Intelligent variable-frequency controller for vibratory feeders

SDVC34-XLRH & SDVC34-URH



User manual

Legal notice

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Translation

Binder Magnetism & Engineering - Translation and adaptation in accordance with European standards. Safety symbols according to ISO 3864.

Preface

Thank you for choosing a CUH-brand controller for vibratory feeders.

This manual contains detailed instructions and explanations on the installation, parameter setting, operating mode configuration and troubleshooting of the controller. Read this manual carefully before using the controller and keep it in an accessible place for future reference.

This manual applies to the following models:

Model	Output current	Communication	Connector
SDVC34-XLRH	6.0 A	RS485	Harting 3 pins + PE
SDVC34-XLRH	6.0 A	RS485	Harting 4 pins + PE
SDVC34-URH	10.0 A	RS485	Harting 3 pins + PE
SDVC34-URH	10.0 A	RS485	Harting 4 pins + PE

Safety warnings

Safety symbols

This manual uses signs in accordance with **ISO 3864**. Read and understand each level before continuing.

DANGER
Failure to comply **will result in** serious injury or death.

WARNING
Failure to comply **may result in** serious injury or death.

CAUTION
May result in minor or moderate injury.

NOTICE
Will result in damage to the product and/or property.

IMPORTANT
Precautions and restrictions of use that must be observed.

DANGER - Risk of electric shock
Never connect or disconnect the power cables while live. Never touch the power sockets or the controller connectors, to avoid any electric shock or other accident.

DANGER - Do not open the housing
Never open the controller housing, to avoid any electric shock. In the event of a fault, contact CUH. Do not attempt to repair the controller yourself; this may void the warranty.

WARNING - Earthing required
The controller housing is earthed through the input power cable. Make sure that the power socket has a proper, functional earth connection.

WARNING - Maximum input voltage
Never connect the controller to a 380 V AC supply, as this would cause irreparable damage. If you need to work with 380 V AC, use the CUH products specifically designed for that voltage.

WARNING - Do not cut the power directly

Never switch the controller's input power on or off simply by cutting the supply with a relay, PLC or other device. This will considerably shorten the controller's service life. The controller output can also be enabled or disabled via port C or port E.

CAUTION - Operating environment

The controller is designed to operate in a cool, dry environment. Do not use it outdoors or expose it to rain or direct sunlight. Operate it within the 0-40 °C temperature range.

CAUTION - Design limits

Never operate the controller under conditions that exceed its design limits. Use the controller in accordance with the instructions in this manual. The manufacturer accepts no liability for damage resulting from improper use.

NOTICE - Equipment classification

NEMA Type 1 enclosure, IP20 degree of protection or equivalent. UL classification: Electronic Operating Control.

Operating environment

To ensure the best performance and the longest service life of the controller, observe the following conditions:

Condition	Requirement
Ventilation	Well-ventilated environment
Humidity and liquids	Away from water, steam, dust and especially oily dust
Hazardous substances	Away from corrosive or flammable gases and liquids
Particles	Away from airborne dust and metal particles
Mounting	Fix firmly to avoid vibration
Interference	Away from sources of electromagnetic interference
Ambient temperature	0-40 °C
Altitude	2000 m or lower
Location	Indoor use only
Type of action control	Type 1 or equivalent
Pollution degree	Degree 2 or equivalent
Rated impulse voltage	2500 V, overvoltage category II

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Chapter I - Features

The controller has been specially designed to drive vibratory feeders in automation systems.

Main functions

- **Automatic frequency modulation (Auto FM):** real-time automatic modulation of the output frequency to ensure that the vibratory feeder always operates at its optimum resonant frequency.

- **Automatic constant-speed control:** real-time automatic adjustment of the output voltage to maintain a constant feed rate, regardless of the variation in material weight in the feeder.

- **Automatic frequency measurement:** the controller automatically measures the feeder's best vibration frequency and configures all associated parameters.
- **Automatic output voltage regulation:** eliminates feed-rate variations caused by mains voltage fluctuations and the beat effect caused by the industrial mains frequency.

- **Waveform synchronisation:** synchronises the output waveforms of the slave controllers with that of the master controller (frequency and phase) to avoid the beat effect.
- **Remote start/stop control:** 2 digital input ports for switching sensors or PLC.
  Setting of the soft start time, on/off delays and logic relationship.

- **Automatic sensor type recognition: automatic adaptation to NPN and PNP sensors.**
- **Soft start (Soft Startup):** progressive increase of the output voltage/feed rate from 0 to the preset value.

- **Preset speeds:** up to 4 feed rates that can be stored and recalled via external switching signals.

- **Acceleration:** maximum output voltage of up to 150 % of the input voltage.
- **Adjustable maximum output voltage:** protects the feeder against excessive voltages.
- **Waveform index:** balance between efficiency and maximum power.
- **Remote speed control:** via external potentiometer, PLC or 1-5 V / 4-20 mA DC signal.
- **24 V NPN output:** for solenoid valve, electrical relay or status signal.
- **Keypad lock:** hold ON/OFF for 2 s.
- **Parameter lock:** by user-defined password.
- **Controller reset:** restores factory settings.
- **RS485 communication:** remote setting of all parameters.

Self-protection functions

Short-circuit protection

In the event of a short circuit at the output, the controller will stop its output and display **Err01** on the LED screen until it is restarted.

Overcurrent protection

If the output current exceeds its rated value, the controller will stop its output and display **Err02**.

Overheating protection

If the internal temperature exceeds 65 °C, the controller will stop its output and display **Err03**. The output resumes when the temperature falls below 60 °C.

Overload protection

With the vibration sensor connected, if the amplitude exceeds the Maximum Amplitude Index (P), the controller will reduce its output.

Overvoltage protection

If the input voltage greatly exceeds the rated range, the internal fuse will blow. Contact CUH for repair.

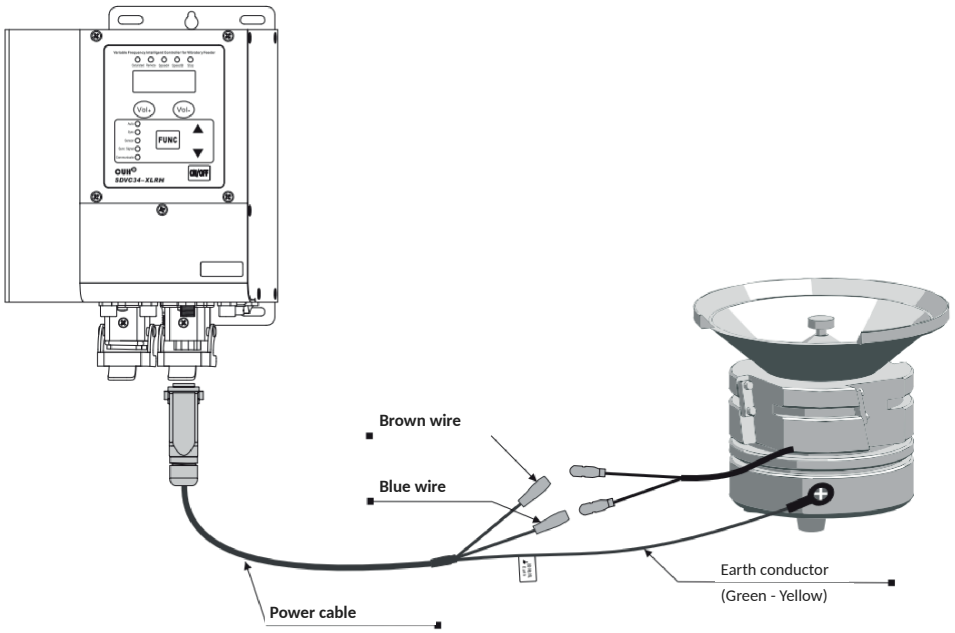
Chapter II - Installation guide

Step 1 - Unpacking and inspection

Open the packaging and check that the controller and all accessories are present and in good condition.

Step 2 - Connecting the output cable

Connect the vibratory feeder power cable to the controller output connector.



WARNING - Output connection

1. The electromagnetic coils of the vibrator must be connected to the two output pins. The metal housing of the vibrator must be reliably earthed.
2. Connecting piezoelectric loads to the controller is prohibited; this could cause an electric shock.

Step 3 - Connecting the input cable to the power socket

Make sure that the switch is in the off position. Plug the input cable into the power socket.

DANGER - Connection order

Always connect the controller side first before plugging into the power socket.

Step 4 - Connecting the input cable to the controller

Connect the input cable connector to the controller input connector.

Pin definition - Input connector

Pin	Function
PE	Protective earth
1	Phase (L)
2	Neutral (N)
3	Not connected (NC)

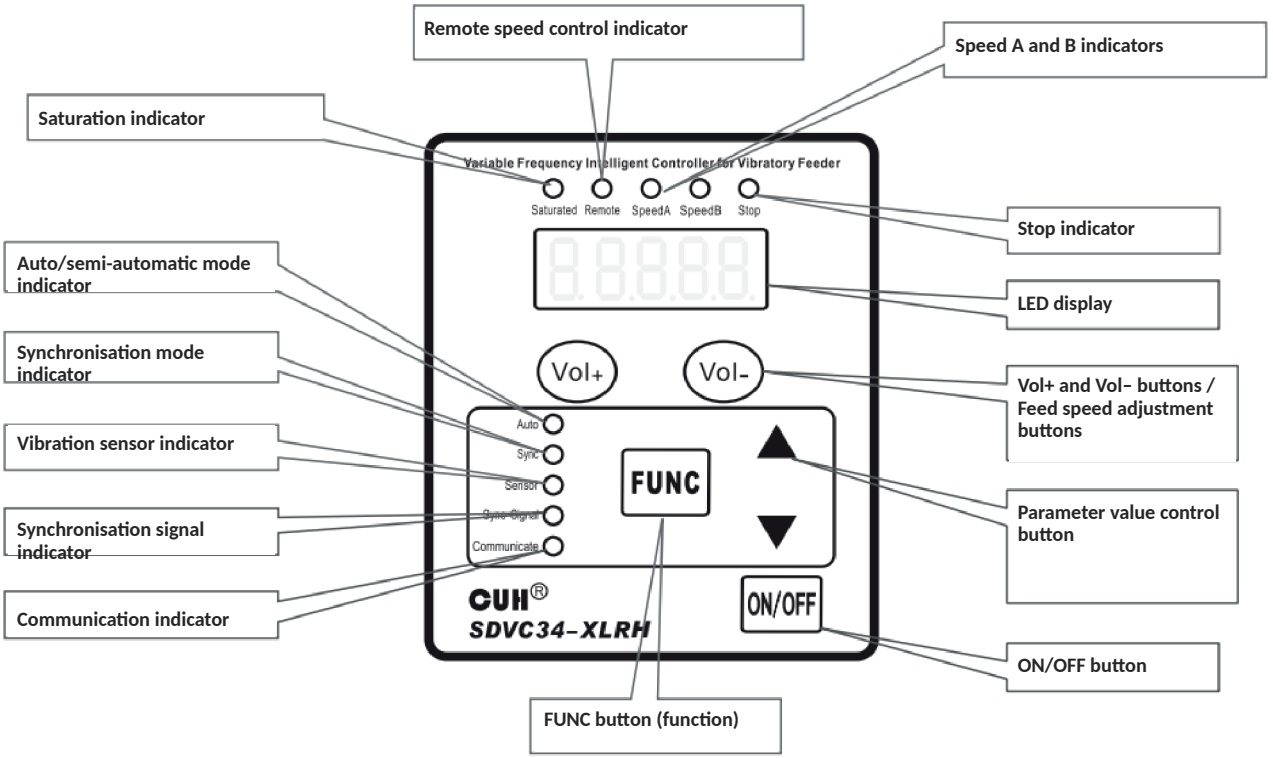
Pin definition - Output connector (by variant)

Variant	Output pins	NC
SDVC34-XLRH (3b+PE)	PE-Earth | 1, 2-Output	3
SDVC34-XLRH-A	PE-Earth | 1, 2-Output	3, 4
SDVC34-XLRH-B	PE-Earth | 2, 3-Output	1, 4
SDVC34-XLRH-C	PE-Earth | 2, 4-Output	1, 3
SDVC34-XLRH-D	PE-Earth | 1, 4-Output	2, 3

Variant	Output pins	NC
SDVC34-XLRH-E	PE-Earth | 1, 3-Output	2, 4
SDVC34-XLRH-F	PE-Earth | 3, 4-Output	1, 2

Chapter III - Operating interface and wiring

3.1 Keypad



Indicator lights - Top row

Indicator	Original	Function
Saturation	Saturated	Lights up when the preset output voltage exceeds the input voltage that the controller can maintain.
Remote control	Remote	Lights up when the external speed control signal is active. The Vol+/Vol- buttons are disabled.
Speed A	Speed A	Lights up when the corresponding signal is connected to the G ports.
Speed B	Speed B	Lights up when the corresponding signal is connected to the G ports.
Stop	Stop	Lights up when the controller stops its output.

