18727-MS

Microstepping Motor Driver

- Self contained; No additional Power Supply Required
- Microstepping: microstepping can overcome the problem of rough running & prevent miss-step operation at low speed
- High speed and high torque: The slave voltage of power amplifier is 140VDC, so high-torque is obtained at high speeds
- New Design: control core consists of Single Chip Microcomputer and programmable array
- Versatile interface to ease connection to Controller/Computer
- High Power USA made Fairchild IGBT Driver is resistant to overload & burnout

I Specifications

POWER: 110VAC/5A/60HZ

MOTORS: 4,6 or 8 Wire 2 & 4 Phase

STEP RANGE:1,1/2,1/4, thru 1/256
1/5,1/10,1/20,1/40,1/50,
1/6, 1/18 of Motor Step Value

INPUTS: 5V, 8-16mA, 10uS Min Pulse Width, 50KHz Max Clock,
(See Section III for Input Interfacing)

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II Installation

1. Open and check

CAREFULLY unpack the driver.

The 18727-MS Driver is packaged with the required mating connectors. DO NOT MISSPLACE

READ All instructions carefully

2. Mounting

Driver requires attachment in a manner that will provide protection from moisture, dust and physical damage.

Driver requires mounting that provides ventalation for cooling.

See Section VI for diminsional information

3. Wiring

CHECK ALL WIRING and CONNECTIONS BEFORE APPLYING POWER

Please connect all wiring according to tables and schematic diagrams. The size of power and motor wire should be 14AWG.

Connect all wiring to provided terminal strips BEFORE attaching to driver.

Input Power requires protective fuse

4. Settings

Refer to Sectio ns III & IV to varify all control signal requirements, connections and function.

18727-MS

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III Switch Settings

1. Drive & Step Set

Review motor specifacions in reguard to current, step angle, and if capable of microsteping

Set the Driver switches according to charts below (NOTE THE "ON= 0/OFF=1" coding.)

Setting current

switch: ON=0, OFF=1																
1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
4	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
current (A)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0

NOTE: Switches 5 & 6 Are not used at this time

Microstepping Setting

switch: ON=0, OFF=1																
7	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
8	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
9	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
10	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
micro	1	2	4	5	6	8	10	16	18	20	32	40	50	64	128	256

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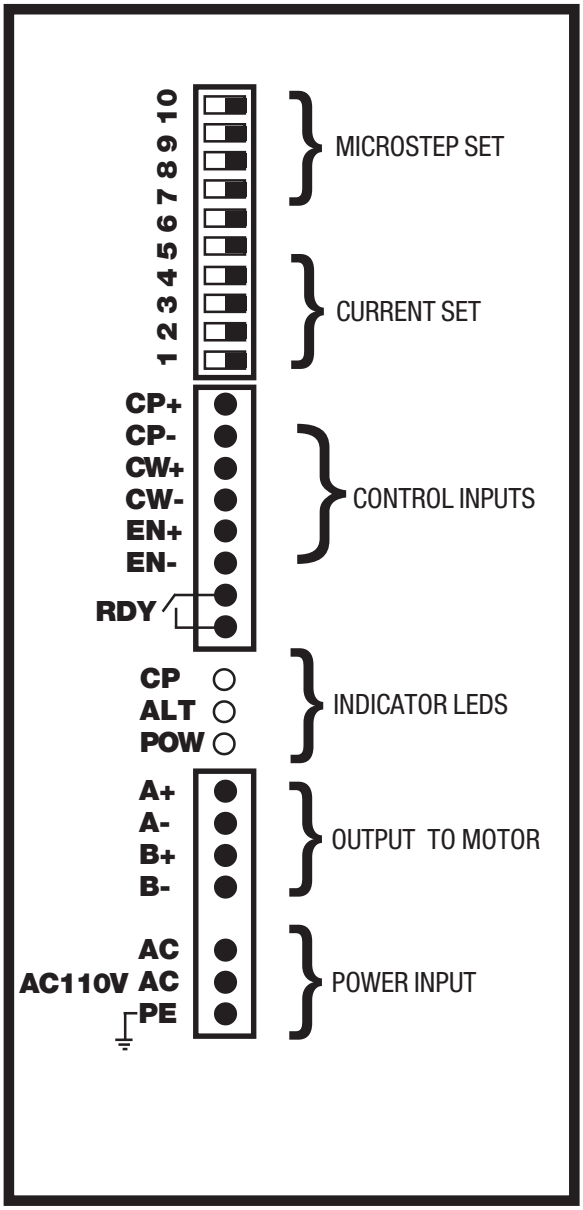
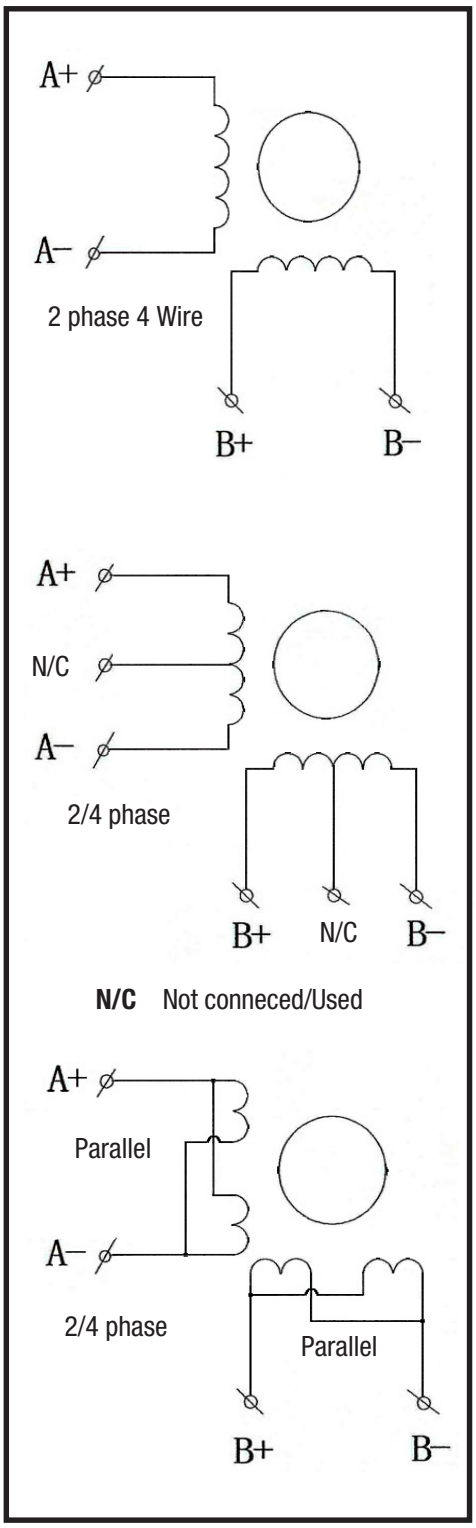
Microstepping Motor Driver

