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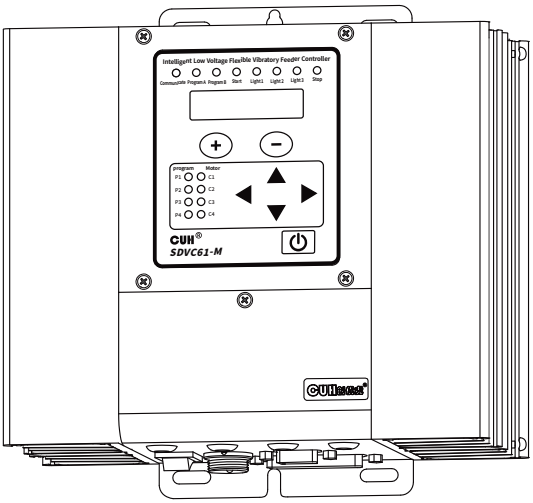
Simplified User Manual of SDVC61 Series

Intelligent Low Voltage Flexible Vibratory Feeder Controller



Applicable controller models:

SDVC61-M (4-way voice coil motor output 24V/3A, 3-way LED driver output 60V/2A)

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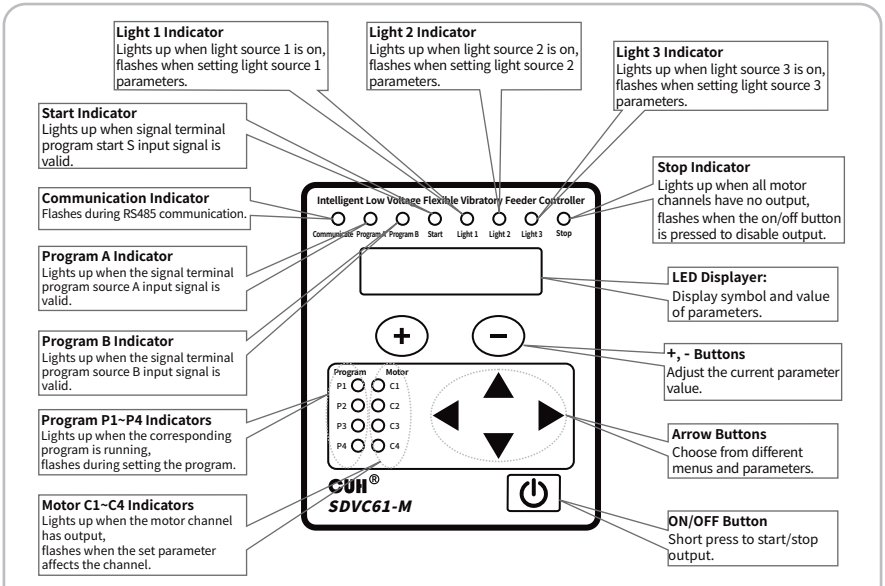
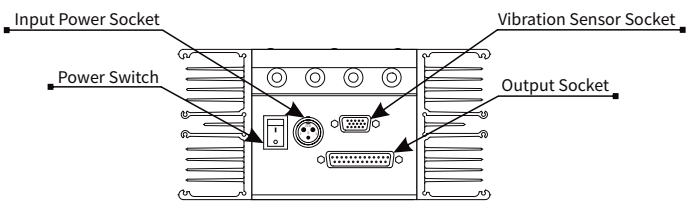
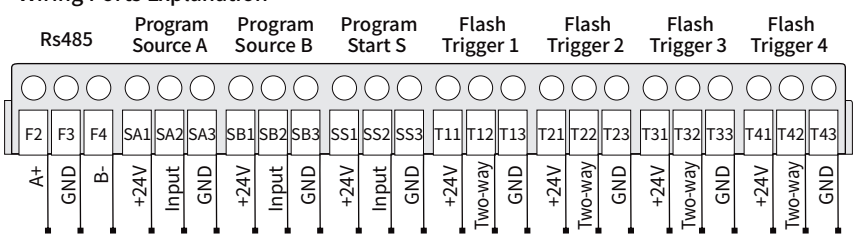
Indicators, Buttons, External Parts and Wiring Ports Explanation



