

CONVEX

CATALOGUE 2005

STEP MOTOR DRIVER

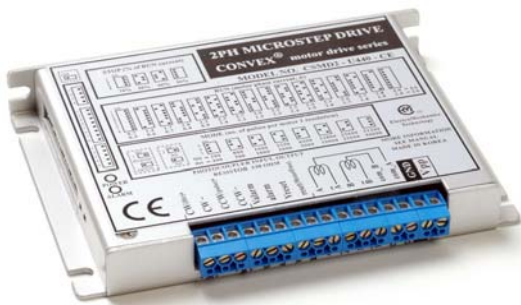


(주) 컨 벅 스

STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-U240-ce
CSMD2-U440-ce
CSMD2-B240-ce
CSMD2-B440-ce
CSMD2-B440S-ce



CSMD2-U440-ce



CSMD2-B440-ce



CSMD2-B440S

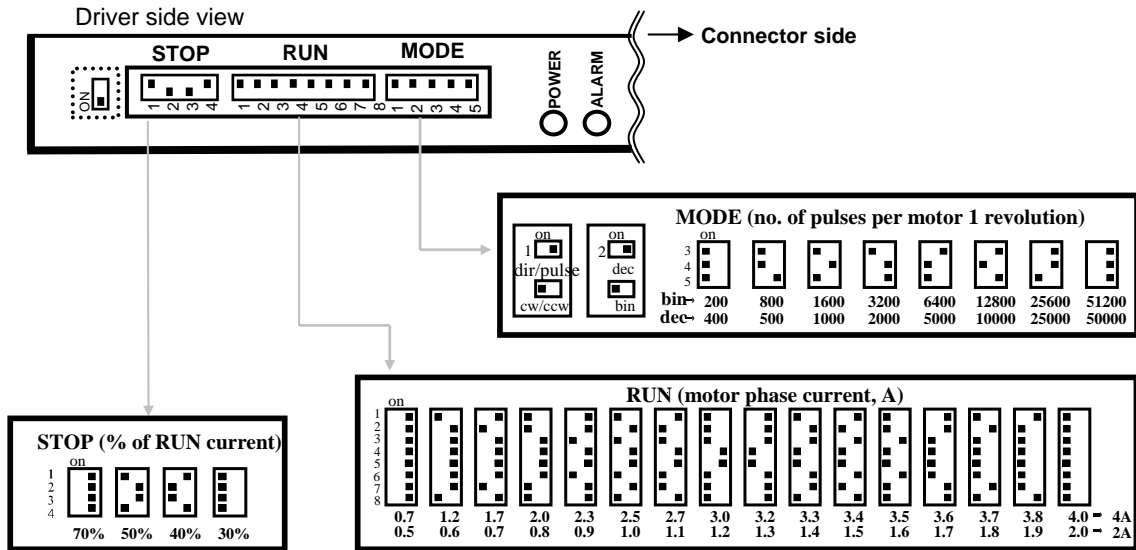
FEATURES

- CE Certified Driver
- High Performance and Reliability
- **Unipolar, Bipolar Microstep**
- High Resolution up to 51200
- General Applications

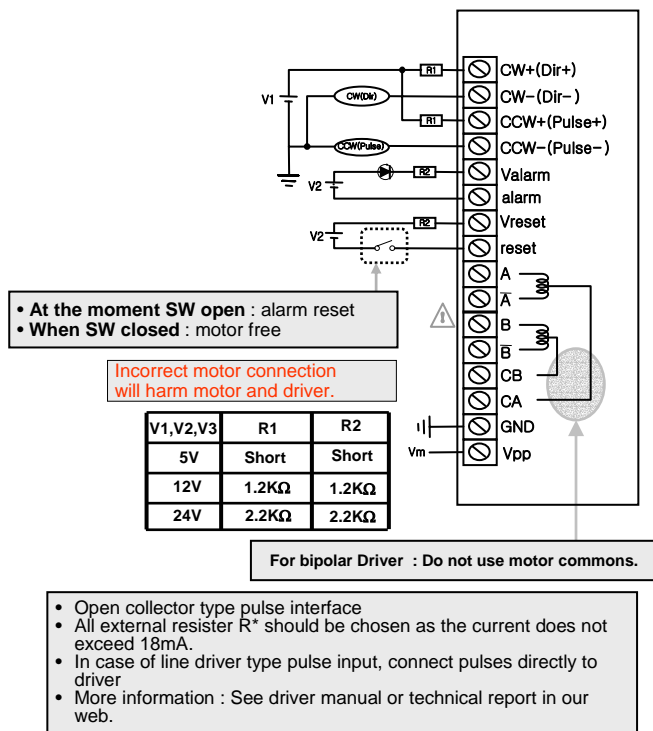
SPECIFICATIONS

Item	Description
Driver Input Voltage	15 ~ 36 Volt DC : CSMD2-**40 15 ~ 55 Volt DC : CSMD2-**60
Driver Output Current	0.5 ~ 2A/Phase : CSMD2-2** 0.7 ~ 4A/Phase : CSMD2-4**
Excitation	Constant Current PWM Unipolar : CSMD2-U*** Bipolar : CSMD2-B***
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse Photocoupler Isolation
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing(option) Photocoupler Isolation
Function	Auto Power Save 4 level selection : 30%, 40%, 50%, 70%
LED Display	Power On Alarm State
Protection	Over Current ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