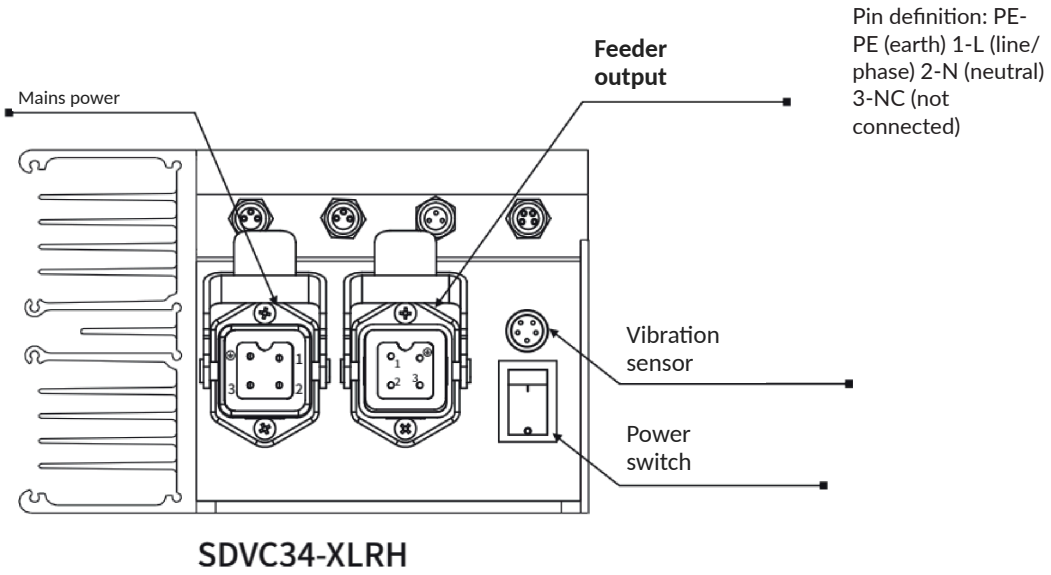
Indicator lights - Left column

Indicator	Original	Function
Auto/Semi-automatic	Auto	Lights up in automatic or semi-automatic mode.
Synchronisation	Sync	Lights up in synchronisation mode.
Vibration sensor	Sensor	Lights up when the vibration sensor is connected.
Synchronisation signal	Sync Signal	Lights up when the synchronisation signal is connected to the slave.
Communication	Communicate	Flashes when the RS485 ports are communicating.

Display and buttons

Element	Original	Function
LED display	LED Screen	Shows the parameter and its value.
Vol+ / Vol-	Vol+ / Vol-	Manual: voltage adjustment. Auto/Semi-automatic: speed adjustment.
FUNC	FUNC	Cycles through the parameters.
▲ / ▼	▲ / ▼	Adjust the value of the displayed parameter.
ON/OFF	ON/OFF	Enables/disables the output. Also used to lock the panel.

3.2 Input/output panel



Element	Description
Mains Power	AC power input connector.
Power Switch	Main on/off switch.
Power Output	Output connector. Pins by variant (see Ch. II).
Vibration Sensor	SDVS connector. Connect/disconnect only with the controller switched off.

3.3 Digital input/output ports

Port A - Remote speed control (Speed Ctrl)

Pin	Designation	Function
A1	RGND	Analogue reference ground
A2	Input	Analogue signal input (1-5 V or 4-20 mA)
A3	+5V	+5 V supply for potentiometer

Port C - Sensor input (Sensor)

Pin	Designation	Function
C1	GND	Ground (0 V)
C2	Input	Signal input (NPN or PNP)
C3	+24V	+24 V supply for sensor

Port D - 24 V NPN output (Ctrl Out)

Pin	Designation	Function
D1	Output	NPN output (open collector)
D2	+24V	+24 V output supply

Port E - Sensor input II (Sensor II)

Pin	Designation	Function
E1	GND	Ground (0 V)
E2	Input	Signal input (NPN or PNP)
E3	+24V	+24 V supply

Port F - RS485 communication

Pin	Designation	Function
F2	A+	RS485 signal A+
F3	GND	Communication ground
F4	B-	RS485 signal B-

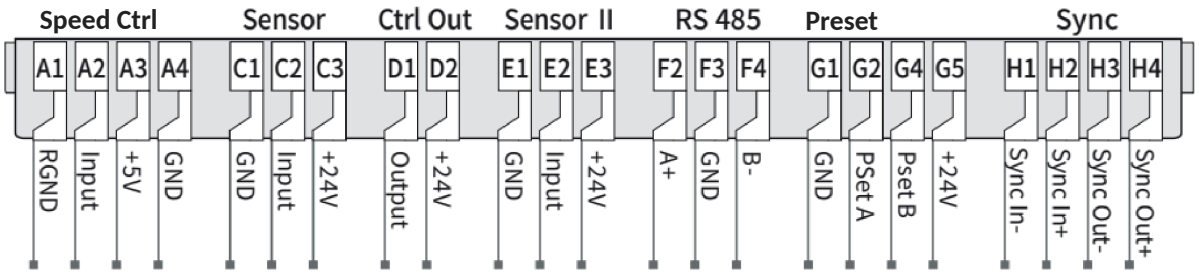
Port G - Preset speeds (Preset)

Pin	Designation	Function
G1	GND	Ground (0 V)
G2	Pset A	Preset speed input A
G3	GND	Ground (0 V)
G4	Pset B	Preset speed input B
G5	+24V	+24 V supply

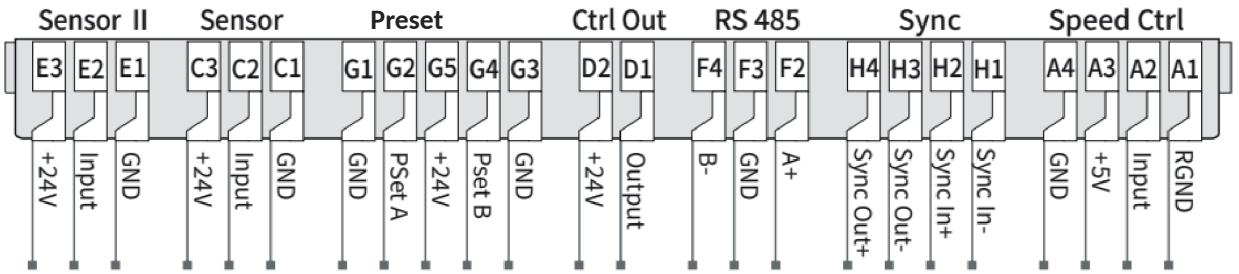
Port H - Synchronisation (Sync)

Pin	Designation	Function
H1	Sync In-	Synchronisation input (-)
H2	Sync In+	Synchronisation input (+)
H3	Sync Out-	Synchronisation output (-)
H4	Sync Out+	Synchronisation output (+)

SDVC34-XLRH:



SDVC34-URH:



Chapter IV - Parameter setting

The controller parameters are classified into 4 types according to how they are accessed: common parameters, basic parameters, advanced parameters and Auto/Synchronisation parameters.

4.1 Common parameters

Accessing the common parameters

Press **Vol+** or **Vol-** to adjust the common parameters. These buttons can be used even when another parameter is shown on the LED display. The controller returns to the previous parameter after adjustment.

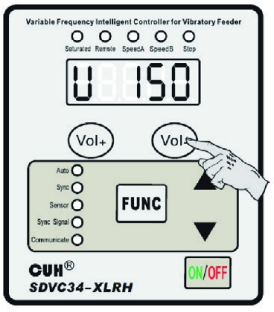
Symbol	Parameter	Range	Default
U	Output voltage (Output Voltage)	0-260 V	150
A	Feed speed (Feed Speed)	0-3200	200
Lock	Keypad lock (Keypad Lock)	-	-

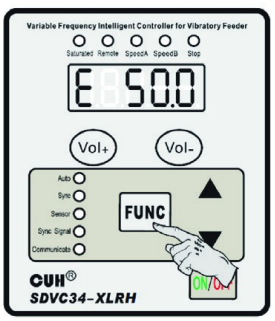
4.2 Basic parameters

Accessing the basic parameters

Hold **FUNC** for 2 seconds to enter. Press ▲ or ▼ to adjust. Hold **FUNC** for 2 s to exit.

Symbol	Parameter	Range	Default
E	Output frequency (Output Frequency)	25.0-400.0 Hz	50.0
J	Port C on delay	0.0-20.0 s	0.2
L	Port C off delay	0.0-20.0 s	0.2
S	Soft start time	0.0-10.0 s	0.5





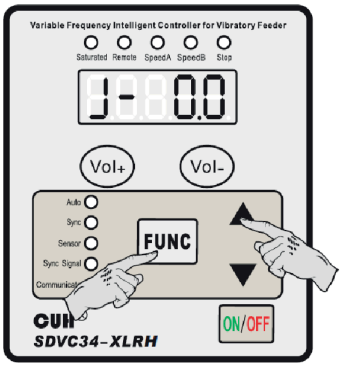
4.3 Advanced parameters

Accessing the advanced parameters

Hold **FUNC** and ▲ simultaneously for 2 seconds to enter. Press **FUNC** to navigate. Press ▲ or ▼ to adjust. Hold **FUNC** and ▲ for 2 s to exit.

Symbol	Parameter	Range	Default
J-	Port E on delay	0.0-20.0 s	0.0 (= J)
L-	Port E off delay	0.0-20.0 s	0.0 (= L)
Г2	Port C logic relationship	--- Positive logic · --- Negative logic	Positive
Г7	Port E logic relationship	--- Positive logic · --- Negative logic	Positive
Г3	24 V NPN output logic relationship	--- Positive · --- Negative · ⊢ Alarm signal	Positive
Г4	Power output logic operation	--- Positive logic · --- Negative logic	Positive
Г8	24 V NPN output logic operation	--- Main logic · --- Secondary logic · --:- Config. 2nd logic	Main
ГА	Digital input type	Uto Auto · nPn NPN · PnP PNP	Uto
П	Logic relationship between Port C and E	And And · Or Or · Xor Xor	And
h	Adjustable maximum output voltage	0-260 V	260
e.	Output frequency lower limit	25.0-390.0 Hz	40.0
y	Acceleration index	100-150 %	120
r	Waveform index	0-100	100
C	Temperature display	-10.0-80.0 °C	Read only
P.	Communication protocol	ASC ASCII · rtu RTU	rtu
d.	Communication address	1-31	1

Symbol	Parameter	Range	Default
c.	RS485 baud rate	0.3-115.2 kbps	9.6
-F	Lock password	0-999	-
Гd	Power-on state	--- Run · --- Stop · -:- Follow previous state	Run
Ur	Software version	Read only	Current version
88888	Controller reset	-	-



Explanation of the advanced parameters

Adjustable maximum output voltage (h): Range 0-260 V. Limits the maximum voltage to protect the feeder. Remote speed control is also affected.

Frequency lower limit (ē): Range 25.0-390.0 Hz. Sets the minimum output frequency.

Acceleration index (y): Maximum percentage of the output voltage relative to the input voltage. It will not exceed the value of parameter h.

Waveform index (r): Balance between maximum efficiency, maximum power and minimum noise.

Output logic operation (Γ8): Logic relationship between the power output and the 24 V NPN output.

Temperature display (C): Real-time internal temperature. Read only.

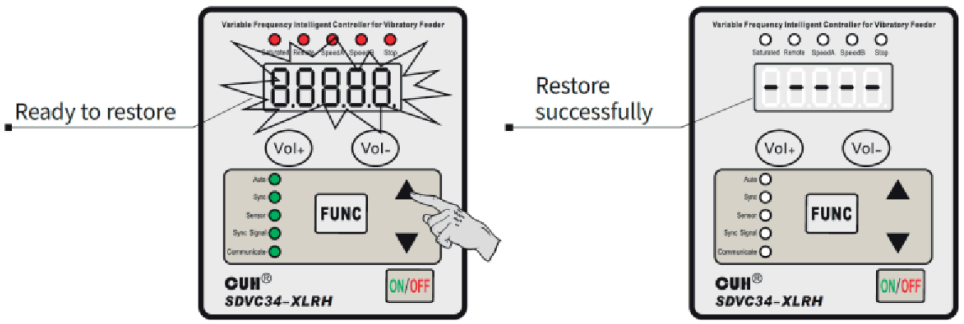
Lock password (-F): Locks all parameters except U and A. Remains active after power off/on.
The display will request the password when accessing the advanced parameters.

Power-on state (Γd): Run, stop or follow the previous state.

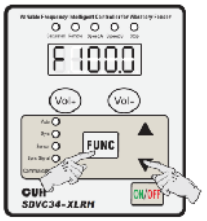
Software version (Ur): Read only.

Controller reset procedure

1. Hold **FUNC** and ▲ for 2 s → advanced parameters.
2. Press **FUNC** until **8.8.8.8.8.** is shown flashing.
3. Hold ▲ until the display stops flashing (ready to restore).
4. Release ▲. The display will show **U150** (factory settings).



4.4 Auto/Synchronisation parameters



Accessing the Auto/Synchronisation parameters

Hold **FUNC** and ▼ simultaneously for 2 seconds to enter. Press **FUNC** to navigate. Press ▲ or ▼ to adjust. Hold **FUNC** and ▼ for 2 s to exit.

