# CDHD2

## High-Performance Servo Drives

CDHD2 is the second generation of the CDHD servo drive family. It features ease of use and advanced control algorithms. The comprehensive feature set of the CDHD2 allows to build more accurate and more efficient machines.

### HD control loop optimizing servo control

An adaptive non-linear control algorithm was developed to optimize servo performance in high precision motion applications. This proprietary algorithm uses a parallel configuration, in which position and velocity branches are on the same level and executed in each sampling period. A variable gain parameter is introduced and automatically optimized for high gain and stability. As a result, position error and settling time are minimized to levels far superior to those of other controllers.
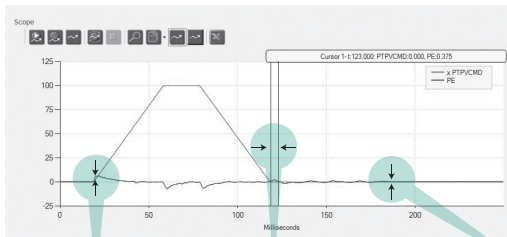
Minimum position error    Settling time of almost zero    No oscillations at stand-still

### High bandwidth current loop achieves and industry-leading frequency response

The current loop design achieves an outstanding frequency response of 3-5 kHz. High sampling rates and flexible filtering options provide a faster response and ensure maximum machine accuracy and throughput.

### Dual loop control to eliminate mechanical errors and increase system stability

A dual loop position and velocity controller is used to improve the performance of the complete motion system. CDHD2 supports linear and rotary secondary encoders, both incremental and absolute. The dual loop control is an integral feature of the CDHD2 family and does not require an additional add-on option card.
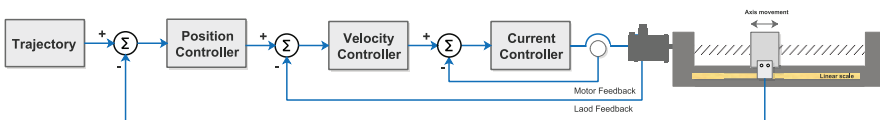
### Gantry mode

The CDHD2 servo drive has built-in support for both rigid and flexible gantry mechanical systems. The CDHD2 Gantry system synchronizes the two Y axes through two CDHD2 drives working in tandem and using high-speed communication to generate and control movement along the Y axis. Each of the two Y axes can be driven by either a linear or a rotary motor.
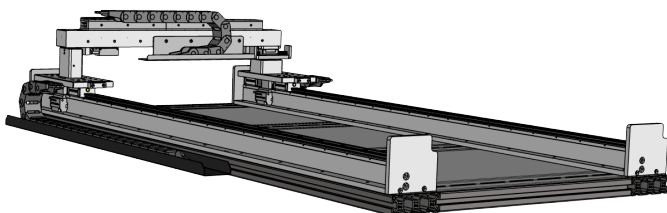
## Key benefits

- High performance control of all synchronous servo motors

- Interfaces multiple feedback devices

- Secondary encoder interface for closed dual loop control

- Built in operator panel for drive configuration and diagnostics

- Position compare output module

- Built-in support for both rigid and flexible Gantry

- 1D error correction compensation table

- Advanced control algorithms achieve maximum machine accuracy and throughput

- High power density in a small footprint

- Safe Torque Off (STO)

- Simple commissioning with new ServoStudio™ 2.0 GUI along with comprehensive parameterization options for optimal configuration

- Competitive price

- 30-month warranty

- Input voltage support: 20 V up to 480 V

## Offered with matched PRO2 & PRHD2 servo motors for optimal performance
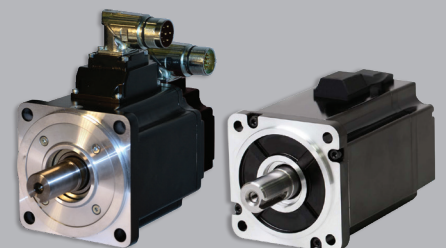
| PRO2 Series | PRHD2 Series |
|---|---|
| 50 W – 7.5 kW | 50 W – 3 kW |
| 0.16 Nm – 48 Nm | 0.16 Nm – 14.3 Nm |

## ServoStudio™ wizard for simple commissioning

- Step-by-step guidance through the motor setup, application configuration and tuning process
- Innovative and self explanatory user interface
- Excellent results for novice users within minutes
- Real-time data recording and plotting
- Easy integration of servo axes
- Plug-and-play motor library
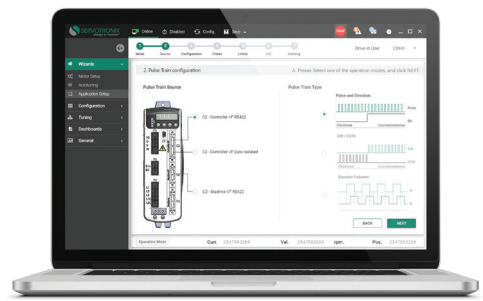
## Rating and dimensions

