Technical Data Sheet of CL3-E

(Hardware version W003, All Rights and technical changes reserved!)

Technical Data:

Operating voltage:	12-24V DC +/-5%
Rated current:	3A RMS
Peak current:	3A RMS (CL3-E-1) or 6A RMS (CL3-E-2)
Motor control:	Stepper open loop, stepper closed loop with encoder, BLDC closed loop with Hall sensor and BLDC closed loop with encoder
Operation mode:	Profile Position Mode, Profile Velocity Mode, Profile Torque Mode, Velocity Mode, Homing Mode, Cyclic Sync Position Mode, Cyclic Sync Velocity Mode, Cyclic Sync Torque Mode, Clock/Direction Mode and Stand-Alone Mode (controlled by JAVA Program)
Interface:	CANopen, RS485 2-wires, RS232 and Micro USB
Encoder:	5V single-ended signal, maximum resolution 65536 increments pro revolution (16 Bit)
Hall sensor:	5V single-ended signal
Input:	5 digital inputs (5V)
	1 analog input 10 Bit, 0-10V or 0-20 mA (switchable by software)
	1 analog input 10 Bit, 0-10V
Output:	3 transistor outputs (Open-Drain, max. 24V/100mA)
Protection circuit:	Over-/under voltage protection
	Over temperature protection (>75°C)
	Reverse polarity protection
	(Short-circuit +UB and GND for reverse polarity, a fuse between the power supply and the controller is necessary!)

Hardware overview:

| Name	Function
X1	Power connector
X2	Motor connector
X3	Micro USB
X4	RS232 interface
X5	Inputs and Outputs connector
X6	Encoder and Hall sensor connector
X7	CANopen/RS485 IN
X8	CANopen/RS485 OUT
S1	Connection (Dip-Switch ON) /Disconnection (Dip-Switch OFF) of a 120 Ohm termination resistor for CAN/RS485
J1	Jumper for switching CAN_L and RS485 -
J2	Jumper for switching CAN_H and RS485 +
L1	Status LED green
L2	Status LED red

Dimension [mm]:
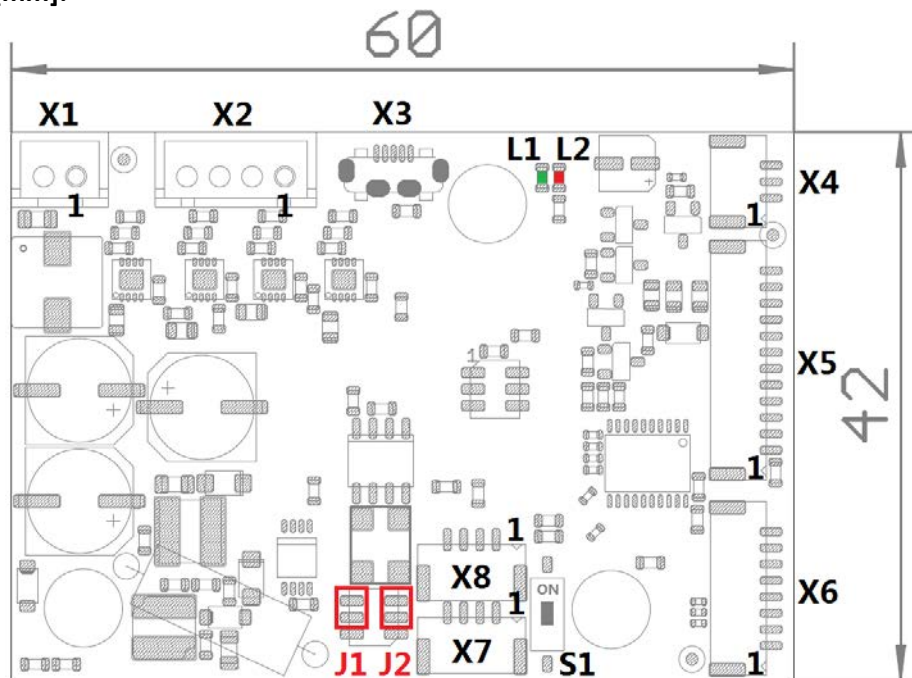
Fig 1

Connector Pin Assignment:

X1 Power connector (Connector type: JST XH, Pin 1 marked in Fig. 1):

PIN	Function	Remark
1	+UB	12-24V DC +/-5%
2	GND	

X2 Motor connector (Connector type: JST XH, Pin 1 marked in Fig. 1):

PIN	Function (Stepper)	Function (BLDC)	Remark
1	A	U	
2	A\	V	
3	B	W	
4	B\	n.c.	