Symbol	Parameter	Range	Default
Г5	Voltage adjustment method	--- Manual · --- Auto	Auto
Г6	Frequency adjustment method	--- Manual · --- Auto · sync Sync	Auto
F	Centre frequency	25.0-400.0 Hz	100.0
n	Max. deviation in automatic FM	0.0-180.0 Hz	30.0
IF	Automatic frequency adjustment index	0-200	20
PA	Amplitude index (proportional)	0-999	60
IA	Amplitude index (integral)	0-999	50
d	Speed display (read only)	-	-
G	Voltage display (read only)	-	-
GL	Voltage lower limit	0-h (V)	0
ē	Frequency lower limit	25.0-400.0 Hz	25.0
P	Maximum amplitude index	0-500	500
H	Adjustable maximum speed	0-3200	1500
φ	Phase difference	-180-180°	0
b	Max. automatic measurement voltage	0-260 V	100
SP	Frequency search speed	1-5	5
c	Minimum speed adjustment increment	1-10	1
⊢	Vibration sensor number	0.1,2.3,4.203-206	205

Explanation of the Auto/Synchronisation parameters

Voltage adjustment method (Γ5):

- Γ5 = **Manual**: parameter U visible, A hidden. Voltage adjusted manually.
- Γ5 = **Auto** + sensor connected: parameter A visible, U hidden. Voltage adjusted automatically.

> **NOTICE**
> With no sensor connected, even if Γ5 = Auto, parameter U remains visible and adjustable.

Frequency adjustment method (Γ6):

- Γ6 = **Manual**: frequency E adjusted manually.
- Γ6 = **Auto** + sensor: frequency automatically adjusted to resonance.
- Γ6 = **Sync** + synchronisation cable: slave frequency = master frequency.

> **NOTICE**
> With no sensor connected, even if Γ6 = Auto, the frequency is adjusted manually.

Centre frequency (F): set it close to resonance to find it faster.

Max. deviation in automatic FM (n): range = (F ± n) Hz. Recommended: ≈ 30 Hz.

Automatic frequency adjustment index (IF): PID integration. The higher, the faster. Too high → oscillations.

Proportional amplitude index (PA): PID voltage proportion. The higher, the faster. Too high → oscillations.

Integral amplitude index (IA): PID voltage integration. The higher, the faster. Too high → oscillations.

GL and ē limits: with Γ3 = “alarm signal” and automatic mode active: if voltage < GL or frequency < ē → 24 V NPN output active (D1 low). Otherwise → inactive (D1 high impedance).

Maximum amplitude index (P): limits the maximum amplitude of the feeder.

Adjustable maximum speed (H): range: 0 to H. Remote speed control is also affected.

Phase difference (φ): phase of the output wave. Default: 0°.

Max. automatic measurement voltage (b): protects the feeder during measurement.

Search speed (SP): the higher, the faster. Range: 1-5.

Minimum speed adjustment increment (c): increment per press of Vol+/Vol-. Range: 1-10.

Vibration sensor (⊢): compatible with 8 models:

Value	Model	X/Y/Z axes
1	SDVS20-1	16g / 16g / 16g
4	SDVS20-4	70g / 70g / -
203	SDVS203	8g / 8g / 8g
204	SDVS204	16g / 16g / 16g
205	SDVS205	32g / 32g / 32g
206	SDVS206	64g / 64g / 64g

Chapter V - Operating modes

The controller can be set to one of the following four modes:

Mode	Voltage (U) - Г5	Frequency (E) - Г6
Manual	Manual - Manual	Manual - Manual
Automatic	Automatic - Auto	Automatic - Auto
Semi-automatic	Automatic - Auto	Manual - Manual
Synchronisation	Manual or Auto	Sync with master - Sync

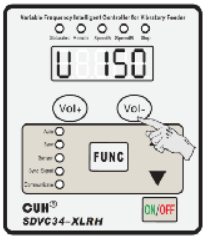
By default, Г5 and Г6 set to Auto. No sensor → manual. With sensor → automatic.

5.1 Manual mode

Voltage and frequency adjusted manually.

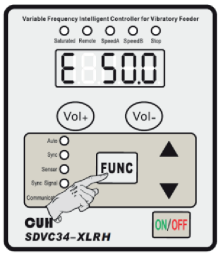
- No sensor connected → always manual mode.
- If Г5 and Г6 are set to Manual → manual mode regardless of the sensor.

5.1.1 Adjusting the voltage in manual mode



1. Switch on with no sensor connected.
2. The display shows **U** and its value.
3. Adjust with **Vol+** / **Vol-**.

5.1.2 Adjusting the frequency in manual mode



1. Hold **FUNC** 2 s → basic parameters.
2. The display shows **E** and its value.
3. Adjust with ▲ / ▼ (no sensor).

5.2 Automatic mode

Sensor required. Voltage and frequency adjusted automatically. Not manually adjustable.

NOTICE
No sensor → manual mode.

5.2.1 Installing the vibration sensor

Wiring

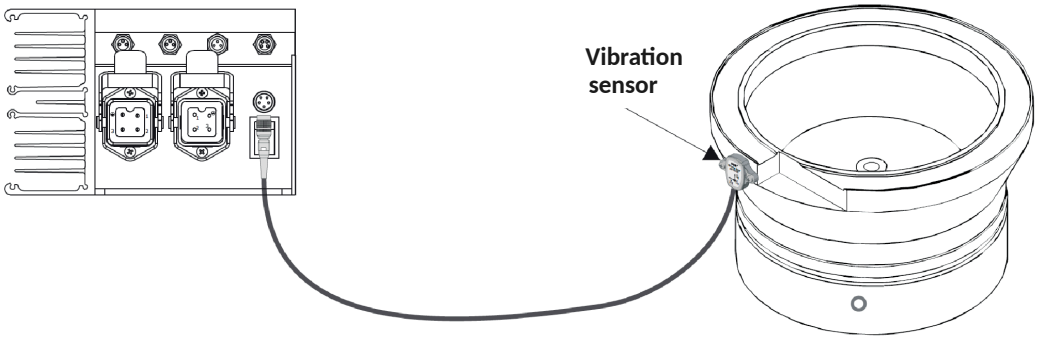
Connect the sensor to the controller connector.

CAUTION
Connect/disconnect only with the controller switched off.



Installation guide

Fix on a smooth surface of the vibrator. Any orientation.



Method 1: Direct mounting. **Method 2:** With screw. **Method 3:** With welded bracket.

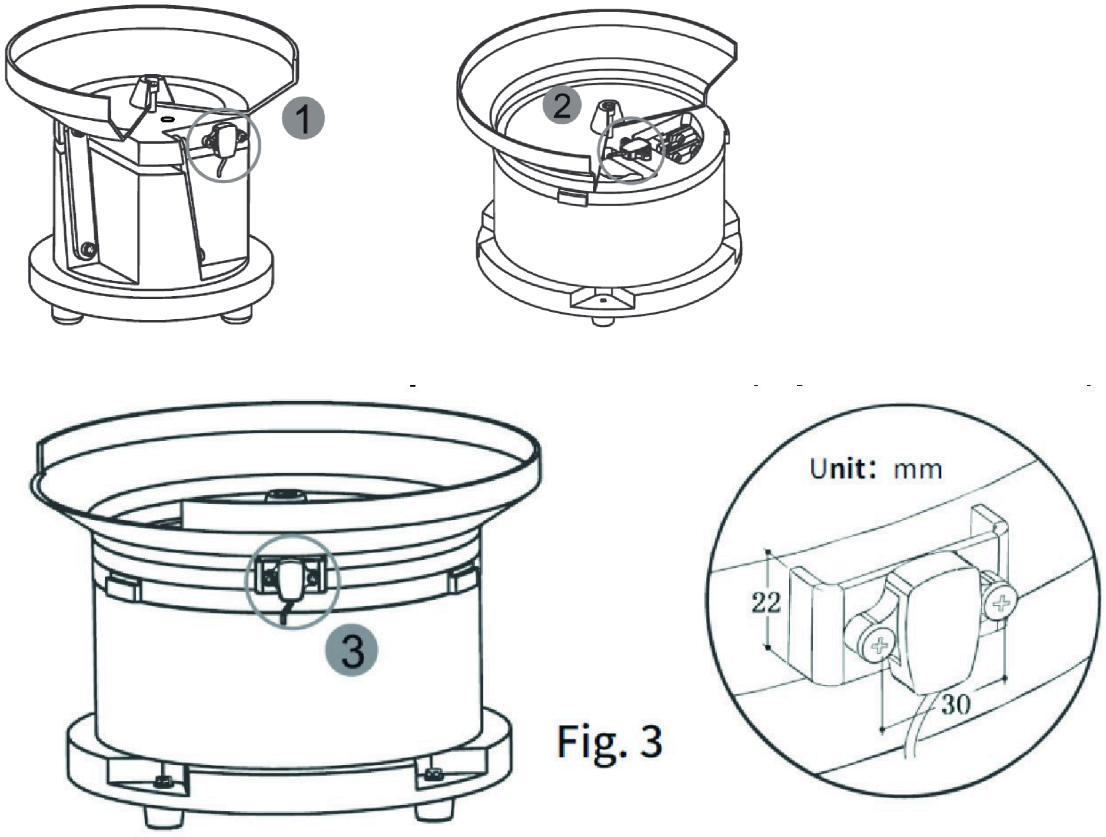


Fig. 3

> **WARNING**
> - Do not leave the sensor pressed by the feeder bowl.
> - Unsuitable location → endless frequency search.

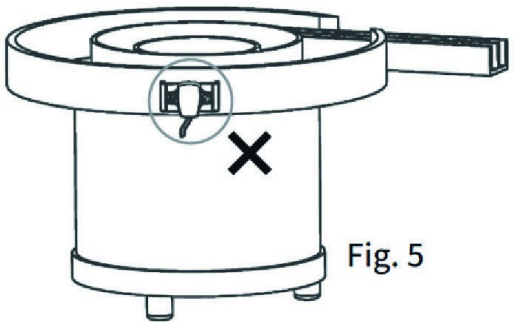


Fig. 5

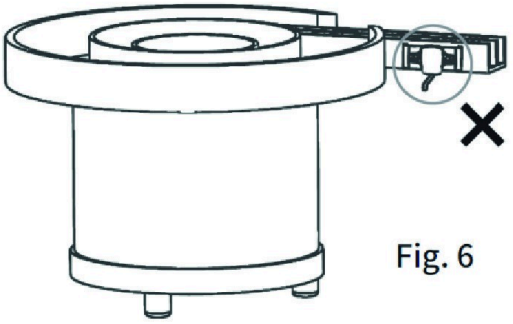


Fig. 6

5.2.2 Adjusting the speed in automatic mode

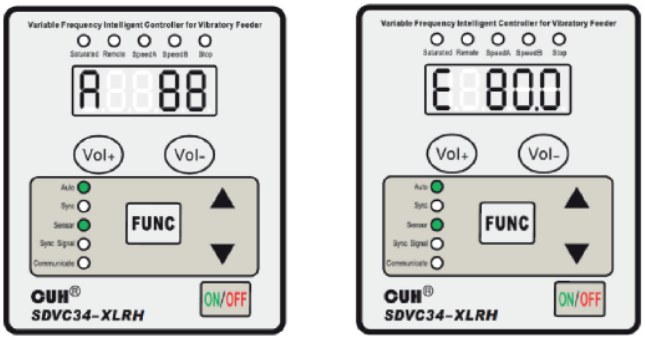
1. Switch on with the sensor connected. Sensor indicator on.

2. The display shows **A** and its value.
3. Adjust with **Vol+** / **Vol-**.

5.2.3 Automatic frequency measurement

1. Hold ▲ and ▼ for 3 s with the sensor connected. The display shows **E** during the process.
2. When finished: F, n, IF, PA, IA, φ, Γ5 and Γ6 (both Auto) are configured.

> **NOTICE**
> - Err02 at the start = normal if b is too high.
> - Cancel: press **ON/OFF**.

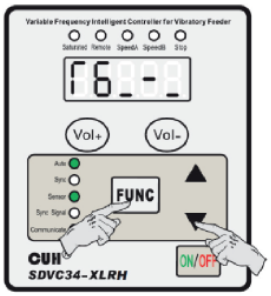


5.3 Semi-automatic mode

Sensor connected + Г6 = Manual. Automatic voltage. Manual frequency.

> **NOTICE**
> No sensor → manual mode.

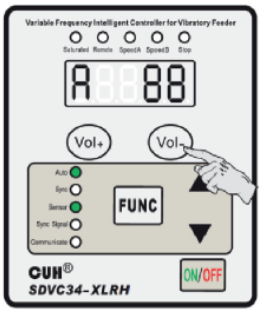
5.3.2 Configuration



1. Switch on with the sensor connected.
2. Hold **FUNC** + ▼ 2 s → Auto/Sync parameters.
3. Navigate to **Г6**.
4. Set Г6 to **Manual**.

5.3.3 Adjusting the speed

Adjust A with **Vol+** / **Vol-**.

