Nidec

Drives

5 YEAR WARRANTY

Unidrive

High performance, scalable & future-proof

AC drives

Nidec Drives

The ultimate Universal Drive

Unidrive M

0.75 kW - 2.8 MW Heavy Duty
(1.0 hp - 4,200 hp)
200 V | 400 V | 575 V | 690 V

Control Techniques has set the standard in motor control since 1973.

Every company has a flagship; a product that leads the charge. For us, it's Unidrive, our high performance drive family.

Unidrive is the accumulation of almost half a century of motor control expertise, and it is the embodiment of what Control Techniques is all about. Unidrive is our crown jewel.

In 1996, we were the first to integrate the control of multiple motor types into one physical product, and hence the universal drive concept was born. Now, more than a million motors across the world rely on a Unidrive.

Unidrive integrates, with all of its benefits, seamlessly into your system. Plus, with its scalable control and motion architecture, it's the drive for what you need today and for where you want to go tomorrow.

5-year warranty as standard*

Our Unidrive series is so reliable we are confident enough to supply it with a five-year warranty as standard.

*Warranty terms and conditions apply.

Performance control

Matched for every type of motor

The bread and butter of Control Techniques is honing our unique motor control algorithms, taking pride in our craft as any good craftsman would.

This ensures that our Unidrive M drives offer the highest control stability and bandwidth for every industrial motor type. Unidrive M enables maximum machine throughput in every application and with every motor, from AC induction motors to dynamic linear motors and from energy saving hybrid permanent-magnet motors to high performance servo motors.

Feedback

The built-in, ultra-flexible speed and position feedback interface supports a wide range of feedback technologies from robust resolvers to high resolution encoders, including SinCos, EnDat (2.1, 2.2, 3.0), SSI, HIPERFACE and BiSS.

High performance and high power

With Unidrive there is no compromise between power and control performance. Unidrive supports high output switching frequencies throughout the power range, making it the drive of choice when your application demands uncompromised high performance control at high powers.

Sensorless

Unidrive supports sensorless control of induction, permanent-magnet, and hybrid PM motors, reducing system cost and improving robustness.

Control

High bandwidth motor control supporting switching frequencies up to 16 kHz, for open and closed loop induction, servo and hybrid PM motors, giving up to 3,000 Hz current loop bandwidth and 250 Hz speed loop bandwidth.

Unidrive, with its high speed variants, is suitable for applications where output frequencies above 600 Hz are needed, such as spindles and centrifuges.

Universally applicable

Having one universal drive in control of multiple parts of the application radically simplifies machine design.

Your engineering team only have one product to learn, allowing them to spend more time on other tasks.

It also means a single, universal replacement for any maintenance, repair or operational need.

Case study:

BPI Solutions, UK and Romania

Packaging firm blows maintenance issues away by converting from DC to AC drives

BPI Packaging solutions is a manufacturer of flexible packaging film, with seven sites in the UK and Romania. The Winsford, UK site produces innovative, sustainable film used in various applications from NHS PPE to surgical waste bags. In a bid to become more efficient BPI decided to convert from DC to AC drives. Seven extruders were converted to Unidrive M and Dyneo+ solutions. By swapping to AC the customer benefitted from 30% energy savings, lower maintenance cost and improved machine performance.

Save energy through

A wide range of energy features

Unidrive M has been designed to bring improved energy efficiency to all applications, delivering up to 98% efficiency, minimising losses during the conversion process.

The easy common DC bus configuration of the drive enables braking energy to be recycled within the drive system, reducing energy usage and eliminating external supply components. Even more, Unidrive M series drives can be configured in a regenerative mode, providing an Active Front End (AFE) for regenerative AC drive systems.

Application of an AFE not only results in the most energy efficient solution but also dramatically reduces supply harmonics.

Meanwhile, in some applications drives can sit idle for significant periods, but even in such scenarios energy can be saved with the low power standby mode of Unidrive M drives.

Nidec hybrid permanent-magnet motors

Pairing Unidrive M with Nidec's Dyneo+ hybrid permanent-magnet motors, delivers exceptional efficiency levels across all operating speeds, especially at lower speeds where the efficiency is much higher in comparison to induction motors.

The energy savings possible can result in a quick return on your investment and will continue to save you money day after day, with the important added benefit of a lower carbon footprint.