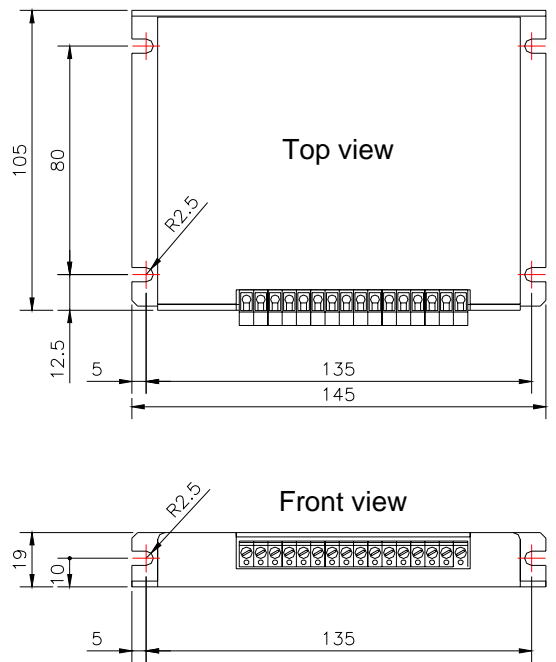
Mode Selection and Current Setting



Driver Connection Example

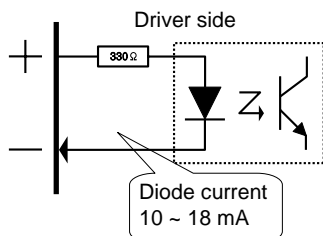


Case Dimension



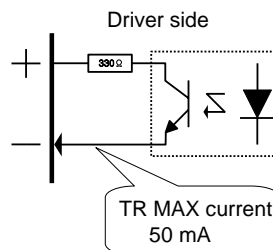
Driver In Photocoupler Circuit

Dir(CW), Pulse(CCW), Reset +, - input



Driver Out Photocoupler Circuit

Alarm or timing out : transistor on state



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

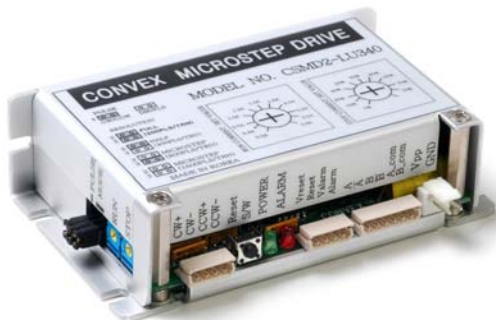
CSMD2-LU340 CSMD2-LU340N CSMD2-LU340CN



CSMD2-LU340



CSMD2-LU340N



CSMD2-LU340CN

FEATURES

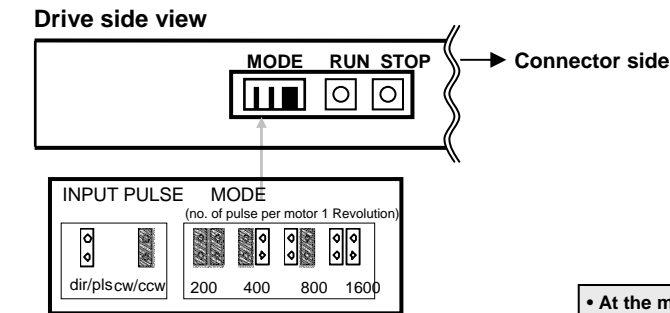
- CE Certified Driver
- Low Cost **Unipolar Microstep** Driver
- High Performance and Reliability
- Microstep Resolution (200, 400, 800, 1600)
- Small Size and Easy to Use
- General Applications

SPECIFICATIONS

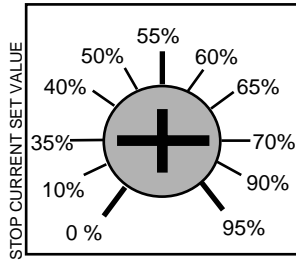
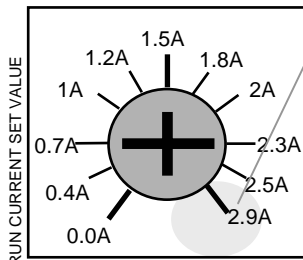
Item	Description
Driver Input Voltage	15 ~ 36 Volt DC
Driver Output Current	0.5 ~ 3A/Phase Adjustable
Excitation	Constant Current PWM Unipolar
Resolution	200 : Full 400 : Half 800 : Microstep 1600 : Microstep (Pulse/Motor 1 Revolution)
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse Photocoupler Isolation
MAX Input Pulse FREQ	80kHz MAX (80kpps MAX)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing (Option) Photocoupler Isolation
Function	Auto Power Save : 10% ~ 90%
LED Display	Power On Alarm State
Protection	Over Current ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

Mode Selection and Current Setting

Driver Connection Example

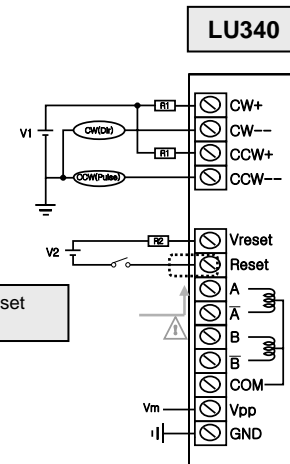


Excessive high heating may occur
External heatsink will be required.

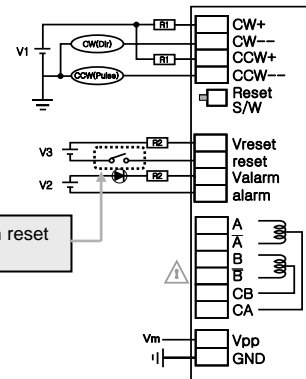


• At the moment SW open : alarm reset
• When SW closed : motor free

V1,V2,V3	R1	R2
5V	Short	Short
12V	1.2KΩ	1.2KΩ
24V	2.2KΩ	2.2KΩ



LU340N
LU340CN

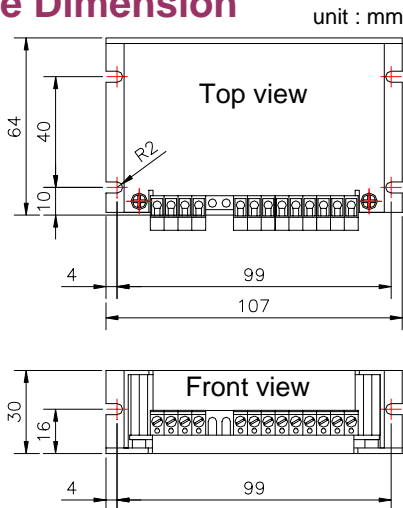


• At the moment SW open : alarm reset
• When SW closed : motor free

Incorrect motor connection
will harm motor and driver.

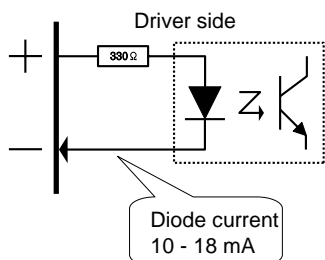
- Open collector type pulse interface
- All external resistor R* should be chosen as the current does not exceed 18mA.
- In case of line driver type pulse input, connect pulses directly to driver
- More information : See drive manual or technical report in our web.