| Model | Input Voltage | Input Power Main Circuit | Continuous Current (Arms) | Peak Current (Arms) | Width (mm) | Height (mm) | Depth (mm) |
|---|---|---|---|---|---|---|---|
| CDHD2-003 | 20–90 VDC | 1 phase | 3 | 9 | 36 | 167 | 104 |
| CDHD2-006 | 20–90 VDC | 1 phase | 6 | 18 | 36 | 167 | 104 |
| CDHD2-012 | 20–90 VDC | 1 phase | 12 | 24 | 36 | 167 | 104 |
| CDHD2-015 | 20–90 VDC | 1 phase | 15 | 30 | 36 | 167 | 104 |
| CDHD2-1D5 | 120/240 VAC | 1 phase | 1.5 | 4.5 | 43.2 | 150 | 143.7 |
| CDHD2-003 | 120/240 VAC | 1 phase | 3 | 9 | 43.2 | 150 | 143.7 |
| CDHD2-4D5 | 120/240 VAC | 1/3 phase | 4.5 | 18 | 54.7 | 150 | 167.4 |
| CDHD2-006 | 120/240 VAC | 1/3 phase | 6 | 18 | 54.7 | 150 | 167.4 |
| CDHD2-008 | 120/240 VAC | 1/3 phase | 8 | 28 | 61.8 | 170 | 181.6 |
| CDHD2-010 | 120/240 VAC | 1/3 phase | 10 | 28 | 61.8 | 170 | 181.6 |
| CDHD2-013 | 120/240 VAC | 3 phase | 13 | 28 | 61.8 | 170 | 181.6 |
| CDHD2-020 | 120/240 VAC | 3 phase | 20 | 60 | 117.4 | 233.8 | 193.5 |
| CDHD2-024 | 120/240 VAC | 3 phase | 24 | 72 | 117.4 | 233.8 | 193.5 |
| CDHD2-033 | 120/240 VAC | 3 phase | 33 | 130 | 157.6 | 304.3 | 220.4 |
| CDHD2-044 | 120/240 VAC | 3 phase | 44 | 130 | 157.6 | 304.3 | 220.4 |
| CDHD2-055 | 120/240 VAC | 3 phase | 55 | 130 | 157.6 | 304.3 | 220.4 |

### Communication:
CANopen®*
EtherCAT®*
USB*
RS232
Daisy Chain

### Motor feedback:
sensAR Absolute Encoder
Incremental Encoder
Hall Sensors
Resolver*
Sine Encoder (e.g., EnDat®, HIPERFACE®)
SSI Encoder (e.g., EnDat®, Nikon®, Tamagawa®)
Motor Temperature

### I/Os:*
Digital: 11 x Input, 6 x Output
Analog: 1 x Input or 2 x Input*, 1 x Output
Pulse & Direction
Equivalent Encoder Output
Secondary Feedback
Fault Output Relay

*Some features are not available on all models.

## Ordering Information

| | | CDHD2 – | 006 | 2A | AP1 – | RO | 000 |
|---|---|---|---|---|---|---|---|

**CDHD2 Servo Drive – HD Series**

**Rating**

| | 120 / 240 VAC (MV) | | 20–48 / 90 VDC (LV) | |
|---|---|---|---|---|
| | Cont. [A rms] | Peak [A rms] | Cont. [A rms] | Peak [A rms] |
| 1D5 | 1.5 | 4.5 | | |
| 003 | 3 | 9 | 3 | 9 |
| 4D5 | 4.5 | 18 | | |
| 006 | 6 | 18 | 6 | 18 |
| 008 | 8 | 28 | | |
| 010 | 10 | 28 | | |
| 012 | | | 12 | 24 |
| 013 | 13 | 28 | | |
| 015 | | | 15 | 30 |
| 020 | 20 | 60 | | |
| 024 | 24 | 72 | | |
| 033 | 33 | 130 | | |
| 044 | 44 | 130 | | |
| 055 | 55 | 130 | | |

**Input Power Supply**

| 1D | Low Voltage Input Power Supply • 20–90 VDC for motor power (for 3A–12A models) • 20–48 VDC for motor power (for 15A model) • 20–48 VDC (optional) for logic power |
|---|---|
| 2A | Medium Voltage Input Power Supply • Single Phase 120 L-N VAC +10% -15% 50/60 Hz • Single Phase 240 L-N VAC +10% -15% 50/60 Hz • Three Phase 120-240 L-L VAC +10% -15% 50/60 Hz |

| | Communication Interfaces | Analog Inputs |
|---|---|---|
| APx | Analog Voltage, Pulse Train, RS232. | 1* or 2 |
| AFx | CANopen, Analog Voltage, Pulse Train, USB, RS232 | 1* or 2 |
| ECx | EtherCAT, Analog Voltage, Pulse Train, USB, RS232 | 1 or 2* |
| EB2 | EtherCAT, USB. | 2 |
| | x = 1: One analog input, 16 bit<br>x = 2: Two analog inputs, 14 bit each | * Standard configuration |
| | AF1 and EC2 options only for LV and MV-33/44/55 models | |

**Motor Type**

| [blank] | Rotary and linear servo motors |
|---|---|
| RO | Rotary servo motors. Available in Asia market only. |

**Special Options**

| [blank] | Standard |
|---|---|

CE  TÜVRheinland  RoHS 2002/95/EC  REACH COMPLIANT