Dyneo+ hybrid permanent-magnet motor

Unidrive
Specifications

Dimensions

Frame size	Dimensions H x W x D mm (in)	Weight kg (lb)	DC Bus Choke/AC Line Choke	
			Internal	External
3	365 x 83 x 200 (14.4 x 3.3 x 7.9)	4.5 (9.9)	✔	-
4	365 x 124 x 200 (14.4 x 4.9 x 7.9)	6.5 (14.3)	✔	-
5	365 x 143 x 200 (14.4 x 5.6 x 7.9)	7.4 (16.3)	✔	-
6	365 x 210 x 227 (14.4 x 8.3 x 8.9)	14 (31)	✔	-
7	508 x 270 x 280 (20 x 10.6 x 11.0)	28 (62)	✔	-
8	753 x 310 x 290 (29.7 x 12.2 x 11.4)	52 (115)	✔	-
9A	1049 x 310 x 290 (41.3 x 12.2 x 11.4)	66.5 (147)	✔	-
9E	1010 x 310 x 290 (39.7 x 12.2 x 11.4)	46 (101)	-	✔
10E	1010 x 310 x 290 (39.7 x 12.2 x 11.4)	46 (101)	-	✔
11E	1190 x 310 x 312 (46.9 x 12.2 x 12.3)	63 (139)	-	✔
12	1750 x 295 x 526 (68.9 x 11.6 x 20.7)	D: 113 (249) T: 130 (287)	-	✔

Electrical Ratings

A.C. Supply Ratings:	200 V drive: 200 to 240 VAC ±10 % 400 V drive: 380 to 480 VAC ±10 % 575 V drive: 500 to 575 VAC ±10 % 690 V drive: 500 to 690 VAC ±10 %
Supply Phases:	3 phases (single phase ratings available on request)
Supply Types:	TN-S, TN-C-S, TT and IT
Input Frequency:	45 to 66 Hz
D.C. Supply:	Connect up to 10 drives in parallel via D.C. bus
Active Front End:	All variants support regen mode for the inverter to regenerate energy back tot the grid
Braking Transistor:	Built-in as standard (frame 3 to 8) or optional (frame 9 to 12)
Output Frequency (Open-loop):	Standard drives: 599 Hz High speed drives: 3,000 Hz
Output Frequency (Closed-loop or sensorless RFC):	Standard drives: 550 Hz High speed drives: 1,250 Hz
EMC with internal filter:	EN61800-3 (2nd environment) and EN61000-6-2 (Immunity)
EMC with external filter:	EN/IEC 61000-6-3 and EN/IEC 61000-6-4
Switching Frequency:	2 to 16 kHz
Current Loop:	62.5 µs

Environmental Specifications

Enclosure type:	IP20 / NEMA1 / UL Open Class / UL Type 1 with additional kit
Ambient temperature:	Without derate: -20 to 40 °C (-4 to 104 °F) With derate: -20 to 55 °C (-4 to 131 °F)
Humidity:	95 % maximum (non-condensing)
Altitude:	0 to 3,000 m (9,900 ft) De-rate 1 % per 100 m (330 ft) above 1,000 m (3,300 ft)
Random Vibration:	Tested in accordance with IEC 60068-2-64
Mechanical Shock:	Tested in accordance with IEC 60068-2-29
Conformal Coating:	All drives have conformally coated PCBs as standard
Corrosive Gases:	Levels must not exceed Class 3C2 of IEC 60721-3-3

Compliance

EN/IEC 61800-5-1 (Electrical Safety)

EN/IEC 61131-2 (I/O)

Safe Torque Off independently assessed by TÜV to IEC 61800-5-2 SIL 3 and EN ISO 13849-1 PLe

UL 508C (Electrical Safety)

DNV certified for use in Marine & Offshore applications

Product Marks

Overload Limits

Typical overload limits (based on drive rated current)				
Operating mode	Closed-loop from cold	Closed-loop from 100 %	Open-loop from cold	Open-loop from 100 %
Normal duty overload (size 11 and below)	110 % for 165 s	110 % for 9 s	110% for 165 s	110% for 9 s
Normal duty overload (size 12)	110 % for 180 s	110 % for 10 s	110 % for 180 s	110 % for 10 s
Heavy duty overload (size 8 and below)	200 % for 28 s	200% for 3 s	150 % for 60 s	150 % for 7 s
Heavy duty overload (size 9A, 9E, 10, 11)	170 % for 42 s	170 % for 5 s	150 % for 60 s	150% for 7 s
Heavy duty overload (size 12)	140 % for 60 s	140 % for 10 s	140 % for 60 s	140 % for 10 s

Drive Feature Table

Standard Drive:	M600	M701	M700	M702
High Speed Drive:	X	HS71	HS70	HS72
STO SIL3:		Single Channel		Dual Channel
I/O Terminals		Analog & Digital I/O		Digital I/O Only
Onboard Comms:		MODBUS RTU		Ethernet/IP, MODBUS TCP, RTMoE, PROFINET
Closed-loop control	With SI Option	✔	✔	✔
Encoder Inputs:	X	2	2	2
Encoder Outputs:	X	2	2	2
Advanced Motion Controller:	X	✔	✔	✔
Regen Mode (Use as an active front end):	✔	✔	✔	✔
Supported Motors				
Asynchronous (Induction) Motor	✔	✔	✔	✔
Synchronous (PM) Motor	✔	✔	✔	✔
Synchronous Reluctance Motor	✔	✔	✔	✔
Hybrid PM Assisted Motor	✔	✔	✔	✔
Closed-loop control	With SI Option	✔	✔	✔

Nidec

All for dreams

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CONTROL TECHNIQUES

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