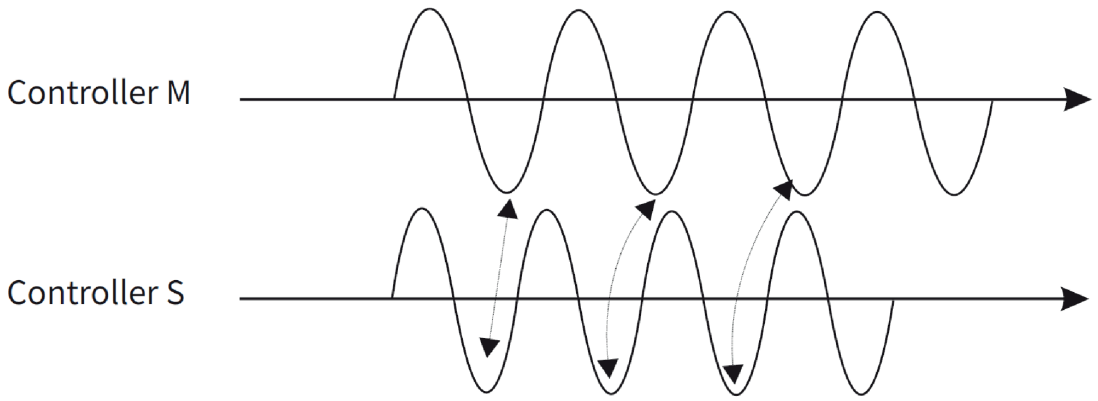


5.3.4 Adjusting the frequency

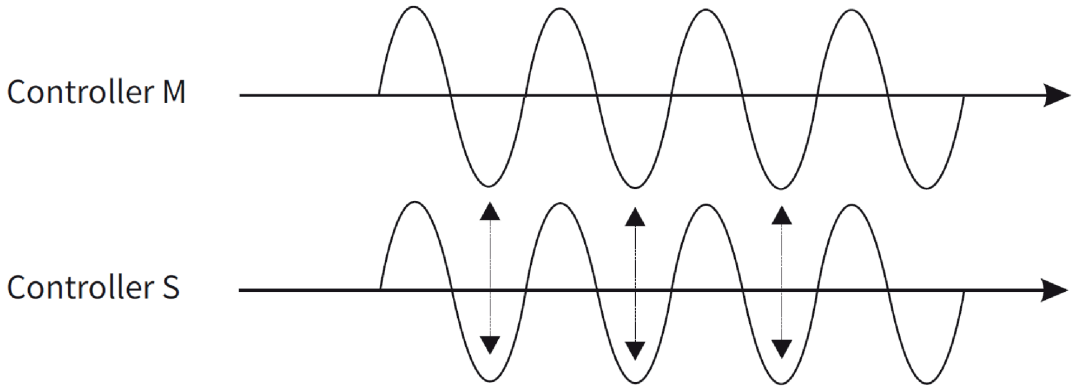
1. Hold **FUNC** 2 s → basic parameters.
2. The display shows **E**.
3. Adjust with ▲ / ▼.

5.4 Synchronisation mode

Synchronisation cable between master and slave. Slave frequency = master. Slave voltage: manual or automatic.

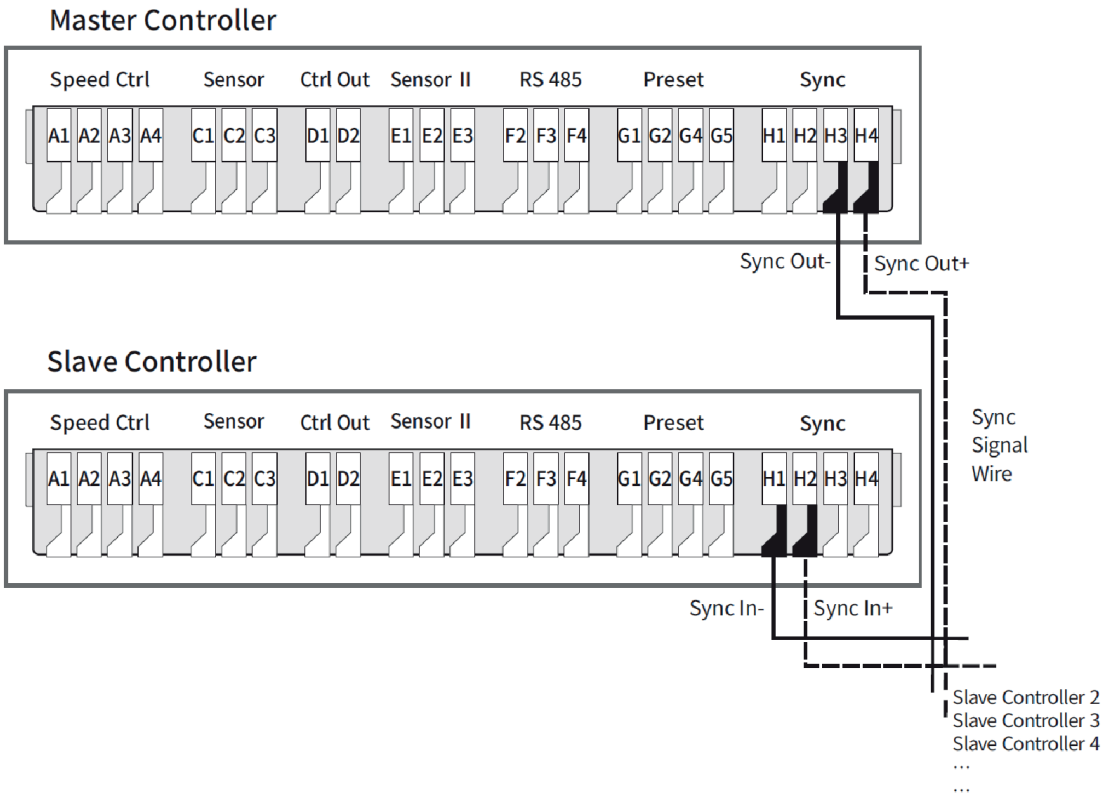


Eliminates the beat effect by synchronising the waveforms.



5.4.1 Synchronisation wiring

1. Open the signal port covers of both controllers.
2. Master **Sync Out+** → slave **Sync In+** | master **Sync Out-** → slave **Sync In-**.

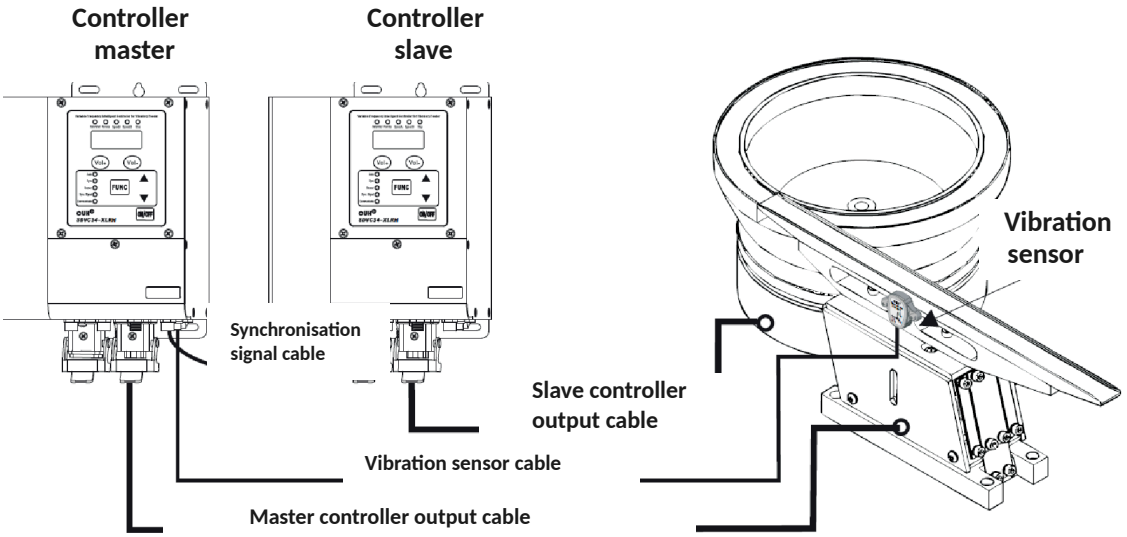


WARNING

The slave will stop its output if the synchronisation signal is unstable or not connected.

5.4.2 Applications - 6 sub-configurations

No.	Master U	Master E	Slave U	Slave E	Sensor
1	Manual	Manual	Manual	Sync	No
2	Auto	Auto	Manual	Sync	Master
3	Auto	Auto	Auto	Sync	Master
4	Manual	Manual	Auto	Sync	Slave
5	Auto	Auto	Auto	Sync	Both
6	Auto	Manual	Auto	Sync	Both, indep.



Chapter VI - Signal control

Signal control includes: start/stop control via Port C, start/stop control via Port E, remote speed control, storing and recalling preset speeds, RS485 communication and 24 V DC NPN output.

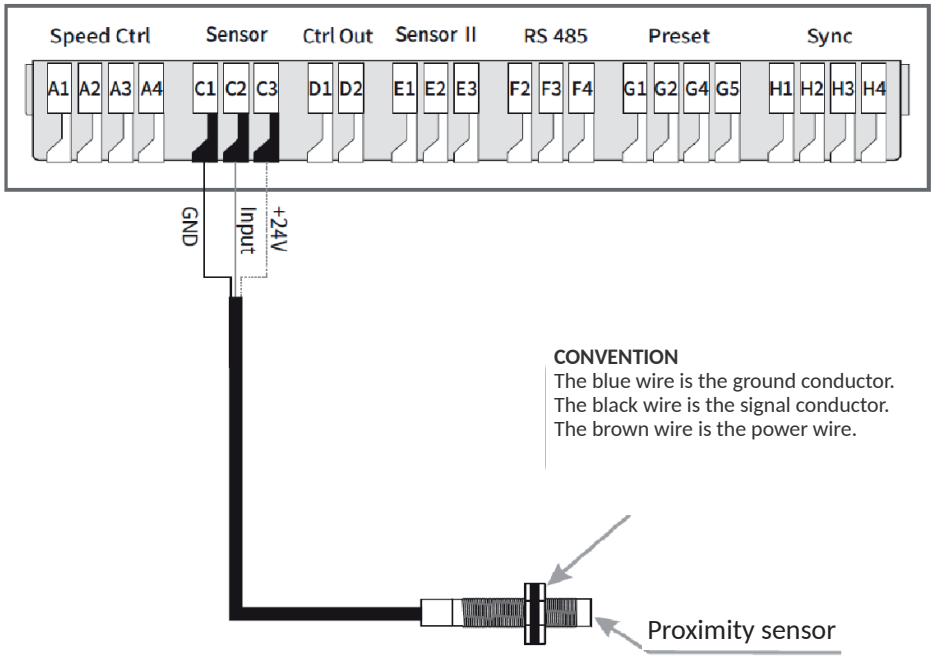
6.1 PNP/NPN input - Port C

The controller output can be switched on or off by any type of switching sensor or PLC via Port C.

6.1.1 Port C wiring method

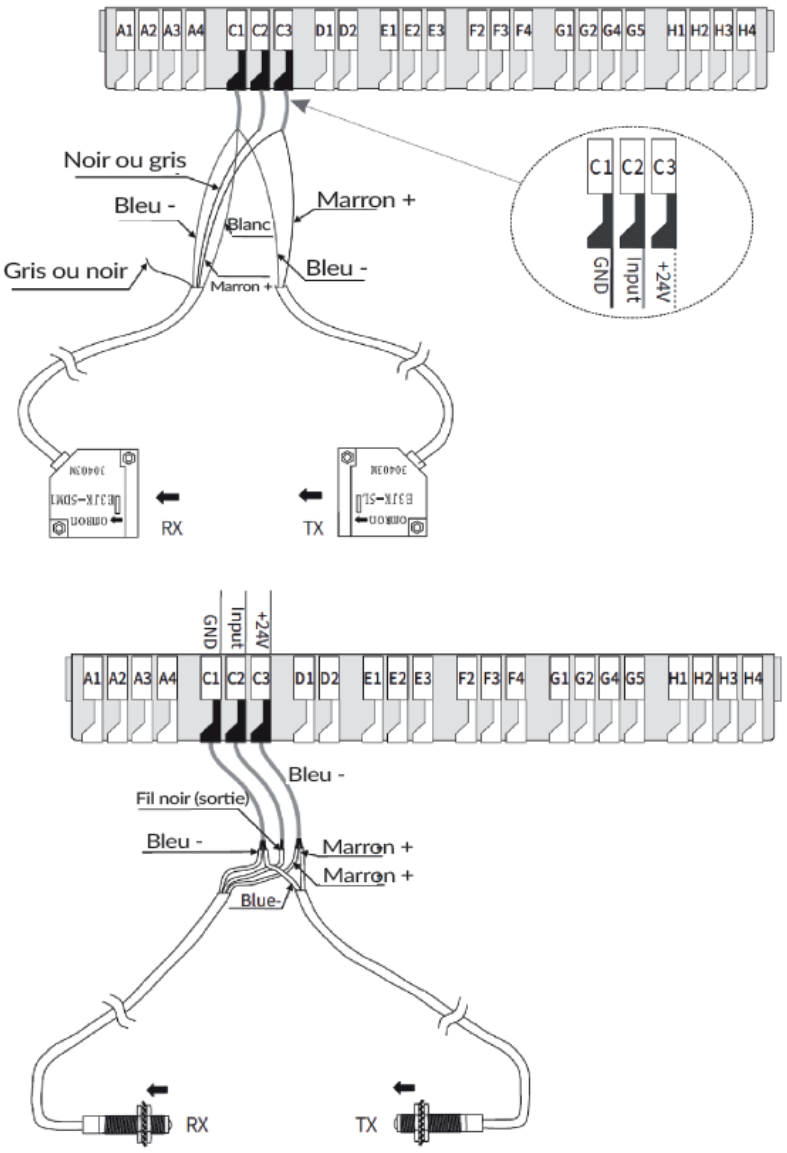
Wiring with proximity sensor

1. Open the signal port covers of the controller.
2. Connect the proximity sensor to Port C: **C1** = GND · **C2** = Input · **C3** = +24 V.



