



VER 1.1

Technical Manual

DS-CLS10-FRS4-1A



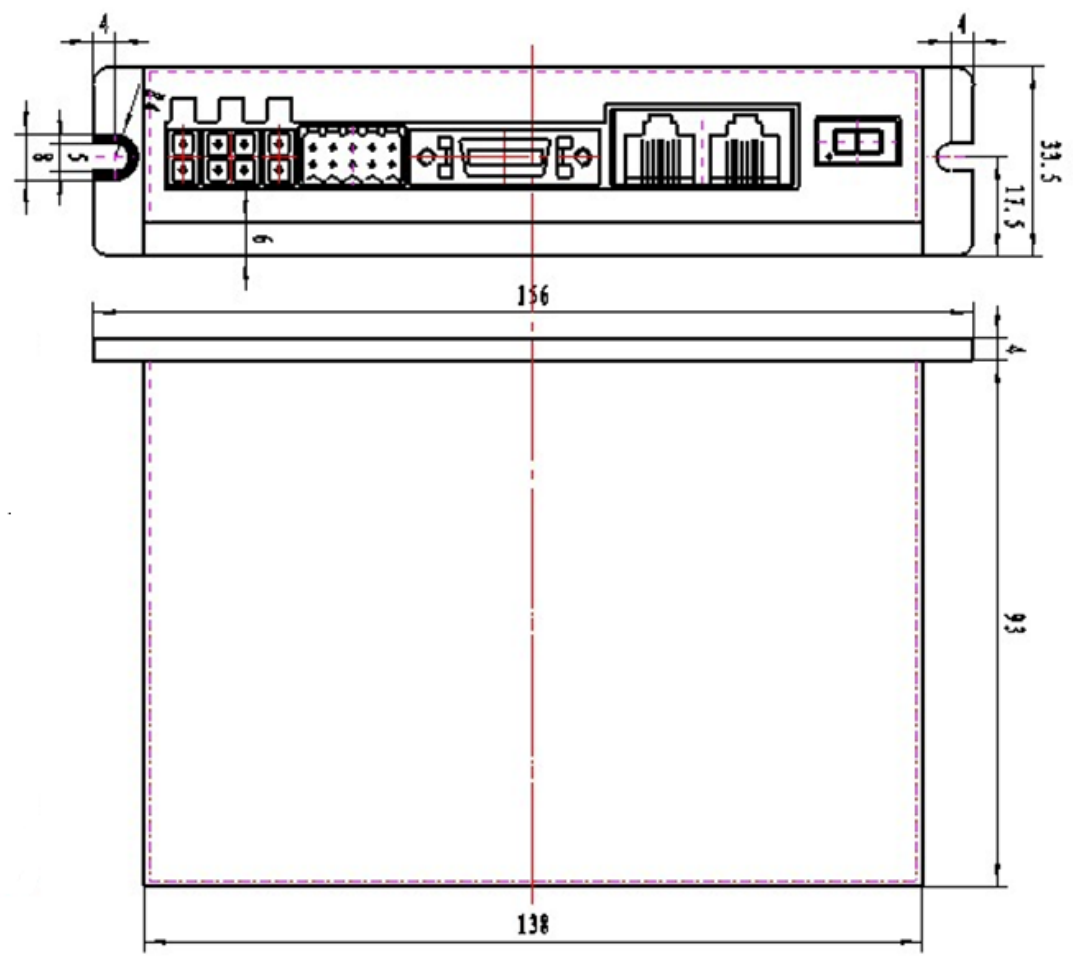
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1. Specifications

Listings	Content	Notes
Model	DS-CLS10-FRS4-1A	
Input power voltage	DC 24V~72V ±10%	
Output current	6.5A (0 - peak)	Continuing current
Control object motor	17 bit absolute value encoder attached	
Driving method	PWM constant current drive	
Communication interface	Input <ul style="list-style-type: none"> • Pulse, directional input (configurable as digital input) • 7 digital inputs Output <ul style="list-style-type: none"> • 3 digital outputs 	Input/output can be freely configured through communication
Detailed content of digital input	/SV ON (Servo On) /RESET (Alarm reset) /START (Motor start/stop) /JOG (Motor jog) /HOME (Zero return)	
Detailed content of digital output	/IN POTISION /ALARM	
LED	Status, Fault	
Communicate I/F	RS485, Up to 30 nodes	MODBUS RTU protocol, baud rate: 19200bps (preset)
Control methods	Position control mode	Based on pulse positioning and RS485 communication positioning
External dimensions (mm)	156 (L) × 97(W) × 33.5(H)	Excluding wiring terminals
Weight	About 500g	Excluding wiring terminals
Operating environment	0 ~ 45°C, under 85%RH	No condensation
Storage environment	0 ~ 85°C, under 85%RH	No condensation
Ambient gas	Prevent corrosive gases	

