

Digital Servo Drive

For Brushless Motor

MLBLDS3610-CA / MLBLDS3610-A

Datasheet V1.1

Sep 30, 2019



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FEATURES

- For **BLDC** Motor
- **Command Inputs:** RS232, CAN2.0B, Pulses, PWM, Analog
- **Feedback:** Quad A/B digital, with or without Hall sensor
- **Position Mode, Velocity Mode, Torque Mode**
- **Hardware / Software Position Limit**
- **Home-seeking**
- **IIT Current Limit**
- **Protection:** Over Current, Over Voltage, Under Voltage, etc.
- **Programmable Digital I/O**
- **Space Vector Arithmetic, Sine-wave Control** (for BLDC Motor)
- **Electromagnetic brake control**
- **Ambient Temperature:** -10~70°C, -40~85°C for Industrial Level.



ELECTRICAL CHARACTERISTIC

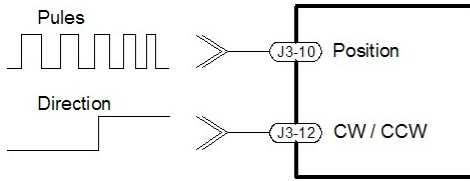
ITEMS	MLBLDS3610-CA MLBLDS3610E-CA	MLBLDS3610-A MLBLDS3610E-A
Power Supply (Vdc)	18-36	18-36
I _{continuous} (A)	10	10
I _{peak} (A)	20	20
RS232	●	●
CAN2.0B	-	●
Feedback	Quad A/B digital	Quad A/B digital
Encoder Output	●	●
Pulses Frequency	1MHz	1MHz
Digital Inputs Voltage	5-24 V	5-24 V
Under-voltage threshold	16 V	16 V
Over-voltage threshold	54 V	54 V
±10V analog	-	●
Electromagnetic brake control	-	●
Ambient Temperature	Blank: -10~70°C E: -40~85°C	Blank: -10~70°C E: -40~85°C
Dimensions (mm)	110 x 76 x 28	110 x 76 x 28

CONTROL MODE

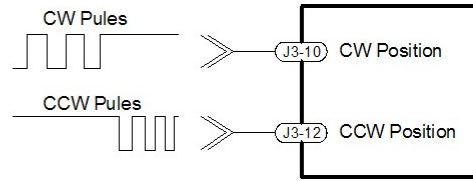
MODES	COMMAND INPUTS
Torque Mode	RS232, CAN2.0B, PWM, Analog
Velocity Mode	RS232, CAN2.0B, Pulses, PWM, Analog
Position Mode	RS232, CAN2.0B, Pulses

COMMAND INPUTS

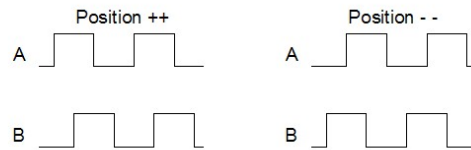
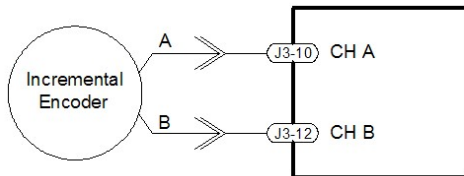
1. Pulses / Direction Inputs