Case Dimension



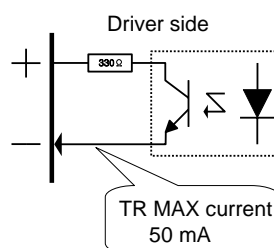
Driver In Photocoupler Circuit

Dir(cw), pulse(ccw), Reset, + - input



Driver Out Photocoupler Circuit

Alarm or timing out : transistor on state



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-U240B-1



CSMD2-U240B-1

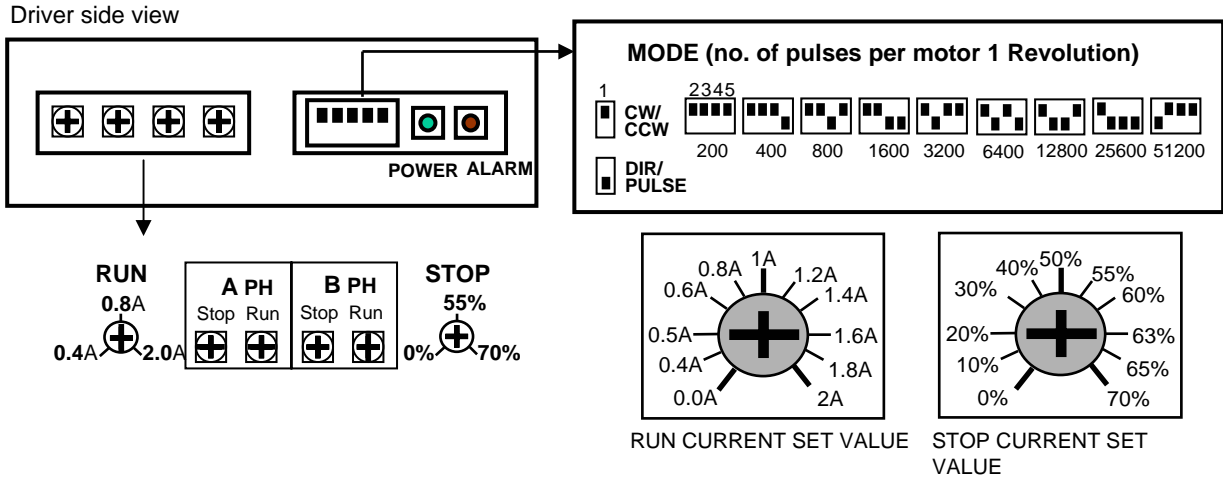
FEATURES

- CE Certified Driver
- Low Cost and Compact Size, **Unipolar Microstep** Driver
- High Performance and Reliability
- High Resolution up to 51200
- **Dynamic Break** Type
- Special 2PH Microstep Driver for Vertical Motion

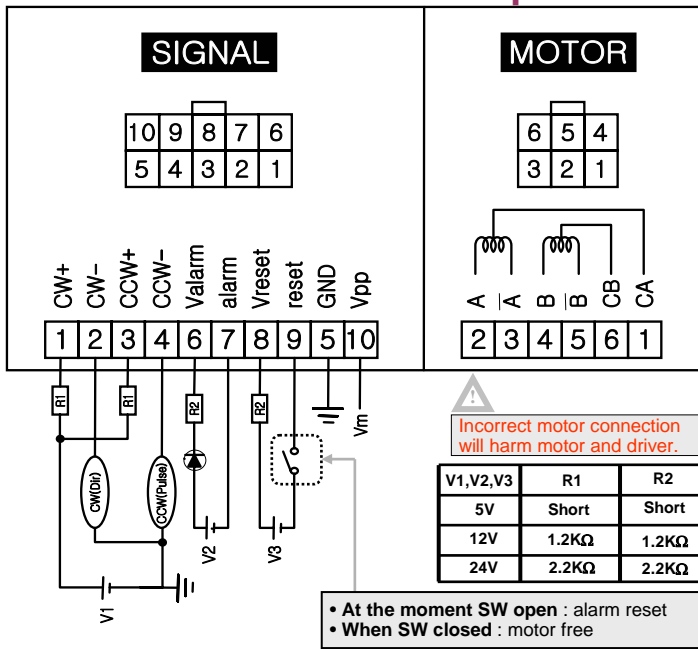
SPECIFICATIONS

Item	Description
Driver Input Voltage	15 ~ 36 Volt DC
Driver Output Current	0.4A ~ 2A/Phase
Excitation	Constant Current PWM Unipolar
Resolution	200, 400, 800, 1600, 3200 6400, 12800, 25600, 51200
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse Photocoupler Isolation
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing(Optional) Photocoupler Isolation
Function	Auto Power Save : 10% ~ 70%
LED Display	Power On Alarm State
Protection	Over Current Over heat ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

Mode Selection and Current Setting

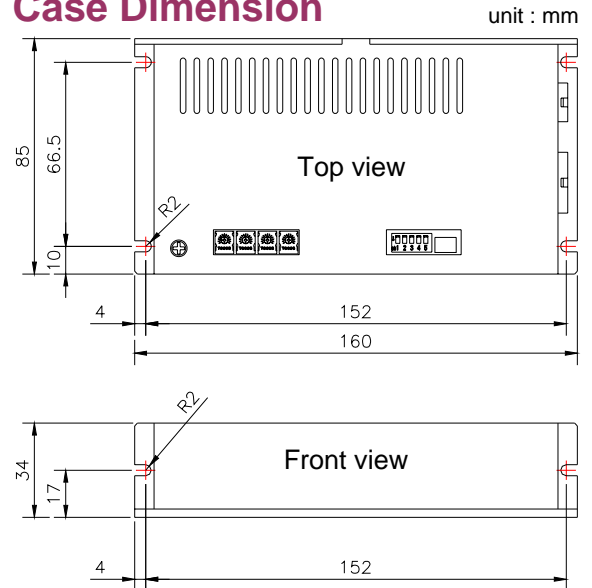


Driver Connection Example



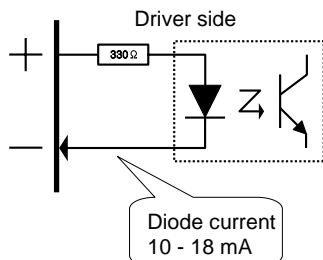
- Open collector type pulse interface
- All external resistor R* should be chosen as the current does not exceed 18mA.
- In case of line driver type pulse input, connect pulses directly to driver
- More information : See driver manual or technical report in our web.