2. Dimensions (mm)



3. Schematic and Interface Description

Please make sure to perform the following tasks before connecting the power supply.

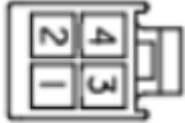
3.1 CN1 (Power supply)

Terminal number	Illustration	Pin.	Signal name
CN1		2	Power V+ (DC24V ~ 72V)
		1	Power GND

Pay attention to the polarity of the power supply when wiring

Wire specifications: AWG20~AWG16 (multi stranded wire)

3.2 CN2 (Motor)

Terminal number	Illustration	Pin.	Signal name
CN2		4	Motor A+
		3	Motor B+
		2	Motor A-
		1	Motor B-

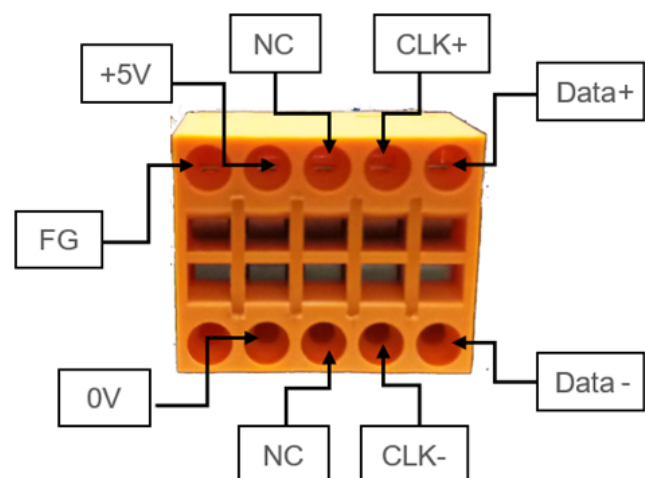
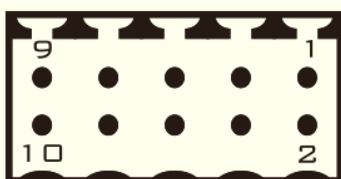
3.3 CN3 (Brake output)

Terminal number	Illustration	Pin.	Signal name
CN3		2	BRK+ Positive Brake output
		1	BRK- Negative Brake output

3.4 CN4 (Absolute value encoder input)

Pin.	Signal name	Pin.	Signal name
1	Data+	2	Data-
3	CLK+	4	CLK-
5	NC	6	NC
7	+5V	8	0V
9	FG	10	FG

Sketch

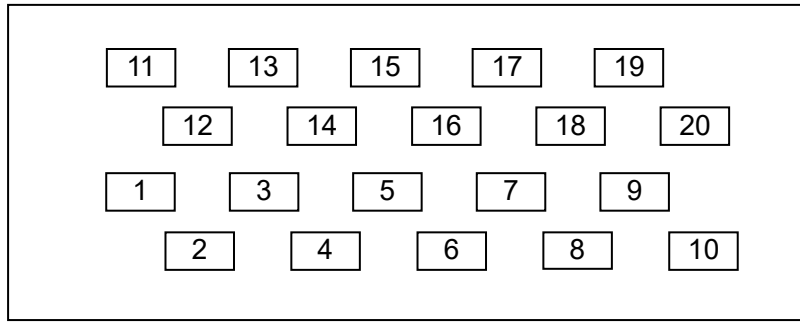


Pay attention to the polarity of the encoder power supply when wiring

Wire specifications: AWG28~AWG18 (multi stranded wire)