External Parts Explanation



Wiring Ports Explanation



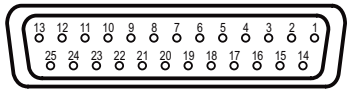
Features

SDVC61 series intelligent low-voltage flexible vibration feeding controller is a product specially designed for the flexible feeding system of voice coil motor. Advanced electronic technology and careful design provide unique performance. It is featured on:

- Four voice coil motor drive outputs, the maximum power is 24V/3A, and the phase difference can be controlled independently.
- Three light source drive outputs, the maximum power is 60V/2A.
- Each light source is equipped with an NTC temperature sensor interface, which can realize overheating protection of the light source.
- The controller is designed with 4 programs, and each program includes 9 segments. Each segment can control output enable, output frequency, channel voltage or amplitude, Phase difference, light source current, hold time.
- Program selection and running trigger support external switch sensor signal control, and the sensor type can be set or automatically identified.
- The flash trigger port is a bidirectional port, which can be set as an input to trigger the lighting of the light source, or as an output to drive an external load. Output support 3 working modes, NPN, PNP, push-pull, support to choose a variety of signal sources.
- The flash trigger port can output a synchronous signal or a frequency-shifted signal, which is used to trigger the light source to form a frequency-shifted flash. This function slows down the movement state of the material through the beat frequency, allowing the user to see the details of the material movement.
- RS485 interface supports two protocols, Modbus ASCII and RTU, and can control all parameters through networking.

Load Port Definition

Output Socket Pinout Diagram

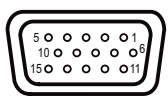


13	12	11	10	9	8	7	6	5	4	3	2	1
Temperature 3+	Temperature 2+	Temperature 1+	Light source 3+	Light source 2+	Light source 1+	null	PE	null	Motor 4+	Motor 3+	Motor 2+	Motor 1+

25	24	23	22	21	20	19	18	17	16	15	14
Temperature 3-	Temperature 2-	Temperature 1-	Light source 3-	Light source 2-	Light source 1-	null	null	Motor 4-	Motor 3-	Motor 2-	Motor 1-

Sensor Port Definition

Sensor Socket Pinout Diagram



5	4	3	2	1
3.3V	No. 4 sensor Z axis	No. 3 sensor Z axis	No. 2 sensor Z axis	No. 1 sensor Z axis

10	9	8	7	6
GND	No. 4 sensor Y axis	No. 3 sensor Y axis	No. 2 sensor Y axis	No. 1 sensor Y axis

15	14	13	12	11
PE	No. 4 sensor X axis	No. 3 sensor X axis	No. 2 sensor X axis	No. 1 sensor X axis

Operation and Usage

Button Operation

Short press to define the pressing time greater than 0.1 and less than 2 seconds, and long press to define the pressing time greater than 2 seconds.

Long press ◀ and ▶ simultaneously to enter the segment parameter setting interface.

Short press ◀ and ▶ simultaneously to switch between different programs, short press ◀ and ▶ to switch between different program segments.

Long press ◀ and ▲ simultaneously to enter the public parameter setting interface.

Long press ▶ and ▲ simultaneously to enter the advanced parameter setting interface.

Short press ▲ or ▼ to select a parameter, short press ⊕ or ⊖ to adjust the parameter value.

On the standby interface, short press ▲ or ▼ to switch the displayed parameters.

Instructions

SDVC61 series controllers are designed with 4 motor drive outputs and 3 light source outputs. Each motor output is configured with a 3-axis vibration sensor for amplitude feedback control, and each light source output is configured with an NTC temperature sensor interface for over-temperature protection.

The controller has designed 4 programs, each program includes 9 program segments, and each program segment can be set as a motor program or a light source program. Different operating parameters are set in each program segment to represent a certain working mode of the vibrating platform, forming a sequential change in the vibration state of the vibrating plate to the purpose of flexible feeding.