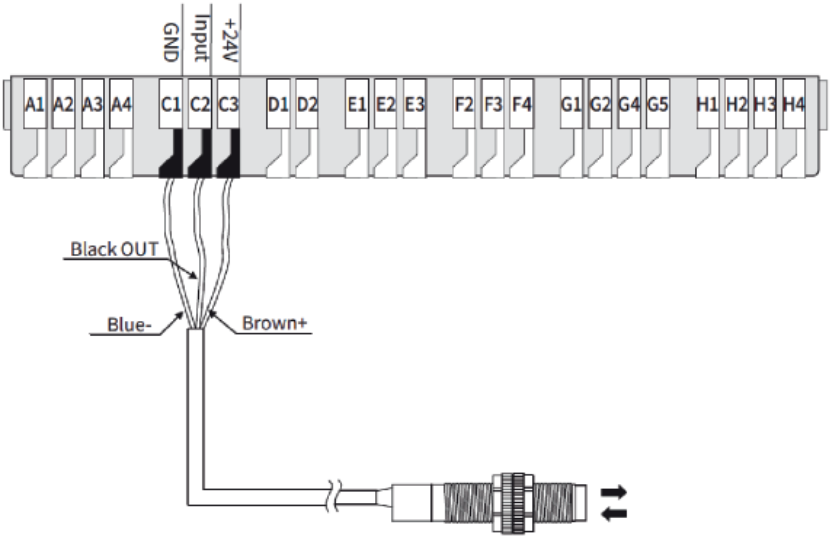
Wire colour	Function
Brown	Power wire (+)
Black	Signal wire
Blue	Ground wire (-)

Wiring with through-beam photoelectric sensor

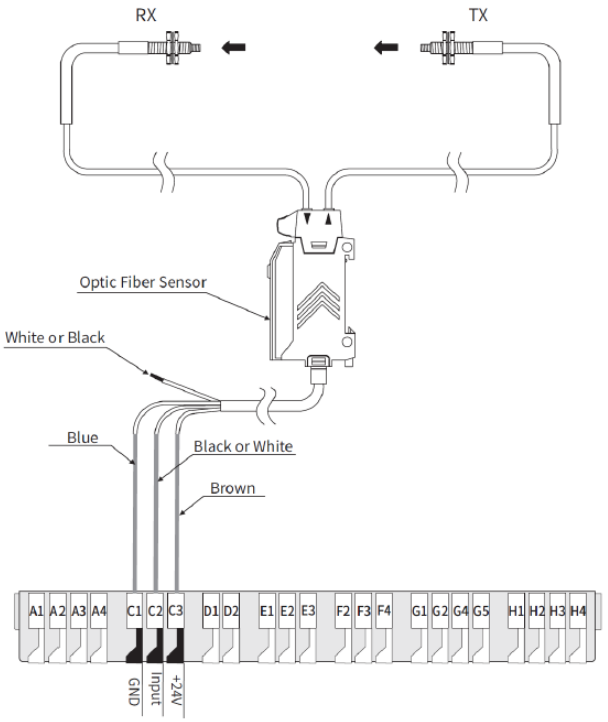


Wiring with reflective photoelectric sensor

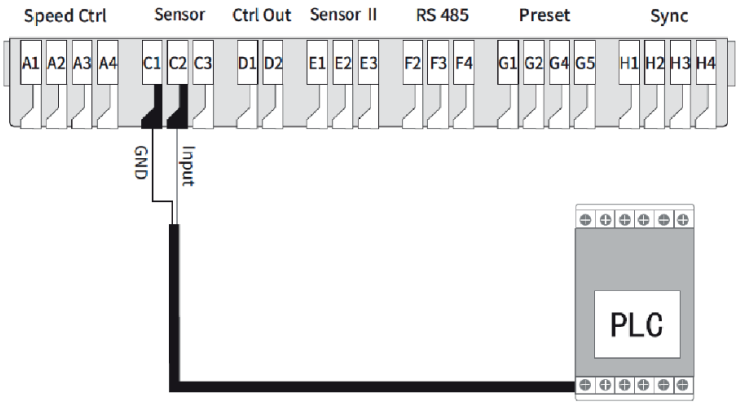
Black (OUT) Signal wire (output)



Wiring with fibre-optic sensor

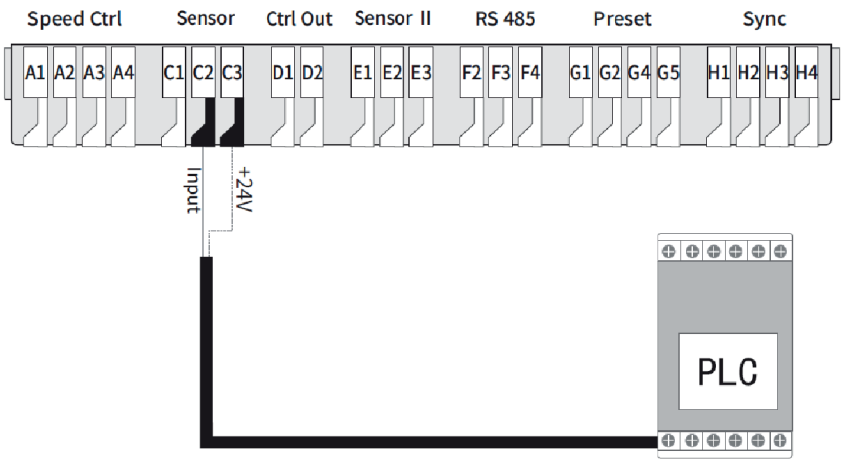


Wiring with PLC



NOTICE

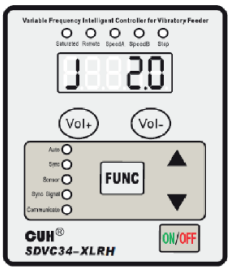
- The PLC relay output, NPN output and PNP output are all valid for switching the controller on/off. Use a PLC with a 24 V output.
-



6.1.2 Port C on/off delay

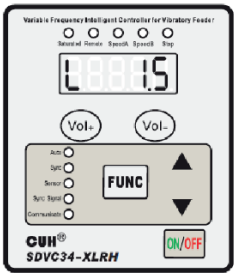
On delay (J): time between receiving the Port C on signal and the start of the output.

1. Hold **FUNC** 2 s → basic parameters.
2. Navigate to parameter **J**.
3. Adjust with ▲ or ▼. Unit: seconds. Resolution: 0.1 s.



Off delay (L): time between receiving the Port C off signal and the stopping of the output.

1. Hold **FUNC** 2 s → basic parameters.
2. Navigate to parameter **L**.
3. Adjust with ▲ or ▼. Unit: seconds. Resolution: 0.1 s.

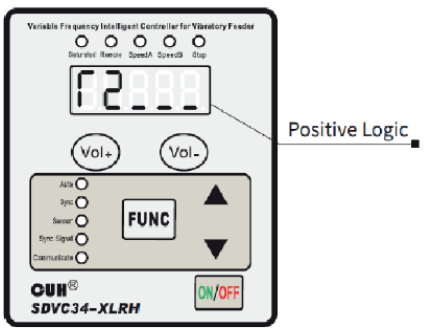


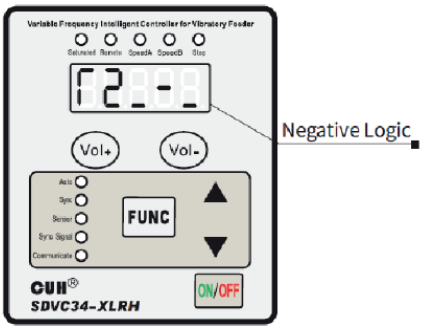
6.1.3 Port C start/stop control logic relationship

By default, the controller runs when Port C receives no signal. Set parameter **Г2** to reverse this behaviour:

1. Hold **FUNC** and ▲ 2 s → advanced parameters.
2. Navigate to **Г2**.
3. Change the logic relationship with ▲ or ▼.

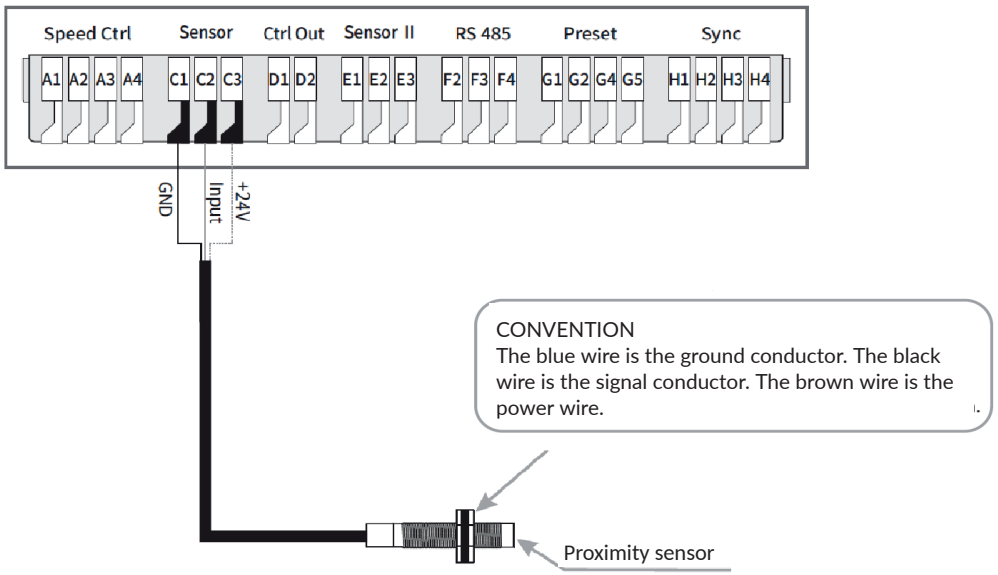
Г2 setting	Behaviour
Positive logic (default)	Output **on** when Port C receives no signal.
Negative logic	Output **off** when Port C receives no signal.





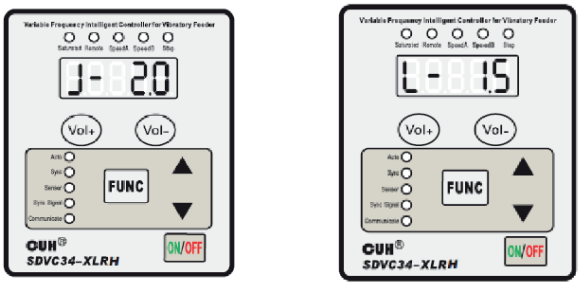
6.2 PNP/NPN input - Port E

Works independently of Port C. The wiring methods are the same.



6.2.2 Port E on/off delay

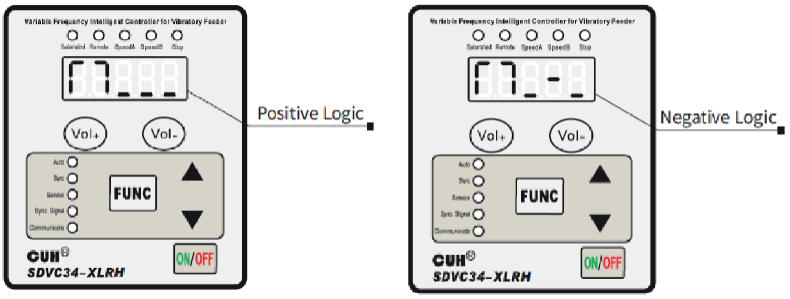
By default, identical to Port C. Can be set independently with **J-** and **L-** in the advanced parameters (**FUNC** + ▲ for 2 s).



6.2.3 Port E logic relationship

Parameter **Γ7** in the advanced parameters:

Γ7 setting	Behaviour
Positive logic (default)	Output **on** when Port E receives no signal.
Negative logic	Output **off** when Port E receives no signal.

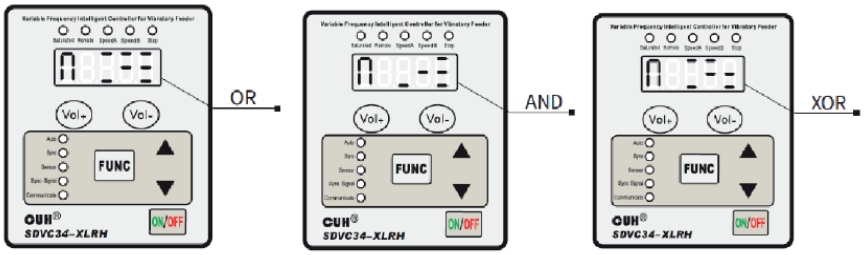


6.3 Common parameters of Ports C and E

6.3.1 Logic relationship between Port C and Port E

Parameter **Π** determines the response when both ports are active:

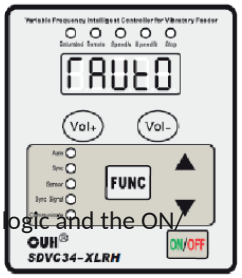
Logic relationship	Behaviour
AND (default)	Output ON only when **both** ports require it.
OR	Output ON when **either** (or both) requires it.
XOR	Output ON only when **one** requires run and the other stop.