3.5 CN5 (I/O)

Sketch



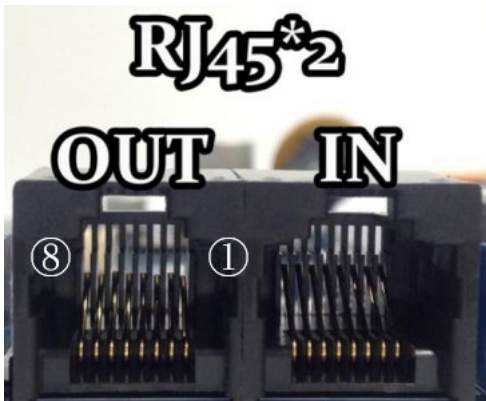
Pin.	Signal name	Pin.	Signal name	Pin.	Signal name
1	COM (IN)	8	IN6 (CW) -	15	NC
2	IN1	9	IN7 (CCW) +	16	NC
3	IN2	10	IN7 (CCW) -	17	NC
4	IN3	11	OUT1	18	NC
5	IN4	12	OUT2	19	NC
6	IN5	13	OUT3	20	NC
7	IN6 (CW)+	14	COM (OUT)		

3.6 CN6 (IN) / CN7 (OUT) (RS485)

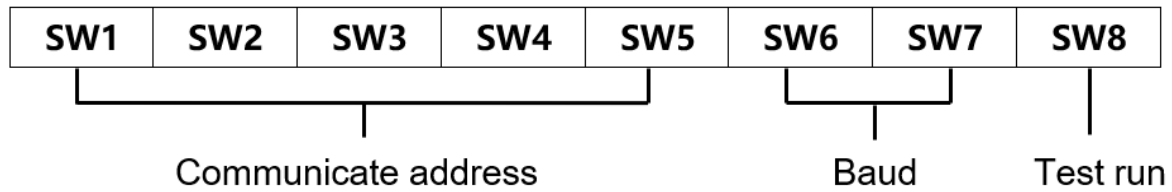
Pin.	Signal name	Pin.	Signal name
1	NC	2	GND
3	A Input (RS485)	4	NC
5	NC	6	B Input (RS485)
7	Terminator (CN5)	8	Terminator (CN5)

Standard product : RJ45 type ×2

Viewing the position of each pin from the perspective of facing insertion



3.7 SW1 (Set switch)



3.7.1 Mailing Address

Users can control up to 30 DS-CLS10-FRS4-1A drivers simultaneously using the RS-485 bus. The communication address of the driver is set using a 5-bit DIP switch,

The address setting range is 1-32, where address 32 is reserved by the system. When the drive address is set to greater than 31, it needs to be set and saved using upper level debugging software,

And all switches must be set to OFF (default to 1).



Notes

- 1) A controller can control up to 30 DS-CSL10-FRS4-1A drivers simultaneously through the RS-485 bus.
- 2) The communication address setting for each drive must be unique, otherwise it may cause communication errors.

DIP switch					Actual address (Decimal)	Display address (Hexadecimal)
SW1	SW2	SW3	SW4	SW5		
ON	ON	ON	ON	ON	1	01H
ON	ON	ON	ON	OFF	2	02H
ON	ON	ON	OFF	ON	3	03H
ON	ON	ON	OFF	OFF	4	04H
ON	ON	OFF	ON	ON	5	05H
ON	ON	OFF	ON	OFF	6	06H
ON	ON	OFF	OFF	ON	7	07H
ON	ON	OFF	OFF	OFF	8	08H
ON	OFF	ON	ON	ON	9	09H
ON	OFF	ON	ON	OFF	10	0AH
ON	OFF	ON	OFF	ON	11	0BH
ON	OFF	ON	OFF	OFF	12	0CH
ON	OFF	OFF	ON	ON	13	0DH
ON	OFF	OFF	ON	OFF	14	0EH
ON	OFF	OFF	OFF	ON	15	0FH
ON	OFF	OFF	OFF	OFF	16	10H
OFF	ON	ON	ON	ON	17	11H