Case Dimension



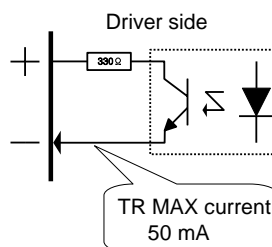
Driver In Photocoupler Circuit

Dir(CW), Pulse(CCW), Reset +, - input



Driver Out Photocoupler Circuit

Alarm or timing out : transistor on state



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-B4180 CSMD2-B8180



CSMD2-B8180

FEATURES

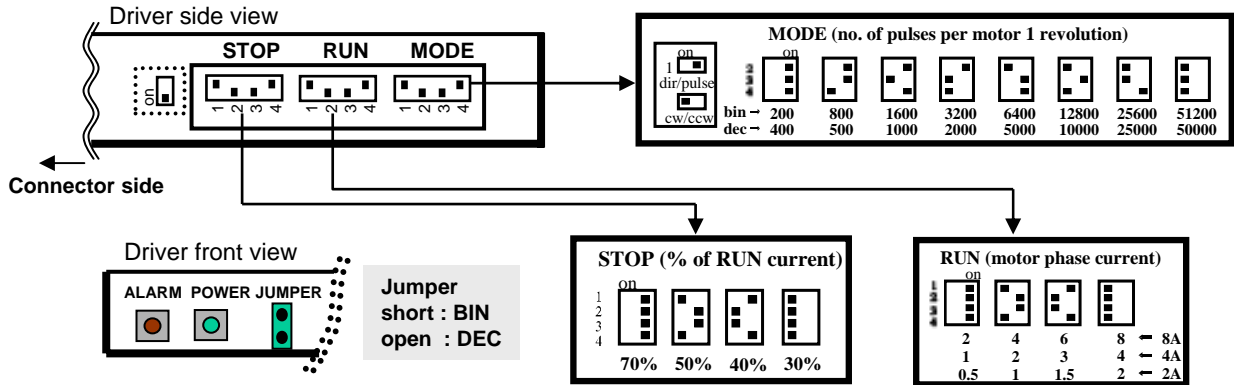
- High Power Bipolar Micro Step Driver
- High Performance and Reliability
- High Resolution up to **102400 (Order made)**
- General Applications

※ Depending on operating condition,
external heatsink or fan are crucially required!

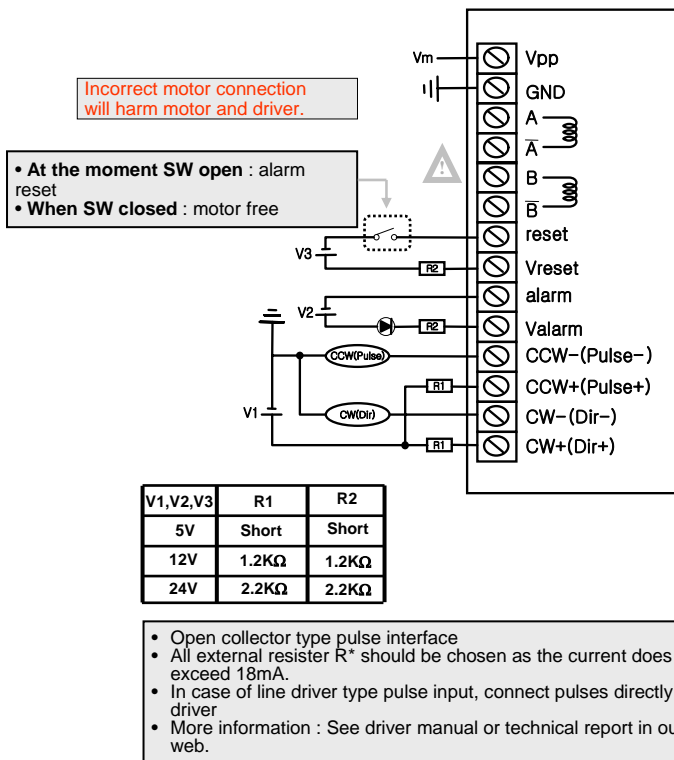
SPECIFICATIONS

Item	Description
Driver Input Voltage	36 ~ 180 Volt DC
Driver Output Current	0.7 ~ 4A/Phase : (B4***) 1 ~ 8A/Phase : (B8***)
Excitation	Constant Current PWM Bipolar
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse Photocoupler Isolation
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing(Optional) Photocoupler Isolation
Function	Auto Power Save 4 level selection : 30%, 40%, 50%, 70%
LED Display	Power On Alarm State
Protection	Over Current ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

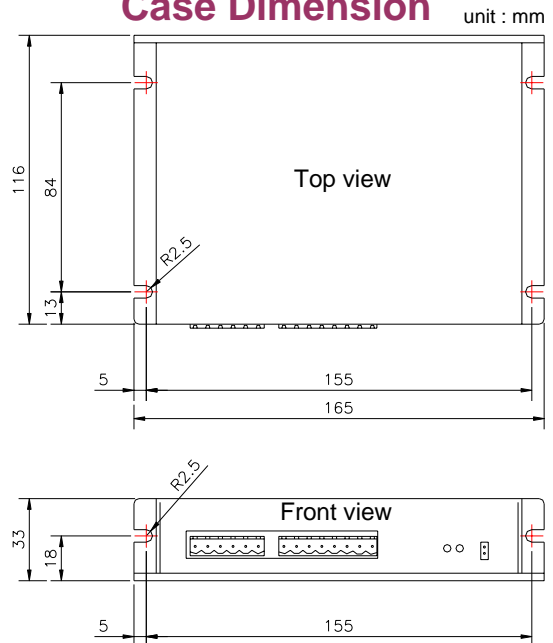
Mode Selection and Current Setting



Driver Connection Example

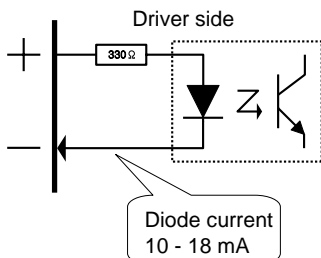


Case Dimension



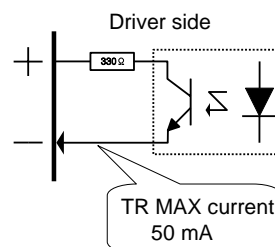
Driver In Photocoupler Circuit

Dir(CW), Pulse(CCW), Reset +, - input



Driver Out Photocoupler Circuit

Alarm or timing out : transistor on state



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-B340



CSMD2-B340

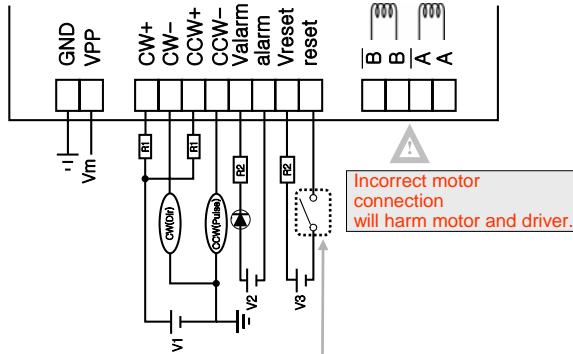
FEATURES

- High Performance and Reliability
- **Bipolar Microstep Driver**
- Microstep Resolution
- Easy to Use
- Model for Mass Production