X3 Micro USB:

PIN	Function	Remark
1	VBUS	
2	DM	
3	DP	
4	n.c.	
5	GND	

X4 RS232 Interface (Connector type: JST GH, Pin 1 marked in Fig. 1):

PIN	Function	Remark
1	RS232-RX	
2	RS232-TX	
3	GND	

X5 IO connector (Connector type: JST GH, Pin 1 marked in Fig. 1):

PIN	Function	Remark
1	+10V DC	Output voltage, max. 200mA
2	Digital Input 1	5V signal, max. 1MHz
3	Digital Input 2	5V signal, max. 1MHz
4	Digital Input 3	5V signal, max. 1MHz (Clock in Clock/Direction mode)
5	Digital Input 4	5V signal, max. 1MHz (Direction in Clock/Direction mode)
6	Digital Input 5	5V signal, max. 1MHz
7	Analog Input 1	10 Bit, 0-10V or 0-20 mA, switchable by software
8	Analog Input 2	10 Bit, 0-10V
9	Output 1	Open-Drain, max. 24V/100mA
10	Output 2	Open-Drain, max. 24V/100mA
11	Output 3	Open-Drain, max. 24V/100mA
12	GND	

X6 Encoder/Hall sensor connector (Connector type: JST GH, Pin 1 marked in Fig. 1):

PIN	Function	Remark
1	+5V DC	Power supply for encoder/Hall sensor, max. 200mA
2	A	5V signal
3	B	5V signal
4	Index	5V signal
5	H1	5V signal
6	H2	5V signal
7	H3	5V signal
8	GND	

X7/X8 CANopen IN/OUT or RS485 IN/OUT (Connector type: JST GH, Pin 1 marked in Fig. 1):

PIN	Function (CANopen)	Function (RS485)	Remark
1	+UB Logic	+UB Logic	24V DC
2	CAN_H	RS485 +	switchable by jumper J2
3	CAN_L	RS485 -	switchable by jumper J1
4	GND	GND	

When X7 and X8 should be used for CANopen IN and OUT, the jumper J1 and J2 should be set as in Fig. 2 showed:
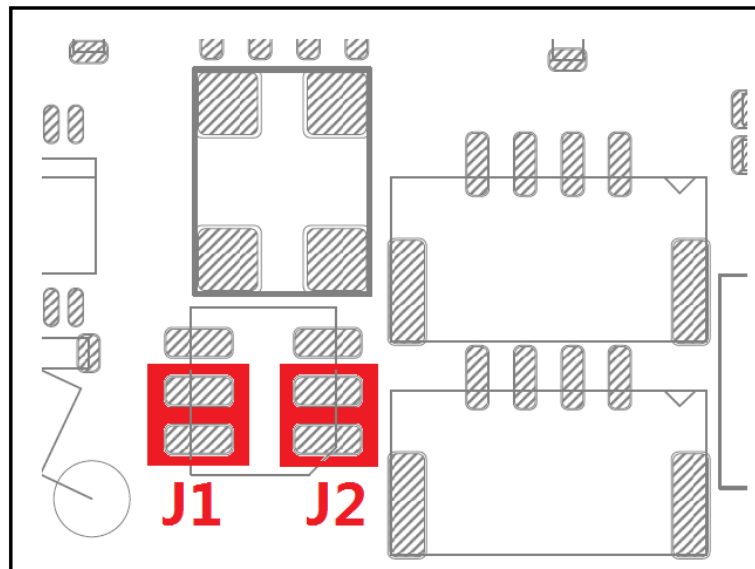

Fig. 2

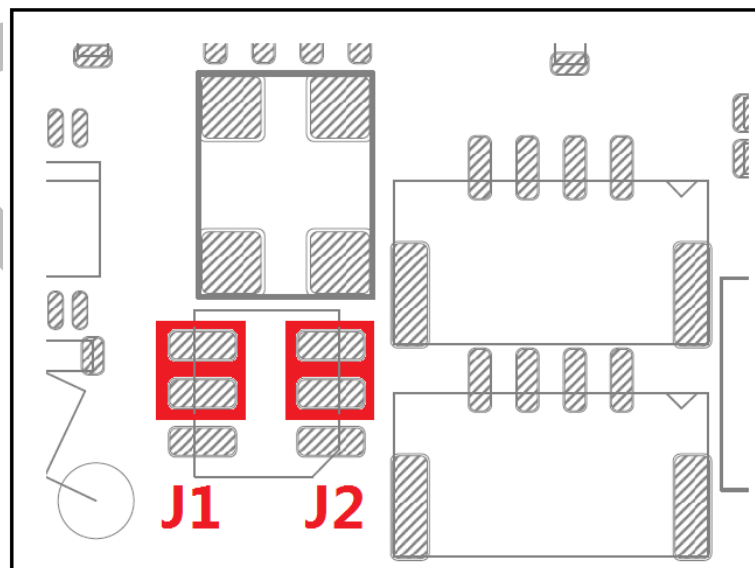When X7 and X8 should be used for RS485 IN and OUT, the jumper J1 and J2 should be set as in Fig. 3 showed:

Fig. 3