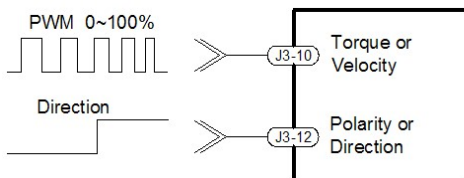
2. Count-up / Count-down Inputs



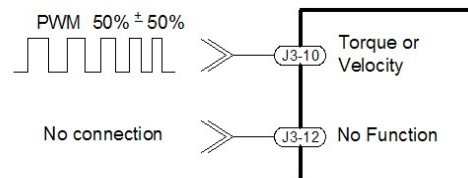
3. Quad A/B Encoder Inputs



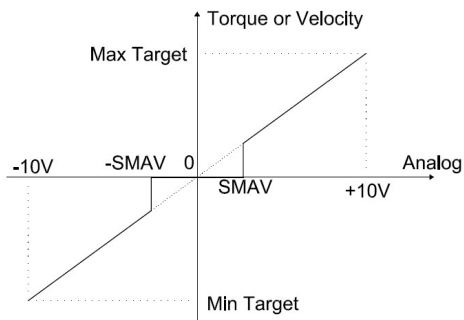
4. PWM / Direction Inputs



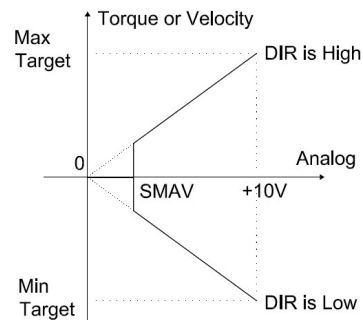
5. PWM 50% Inputs



6. Analog ($\pm 10V$) Inputs

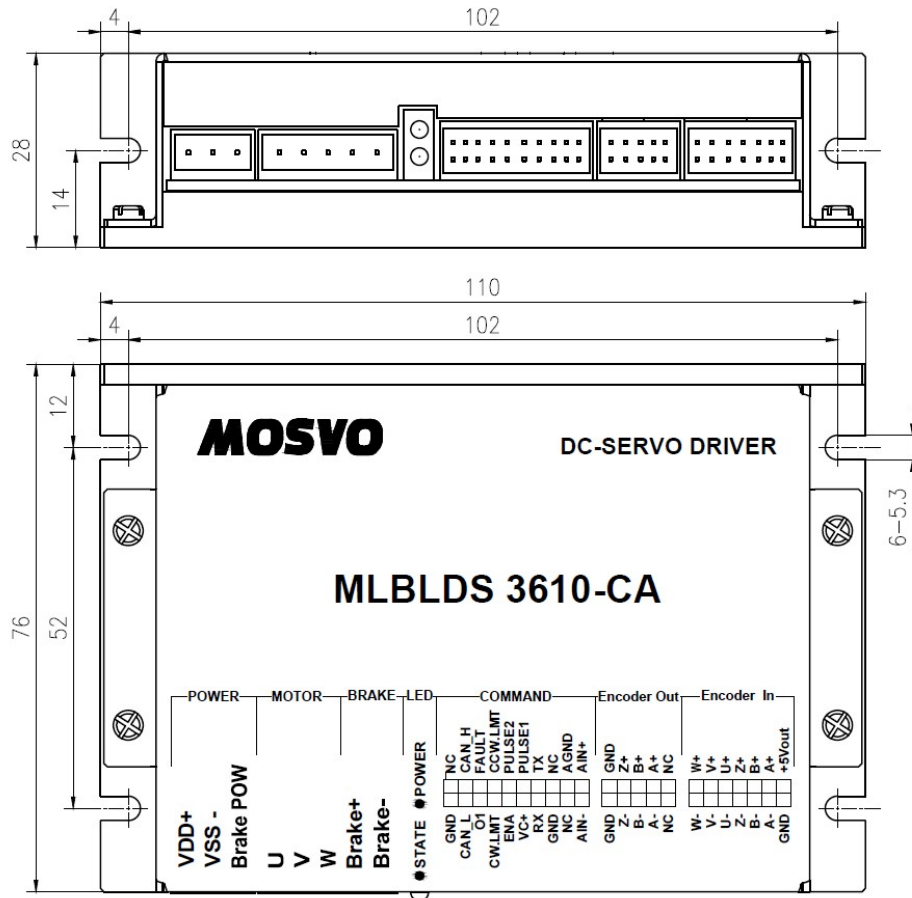


7. Analog (0~10V) / Direction Inputs



8. Communication Commands Inputs (Please see the specific communication protocol)

DIMENSIONS (unit: mm)



INTERFACES


1. J1 – Encoder Input

Pins Order	Symbol	Pins		Symbol
	GND	1	2	+5Vout
	A-	3	4	A+
	B-	5	6	B+
	Z-	7	8	Z+
	U-	9	10	U+
	V-	11	12	V+
	W-	13	14	W+

2. J2 – Encoder Output

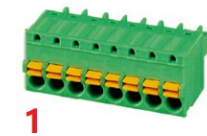
Pins Order	Symbol	Pins		Symbol
	-	1	2	-
	A-	3	4	A+
	B-	5	6	B+
	Z-	7	8	Z+
	GND	9	10	GND