SPECIFICATIONS

Item	Description
Driver Input Voltage	15 ~ 36 Volt DC
Driver Output Current	0.5 ~ 3.0A/Phase (Set at Factory)
Excitation	Constant Current PWM Bipolar
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000 (Set at Factory)
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse Photocoupler Isolation
MAX Input Pulse FREQ	80kHz MAX (80kpps MAX)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing(option) Photocoupler Isolation
Function	Auto Power Save (Power save quantity is set at Factory)
LED Display	Power On Alarm State
Protection	Over Current ARM Short
Operating Temperature	0°C ~ 50°C

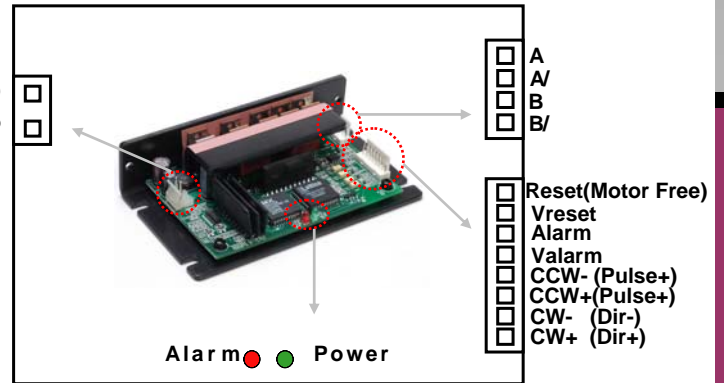
Driver Connection Example



V1,V2,V3	R1	R2
5V	Short	Short
12V	1.2KΩ	1.2KΩ
24V	2.2KΩ	2.2KΩ

- At the moment SW open : alarm reset
- When SW closed : motor free

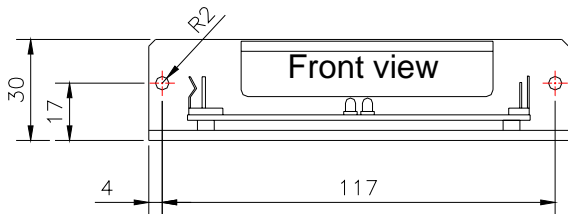
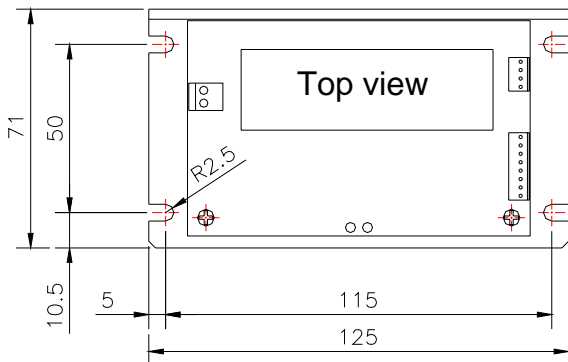
- Open collector type pulse interface
- All external resistor R* should be chosen as the current does not exceed 18mA.
- In case of line driver type pulse input, connect pulses directly to driver
- More information : See driver manual or technical report in our web.



- reset(Motor Free)
- reset
- alarm
- alarm
- CW- (Pulse+)
- CW+ (Pulse+)
- W- (Dir-)
- W+ (Dir)

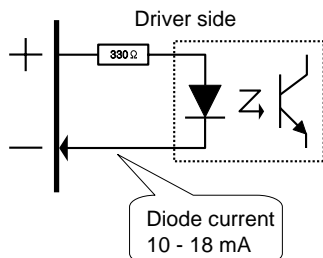
Case Dimension

unit : mm



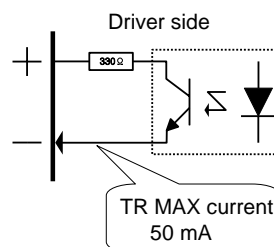
Driver In Photocoupler Circuit

Dir(CW), Pulse(CCW), Reset +, - input



Driver Out Photocoupler Circuit

Alarm or timing out : transistor on state



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-LB140-s



CSMD2-LB140-s

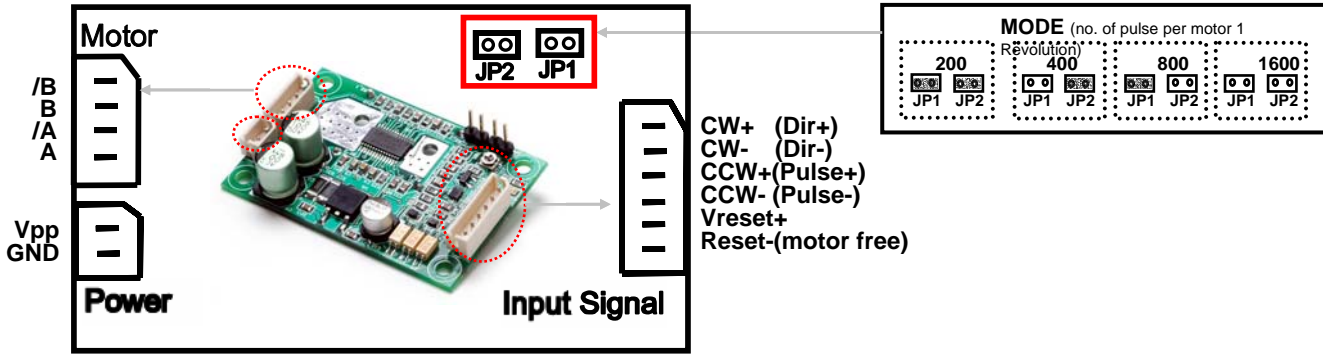
FEATURES

- **Extremely Low Cost Bipolar Driver**
- Microstep Resolution (200,400,800,1600)
- **Small Size** and Easy to Use
- Model for Mass Production