6.3.2 Digital input type

Parameter **ГА** in the advanced parameters:

Value	Meaning
Auto (default)	Automatic NPN/PNP recognition
NPN	NPN-type digital input
Main logic (default)	Power output and 24 V NPN output linked. Controlled by the Port C/E logic and the ON/OFF button.



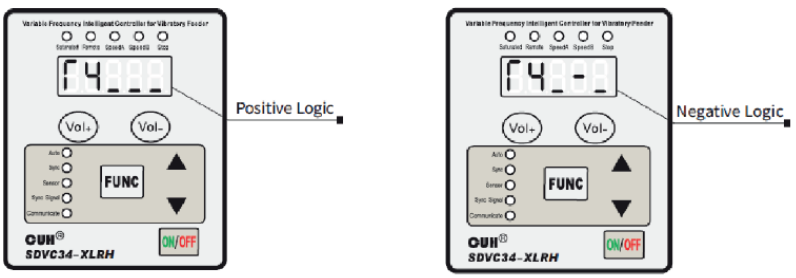
Behaviour

PNP-type digital input

6.3.3 Power output logic operation

Parameter **Г4** in the advanced parameters:

Setting	Behaviour
Main logic (default)	Power output and 24 V NPN output linked. Controlled by the Port C/E logic and the ON/OFF button.
Second logic	Separate. Power: ON/OFF button. 24 V NPN: Port C/E logic.



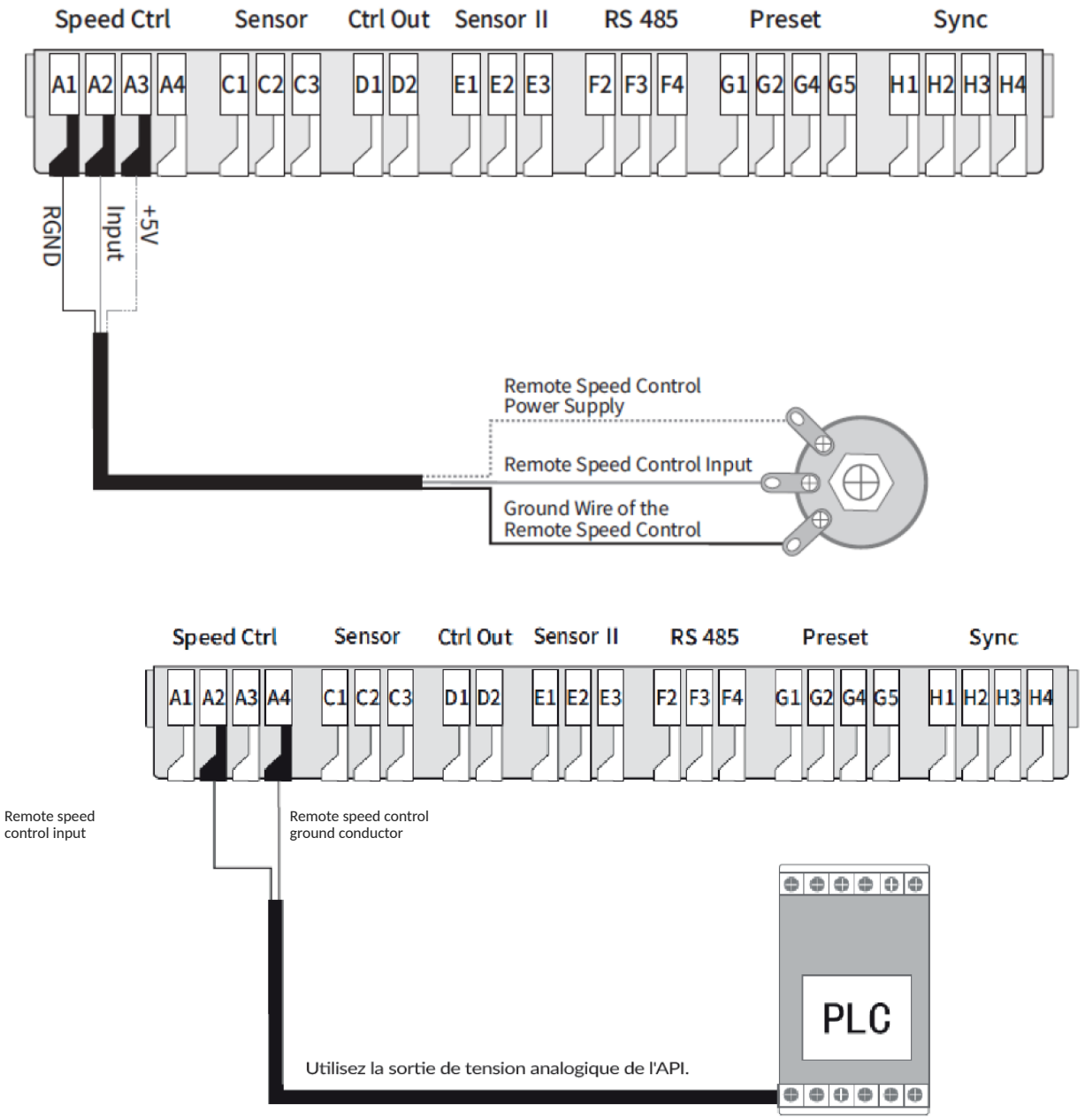
6.4 Remote speed control

Output voltage / speed can be controlled remotely via potentiometer or 1-5 V / 4-20 mA DC signal.

When the remote control voltage exceeds 0.5 V, remote control is activated and the Vol+/Vol- buttons are disabled. The remote control indicator lights up.

Wiring with potentiometer

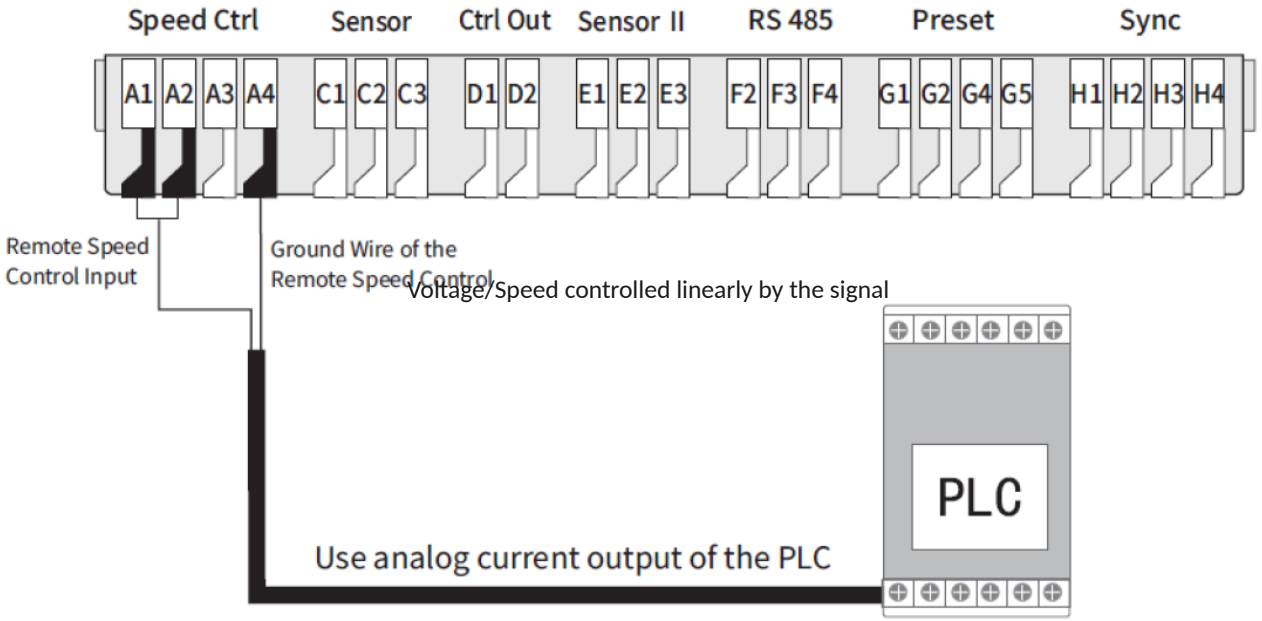
1 kΩ linear potentiometer recommended.



Wiring with PLC

Control signal - output relationship

Remote control signal	Behaviour
Below 0.5 V	Control by Vol+/Vol- buttons
0.5-1 V	Output voltage U = 20 V / Speed A = 0
1-5 V / 4-20 mA	Voltage/Speed controlled linearly by the signal



6.5 24 V NPN output

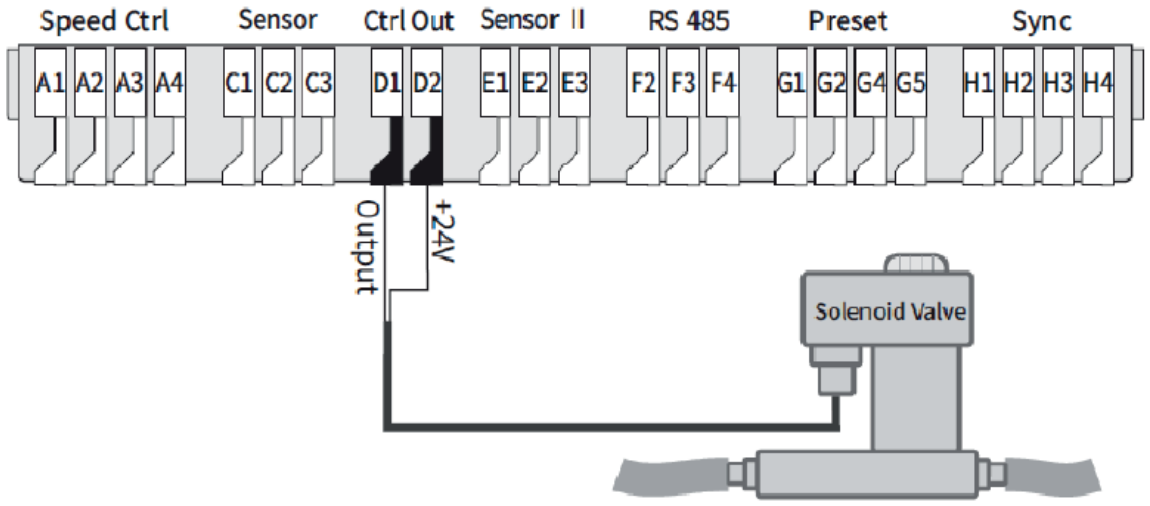
24 V DC control output for solenoid valve, electrical relay or PLC, in coordination with Ports C and E.

6.5.1 Wiring method

DANGER - Correct polarity required
Connect correctly: **D2** = positive pole (+), **D1** = negative pole (-). Reversing the connection may cause a short circuit and damage the 24 V NPN output.

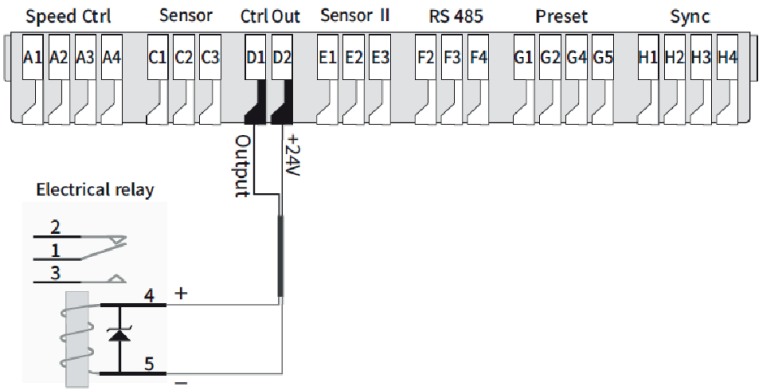
Wiring with solenoid valve

Rated voltage: 24 V. Maximum power: 4 W.



Wiring with electrical relay

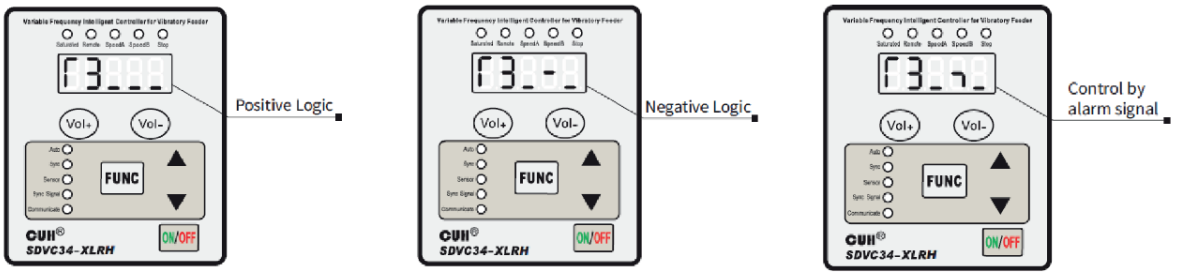
Rated voltage: 24 V. Maximum power: 4 W.



