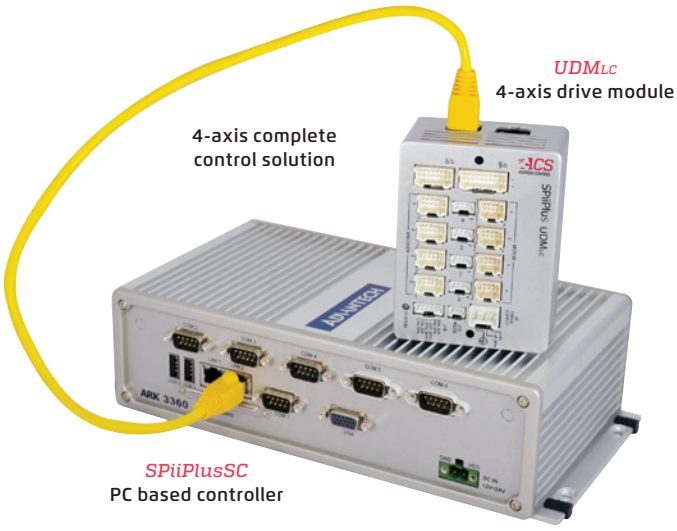
UDMLC

EtherCAT® Dual/Quad Axis Drive Module

- Universal dual/quad axis Drive Modules for EtherCAT networks
- 12Vdc to 48Vdc, up to 5A continuous and 10A peak current
- Digital control for easy setup and diagnostics
- Universal drive, supporting any of the following type of motors by software settings only: 2, 3 phase AC Servo / DC brushless with sinusoidal commutation, DC Brush, voice coils, closed and open loop step motors
- Feedback
  4 digital incremental encoders
  2 absolute encoders (optional)
- Digital I/O (all can be used as general purpose I/O):
  Inputs: 4 Registration Mark
  Outputs: 1 PEG, 4 motor brake (24V, 0.5A)
- Compact footprint: 100x75x48 mm³

The UDMLC is a series of small footprint EtherCAT modules with dual/quad-axis universal drives for servo, stepper, and voice coil motors with a power range of 10W to 200W. The type of motor is selected by the user and can be set differently for each drive.

This product addresses the needs of demanding multi-axis motion applications with limited space, such as moving inspection heads, small manipulators, and table-top motion stages. The miniature size, low weight, and minimal cable interface makes the UDMLC ideal for mounting remotely on moving axes. It is available in three current levels (cont./peak per axis): 1.25/2.5A, 2.5/5A or 5/10A (dual axis version only), and has inputs for four digital incremental and two absolute encoders.



The unit is powered by a 12 to 48Vdc drive supply voltage and by a separate 15 to 48Vdc control supply that keeps all logic signals alive during emergency conditions. The UDMLC is panel or din rail mountable.

CE, UL

EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany

Contact us: sales@acsmotioncontrol.com | **www.acsmotioncontrol.com**

ACS MOTION CONTROL

Product (x – number of axes) (yyy – additional options)	UDMLC x001yyy	UDMLC x002yyy	UDMLC x005yyy
Number of axes	2,4	2,4	2
Motor voltage input range [Vdc]		12-48	
Control voltage input [Vdc]		15-48	
Phase current (Cont./ Peak) Sine amplitude [A]	1.25/2.5	2.5/5	5/10
Phase current (Cont./ Peak) RMS [A]	0.9/1.8	1.8/3.6	3.6/7.2
Peak current time [sec]		1	
Max. output voltage to motor [Vdc]		(Drive supply) x 93%	
Max. RMS input current at 80Vdc [W]	4.3	8.6	8.6
Min. load Inductance, at maximum motor voltage [mH]		0.050	
Max. Heat dissipation per axis [W]	0.7	2	6
Weight [gram]		250	
Dimensions [mm³]		100x75x48	
Standards		CE, UL (pending)	

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 (2.5/5model only)
- Dual feedback / loop control
- Disturbance rejection control

Optional Servoboost™ algorithem that provides better, more consistent servo performance, insensitive to noise and large changes in the system

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, motor phase-to-phase short circuit, motor phase to ground short circuit, over-current, over-temperature

Supplies

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

Drive Supply

Range: 12Vdc to 48Vdc

Current rating should be calculated based on actual load

Control Supply

Range: 15Vdc to 48Vdc

Maximum input power: 15W

Input current: < 1A

Motor Type

Universal drive, supporting any of the following type of motors by software settings only: 2- and 3-phase permanent magnet synchronous 2- and 3-phase step (micro-stepping or servo). DC brush. Voice coil

Accessories

UDMLC-ACC1 – A set of mating connectors

UDMLC-ACC2 – A set of 50cm cables with assembled mating connectors

UDMLC-ACC3 – Din-rail mounting kit

Feedback

Types: incremental digital encoders, optional: absolute encoders

Incremental Digital Encoder: Four, one per axis. A&B,I and Clk/Dir, Type: Differential RS-422

Max. rate: 50 million encoder counts/sec

Protection: Encoder error, not connected

Absolute encoders (optional): Total of two. EnDat 2.1(Digital)/2.2, Panasonic, SmartABS, and BiSS-C

Hall inputs: Four, a set of three per axis. Type: single-ended, 5V, source, opto-isolated

Input current: <7mA

5V feedback supply: Feedback devices are fed by a 5V±5% supply.

Total available current to all encoders is 1A

Digital I/O

Safety Inputs: Left and right limit inputs per axis

Type: Single-ended, 24V±20%,opto isolated, source E-Stop: 24V, Max., opto isolated, two terminal, input current 14mA Unused safety inputs can be used as general purpose inputs

Registration MARK: Four. Fast, 24V±5%, opto-isolated, two terminals. Can be configured as 'sink' or 'source'. 10mA max. input current. can be used as general purpose fast inputs

Motor Brake Outputs: Four, opto-isolated, 24V±20%, 0.5A per output. Can be used as general purpose outputs

Position Event Generator (PEG): One, RS422. Can be used as general purpose output. Pulse width 26nSec to 1.75mSec

Maximum rate with RS422 outputs: 10MHz

SPI Interface One. requires customized software to activate. Consult ACS representative

Environment

Operating range: 0 to + 50°C

Storage and transportation range: -25 to +70°C

Humidity (operating range): 5% to 90% non-condensing

Communication

Two EtherCAT ports, In and Out

Ordering Options

Ordering options	Field	Example	Values
Number of axes	1	4	2,4
Continuous Current (Peak is double)	2	2.5A	2 2.5A 001-1.25, 002-2.5A, 005-5A (5A only dual axis version)
Total number of digital incremental encoders(1)	3	4	2, 4. 4-axis unit requires 4
Absolute encoders type	4	None	N- None, E- EnDat 2.1(Digital)/2.2, S- Smart Abs, P- Panasonic, B- Biss-C
Number of Absolute encoders interface	5	0	0,1,2
EtherCAT Master	6	Any	Any (1)
Type of motors	7	Any	Any (0)
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)

Example: UDMLC40024N010N

Field		1	2	3	4	5	6	7	8
PN	**UDMLC**	4	002	4	N	0	1	0	N