The method of use is as follows:

1. According to the distribution of the voice coil motor of the flexible vibrating platform, connect the load correctly in combination with the load wiring diagram in this manual.

2. Power on the controller, and long press ◀ and ▶ simultaneously to enter the program segment parameter setting interface.

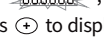
3. Set the program segment parameters of the current program according to the working mode requirements of the flexible vibration plate.

4. After setting the parameters of the program segment, you can trigger the operation of the program externally or set the internal automatic trigger, and you can choose the level trigger or edge trigger. When the level is triggered, the program runs in a loop, and when the edge is triggered, the program runs for the specified number of times and then stops.

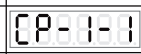
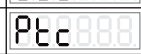
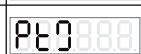
5. At this time, the vibrating platform should be able to operate normally. Check whether the operating state of is the same as the set program parameters.

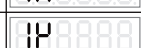
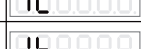
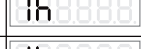
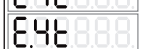
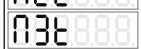
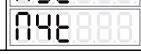
Factory Restore

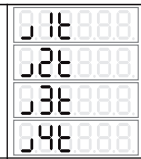
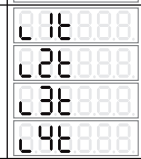
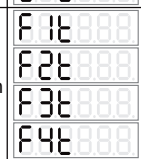
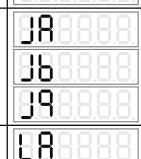
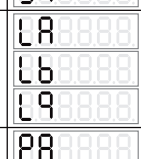
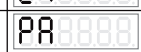
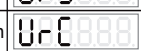
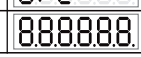
This function allows the user to quickly restore the disordered parameters to the factory state. The operation steps are as follows:

- Enter the advanced parameter setting interface, short press ▲ to choose to restore factory default parameters  , and the flashing (digital tube and LED lights all flash).
- Long press ⊕ to display [------], and the factory reset operation is completed.

Parameter Table

	Definition	Symbol	Range	Default
Standby Parameters (not adjustable)	Current Program Segment		——	——
	Bus Voltage		12~48 V	——
	24V Auxiliary Voltage		20~28 V	——
	Left/Right Radiator Temperature		-20~85 °C	——
	Motor 1/2/3/4 Current		0.00~3.00 A	——
	Sensor 1/2/3/4 Amplitude		0.0~16.0 g	——
	Light Source 1/2/3 Output Voltage		0.0~60.0 V	——
	Light Source 1/2/3 Output Current		0.00~2.00 A	——
	Light Source 1/2/3 Temperature		-20~85 °C -21 means the temperature sensor is not connected	——
Program Parameters	Program Time Amplification Factor		0.1~10 Does not exceed the maximum value of the hold time	1
	Program Amplitude Amplification Factor		0.1~10 Valid only for motor	1
	Program Trigger Mode		In0~9 internal automatic trigger Ot0~9 External program starts S trigger 0 for continuous operation, 1~9 for the number of cycles	In0

Program Segment Parameters	Program Segment Enable		0000~1111 motor switch 0.0.0.~1.1.1. light source switch	0000
	Motor Frequency		5.0~400.0 Hz	50.0
	Motor Voltage*4 (U-open loop voltage, A-closed loop amplitude)	 	0.0~24.0 V 0.0~16.0 g	0.0 0.0
	Motor Phase*4		-180.0°~180.0°	0
	Light Source Current*3		0.00~2.00 A	0.00
	Hold Time		Soft start: −9.9 ~ −0.1 s Hold: 0.0 ~99.9 s	5.0
Public Parameters	Light Source 1/2/3 Lighting Mode	  	On always bright Ato program segment control lights up ELU external level trigger 1~999 ms external trigger flash time	Ato
	Light Source 1/2/3 Independent Output Current (different from the current in the program segment)	  	0.00~2.00 A	0.50
	Light Source 1/2/3 External Trigger Source	  	t1, t2, t3, t4 External flash trigger port	t1 t2 t3
	Flash Trigger 1~4 Output Signal Source 1/2	       	-P4, -P3, -P2, -P1, -L3, -L2, -L1, -t4, -t3, -t2, -t1, -S, -b, -A, 0, 1, A, b, S, t1, t2, t3, t4, L1, L2, L3, P1, P2, P3, P4, Err t means the external trigger input, L means the LED is on or off, P means to run the program, Err means error signal	L1 0 L2 0 L3 0 Err 0
	Flash Trigger 1~4 Output Signal Relationship	   	And, or, Hor, rS	or

