SmartDrive Dm Series Stepper Drive Datasheet

Copy of the original data sheet for the DM7 Series Stepper Drives from Smartdrive
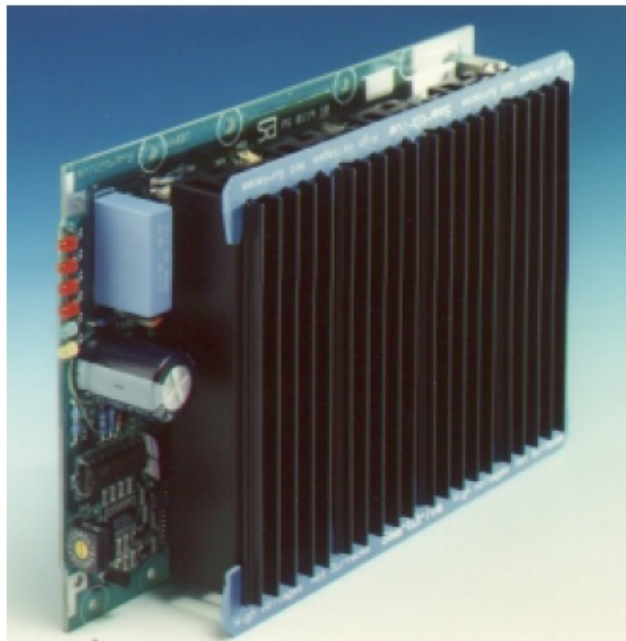
Contents

# Original Datasheet

SmartDrive
• DRIVES AND CONTROLS •

Micro Stepping Drive
Quick Reference Guide
DM28/6, DM28/9, DM55/6, DM55/9, DM75/9, DM110/9, DM165/9

The advanced design of the DM series drive using MOSFET technology enables continuous winding currents of up to 16.5A (peak). In Addition the DM series drives will protect themselves against all motor winding faults including winding shorts as well as supply related faults. For ease of installation we recommend the use of SmartDrive's range of dedicated drive backplanes, for more information contact the SmartDrive Sales department.

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Current Switch Settings
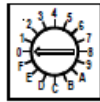
Rotary Switch

Switch Setting	Peak Current With Boost ON (Amps)				
	DM28	DM55	DM75	DM110	DM165
0	0.875	1.75	0.5	3.5	5.25
1	1	2	1.0	4	6
2	1.125	2.25	1.5	4.5	6.75
3	1.25	2.5	2.0	5	7.5
4	1.375	2.75	2.5	5.5	8.25
5	1.5	3	3.0	6	9
6	1.625	3.25	3.5	6.5	9.75
7	1.75	3.5	4.0	7	10.5
8	1.875	3.75	4.5	7.5	11.25
9	2	4	5.0	8	12
A	2.125	4.25	5.5	8.5	12.75
B	2.25	4.5	6.0	9	13.5
C	2.375	4.75	6.5	9.5	14.25
D	2.5	5	7.0	10	15
E	2.625	5.25	7.5	10.5	15.75
F	2.75	5.5	8.0	11	16.5

Microstep Switch Settings
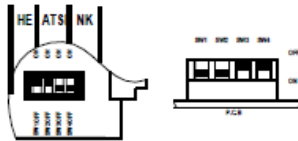
Microstep selector switches set to 3200 steps/rev

Resolution (Microsteps per step)	Steps/Rev (1.8deg/step motors)	SW1	SW2	SW3	SW4
2	400	OFF	OFF	OFF	OFF
4	800	ON	OFF	OFF	OFF
5	1000	OFF	OFF	OFF	ON
8	1600	OFF	ON	OFF	OFF
10	2000	ON	OFF	OFF	ON
16	3200	ON	ON	OFF	OFF
25	5000	OFF	ON	OFF	ON
32	6400	OFF	OFF	ON	OFF
50	10000	ON	ON	OFF	ON
64	12800	ON	OFF	ON	OFF
125	25000	OFF	OFF	ON	ON
128	25600	OFF	ON	ON	OFF
250	50000	ON	OFF	ON	ON
256	51200	ON	ON	ON	OFF
N/A	N/A	OFF	ON	ON	ON
N/A	N/A	ON	ON	ON	ON