TOP OF DRIVER



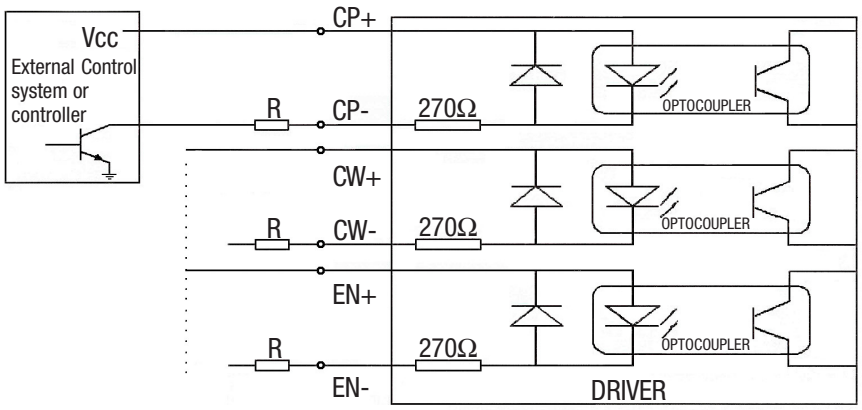
TYPICAL MOTOR WINDINGS



18727-MS

Microstepping Motor Driver

IV Interface



Signal Level	External R
5V	Not needed
12V	680Ω
24V	1.8KΩ

1. INPUTS: Input signals must have the ability to provide 8-16mA of drive current
(WARNING TTL/CMOS generally cannot supply enough current directly)
COMMON ANODE: (Internal optocoupler) Connect CP+, CW+ & EN+ To a Common Voltage Source. Inputs supplied to CP-, CW-, EN-. (Shown above Drawing)
COMMON CATHODE: Connect CP-,CW- & EN- To a common Return (-). Inputs supplied to CP+,CW+ & EN+
For External Resistor value see Table above.

CP+/-: CLOCK PULSE (Step) Common Anode Connection:
"High" to "Low" transition on CP- input (Current Sink 8-16mA)
: CLOCK PULSE (Step): Common Cathode Connection:
"Low" to "High" transition on CP+ input (Current Source 8-16mA)

EN+/-: ENABLE (Start) Common Anode Connection:
"0"/Low" on EN- input (Current Sink 8-16mA) Power removed from motor
"1"/High on EN- input: Power applied to motor
: ENABLE (Start): Common Cathode Connection:
"0"/Low on EN+ input Power Removed from motor
"1"/High on EN+ input: Power applied to motor (Current Source 8-16mA)

CW+/-: Motor Direction: Common Anode Connection:
"0"/Low on CW- input : Clockwise (Current Sink 8-16mA)
"1"/High on CW- input: Counter Clockwise
: Motor Direction: Common Cathode Connection:
"1"/High on CW+ input : Clockwise (Current Source 8-16mA)
"0"/Low on CW+ input: Counter Clockwise

