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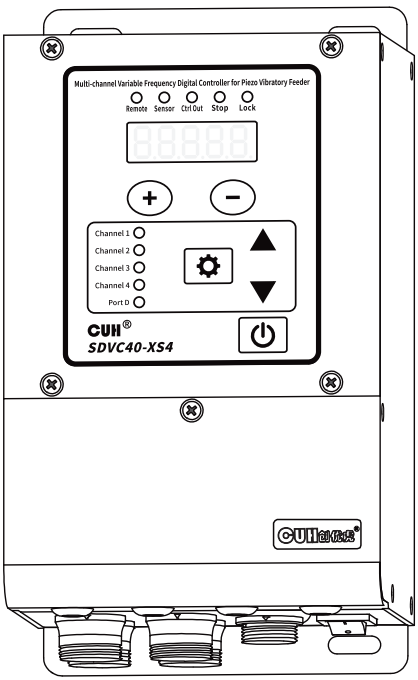
Simplified User Manual of SDVC40-XS Series

Multi-channel Variable Frequency Digital Controller for Piezo Vibratory Feeder



Applicable controller models:

SDVC40-XS2（50mA * 2）

SDVC40-XS3（50mA * 3）

SDVC40-XS4（50mA * 4）

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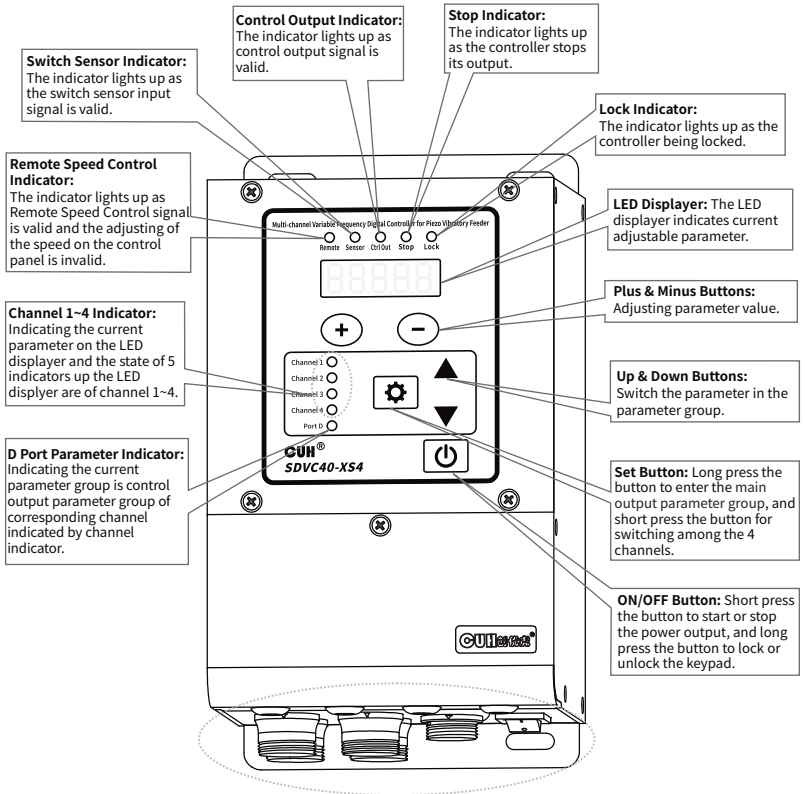
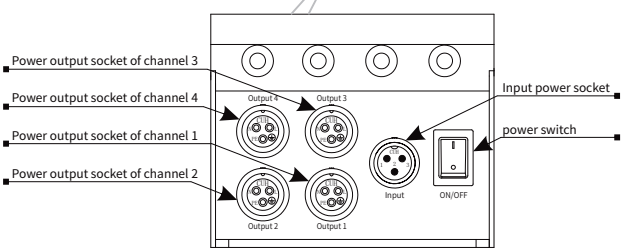
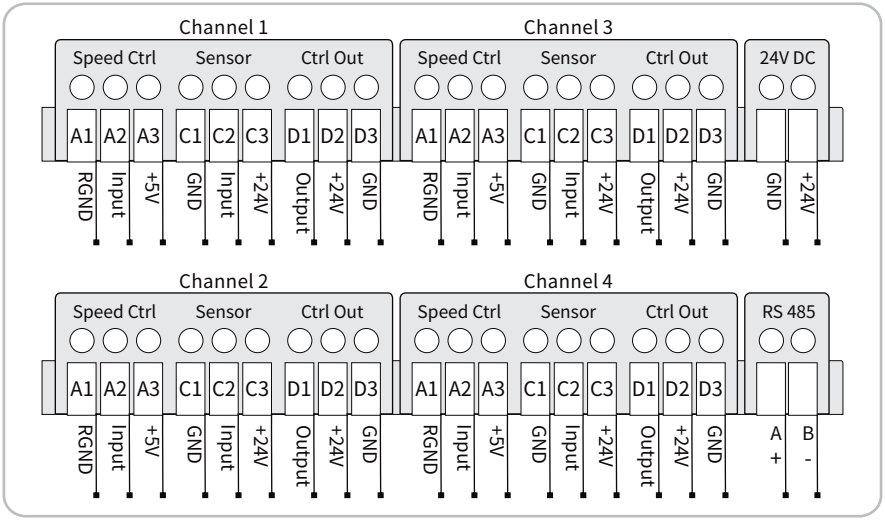
Indicators, Buttons and External Components