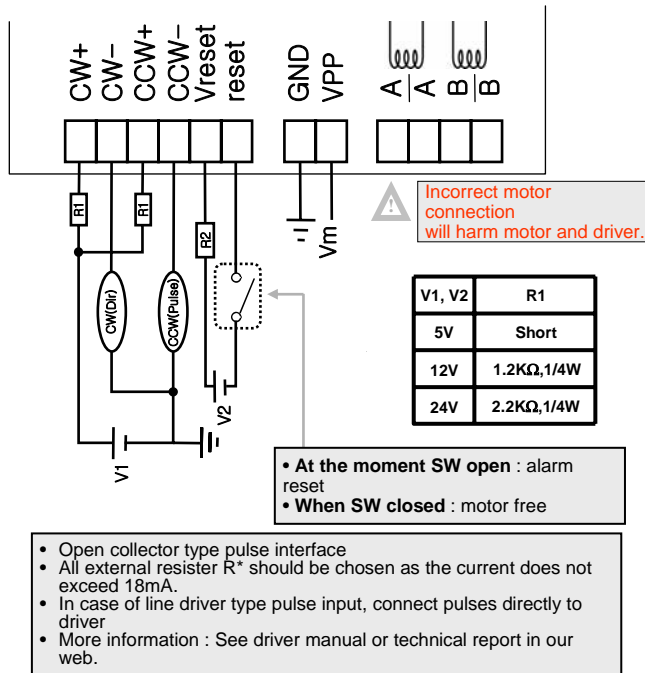
SPECIFICATIONS

Item	Description
Driver Input Voltage	15 ~ 36 Volt DC
Driver Output Current	1.2AMAX/Phase (continuous state) Set at Factory
Excitation	Constant Current PWM Bipolar
Resolution	200 : Full 400 : Half 800 : Microstep 1600 : Microstep (Pulse/Motor 1 Revolution)
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse Photocoupler Isolation
MAX Input Pulse FREQ	80kHz MAX (80kpps MAX)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Function	Auto Power Save (Power save quantity is set at Factory)
LED Display	Power On
Operating Temperature	0°C ~ 50°C

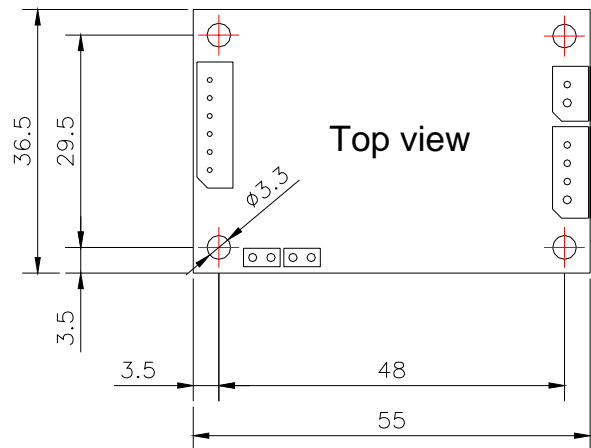
Mode Selection



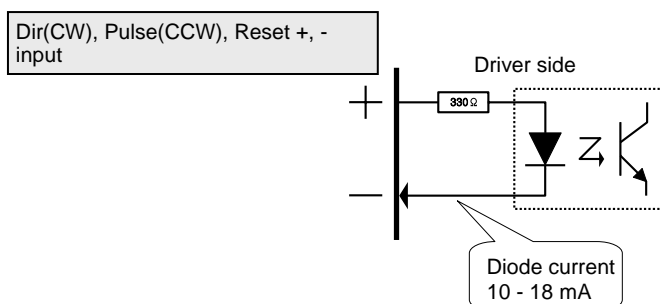
Driver Connection Example



Case Dimension unit : mm



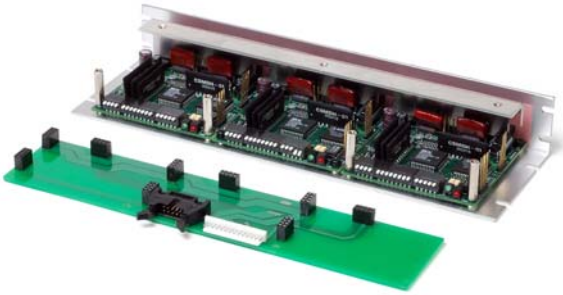
Driver In Photocoupler Circuit



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-B440S- 3Axis Customized Driver



CSMD2-B440S-3Axis

FEATURES

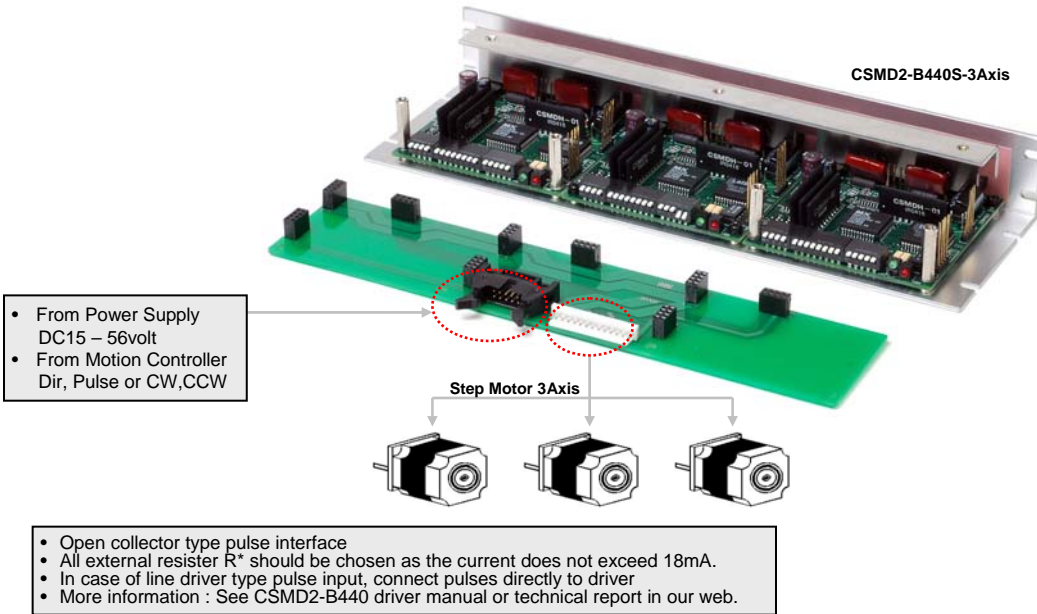
- High Performance and Reliability
- **Bipolar Microstep Driver (3Axis)**
- Order Made for Low Cost
- Cost Effective for Mass Production