Drive Connections

Pin	Function	Pin	Function
2c	Motor Winding 2A	2a	Motor Winding 2A
4c	Motor Winding 2B	4a	Motor Winding 2B
6c	Motor Winding 1A	6a	Motor Winding 1A
8c	Motor Winding 1B	8a	Motor Winding 1B
10c	N/C	10a	+V Logic Supply 18-30V
12c	+V Winding Supply 27-94V	12a	+V Winding Supply 27-94V
14c	+V Winding Supply 27-94V	14a	+V Winding Supply 27-94V
16c	0V Winding Supply	16a	0V Winding Supply
18c	Reset Input	18a	0V Winding Supply
20c	Fault Condition Output	20a	Fault Condition Output
22c	Phase (0) Output	22a	Phase (0) Output
24c	Sync. Output	24a	Boost Input
26c	N/C	26a	Direction Input
28c	Sync. Input	28a	Clock Input
30c	External Current Setting	30a	Energise Motor
32c	N/C Page 2	32a	0V (Logic Supply)

Links

TRACK SIDE OF P.C.B
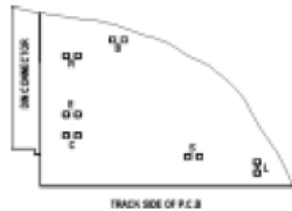
Label	Function
R	Link for external Reset
E	Link to permanently energise drive
S	Link for external Sync In
C	Link for external current control
L	Auto Current reduction. ON when linked.
B	Link for Boost always ON

Note:- Auto Current reduction reduces the winding current to 50% when the motor is idle for more than one second. With "L" open winding current is 50% of the set value.

Inputs & Outputs

Clock
Falling edge advances the motor by one step/half step.

Boost
Active low signal. Boost must be held low to obtain the rated current set by the DIL switch. With boost held high the current is 75% of the current setting.

Reset
Active low signal. Falling edge resets drive and clears the trip circuits. The drive is held in a reset state as long as Reset is low, hence the motor will be de-energised. For this feature link R must be made.

Direction
Sets the direction of motor rotation. Direction will depend on the wiring of the motor.

Energise
Active low signal. Switches output to motor on.

Clock, Boost, Reset, Direction & Energise

Fault
Open collector output. Output is pulled low whilst the drive is ok. The output is high during fault conditions and power up.

Phase 0
Open collector output, 5mA. On the D Series drive this ouput goes low when the drive output is in the full step position, irrespective of energise.
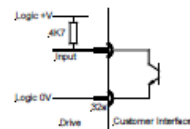
Fault & Phase 0

External Current Setting
The external current setting allows drive current to be set via an external resistor. Contact SmartDrive for details.
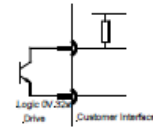
Sync In & Sync Out
These two connections are used for synchronising the chopping frequency of two or more drives. Contact SmartDrive for details.

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Front Panel Status LED's

Colour	Name	Function
Red	Supply Fault	Indicates either a low logic supply, or the winding supply is too high (greater than 100V).
Red	Over Temp	Indicates that the heatsink temperature is greater than 100°C.
Red	W1 Fault	Indicates that either a short circuit has occurred on winding 1 or if the winding supply is below 27V.
Red	W2 Fault	Indicates that a short circuit has occurred on winding 2.
Green	Energise	Indicates that the motor is energised.
Yellow	Phase 0	Indicates the phase 0 condition. Note that it is normal for this LED to flash or be dimly lit when the drive receives clock pulses.

Electrical Specification

Supply Voltages		Min	Typ	Max
	Winding Supply	27V	85V	94V
	Logic Supply	15V	24V	33V
Logic Supply Current	80mA			
Winding Supply Fuses	DM28/6, DM28/9	3.15A Fast Blow		
	DM55/6, DM55/9	5A Fast Blow		
	DM110	8A Fast Blow		
	DM165	10A Fast Blow		
Motor Inductance	Min 0.5mH			
Step Rate	0-500KHz			
Dimensions ($l \times w \times h$)	6HP Drive	172x25x112mm		
	9HP Drive	172x42x112mm		
Mounting	3U subrack mounting or via PCB posts			

Contacting SmartDrive

Before returning any goods please contact SmartDrive to obtain a Returned Goods Number.
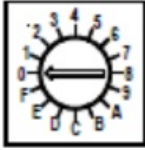
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Replacing DM75 with DM110 (or DM165)

It is possible to use a DM110 card in place of a DM75 - the only difference is the peak output current which can be limited with the Current Limiter dial on the front.

Turn it to about 50% of the dial.

A DM165 can be set to 25% power output for the same result

Current Switch Settings

DM165 Setting on 25% Power

Rotary Switch

DM110 Setting on 50% Power

DM75 Setting on Full Power

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2	1.125	2.25	1.5	4.5	6.75
3	1.25	2.5	2.0	5	7.5
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