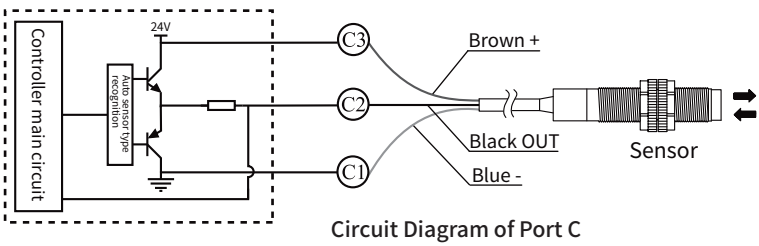
External Components Explanation



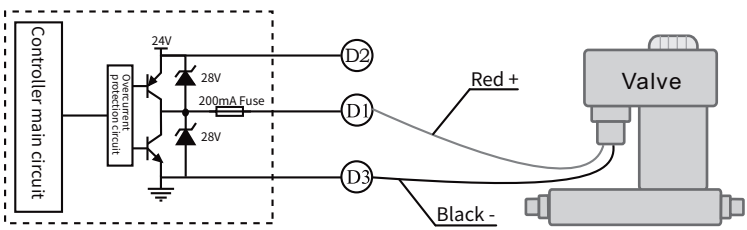
Wiring Ports



Input and Output Circuit Diagrams



Circuit Diagram of Port C



Circuit Diagram of Port D

Features

SDVC40-XS Series controller is specially designed for driving piezo-electric vibratory feeder in automation systems. Its special features include:

Frequency Adjustment: Output frequency of the controller is 40.0 ~ 400.0 Hz.

Voltage Adjustment: Output Voltage of the controller is 0~220V.

Phase Difference Adjustment: Adjust the Phase Difference from -180° to 180° between each power output channel, when all channels power output frequency are same.

Automatic Voltage Regulation: The internal digital voltage regulation circuit can eliminate the feed speed variation caused by main voltage fluctuation.

Switch Sensor ON/OFF control: NPN / PNP Switch Sensor whose type can be recognized automatically or PLC can be connected to turn ON/OFF the controller.

Remote Speed Control: Power Output Voltage of the controller can be adjusted remotely by an external potentiometer, PLC or other equipment which provide 1~5V or 4~20mA DC signal.

Power Output ON/OFF Button: Start or stop the power output of controller on the control pannel.

Keypad Lock: Lock all buttons on the keypad to prevent misoperation by pressing the ON/OFF button and hold for 2 seconds.

