UDMPM

EtherCAT® Single & Dual Axis Drive Module

- Universal single and dual axis Drive Modules for EtherCAT networks

- 85 to 265Vac, up to 7.5A continuous and 15A peak current (~1.6kW/3.2kW@230Vac)

- Digital control for easy setup and diagnostics

- Dual loop with dual feedback per each axis

- 20kHz sampling and update rate of all control loops

- Supports incremental digital and analog encoders, absolute encoders and resolver

- Digital I/O: 8 inputs, 8 outputs Analog I/O: 4 inputs, 2 outputs, 12 bit resolution

- Safe Torque Off (STO)

The UDMPM is a line of EtherCAT universal single & dual axis economical drives for AC servo / DC Brushless, AC Induction, and DC brush motors.

The UDMPM operates as an EtherCAT node under any SPiiPlus EtherCAT master Controller including the PC based SPiiPlusSC Soft Controller. It is designed to address cost sensitive applications requiring better move & settle, smooth velocity and stand still jitter performance with power of up to 1.6kW/3.2kW (continuos/peak) per axis.

The UDMPM is offered with two current levels: 5A/10A (cont./peak) and 7.5A/15A.
Optional Safe Torque Off (STO) module cuts the power to the motor without removal of the power source to comply with SIL-3 and PLe safety levels.

The UDMPM is powered by a single phase 85 to 230Vac and by a separate 24Vdc control supply that keeps all low voltage signals alive during emergency conditions.

CE, UL (Pending)
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ACS
MOTION CONTROL

Servo

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

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
Protection: Over voltage, Phase-to-phase short circuit, Short to ground, Over current, Over temperature

Supply

The module is fed by two power sources. A motor AC supply and a 24Vdc control supply. During emergency conditions there is no need to remove the 24Vdc control supply.

Motor Supply
Range: 85 to 265Vac
Current rating should be calculated based on actual load.

Control Supply
Range: 24Vdc ± 10% Maximum input current / power: 4A / 100W
Note: The module consumes 2A (50W). Additional 2A are needed when the motor brake feature is used

Motor Type

3 and 2 phase AC synchronous, AC Induction and DC brush motors

Feedback

Incremental Digital Encoder: Four, two per axis, A&B,I; Clk/Dir,I RS-422. Max. rate: 50 million encoder counts/sec., Protection:Encoder error, not connected

Sin-Cos Analog Encoder (optional):
Two, one per axis.1Vptp, differential
Multiplication factor: From x4, to- x4,096
Maximum frequency: 250kHz
Automatic compensation of Offset, Phase and Amplitude
Maximum acceleration: 10^8 million sine periods/sec^2. Protection: Encoder error, not connected
Hall inputs: Two sets of three per axis. Single-ended, 5V, source, opto-isolated.
Input current: <7mA.
Resolver: 12b resolution (4,096 counts/rev)
Absolute encoders (optional): EnDat 2.1(Digital)/2.2, Smart-ABS, Panasonic, BiSS-C, Hiperface. Consult ACS for availability
5V feedback supply: Total current available for feedback devices: 250mA.

Digital I/O

Safety Inputs: Left + right limit per axis. Single-ended, 24V±20%, opto_isolated, source. (See ordering options for other configurations) Input current: 14mA. E-Stop: Opto-isolated, floating two-terminal.
Motor Brake outputs: Two. 24V, 1A ,opt_isolated. Powered by the 24V Control Supply.
STO: Two pairs of inputs. (Optional)

General Purpose Inputs: Eight, Single-ended, 24V±20%, opto-isolated, source. (See ordering options for other configurations)
Input current: 14mA
Registration MARK: Four. Two are RS422 with dedicated inputs and can be used as GP inputs. Two share General Purpose Inputs 6,7.
General Purpose Outputs: Eight. Single-ended, 24V±20%, opto-isolated, source. 0.5A per output with up to 3A for all outputs.
Position Event generator (PEG): Two PEG_Pulse and two PEG_State, RS422. Flexible axis assignment. Can be used as GP outputs. Two GP opto-isolated outputs can be programmed to be used as the PEG Pulse outputs.
Pulse width with RS422 outputs: 26nSec to 1.75mSec. Maximum rate with RS422 outputs: 10MHz
Pulse width with GP outputs: 0.75mSec to 1.75mSec. Maximum rate with GP outputs: 1kHz
HSSI: One channel. RS422

Analog I/O

Input: Two per axis. differential, ±10V, 12bit resolution, 100mV compensated offset, maximal sampling rate 250kHz
Output: Two. 10 bit resolution, differential ±10V±10%, 50mV maximal offset, 50mVp_p max ripple, linearity better than 1%

Environment

Operating: 0 to + 50°C
Storage : -25 to +70°C
Humidity: 5% to 90% non-condensing
Communication
EtherCAT: Two, In & Out, RJ45 connectors

Specifications

Part Number X represents number of axes XX represents other ordering options	UDM PM X-002-XX	UDM PM X-005-XX	UDM PM X-007-XX
Number of Axes		1 or 2	
Input voltage range [Vac]		85 to 265	
Phase Current Cont./Peak, sine amplitude [A]	2.5 / 5	5 / 10	7.5 / 15
Phase Current Cont./Peak, RMS [A]	1.8 / 3.6	3.6 / 7.1	5.4 / 10.8
Peak current time [sec]		1	
Max. output voltage		Vdc x 1.41 x 88%	
Max. Input cont. power per axis @ at 230Vac [kVA]	0.9 / 1.8	1.6	2.5
Max. output power (Cont./Peak) per axis @ 230Vac [kW]	0.55 / 1.1	1.1/2.2	1.6/3.2
Min. load Inductance, at maximum motor voltage [mH]. With a lower voltage the min. inductance value can be reduced proportionally		0.05	
Max. Heat dissipation per axis @ 230Vac [W]	25	50	75
Weight without [gram]		2,000	
Dimensions [mm³]		270 x 157 x 67	
Standards		CE, UL (Pending)	

Note: Cooling by forced airflow is required.

Ordering Options

Ordering options	Field	Example	Values
Number of drives (85Vac - 265Vac)	1	2	1,2
Continuous Current (Cont/Peak)	2	7.5A	002- 2.5A, 005- 5A, 007- 7.5A
Number of 250kHz Sin-Cos encoder interfaces	3	2	0,1,2
Encoder channels per axis	4	2	1,2
Absolute encoders type	5	None	N- None, E- EnDat 2.1(digital)/2.2, S- Smart-ABS, P- Panasonic, B- BiSS-C, H- Hiperface, R- Resolver
Number of Absolute encoders interface	6	0	0,1,2
STO	7	Yes	Y- Yes, N- No
EtherCAT Master	8	Any	1 - Any
I/O configuration	9	No	**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)

Example: UDM PM200722N0Y1N

Field		1	2	3	4	5	6	7	8	9
PN	**UDM PM**	2	007	2	2	N	0	Y	1	N

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