3. J3 – Command Input

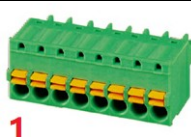
Pins Order	Symbol	Pins		Symbol
	AIN-	1	2	AIN+
	-	3	4	AGND
	GND	5	6	-
	RX	7	8	TX
	VC+	9	10	Pulse1 / CU
	ENABLE	11	12	Pulse2 / CD / DIR
	CW.LMT	13	14	CCW.LMT
	IN1	15	16	FAULT
	CAN-L	17	18	CAN-H
	GND	19	20	-

- a) **AIN+**, **AIN-**: $\pm 10V$ analog inputs.
- b) **TX**, **RX**, **GND**: RS232 interfaces.
- c) **VC+**: Power supply for PNP output. (*Please see the details in PROGRAMMABLE OUTPUTS*).
- d) **Pulse1**: High speed Input. Pulse input or CU, Encoder CH.A input. The detail functions show as following 'COMMAND INPUTS'.
- e) **Pulse2**: High speed Input. Direction input or CD, Encoder CH.B input. The detail functions show as following 'COMMAND INPUTS'.
- f) **Enable**: Enable or Disable input.
- g) **CW.LMT**: CW running limit.
- h) **CCW.LMT**: CCW running limit.
- i) **Fault**: Error output.
- j) **IN1**: Programmable input.

4. J8 – Motor and Brake

Picture and PIN1 Defination	Symbol	Brushless Motor
	U	Motor U
	V	Motor V
	W	Motor W
	BRAKE+	Electromagnetic Brake Coil +
	BRAKE-	Electromagnetic Brake Coil +

5. J9 – Power Supply and Auxiliary Power input

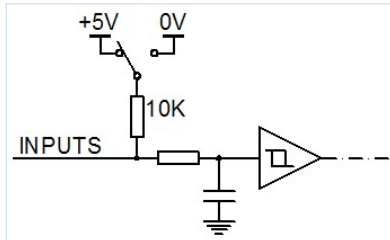
Pins Order	Pins	Symbol	Description
	1	VDD +	Power supply
	2	VSS -	Power GND
	3	Auxiliary Power	Power for Brake. 24VDC is recommended. If don't use brake, this pin should be open.

Matched Socket

Socket	Plug	Pin	Manufacturer
J1 Encoder	501646-1400	501647	Molex
J2 2nd Encoder	501646-1000	501647	Molex
J3 Command	501646-2000	501647	Molex

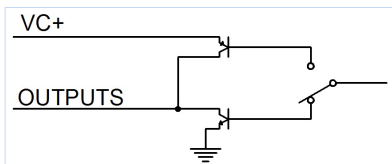
J9 Power Supply & Auxiliary Power	15EDGKD-3.81-03P-14-00A(H)	--	DEGSON
J8 Motor & Brake	15EDGKD-3.81-05P-14-00A(H)	--	DEGSON

PROGRAMMABLE INPUTS



1. The inputs can be programmable to **pull up** or **pull down**. The default is pull up.
2. The functions can be programmable.
3. Some specific functions should be on the **fixed** pins. (For example, pulses input, ENABLE input, etc.)
4. The inputs allow **5~24Vdc** high level.

PROGRAMMABLE OUTPUTS



1. All the programmable outputs can be set as **NPN** output or **PNP** output. Then the functions can be programmable.
2. NPN output is open collector. It can be pull up to **30Vdc**.
3. PNP output is also open collector. The Emitter (**VC+**) can connect to **30Vdc**.

PROGRAMMABLE INPUTS and OUTPUTS

All the programmable IO should be set as input or output firstly. Then the input pins or the output pins are as the same as the above.

INDICATOR LIGHT

INDICATOR LIGHT	STATE	MEANING
POWER	Green On	Power Supplied
	Off	No Power
STATE	Green Flashes	Disable
	Green On	Enable
	Red On	Error

PARAMETERS SETUP

User can configure the drive parameters according to the motor and load. Power-off will lose user's parameters configuration in the drive. To avoid that, use command "ESA" to save drive configuration to EEPROM memory.

ORDER INFORMATION

TYPE	Max. Continuous Current	Max. Peak Current	AMBIENT TEMPERATURE
MLBLDS3610-CA	10A	20A	-10~70°C
MLBLDS3610E-CA	10A	20A	-40~85°C
MLBLDS3610-A	10A	20A	-10~70°C
MLBLDS3610E-A	10A	20A	-40~85°C

VERSION RECORD

<i>Version</i>	<i>Date</i>	<i>Description</i>
V1.0	Sep 20, 2019	-
V1.1	Sep 30, 2019	Corrected some mistakes