Run state of output when controller is powered on: ON/OFF state of output (Power output or DC output) when controller is powered on can be adjusted.

DC Control Output: The controller can output low voltage DC signal associated with ON/OFF control of the controller to drive a solenoid valve or other external devices.

RS485 Communication: Support ASCII and RTU mode of Modbus protocol.

Control logic programable: Set control signal, control logic and time delay etc.

Protection Functions: Include Overheat, Short-circuit and Overcurrent are of Power Output and Control Output.

Default Settings Restoration: This function can help operator reset the parameters to the factory default value.

Basic Operation

[Short press] Press the button and hold less than 2 seconds and more than 0.1 second, then release it.

[Long press] Press the button and hold more than 2 seconds, then release it.

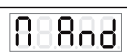
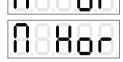
- Long Press [⚙] to enter or exit Main Output Parameter Group adjustment interface.
- Long Press [⚙] and ▲ simultaneously to enter or exit Control Output Parameter Group adjustment interface.
- Long Press [⚙], ▲ and ▼ simultaneously to enter or exit Sharing Parameter Group adjustment interface.
- After entering the parameter group adjustment interface, switch parameters in the parameter group by ▲ or ▼, and adjust parameter value by ⊕ or ⊖.
- For adjusting parameter in each channel, switch to the corresponding channel interface by short press [⚙]
- Short press [⏻] to turn on/off power output rapidly.
- Long press [⏻] to lock or unlock the keypad.
- The parameters of each channel can achieve Default Settings Restoration function respectively and the steps are as follows:

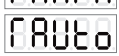
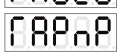
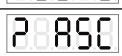
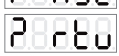
  1、Enter the parameter group adjustment interface which need to be restored and select the correspondent channel.

  2、Switch to the Default Settings Restoration parameter  by ▼.

  3、Press ⊕ and hold until the LED screen display [-----] and release ⊕, then LED screen display CUH awhile and return to the standby interface. By this time, all parameters of corresponding parameter group have been restored to default value.

Parameter Definition

Parameter Symbol	Definition	Value Range	Default Setting
	Output Voltage	0~220	150
	Output Frequency	40.0~400.0Hz	50.0
	Soft Startup	0.1~10.0 seconds	0.5
	Soft Closedown	0.1~10.0 seconds	0.1
	Phase Difference	-180°~180°	0
	On Delay	0.0~20.0 seconds	0.2
	Off Delay	0.0~20.0 seconds	0.2
	Maximum Output Voltage	0~220V	220
	Default Settings Restoration for the parameter group of each channel	——	——
	1st signal input source of main output logical operation unit 1st signal input source of control output logical operation unit **(when D port parameter indicator lights up)**	0、1、A、b、C、d、 OA、Ob、OC、Od、 -A、-b、-C、-d、 -OA、-Ob、-OC、-Od	0
	2nd signal input source of main output logical operation unit 2nd signal input source of control output logical operation unit **(when D port parameter indicator lights up)**	0、1、A、b、C、d、 OA、Ob、OC、Od、 -A、-b、-C、-d、 -OA、-Ob、-OC、-Od	Main \ Control output A（A \ OA） B（b \ Ob） C（C \ OC） D（d \ Od）
	Main utput logical unit operation mode Control output logical unit operation mode **(when D port parameter indicator lights up)**	 AND  OR  XOR  rs trigger	OR

