

DDM3U-1-320V-30A-SR

MC4U Universal Single-Axis PWM Drive

Regulates one motor phase-current set through the MC4U digital current loop, converting the 24 to 320 V DC bus into controlled PWM motor power while reporting supply, current and thermal faults.

PRODUCT SNAPSHOT

BRAND

ACS

FAMILY

ACS MC4U control module

PART

DDM3U-1-320V-30A-SR

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PRODUCT OVERVIEW

Regulates one motor phase-current set through the MC4U digital current loop, converting the 24 to 320 V DC bus into controlled PWM motor power while reporting supply, current and thermal faults.

- Controls one axis through a 20 kHz digital current loop
- Supports sinusoidal commutation with or without Hall sensors
- Uses space-vector modulation with advanced unipolar PWM
- Reports bus, supply, short-circuit, overcurrent and thermal faults

RELATED PRODUCTS ON APTER POWER

MODEL	SYSTEM ROLE	APTER POWER PAGE
6SN1145-1BB00-0FA1	SIMODRIVE 611 infeed/regenerative module	View 6SN1145-1BB00-0FA1 page
6SL3210-1PE31-8AL0	SINAMICS G120 PM240-2 power module	View 6SL3210-1PE31-8AL0 page
6SL3320-1TE33-1AA3	SINAMICS S120 single motor module	View 6SL3320-1TE33-1AA3 page
6SN1123-1AA00-0EA1	SIMODRIVE 611 one-axis power module	View 6SN1123-1AA00-0EA1 page
6SL3210-1PE31-8UL0	SINAMICS G120 unfiltered power module	View 6SL3210-1PE31-8UL0 page
6SL3310-1GE35-0AA3	SINAMICS G130 cabinet power module	View 6SL3310-1GE35-0AA3 page
FIO-11	ABB drive analog I/O extension module	View FIO-11 page
DSQC651	ABB robot controller I/O unit	View DSQC651 page

TECHNICAL DATA

PARAMETER	VALUE
Part number	DDM3U-1-320V-30A-SR
Number of axes	1
DC bus voltage	24 to 320 V DC +/-10%
Phase current, sine amplitude	30 A continuous / 60 A peak
Phase current, RMS	21.2 A continuous / 42.4 A peak
Peak-current duration	1 s
Maximum drive output voltage	0.88 x DC-bus voltage, phase-to-phase
Input power at 320 V DC	7.0 kW continuous / 13.4 kW peak
Output power at 320 V DC	6.8 kW continuous / 12.8 kW peak
Minimum load inductance at 320 V DC	0.5 mH
Heat dissipation at continuous output	235 W
Current-control method	Digital field-oriented control with space-vector modulation

PARAMETER	VALUE
Current-ripple frequency	40 kHz
Current-loop sampling rate	20 kHz
Programmable current-loop bandwidth	Up to 5 kHz
Commutation	Sinusoidal; with or without Hall sensors
PWM method	Advanced unipolar PWM
Control supply	24 V DC +/-10%
Control-supply input power	11.4 W maximum
Control-supply input current	0.6 A maximum at 19 V; 0.48 A nominal at 24 V
Supported motor types	AC servo brushless; DC brush; voice coil; 2/3-phase stepper
Operating temperature	0 to +40 degC
Storage and transport temperature	-25 to +60 degC
Relative humidity	5 to 90%, non-condensing

APPLICATIONS & PRECAUTIONS

COMMON APPLICATIONS

Single-axis brushless servo control

Controls one axis through a 20 kHz digital current loop

DC brush and voice-coil actuation

Supports sinusoidal commutation with or without Hall sensors

Two- or three-phase microstepping

Uses space-vector modulation with advanced unipolar PWM

Synchronized multi-axis machine motion

Reports bus, supply, short-circuit, overcurrent and thermal faults

PRODUCT PRECAUTIONS

- 1 Verify the complete DDM3U-1-320V-30A-SR part number and its one-axis MC4U position before opening the control module.
- 2 Isolate the 24 V control supply and the 24 to 320 V DC drive bus, then confirm stored bus energy is discharged before handling conductors.
- 3 Record motor phase, Hall-sensor and feedback assignments before disconnecting the installed drive.
- 4 Use ESD controls and protect the MC4U card-edge and power interfaces from contamination or mechanical loading.
- 5 Confirm that the connected motor and load provide at least the documented 0.5 mH inductance at the 320 V DC bus condition.
- 6 Restore the approved commutation method, current-loop bandwidth and axis configuration before enabling torque.
- 7 Commission at controlled current and speed while checking direction, phase current and fault reporting.
- 8 Prove overvoltage, missing-supply, short-circuit, overcurrent and overtemperature responses before production release.

ENGINEER FAQ

Q1 How many axes does ACS DDM3U-1-320V-30A-SR control?

The ACS MC4U PWM Drives datasheet identifies DDM3U-1-320V-30A-SR as a one-axis universal drive.

Q2 Which DC-bus range applies to ACS DDM3U-1-320V-30A-SR?

The exact model row specifies a 24 to 320 V DC bus range with +/-10% tolerance.

Q3 What continuous and peak phase current does ACS DDM3U-1-320V-30A-SR provide?

ACS lists 30 A continuous and 60 A peak sine-amplitude current, equivalent to 21.2 A continuous and 42.4 A peak RMS.

Q4 How long may ACS DDM3U-1-320V-30A-SR deliver peak current?

The official exact-model table specifies a one-second peak-current duration.

Q5 Which motor types are supported by ACS DDM3U-1-320V-30A-SR?

The MC4U universal drive family supports AC servo brushless, DC brush, voice-coil and two- or three-phase stepper motors.

Q6 How is the current loop configured on ACS DDM3U-1-320V-30A-SR?

The drive uses digital field-oriented control with space-vector modulation, a 20 kHz sampling rate and programmable bandwidth up to 5 kHz.

Q7 What must be isolated before replacing ACS DDM3U-1-320V-30A-SR?

Isolate both the drive DC bus and the separate 24 V control supply, then verify stored energy is discharged before touching the module.

Q8 Which faults should be checked after commissioning ACS DDM3U-1-320V-30A-SR?

Verify reporting for overvoltage, missing drive or control supply, phase or ground short circuit, overcurrent and excessive temperature.

SOURCE ACS Motion Control MC4U PWM Drives Datasheet | 4202-80, Rev. 3.1.14.01

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