UDM*PM*
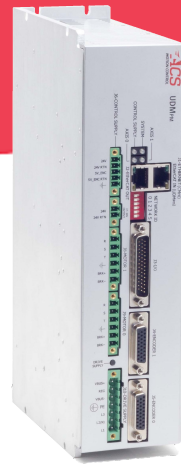
EtherCAT® Single & Dual Axis Drive Module

> Universal single and dual axis drive modules for EtherCAT networks

> 85 to 265Vac (or 120 to 375Vdc), 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, 12 bit resolution; 2 outputs, 10 bit resolution

> Safe Torque Off (STO)

The UDM*PM* is a line of EtherCAT universal single & dual axis economical drives for AC servo/DC brushless, DC brush, voice coil, and stepper motors.

The UDM*PM* 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 UDM*PM* is offered with two current levels: 5A/10A (cont./peak) and 7.5A/15A.
The 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 UDM*PM* is powered by a single phase 85 to 265Vac (or 120 to 375Vdc) and by a separate 24Vdc control supply that keeps all low voltage signals alive during emergency conditions.

ACS
MOTION CONTROL

Specifications

Part Number X represents number of axes XX represents other ordering options	UDMₚₘ X-002-XX	UDMₚₘ X-005-XX	UDMₚₘ X-007-XX
Number of Axes		1 or 2	
Input voltage range [Vac] Single Phase only		85 to 265	
Input voltage range [Vdc]		120 to 375	
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 @ 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		1	
Max. Heat dissipation per axis @ 230Vac [W]	25	50	75
Weight [gram]		2,000	
Dimensions [mm]		270 x 157 x 67	
Standards		CE	

Note: For cooling use fan with airflow of 25CFM

Example: UDMpm200722N0Y1N

Field		1	2	3	4	5	6	7	8	9
UDMpm	**UDMₚₘ**	2	007	2	2	N	0	Y	1	N

Ordering Options

Ordering Options	Field	Example User Selection	Values
Number of drives (85Vac - 265Vac)	1	2	1, 2
Continuous current (Cont/Peak)	2	007	002 - 2.5/5A, 005 - 5/10A 007 - 7.5/15A
250kHz SIN-COS (LT)	3	2	0, 1, 2
Encoder channels per axis[1]	4	2	1, 2
Absolute encoders type[2]	5	N	N - None, E - EnDat 2.1(digital)/2.2 S - Smart ABS, P - Panasonic B - BISS-A/B/C, H - Hiperface R - Resolver, I - SSI
Number of absolute encoders interface	6	0	0, 1, 2
STO	7	Y	Y _ Yes, N - No
EtherCAT Master	8	1	1 - Any ACS EtherCAT Master
I/O configuration	9	N	N - Inputs & limits: 24V/SOURCE (PNP), Outputs: 24V/SOURCE (PNP). D - Identical to (N). For compatibility reasons. S - Inputs & limits: 24V/SINK (NPN), Outputs: 24V/SOURCE (PNP). U - Inputs: 24V/SOURCE (PNP), Limits: 24V/SINK (NPN), Outputs: 24V/SOURCE (PNP).

[1] To use a 5Vdc external supply for the encoders consult ACS
[2] All absolute encoder channels must be the same type

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 or 120 to 375Vdc
Current rating should be calculated based on actual load.
Mating connector supplied.
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.
Mating connector supplied.

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).

Feedback
Incremental Digital Encoder: Four, two per axis, AqB,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: 12bit resolution (4,096 counts/rev)
Absolute encoders (optional): EnDat 2.1(Digital)/2.2, Smart-ABS, Panasonic, BiSS-A/B/C, SSI, Hiperface. Consult ACS for availability
5V feedback supply: Total current available for

Environment
Operating: 0 to + 50°C
Storage : -25 to +70°C
Humidity: 5% to 90% non-condensing

Communication
EtherCAT: Two, In & Out, RJ45 connectors

Accessories
SPii+CMntUDMpm-ACC1: CMnt-x & UDMpm-x mating connectors kit
SPii+CMntUDMpm-ACC2: CMnt & UDMpm J11 mating connector + 2m cable, flying leads
STO-ACC1: 2 meter cable with flying leads for STO

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: 4-14mA. 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: 4-14mA
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%

Certifications
CE: Yes
Safety: IEC 61010-1
EMC: EN 61326-1

ACS MOTION CONTROL