6.5.2 24 V NPN output logic relationship

Parameter **Γ3** in the advanced parameters:

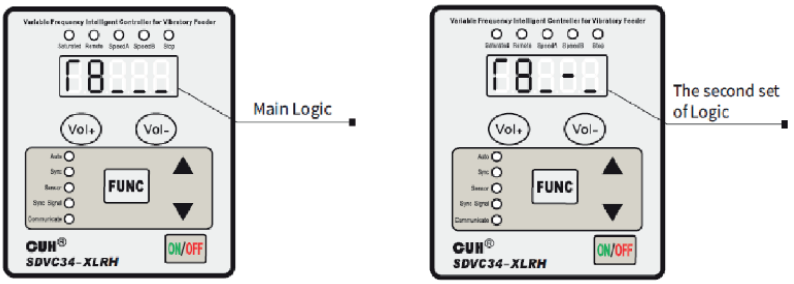
Setting	Behaviour
Positive logic (default)	NPN output ON when the controller output is ON.
Negative logic	NPN output OFF when the controller output is ON.
Alarm signal	Activation according to parameters GL (voltage limit) and ē (frequency limit). See section 4.4.



6.5.3 24 V NPN output logic operation

Parameter **Γ8** in the advanced parameters:

Setting	Behaviour
Main logic (default)	NPN output and power output share the same logic.
Second logic	NPN output controlled by the second logic. Power by the main logic.



6.6 Preset speeds: storing and recalling

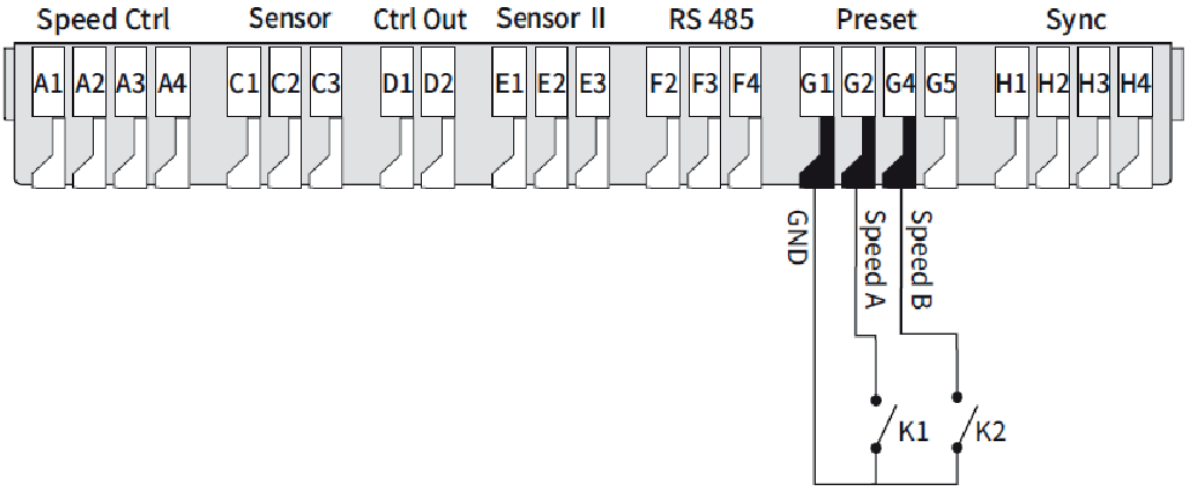
4 preset speeds. The on/off combinations of indicators A and B correspond to speeds 1-4:

Speed Ctrl	Indicator A	Switch 1 (G1-G2)	Indicator B	Switch 2 (G3-G4)
Speed 1	ON	Closed	OFF	Open
Speed 2	OFF	Open	ON	Closed
Speed 3	ON	Closed	ON	Closed
Speed 4	OFF	Open	OFF	Open

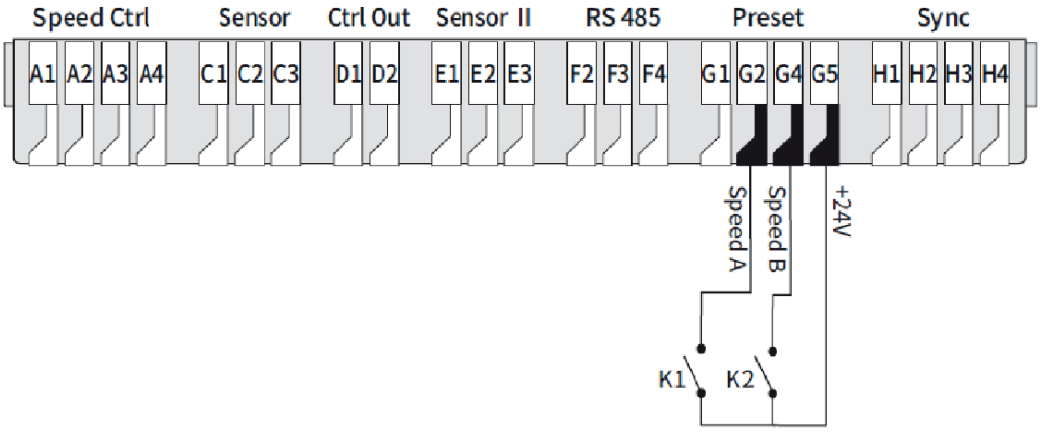
Parameter association by mode:

- **Manual (voltage):** 4 output voltage values (U)
- **Manual (frequency):** 4 output frequency values (E)
- **Automatic (voltage):** 4 feed speed values (A)
- **Automatic (frequency):** 4 centre frequency values (F)

Wiring with ГА = NPN



Wiring with ГА = PNP



Storing the preset speeds

Example of storing Speed 1:

1. Close K1 (indicator A lights up), open K2 (indicator B goes off).
2. Set the desired speed according to the mode: manual → U and E; automatic → A; semi-automatic → A and E.
3. When the output has stabilised, hold **FUNC** and ▼ for 2 s. The display will show “SAVE”.

Recalling the preset speeds

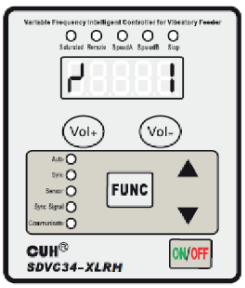
Close K1 again and open K2. The controller will apply Speed 1 instantly.

6.7 RS485 communication

All parameters can be set remotely via the RS485 ports.

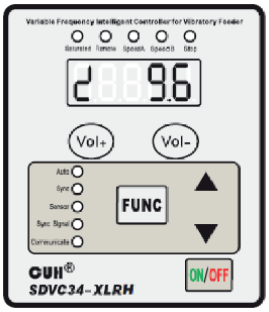
6.7.1 Communication address

Address parameter in the advanced parameters. Range: 1-31. All controllers on the same network must have different addresses.



6.7.2 Baud rate

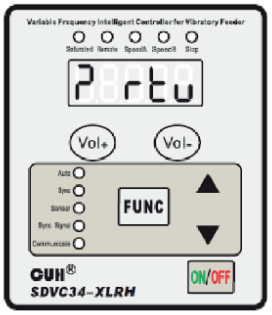
Valores: 0,3 / 1,2 / 2,4 / 9,6 / 19,2 / 57,6 / 115,2 kbps. Por defecto: 9,6 kbps. Misma velocidad para todos los controladores de la red.



6.7.3 Communication protocol

Modbus ASCII or Modbus RTU. Default: RTU. Full protocol available at: **www.cuh-controller.com**

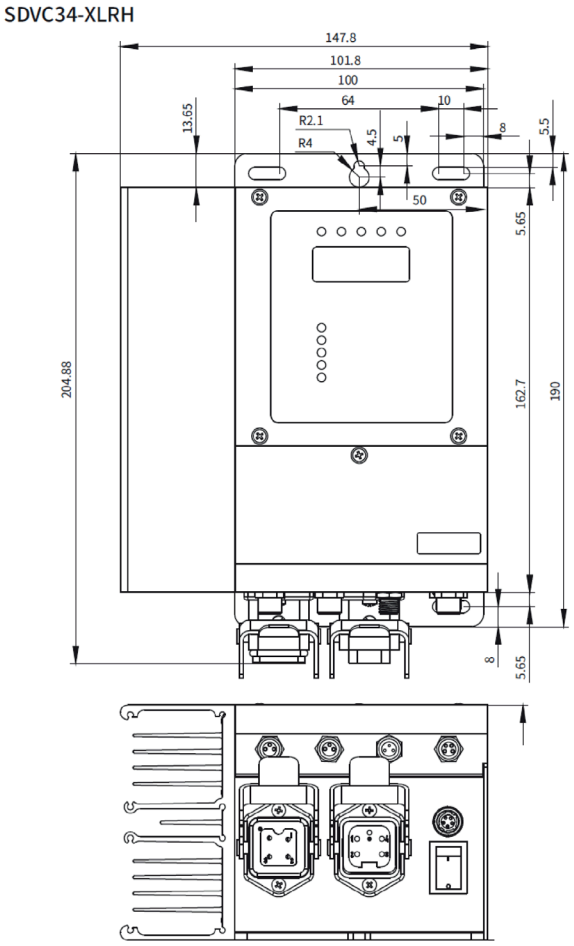
> **CAUTION - Non-volatile memory**
> Because the non-volatile memory has a limited number of erase cycles, the RS485 save instruction must be executed manually after changing parameters. Avoid sending save instructions frequently from the program.



Chapter VII - Appendix

7.1 Dimensions

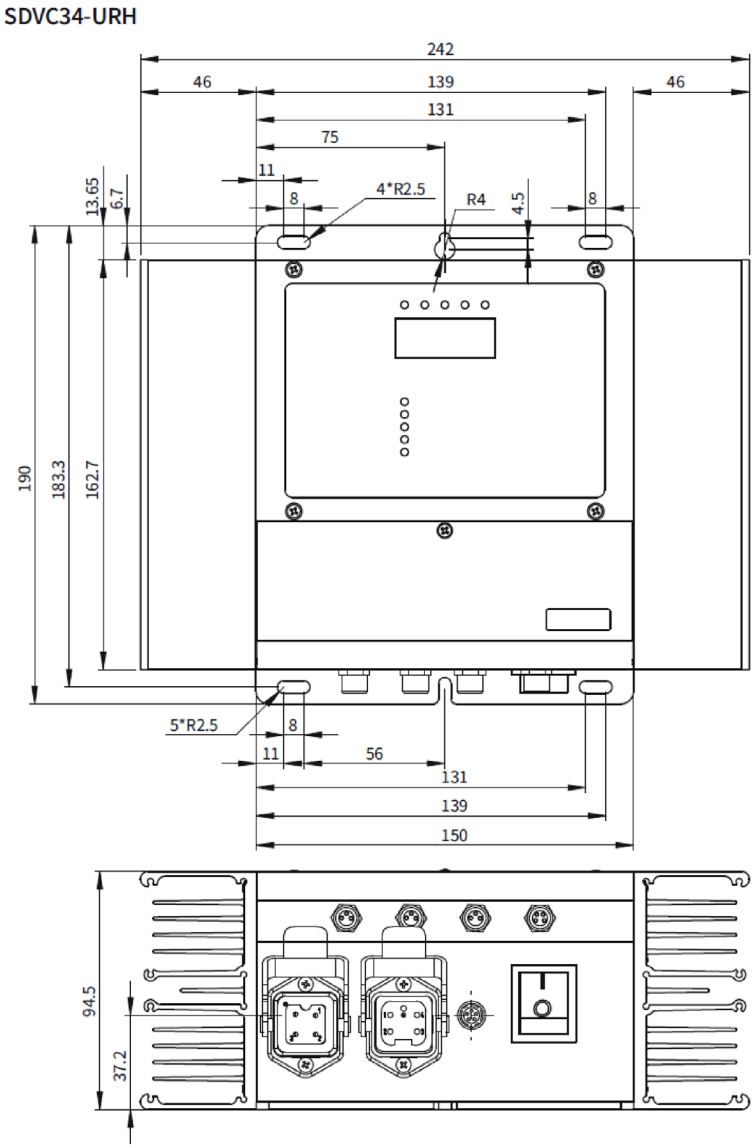
SDVC34-XLRH



Dimension range	Tolerance
0~3	±0.05
3~10	±0.1
10~30	±0.15
30~80	±0.2
80~180	±0.3
>180	±0.5

This tolerance table applies to all products in this series.