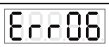
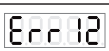
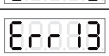
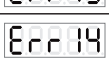
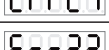
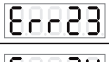
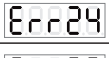
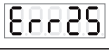
Parameter Symbol	Definition	Value Range	Default Setting
	Main Output On Delay Control Output On Delay **(when D port parameter indicator lights up)**	0.0~20.0 seconds	0.0
	Main Output Off Delay Control Output Off Delay **(when D port parameter indicator lights up)**	0.0~20.0 seconds	0.0
	Main Output Mode Control Output Mode **(when D port parameter indicator lights up)**	 Delay Mode  Hold Mode	Delay Mode
	Control Output Type **(when D port parameter indicator lights up)**	 NPN  PNP  Push-pull	Push-pull
* 	Switch Sensor Type	 NPN  Auto  PNP	Auto
* 	Power-on Operation Status	 ON  OFF  Keep	ON
* 	Modbus Communication Protocol	 ASC II  RTU	ASC II
* 	Modbus Communication Address	1~31	1
* 	Modbus Communication Baud Rate	0.3、1.2、2.4、9.6、19.2、57.6、115.2Kbps	9.6
* 	Temperature	Real time temperature read-only	

Note: The parameter with * is belong to the sharing parameter group and all the 4 channel indicators are light up.
The parameter with D port parameter indicator lighting up is control output parameter group.
The other parameters are belong to main output parameter group.

Specification

Item	Min	Typical	Max	Unit	Note
Input Voltage	85	220	250	V	AC RMS
Adjustable Output Voltage Range	0	——	220	V	
Adjustable Output Current Range	0	——	50	mA	
Single Channel Output Power	0	——	11	VA	
Voltage Adjusting Accuracy		1		V	
Voltage Regulation Precision	0	——	0.1	%	ΔVout/ΔVin
Output Frequency	40.0	——	400.0	Hz	
Frequency Adjusting Accuracy		0.1		Hz	
Output Waveform		Sine			
DC Control Output Current	0	——	200	mA	The maximum total output current of 4 channel is 500 mA.
DC Control Output Voltage	22	24	26	V	
Analog Control Signal		1~5		V	Remote Speed Control signal
		4~20		mA	
Digital Control Signal		24		V	Switching Signal
Adjusting Method		6		Button	
Standby Consumption	——	2.5	——	W	When stopping power output
Display Method		5		Digit	LED
Soft Startup Time	0.1	——	10.0	s	Default value: 0.5
Soft Closedown Time	0.1	——	10.0	s	Default value: 0.1
Delay Time Range	0	——	20.0	s	Default value: 0.2
Delay Time Accuracy		0.1		s	
Overheat Protection Trigger Temperature	60	——	65	℃	
Ambient Temperature	0	25	40	℃	No Condensation
Ambient Humidity	10	60	85	%	
Storage Ambient Temperature	-20	25	85	℃	

Troubleshooting Suggestions and Error Explanations

Error Code	Definition	Troubleshooting Methods
No display after power on		Make sure the power outlet is live Make sure the Input power Cable is reliably connected to the power outlet
Display normally, but no output		Make sure the Output Cable is reliably connected to the vibrator. Make sure the output voltage is not small. Make sure the Stop Indicator is not light up.
Control signal loses effectiveness		Make sure the control signal is correctly inputted. Make Sure the ground wire of the control signal is correctly connected to the controller. Make sure the Logical Relation of the control signals is set correctly as your expectation.
Display normally, no output, but sound can be heard		Adjust all parameters as this book instructed.
Channel indicator flashing	Internal channel misconnected	Disable the breakdown channel by Default settings Restoration in the Sharing Parameter Group. Contact our technical support for repairing the breakdown channel.
	Overheat	Place the controller in well ventilation environment.
	Reserve	Contact our technical support.
	Channel 1 Main Output Overcurrent	Reduce the output voltage and make sure the vibrator is not short circuit.
	Channel 2 Main Output Overcurrent	
	Channel 3 Main Output Overcurrent	
	Channel 4 Main Output Overcurrent	
	Channel 1 Control Output Overcurrent	Reduce power consumption of the load connected to the control output, and make sure the load is not short circuit.
	Channel 2 Control Output Overcurrent	
	Channel 3 Control Output Overcurrent	
	Channel 4 Control Output Overcurrent	
	Internal 24V Power Supply Error	Contact our technical support.
	RS Logical Error	Input signal 1 and Input signal 2 of the RS Flip-flop can't be active at the same time.