SPECIFICATIONS

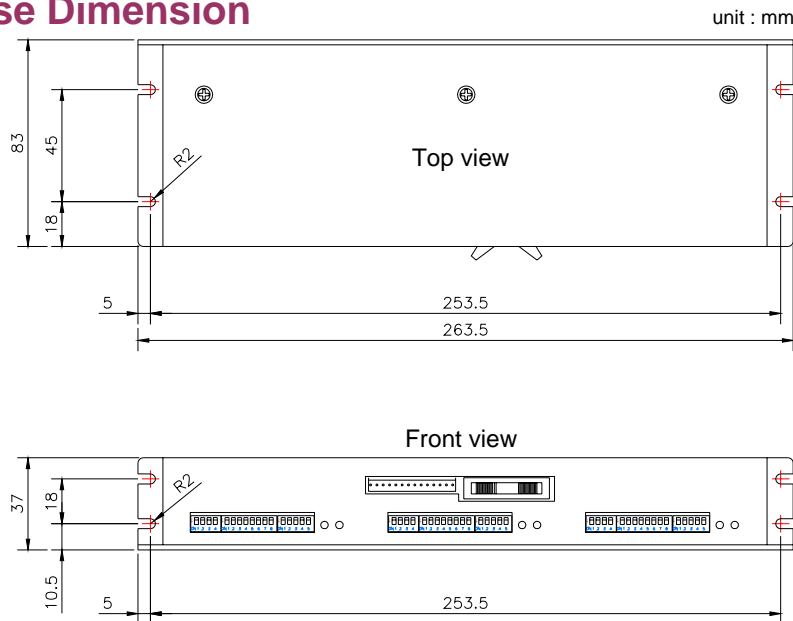
Item	Description
Driver Input Voltage	15 ~ 36 Volt DC 15 ~ 55 Volt DC(Order made)
Driver Output Current	0.7 ~ 4A/Phase
Excitation	Constant Current PWM Bipolar
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000
Input Pulse Type	1 Pulse, 2 Pulse Photocoupler Isolation (Set at Factory)
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset(Order made) Motor Free(Order made)
Control Out Signal	Alarm Out or Timing(Order made)
Function	Auto Power Save (Power save quantity is set at Factory)
LED Display	Power On Alarm State
Protection	Over Current ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

※Two or three drivers in a Aluminum base(Heatsink)

3 Axis Control Layout

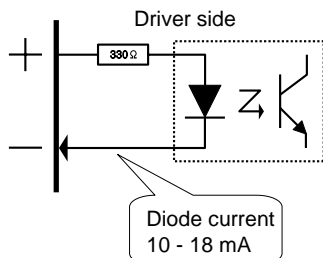


Case Dimension



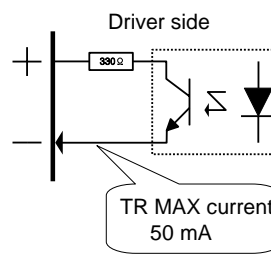
Driver In Photocoupler Circuit

Dir(CW), Pulse(CCW), Reset +, - input



Driver Out Photocoupler Circuit

Alarm or timing out : transistor on state



STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-B440-RCE



CSMD2-B440-RCE

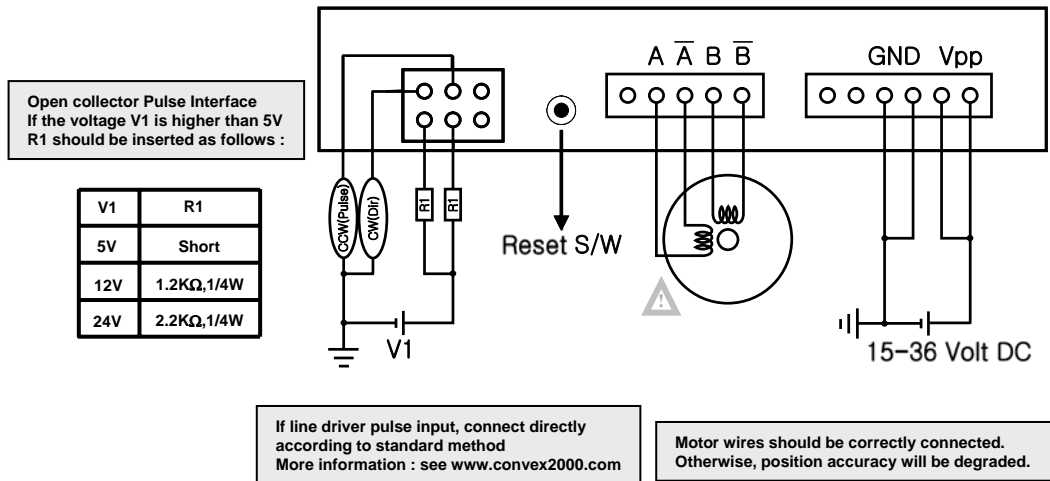
FEATURES

- CE Certified Bipolar Microstep Driver
- High Performance and Reliability
- High Resolution
- Step Motor angular positioning **Error Compensation Driver**
- **Absolute Rotation Error : less than $\pm 0.018^\circ$**

