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# MC4U PWM Drives

DDM3U-2-320V-5A, DDM3U-2-320V-10A, DDM3U-2-320V-20A  
2 Universal Drives per Card 320V, up to 40A peak, 10.8kW



DDM3U-4-60V  
Up to 4 Universal Drives per Card 60V, 5A peak, 0.3kW



DDM3U-2-560V-5A, DDM3U-2-560V-10A, DDM3U-2-560V-15A  
2 Universal Drives per Card 560V, up to 30A peak, 6kW



DDM3U-4-320V-1A, DDM3U-4-320V-2A, DDM3U-4-320V-3A  
Up to 4 Universal Drives per Card 320V, up to 6A peak, 0.75kW



- Low noise for the best position jitter and velocity smoothness
- Optimal solution for large Gantry tables
- Wide power range - 100W to 6kW
- Digital control for easy setup and diagnostics
- AC Servo (DC brushless), DC Brush, AC Induction motors
- Open and closed loop Step motor control with high resolution micro-steps

The MC4U line of universal digital PWM drive modules are specifically designed to provide a high performance and cost effective solution for demanding multi-axis applications. The drives are optimized for low noise, providing the best possible jitter and velocity smoothness and are fully programmable for easy setup and diagnostics. The low power modules include up to four drives and high power modules include two drives for optimal costs and performance. The MC4U drive modules support linear and rotary motors covering a wide power range of 100W to 6kW. Each drive can be programmed to control any type of single, two or three phase motor.

RoHS

**ACS** MotionControl  
Your Competitive Advantage

## Drive Characteristics

Part Number Where X represents number of axes	DDM3U-X-60V-4A	DDM3U-X-320V-5A	DDM3U-X-320V-10A	DDM3U-X-320V-20A	DDM3U-X-320V-1A	DDM3U-X-320V-2A	DDM3U-X-320V-3A	DDM3U-X-560V-5A	DDM3U-X-560V-10A	DDM3U-X-560V-15A
Number of Axes	2 or 4	1 or 2	1 or 2	1 or 2	2 or 4	2 or 4	2 or 4	1 or 2	1 or 2	1 or 2
Bus Voltage, range [Vdc] ± 10%	18-60	24 – 320						24 – 560		
Phase Current Cont./Peak, sine amplitude [A]	4 / 5	5 / 10	10 / 20	20 / 40	1 / 2	2 / 4	3 / 6	5 / 10	10 / 20	15 / 30
Phase Current Cont./Peak, RMS [A]	2.8 / 3.6	3.6 / 7.1	7.1 / 14.2	14.2 / 28.3	0.7 / 1.4	1.4 / 2.8	2.1 / 4.2	3.6 / 7.1	7.1 / 14.2	10.6 / 21.3
Peak current time [sec]	1									
Maximum drive output voltage (phase to phase) @ max bus voltage and nominal current, sine amplitude [V] For a given Bus Motor Supply Voltage ( $V_{MDC}$ )	$V_{M-DC} \times 88\%$									
Input power @ full output cont./ peak power at specified voltage [kW]	0.6 / 1.2 @ 51Vdc	2.8 / 5.6 @ 320Vdc	5.6 / 11.1 @ 320Vdc	8.3 / 11.1 @ 320Vdc	1.1 / 2.3 @ 320Vdc	2.2 / 4.4 @ 320Vdc	3.4 / 6.8 @ 320Vdc	4.1 / 8.0 @ 560Vdc	8.0 / 15.2 @ 560Vdc	11.7 / 21.8 @ 560Vdc
Maximum output power @ nominal bus voltage: cont / peak [kW] For 1 axis: Total for 2 axes: Total for 4 axes:	@ 51Vdc 0.15 / 0.3 0.3 / 0.6 0.6 / 1.2	@ 320Vdc 1.36 / 2.7 2.7 / 5.4 -	@ 320Vdc 2.7 / 5.4 5.4 / 10.8 -	@ 320Vdc 5.4 / 10.8 8.2 / 21.8 -	@ 320Vdc 0.26 / 0.52 0.52 / 1.0 1.0 / 2.1	@ 320Vdc 0.5 / 1.0 1.0 / 2.1 2.1 / 4.2	@ 320Vdc 0.75 / 1.5 1.5 / 3 3 / 6	@ 560Vdc 2.0 / 4.0 4.0 / 7.9 -	@ 560Vdc 4.0 / 7.9 7.9 / 15.2 -	@ 560Vdc 5.9 / 11.7 11.7 / 21.8 -
Minimal load Inductance, at specified bus voltage [mH] At lower bus voltage the minimum inductance value can be reduced proportionally. (Please consult factory for using inductance with lower values)	0.25 @ 51Vdc	0.5 @ 320 Vdc						1 @ 560 Vdc		
Heat dissipation at full cont. power [W]	25	68	105	160	25	45	62	75	120	200
Weight [gram]	290	840		1,110		800		840		1,110
Standards	CE, RoHS	CE, UL, RoHS			CE pending, RoHS					

### Common Characteristics

**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 bus supply and a control 24Vdc supply. The bus voltage is generated by the MC4U PSM3U modules. During emergency conditions there is no need to remove the control 24Vdc source.

### Control supply specification

**Control supply input voltage:** 24Vdc ± 10%  
**Maximum input power:** 11.4W  
**Input current:**  
**Maximum:** 0.6A @ 19V  
**Nominal:** 0.48A @ 24V

### Motor Types

**Single phase motors:** DC Brush, Voice coil  
 2 or 3 phase AC synchronous motor  
 3 phase AC Induction, asynchronous motor  
 2 and 3 phase step motor (always using microstepping control)

### Drive Protection

- Over voltage
- Supply missing
- 24 Vdc control supply missing
- Phase-to-phase short circuit
- Short to ground
- Over current
- Over temperature protection

### Drive faults reported

- Power supply under voltage
- Power supply missing
- Short circuit
- Over current
- Temperature too high

### Ambient Temperature

**Operating range:** 0 to + 40°C  
**Storage and transportation range:** -25 to +60°C  
**Humidity (operating range):** 5% to 90% non-condensing

## Warranty

The warranty of this product is according to the Terms and Conditions of Sale and is effective for one year from date of shipment from ACS Motion control. For further warranty information, please see the hardware guide.  
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#### International Headquarters

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