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2. OUTPUTS:

RDY: Driver Ready: Internal contact to signal status of Driver to computer/controller
Closed: Driver powered and ready for operation
Open: Driver not ready

MOTOR: Refer to Motor winding Drawings for Multi Winding configurations
A+: A Motor Winding (Check your Motor Color coding)
A-: A Motor Winding (Check your Motor Color coding)
B+: B Motor Winding (Check your Motor Color coding)
B-: B Motor Winding (Check your Motor Color coding)

3. INDICATORS:

CP: CLOCK PULSE: Green LED: Input Clock Pulse Presesnt

ALT: FAULT: Red LED
REGULAR BLINKING: Overcurrent
PATTERNED BLINK: Fan Problem

POW: POWER ON: Green LED

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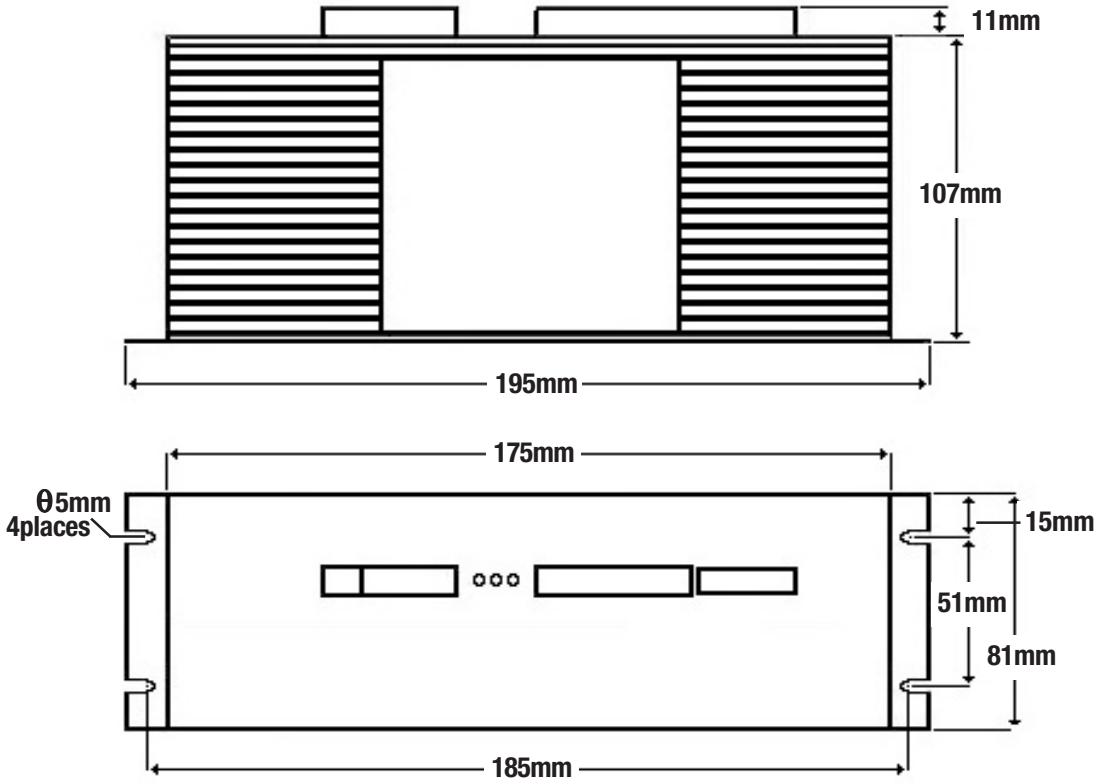
VI Dimensions



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VI Trouble Isolation

The best problem solving method in a formally operational system is substitution. After verifying that power is available & controller is operational and reviewing chart below, Replace driver with another.

For new or refurbished systems; Follow simple steps below before replacing driver with another.

1. System Check

PROBLEM	POSSIBLE CAUSE	FIX
No Operation, Green LED Dark.	No AC Line Power Driver Failure	Check Fuses or Breakers, AC Input wiring Replace Driver
No Operation, Green LED Lighted CP LED Dark	Controller not powered No CP from from Controller Reversed CP input Interface connection Controller Fail	Varify Controller AC power Varify wiring from Controlled to Driver Varify interface connections & Polarity Replace Controller
Motor turn in 1 direction only	Incorrect CW input Interface connection Driver Fail Controller Fail	Varify interface connections & Polarity Replace Driver Replace Controller
Motor runs rough, mis-steps, stalls	Loose connections Load to large Signal Noise Mechanical jamming, or friction	Check & tighten connections Reduce loading on Mechanical system or change motor Shield cables, relocate driver Clean & lubricate Mechanical system

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