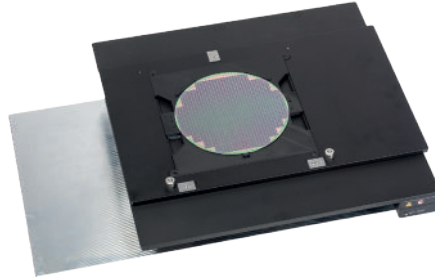

Servo motos & DC motors
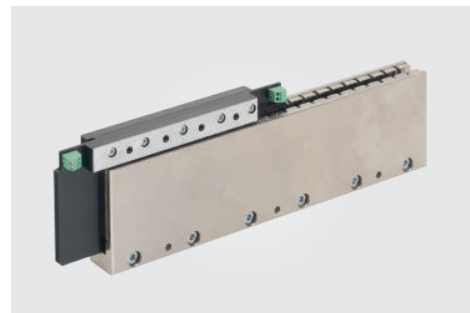
Linear motors

Torque motors
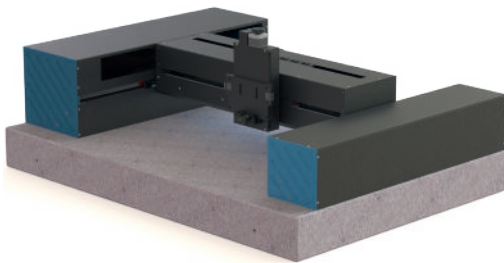

Voice coil motors

Typical Applications■

Cross stages

Microscope stages

PT15 scanning unit in gantry design

**OEM machines
(measuring and magnetization machines)**

Accessories■

Handwheel

- for moving two axes
- ergonomic and dynamic
- sensitive positioning due to high encoder resolution and precision roller bearings

2-axis Joystick

- 6 freely programmable buttons
- 8 LEDs
- connected to the CAN bus
- versions available for normal or heavy use

QuickStep Interface

- clock and direction input to control the position
- additional I/O signals for connection to PLC or other controls

DeltaStar Interface

- for Sin/Cos (1 Vss) and RS422 Quadrature signal transmitter
- with trigger input and outputs
- generates position-dependent trigger signals and can also store the current position on external trigger signals