UDMNT

EtherCAT® Dual & Single Axis Drive Module

Servo Performance:

- A standard comprehensive set of powerful algorithms to enhance accuracy, move & settle time, smooth velocity, stability and robustness.
- Advanced PIV cascaded structure
- Loop shaping filters
- Gain Scheduling
- Gantry MIMO control
- Dual feedback / loop control
- Disturbance rejection control
- Optional Servoboost™ algorithm that provides better, more consistent servo performance, insensitive to noise and large changes in the system.

Universal drive:

- 2 and 3 phase AC Servo / DC brushless with sinusoidal commutation
- DC Brush
- Voice coils
- Closed and open loop step motors

12VDC to 80VDC, up to 10A continuous and 20A peak current

Wide range of feedback interfaces:

- Digital incremental encoders
- Sin-Cos analog encoder interface, supporting laser encoders with speeds >10MHz (optional)
- Absolute encoders (optional) EnDat 2.1(digital)/2.2, Smart- Abs, Panasonic, BiSS-C

Comprehensive I/O:

- 4 general-purpose / Registration MARK inputs
- 2 general purpose / motor brake outputs (24V, 0.1A)
- 2 PEG (Position Event Generator) outputs
- 2 analog inputs, ±10V
- 1 analog output, ±10V

Compact: 144x112.5x38.5 mm^3

The UDMNT is a line of compact, panel-mounted EtherCAT modules with single / dual-axis universal drives for servo, stepper, and voice-coil motors with peak power of up to 1.3kW.
The UDMNT addresses the needs of demanding multi-axis motion applications with limited space, such as wafer-handling robots, wire bonders, die bonders, electronics packaging, small manipulators, and table-top motion stages. With the optional combination of a 10MHz laser encoder interface and the powerful ServoBoostTM algorithm, demanding positioning systems can achieve ultimate performance levels, such as speeds above 1m/s, Jitter of nanometers, almost zero settling time, and uncompromised system robustness with minimal sensitivity to disturbances and changes. The UDMNT is a slave that runs under any ACS EtherCAT masters. A comprehensive set of software support tools are provided for module configuration, setup and tuning.

Specifications

Per Drive	2.5A	5A	10A
Continuous/peak current Sine amplitude [A]	2.5/5	5/10	10/20
Continuous current RMS [A]	1.8/3.6	3.6/7.2	7.2/14.4
Heat dissipation [W]	0.6	1.4	3.4
Maximum cont./peak output power @ 80VDC [W]	160/320	320/640	640/1280
Maximum cont Input current [A]	2	4.1	8.2
Peak current time [sec]	1		
Minimum load inductance @80VDC [mH]. Can be derated linearily for lower voltages	0.05		

Per module	
Maximum cont input current per module [A]	40
Maximum motor voltage [VDC]	(Vin motor) x 92%

Example: UDMnt2B200N0D

Field		S	2	3	4	5	6	7	8
PN	UDMNT	2	B	2	0	0	N	0	D

Ordering Options

Ordering options	Field	Example	Optional Values
Number of axes	1	2	1, 2
Continuous Current (Peak is double)	2	B	A- 2.5/5A, B- 5/10A, C- 10/20A
Total number of encoder channels	3	2	1 (for single axis unit only), 2
500kHz Sin-Cos	4	0	0, 1, 2
10MHz Sin-Cos	5	1	0, 1, 2
Absolute encoders type	6	N	U- All, N- None, E- EnDAT 2.1(digital)/2.2, S- Smart Abs, P- Panasonic, B- BiSS-C
Number of Absolute encoders interface	7	0	0, 1, 2
I/O configuration	8	N	**N- Inputs & limits:** 24V/SOURCE (PNP), Outputs : 24V,SOURCE (PNP). **D-** Identical to (N), for compatability reasons **S- Inputs & limits:** 24V/SINK (NPN) **Outputs:** 24V,SOURCE (PNP) **R- Inputs & limits:** 5V/SOURCE (PNP) **Outputs:** 5V/SOURCE (PNP). **T- Inputs & limits:** 5V/SINK (NPN). **Outputs:** 5V/SOURCE (PNP). **U- Outputs & Inputs:** 24V/SOURCE (PNP), **Limits:** 24V/SINK (NPN).

Drives

Type: digital current control with field oriented control and space vector modulation
Current ripple frequency: 40 kHz
Current loop sampling rate: 20 kHz
Programmable Current loop bandwidth: up to 5 kHz
Commutation type: sinusoidal. Initiation with and without hall sensors
Switching method: advanced unipolar PWM

Supply

The drive must be supplied by two power sources. A motor supply and a 24Vdc control & logic supply. During emergency conditions there is no need to remove the 24Vdc control supply.
Motor Supply: Range: 12Vdc to 80Vdc
Current rating should be calculated based on actual load.
Control Supply: Control supply input voltage: 24VDC ±20%
Maximum input power: 15W
Max input current: 0.8A @ 24V

Motor Types

Two- and three-phase permanent magnet synchronous (DC brushless/AC servo), DC brush, Voice coil, Two- and three-phase stepper (micro-stepping open or closed loop), Five-phase stepper*.
* Consult ACS.

Feedback

Types: incremental digital encoders, optional Sin-Cos encoders

Incremental Digital Encoder: One per axis, A&B,I; CLK/DIR,I
Type: RS-422
Max. rate: 50 million encoder counts/sec
Sin-Cos Analog Encoder (optional): One per axis
Type: 1Vptp, differential
Programmable multiplication factor: x4 to x4096
Maximum frequency: 500kHz or 10MHz
Maximum acceleration with Sin-Cos encoder: 108 sine periods/second^2
Absolute Encoder (optional): Two, EnDat 2.1 (digital)/2.2, Smart- Abs, Panasonic, BiSS-C
Hall inputs: Two sets of three per axis
Type: single-ended, 5V, source, opto-isolated
Input current: <7mA

Digital I/O

The Digital I/O are powered by an 24V/ source (default), See ordering options for other I/O configurations
Safety Inputs: Left and right limit inputs per axis.
Type: 24V/ source (default), single ended, opto-isolated
Max. input circuit current: 4.1mA
Digital Inputs: General purpose inputs:
Four, 24V/ source (default), single-ended, opto-isolated
Max. Input current: 4.1mA
Registration MARK Inputs: (High Speed Position Capture) Four, 24V±20%, opto-isolated, two terminals. Input current <14mA. Can be used as general purpose inputs.
Digital Outputs: General purpose outputs:
Two, 24V/ source (default), single ended, opto-isolated, 100mA per each output
PEG: (Position Event Generator): Two, RS422. Pulse width 26nSec to 1.75mSec. Maximum rate: 10MHz. Can be used as general purpose output.

Analog I/O

Analog Inputs: Two Inputs, ±10V, differential, 12 bit resolution.
Analog Outputs: One output, ±10V, differential, 10 bit resolution.

Drive Protection

- Over voltage
- Under Voltage
- Phase-to-phase short circuit
- Short to ground
- Over current
- Over temperature

Environment

Operating range: 0 to +50°C
Storage and transportation range: -25 to +60°C
Humidity (operating range): 5% to 90% non-condensing

Communication

Two EtherCAT ports, In and Out, RJ45 connector

Accessories

UDMnt-ACC1: A set of mating connectors
UDMnt-1-BOB: A set of cables, connectors and breakout modules for the single axis UDMnt
UDMnt-2-BOB: A set of cables, connectors and breakout modules for the dual axis UDMnt

Certifications

CE: Yes
Electrical Safety: IEC 61010-1
EMC: EN 61326-1
UL Certification: UL508C

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