OFF	ON	ON	ON	OFF	18	12H
OFF	ON	ON	OFF	ON	19	13H
OFF	ON	ON	OFF	OFF	20	14H
OFF	ON	OFF	ON	ON	21	15H
OFF	ON	OFF	ON	OFF	22	16H
OFF	ON	OFF	OFF	ON	23	17H
OFF	ON	OFF	OFF	OFF	24	18H
OFF	OFF	ON	ON	ON	25	19H
OFF	OFF	ON	ON	OFF	26	1AH
OFF	OFF	ON	OFF	ON	27	1BH
OFF	OFF	ON	OFF	OFF	28	1C H
OFF	OFF	OFF	ON	ON	29	1D H
OFF	OFF	OFF	ON	OFF	30	1E H
OFF	OFF	OFF	OFF	ON	31	1F H
OFF	OFF	OFF	OFF	OFF	Customize	Customize

BAUD





DIP switch		BAUD (bps)
SW6	SW7	
ON	ON	4800
ON	OFF	9600
OFF	ON	19200
OFF	OFF	38400

TEST RUN

The trial run function is used to verify the performance of the drive. Turn the SW8th gear switch to ON in the power-off state. Then, when powered on and in a state without pulse input, turn the SW8th gear dial switch from ON to OFF, and then from OFF to ON after 1 second, to activate the trial run function (the motor rotates forward and backward at a speed of 1 rpm).

4. LED Indicator

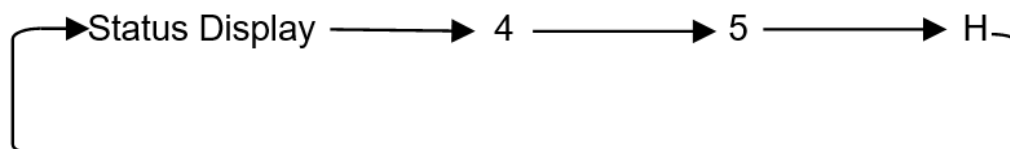
4.1 Status Display

Display	Status
	Motor rotation display The light comes on when the motor rotates, and goes off when it stops
	Equipment Enabling Status Equipment enable light on, equipment disable light off
	Display in command input The light is on during command input
	Displayed in CONNECT The light in CONNECT is on

4.2 Status Number Display

The site number is displayed word by word, ending with H, and only the status is displayed after a successful CONNECT connection

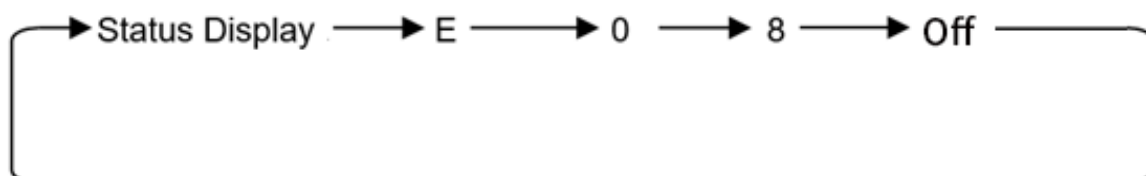
Example: Site number: 45H



4.3 Alarm Display

The alarm code is displayed word by word and blinks, ending with E

Example: Alarm code E8



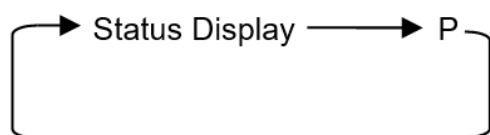
Function	Alarm code	Alarm/Warning	Description
Communication timeout	Warning	8	Abnormal communication cycle during communication
Spare	Warning	9	Spare
Motor overcurrent	Warning	10	Motor phase current overcurrent or driver failure

Motor phase loss	Warning	11	The motor is not connected
Spare	Warning	12	Spare
Undervoltage	Warning	13	Power input less than 18V
Overvoltage	Warning	14	Power input greater than 85V
Superheat	Warning	15	The temperature of the driver heat sink has reached 85 °C or above
Speed too high	Warning	16	Set speed exceeding maximum allowable speed
EEM error	Warning	17	CPU storage data exception
Overload	Warning	18	Brake resistor fault
Spare	Warning	19	Spare
Spare	Warning	20	Spare
Internal communication abnormality	Warning	21	Internal communication abnormality of the drive
Abnormal data reading	Warning	22	An exception occurred while reading Flash data
EMERGENCY STOP	Warning	23	Input port triggers emergency stop signal