SPECIFICATIONS

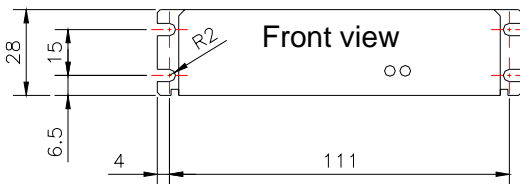
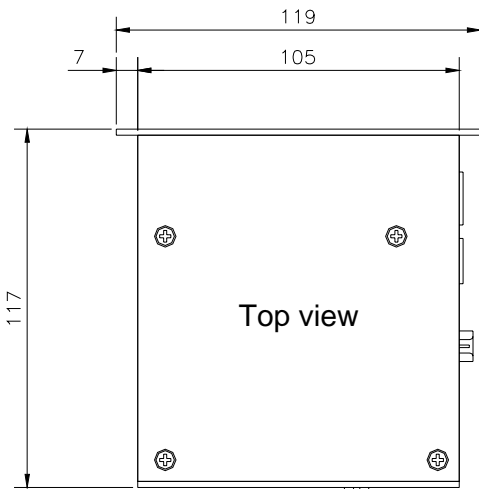
Item	Description
Driver Input Voltage	15 ~ 36 Volt DC
Driver Output Current	0.4 ~ 4A/Phase (Set at Factory)
Excitation	Constant Current PWM Bipolar
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000 (Set at Factory)
Input Pulse Type	1 Pulse, 2 Pulse Photocoupler Isolation (Set at Factory)
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing(Optional) Photocoupler Isolation
Function	Auto Power Save 4 level selection : 30%, 40%, 50%, 70% (Save quantity is set at Factory)
LED Display	Power On Alarm State
Protection	Over Current ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

Driver Connection Example



Case Dimension

unit : mm



◆ 스텝 모터는 입력 펄스 당 일정한 각을 회전하는 모터이다. 기본각이 1.8°인 2상 스텝 모터는 모터를 구동하는 드라이버의 회로에 따라 0.9°, 0.45°, -----, 0.00001° 등 임의의 각도로 잘게 나눌 수 있다. 그러면 실제 회전 각도는 어떠한가?

◆ 스텝 모터가 1.8° 회전한다는 규격은 개념적인 원리를 의미하며 실제 스텝 모터에 2상 여자하여 1 스텝 회전시키면 실제 회전각은 $1.8^\circ \pm 0.05^\circ$ 이다. 즉, 실제 회전각에는 $\pm 0.05^\circ$ 의 회전각 오차 (positional error) 가 존재하게 된다. 이 오차는 maker에 따라, 모델에 따라 작거나 큰 데 대개의 경우 $\pm 0.05^\circ$ 정도이다. 따라서 마이크로 스텝으로 1 스텝에 대한 회전각을 잘게 자르더라도 절대 오차의 크기는 작아지지 않고 기본각 만이 작아지게 된다. 즉, 아무리 마이크로 스텝을 하여도 절대 오차는 여전히 같은 양만큼 남게 된다.

◆ 이 오차는 스텝 모터가 teaching 방식에 의해 단순한 pick & place 운동을 하는 경우에는 큰 문제가 되지 않으나, 큰 관성 부하와 직결되어 회전 운동을 하는 경우 회전 시 진동을 유발하여 저속 회전 조차 되지 않게 하거나, 정밀 이송기구에서 미세 회전 운전시 오차를 유발하게 된다. 즉, 마이크로 스텝 (최근에 나노 스텝) 여자에 의하여 모터를 회전한다 하여도 모터 자체에 내재된 오차는 줄어들지 않는 것이다.

◆ 마이크로 스텝은 반복 정밀도를 높이고, 소음, 진동을 줄일 수 있는 좋은 방법이나 절대 회전각 오차를 줄일 수는 없다. 그러면 마이크로 스텝의 장점을 그대로 살리면서 절대적인 회전각 오차를 줄이는 방법은 없는가?

◆ 컨벡스의 CSMD2-B440-RCE (patent pending)는 모터의 오차를 보정하는 마이크로 스텝 드라이버로 절대 회전각 오차를 $\pm 0.018^\circ$ 까지 줄일 수 있다. 이 경우 드라이버는 모터의 오차 보정 정보를 갖고 있으며 출하 혹은 사용시 반드시 모터와 짝(pair)으로 사용되어야 최저 오차가 보장 된다.

STEP MOTOR DRIVER

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-B440-3U



CSMD2-B440-3U

VME Type Step Driver



다축 바이폴라 Step Motor를 구동시키기 위한 모듈형 VME Type Step Driver

※ 귀사 장비에 적용하실 때 컨벡스 기술지원팀에 문의해 주십시오.

FEATURES

- High Performance and Reliability
- **Bipolar Microstep Driver (2Axis)**
- **VME Type Driver-3U-8HP**
- Specifications of each axis is the same as that of CSMD2-B440-ce
- High Resolution
- Easy to use and Wiring

SPECIFICATIONS

Item	Description
Driver Input Voltage	15 ~ 55 Volt DC
Driver Output Current	0.7 ~ 4A/Phase
Excitation	Constant Current PWM Bipolar
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000
Input Pulse Type	1 Pulse, 2 Pulse Photocoupler Isolation (Set at Factory)
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset : Edge Motor Free : Level Photocoupler Isolation
Control Out Signal	Alarm Out or Timing(option) Photocoupler Isolation
Function	Auto Power Save 4 level selection : 30%, 40%, 50%, 70%
LED Display	Power On Enable On Alarm State
Protection	Over Current ARM Short Regeneration
Operating Temperature	0°C ~ 50°C

CONVEX 2PH MICROSTEP DRIVER series

CSMD2-U440-3U



CSMD2-U440-3U

VME Type Step Driver



다축 유니폴라 Step Motor를 구동시키기 위한 모듈형 VME Type Step Driver

※ 귀사 장비에 적용하실 때 컨벡스 기술지원팀에 문의해 주십시오.

FEATURES

- High Performance and Reliability
- **Uipolar Microstep Driver**
- **VME Type Driver-3U-7HP**
- Specifications of each axis is the same as that of CSMD2-U440-ce
- High Resolution
- Easy to use and Wiring

SPECIFICATIONS

Item	Description
Driver Input Voltage	15 ~ 36 Volt DC
Driver Output Current	0.7 ~ 4A/Phase
Excitation	Constant Current PWM Unipolar
Resolution	BIN : 200, 800, 1600, 3200, 6400 12800, 25600, 51200 DEC : 400, 500, 1000, 2000, 5000 10000, 25000, 50000
Input Pulse Type	1 Pulse : Direction, Pulse 2 Pulse : CW, CCW Pulse
MAX Input Pulse FREQ	500kHz (500kpps)
Control In Signal	Alarm Reset : Edge (Order made) Motor Free : Level (Order made) Photocoupler Isolation
Control Out Signal	Alarm OUT or Timing(option) Photocoupler Isolation
Function	Auto Power Save 4 level selection : 30%, 40%, 50%, 70%
LED Display	Power On Alarm State
Protection	Over Current Over heat ARM Short Regeneration
Operating Temperature	0°C ~ 50°C