SDVC34-URH

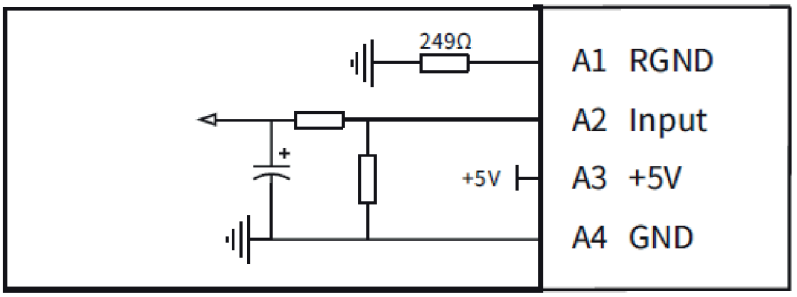


Tolerance table

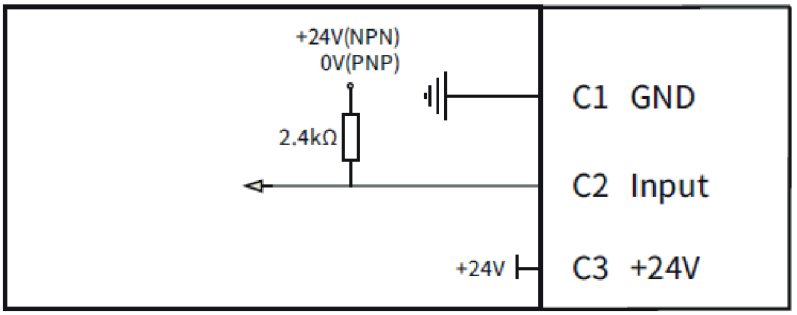
Range (mm)	Tolerance (mm)
0-3	± 0.05
3-10	± 0.1
10-30	± 0.15
30-80	± 0.2
80-180	± 0.3
> 180	± 0.5

7.2 Input and output circuit diagrams

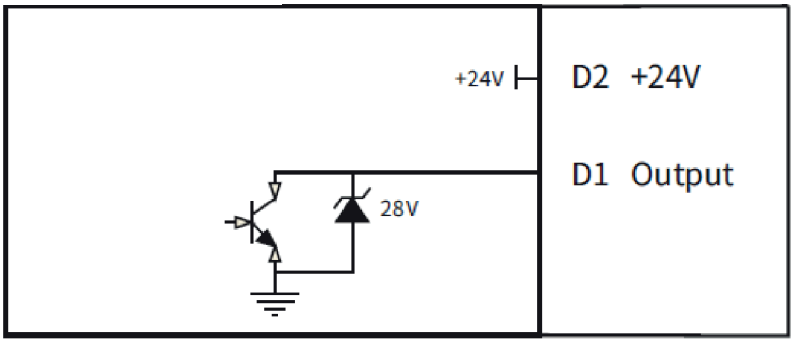
Port A: Remote speed control



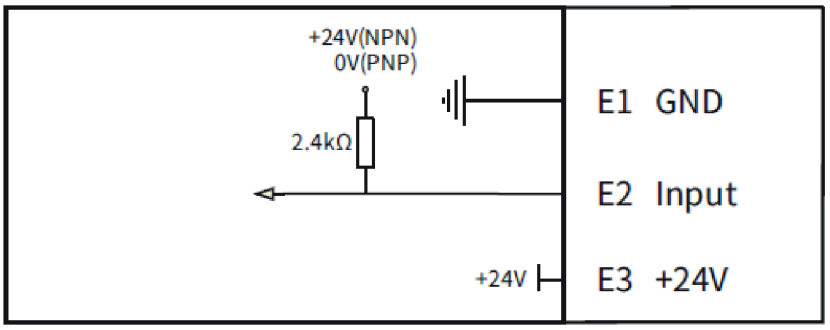
Port C: Sensor



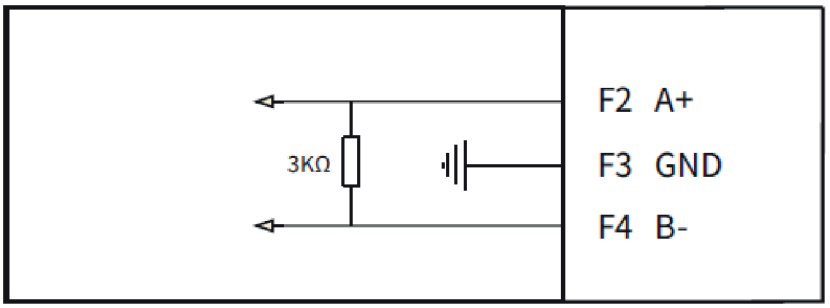
Port D: 24V NPN output



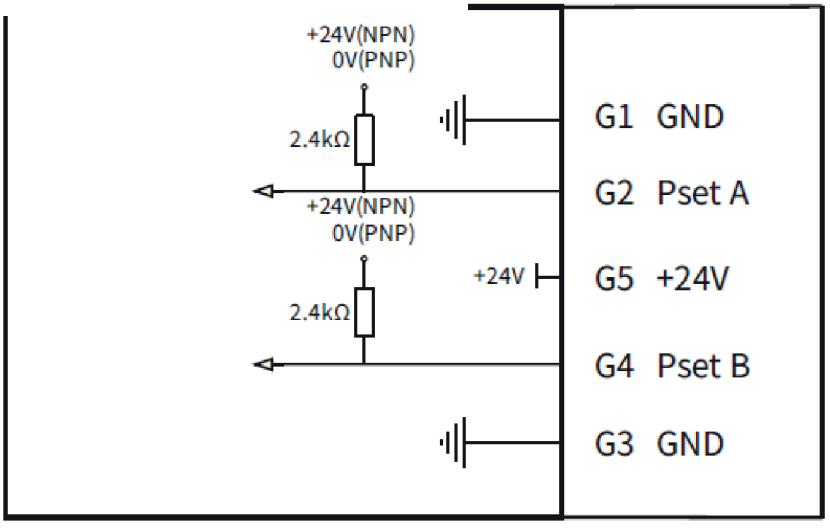
Port E: Sensor II



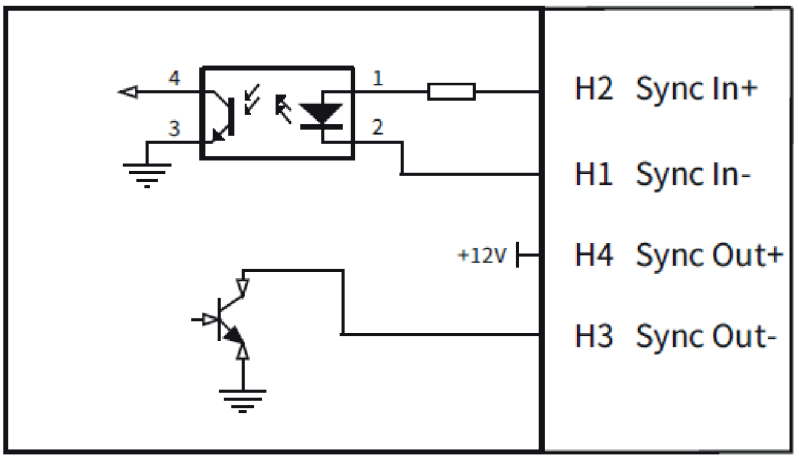
Port F: RS485



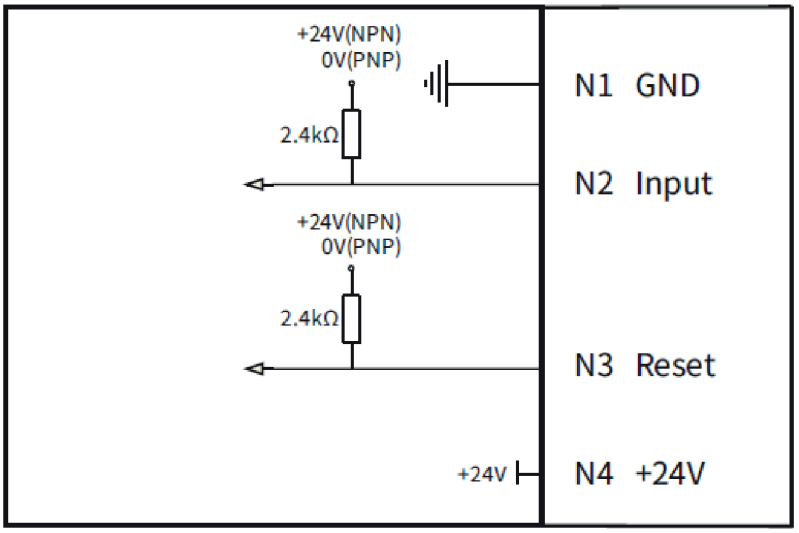
Port G: Speed preset



Port H: Synchronisation



Port N: Counting



7.3 Technical specifications

Parameter	Min.	Typ.	Max.	Unit	Notes
Voltage					
Input voltage	85	-	250	V	AC RMS
Adjustable output voltage	0	-	260	V	-
Voltage setting resolution	-	-	1	V	-
Voltage regulation (ΔVout/ΔVin)	-	-	5	%	-
Current and power					
Output current - XLRH	0	-	6	A	-
Output current - URH	0	-	10	A	-
Output power - XLRH	-	-	1320	VA	-
Output power - URH	-	-	2200	VA	-
Frequency					
Output frequency	25	-	400	Hz	-
Frequency resolution	-	-	0.1	Hz	-
Timing					
Soft start	0	0.5	10	s	Default: 0.5
On/off delay	0	0.2	20	s	Default: 0.2
Timing resolution	-	-	0.1	s	-

Parameter	Min.	Typ.	Max.	Unit	Notes
Protections and conditions					
Thermal protection	-	65	-	°C	-
Waveform	Sinusoidal	-	-	-	-
Maximum acceleration	-	-	150	%	Relative to input voltage
Outputs and control signals					
NPN DC output voltage	22	24	26	V	-
NPN DC output current	-	-	200	mA	-
Digital control signal	Switching signal	-	-	-	-
Analogue control signal	1-5 V / 4-20 mA	-	-	-	Remote speed control
Communication					
Communication	Modbus RS485	-	-	-	-
Environmental conditions					
Operating temp.	0	-	40	°C	-
Storage temp.	-20	-	65	°C	-
Humidity	-	-	85	%	Non-condensing
Interface					
Display	LED display	-	-	-	-
Adjustment	Keypad	-	-	-	-
Standby consumption	-	-	7	W	-

7.4 Troubleshooting and error codes

Symptom / Code	Possible causes and solutions
No display after power-on	Check the power socket. Check the input cable.
Err01 - Short circuit	Check the output cable and the electromagnet. Disconnect the output cable and restart. If the problem persists, contact CUH.
Err02 - Overcurrent	Reduce the output voltage. Check the electromagnet air gap.
Err03 - Overheating	Place it in a well-ventilated environment.
Err04 - Reserved	Contact CUH.
Err05 - Reserved	Contact CUH.
Err06 - Internal communication	Contact CUH.
Err07 - Temperature sensor	Contact CUH.
Err08 - Synchronisation signal	Contact CUH.
Normal display but no output or sound	Check the frequency (not too far from resonance). Check the output cable. Check the voltage (not too low).
Sound but no movement	Check that the controller has not been stopped by ON/OFF (stop indicator). Check Г2, Г7 and П. Restart.
Start/stop control does not work	Check parameters Г2, Г7. Check that the signal is correctly connected. Restart.
Beat effect	Connect the synchronisation cable. Set the slave to synchronisation mode. Restart.
Vibration sensor type error	The connected sensor does not match parameter ├. Set it according to the model (see section 4.4).

Chapter VIII - Warranty information

8.1 Warranty period

3 years from the date of delivery of the product to the place designated by the buyer.

8.2 Warranty coverage

Faults attributable to CUH during the warranty period are repaired free of charge. Situations **not** covered:

a. Failure to comply with the conditions of this manual, improper use or misuse.

b. Fault not due to a product defect, but to the design of the buyer's equipment or software.

c. Faults caused by modifications or repairs carried out by personnel not authorised by CUH.

d. Faults that could have been avoided by correct maintenance or replacement of wear parts according to this manual.

e. Faults due to unforeseeable changes in the level of science and technology after shipment.

f. Faults caused by natural disasters (fires, earthquakes, floods) or other external factors (abnormal voltage, etc.).

CUH accepts no liability for indirect losses (damage to equipment, loss of opportunity, loss of profit, etc.).

8.3 Product suitability

Designed for general use in the vibratory feeding industry. It **must not** be used for:

1. Installations with a serious impact on life and property: nuclear power plants, airports, railways, ships, motorised devices, medical equipment.
2. Public utilities: electricity, gas, water supply.
3. Outdoor use or use under similar conditions.

CUH® Science & Technology · Manufacturer's commitments

TYPES OF SERVICE	MAIN COMMITMENTS
- Information service: Real-time updates on market demand for customers. - Technical service: Theoretical guidance and customised solutions for vibratory feeding. - Marketing support: Helps customers develop markets efficiently and improve their competitiveness. - Customer service: Unconditional returns and exchanges of products within 30 days. - Warranty services: 24/7 real-time support and on-site technical assistance.	- Quality commitment: If a controller purchased within the last year has a quality problem on our part, CUH offers free repair and an additional unit of the same model. - Service commitment: "1-1-2 technical support is available in countries with global distributors" — We arrive on site within 1 week, solve the problem within 1 day and provide 2 hours of on-site training. - After-sales commitment: Lifetime warranty for all products. - Performance commitment: Performance specifications are not exaggerated in any way. - Cooperation commitment: Stable product supply guaranteed for up to 10 years.

Customer helpline: (+86) 025-84730416

BINDER Magnetism & Engineering · Distributor's commitments

TYPES OF SERVICE	MAIN COMMITMENTS
- Product information: Access to up-to-date technical documentation, product sheets and news on the CUH range in Spanish, French, English and Portuguese. - Technical advice: Guidance in selecting the most suitable controller for each vibratory feeding application. - Sales support: Assistance with integrating CUH products into projects and production lines. - After-sales service: Fast, direct handling of returns, replacements and warranty claims. - Field support: Technical assistance for commissioning, troubleshooting and installation issues.	- Certified quality: All products in the catalogue are CE certified and comply with the applicable European directives. - Documentation in Spanish, French, English and Portuguese: Complete manuals, adapted to European regulations, ready for the technical file.

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