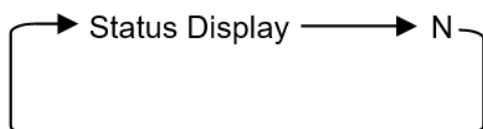
4.4 Overtravel Display

When overtravel occurs, it is displayed as follows :

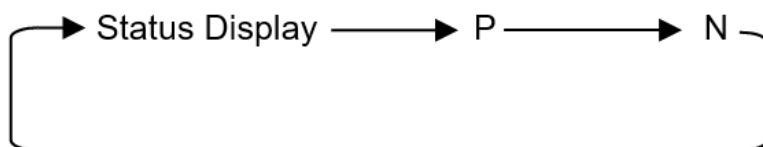
- 1) Positive rotation side overtravel (P-OT)



- 2) Negative side overtravel (N-OT)

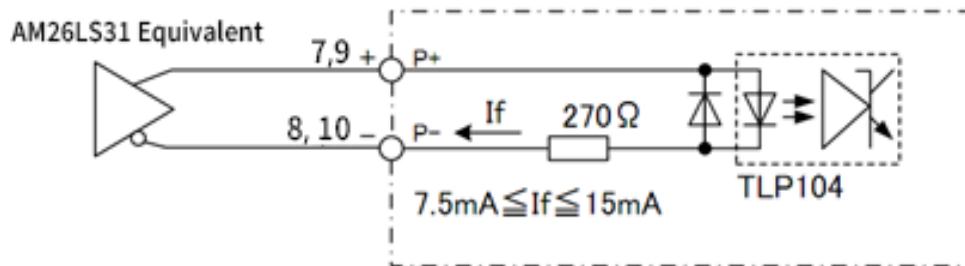


- 3) Both forward and reverse overtravel occur

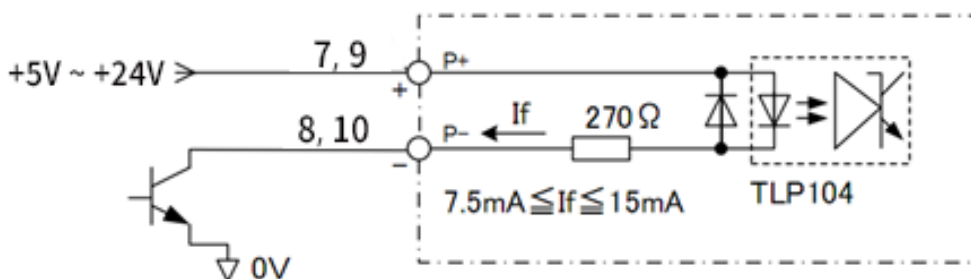
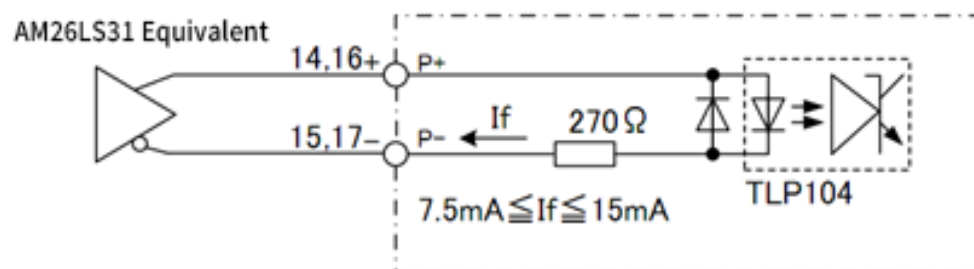


5. Input Circuit Diagram

5.1 Command pulse input circuit (Differential drive)



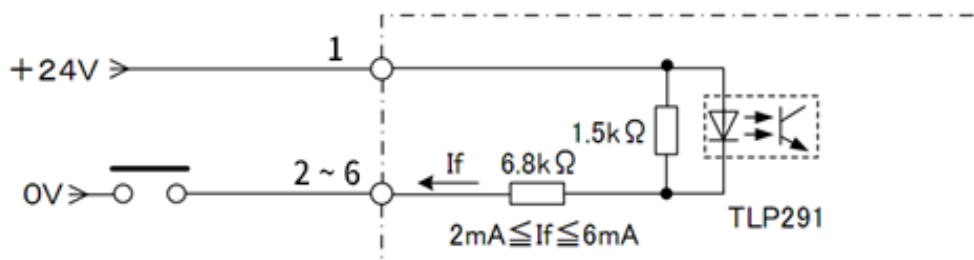
5.2 Command pulse input circuit (Collector)