Public Parameters	Flash Trigger 1~4 Output On Delay		0.0~99.9 s	0.0
	Flash Trigger 1~4 Output Off Delay		0.0~99.9 s	0.0
	Flash Trigger Port Orientation		In, Otn, Otp, Opp, O.t.n., O.t.p., O.p.p., syc, fsc (**x.x.x.** means inversion, **syc** means output synchronization signal, **fsc** means frequency shift signal)	In
Advanced Parameters	Switch Sensor Type		Ut0 (Continuous scan), Ut1 (Single scan), nPn, PnP	Ut1
	Program Source A, b, S On Delay		0.0~99.9 s	0.1
	Program Source A, b, S Off Delay		0.0~99.9 s	0.1
	Program Source Selection		00, 01, 10, 11, 0A, 1A, 0b, 1b, bA	bA
	Vibratory Feeder Operating Mode		OPE open loop, CLo closed loop	OPE
	Frequency Shift Signal Frequency Difference		-20.0~20.0 Hz	5.0
	Motor Maximum Voltage Limit		0.0~24.0 V	15.0
	Motor Overcurrent Protection Current		0.0~3.0 A	1.0
	Communication Protocol		rtu, ASC	rtu
	Communication Baud Rate		0.3, 1.2, 2.4, 9.6, 19.2, 57.6, 115.2 (Kbit/s)	9.6
	Communication Address		1~31	1
	Power Board Software Version		——	——
	Control Board Software Version		——	——
	Factory Restore		——	——

Technical Specifications

Item	Min	Typical	Max	Unit	Note
AC Input Voltage	180	220	260	V	50/60 Hz AC RMS
Motor Output Voltage	0	——	24	Vac	AC RMS
Motor Output Current	0	——	3	A	
Motor Output Frequency	5.0	50.0	400.0	Hz	
Frequency Adjustment Accuracy	0. 1			Hz	
Motor Output Waveform	Sine				
Light Source Output Voltage	12	——	60	V	DC
Light Source Output Current	0	——	2	A	DC
Light Source NTC Temperature Sensor Resistance	100000			Ω	B Value 4000K
Control Output Voltage	22	24	26	V	
Standby Power Consumption	7			W	
Load Type	Voice coil motor and LED light board				
Display Method	6			Digit	LED
Ambient Temperature	0	25	40	℃	No Condensation
Ambient Humidity	10	60	85	%	
Storage Ambient Temperature	-20	25	85	℃	

Toubleshooting Suggestions and Error Explanations

Error Code	Definition	Troubleshooting Methods
Err011/012/013/014	Voice coil motor C1~C4 short circuit	Make sure the load is not short-circuit.
Err021/022/023/024	Voice coil motor C1~C4 overcurrent	Reduce output voltage appropriately.
Err031/032	The left/right radiator is overheated	Provide a well-ventilated environment.
Err041/042	Power/auxiliary power failure	Make sure input voltage between 180~260Vac.
Err05	Internal communication abnormal	contact our technical support.
Err06	Temperature sensor abnormal	
Err071/072/073	Light source output 1~3 short circuit	Correctly connect the Light source load.
Err081/082/083	Light source output 1~3 open circuit	
Err091/092/093/094	Trigger output 1~4 short circuit	Make sure the load is not short-circuit and the current does not exceed 200mA.
Err101/102/103/104	Vibration sensor 1~4 missing shaft	Correctly connect the vibration sensor.
Err201/202/203	Light sources 1~3 are overheated	Provide good heat dissipation for the light source.