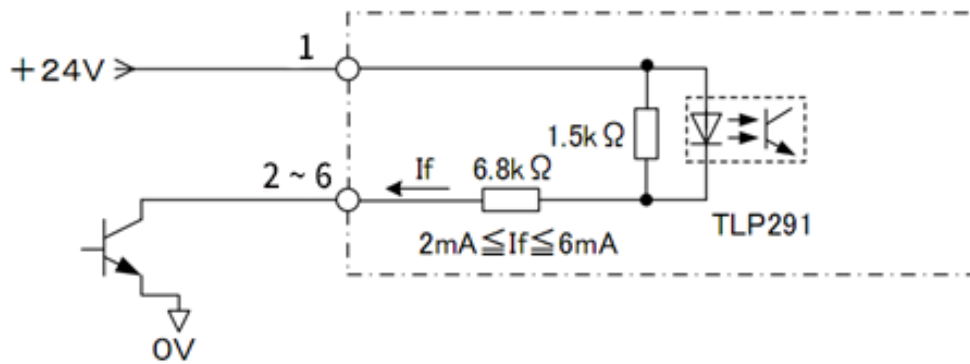
Notes

This product is compatible with +5V/+24V signals and does not require a series current limiting resistor for 24V input.

5.3 Sensor, digital input circuits (Contacts)

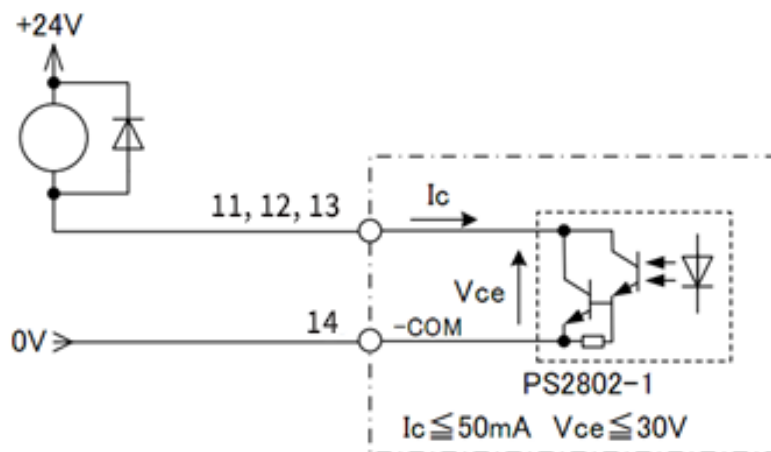


5.4 Sensor, digital input circuits (Collector output)



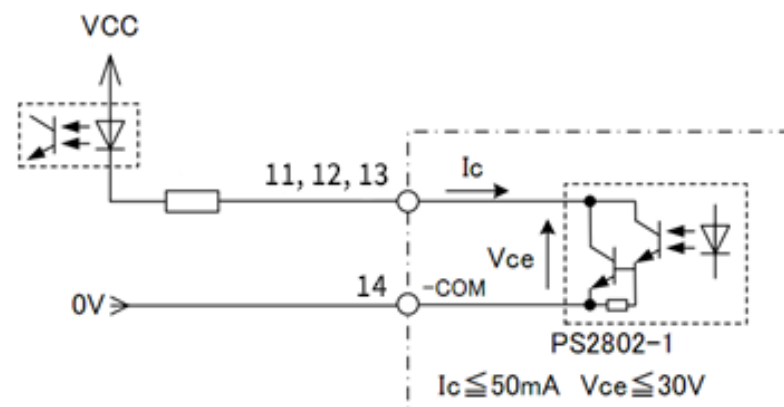
6. Output Circuit Diagram

6.1 Digital output circuit (Relay connection)



i **Notes** When connects relay, diodes at both ends of relay (similar to IN4000)

6.2 Digital output circuit (Optocoupler connection)





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