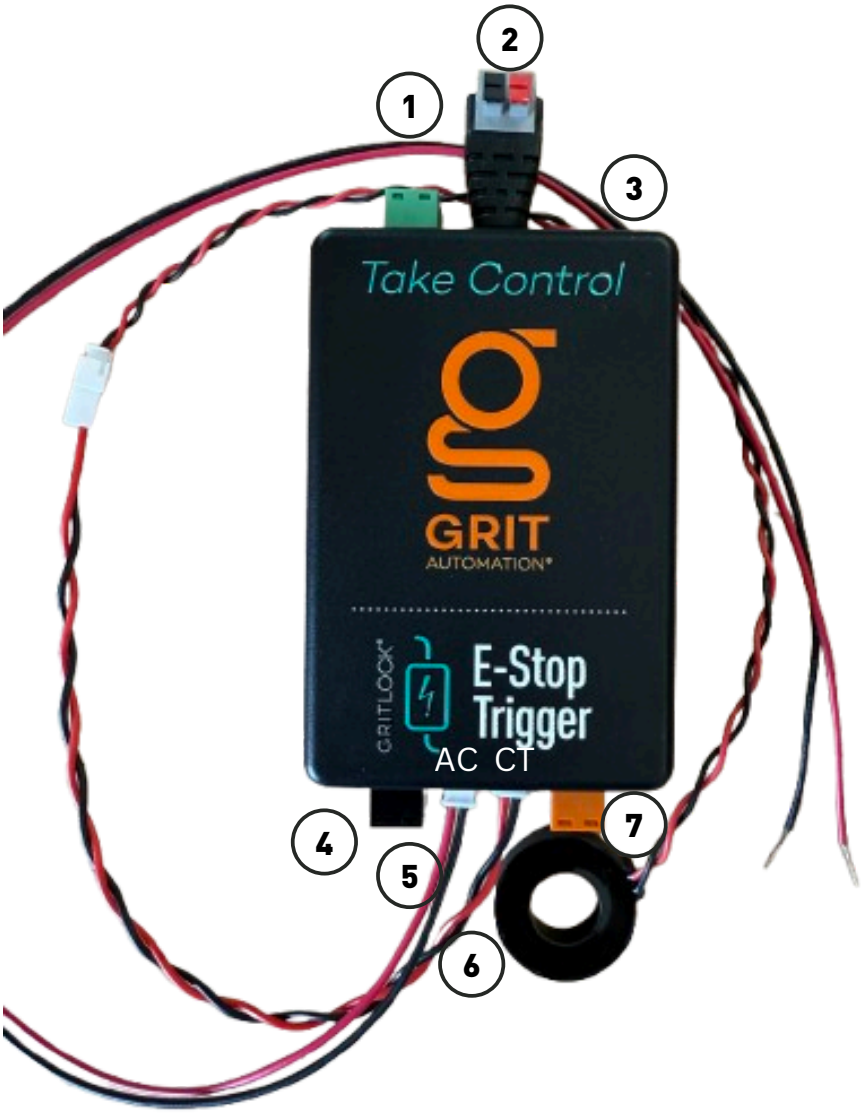
GRIT E-Stop Trigger

The GRIT E-Stop Trigger detects tool operation using a Current Transformer (CT) around one motor-load conductor, or a compatible external running signal. It reports to the GRIT Hub over the GRIT mesh for dust collection, gate control and RFiD access control. Match the running signal to the input rating of the assembled Trigger; do not assume every revision accepts the same voltage. Requires a GRIT Hub.

The green terminal supplies 5V DC to a compatible RFiD reader. The orange isolated contact connects to the machine stop-control circuit. Device power is separate from the black running-signal input. Use the AC mains leads within the labeled rating, or the DC input fitted to your hardware revision. Never apply 12V or 24V directly to the 5V rail.



1. Green terminal: outgoing 5V supply for a compatible RFiD accessory.
2. DC power connection: revision-dependent. On board 5029 Rev 15, CN5 is the +5V rail; the separate DC3 converter input is 12-24V DC. Match the fitted input and label before connection.
3. Lock/unlock indicator LED.
4. Black terminal: tool-running signal, separate from device power.
5. AC mains power leads: use a verified source within the device label rating.
6. CT: surrounds one individual motor-load conductor.
7. Orange contact: isolated stop-control connection, ESTOP-A / ESTOP-B.

Installation and Configuration

Installation consists of three primary steps:

Step 1: Power the GRIT E-Stop Trigger Device
Use the AC mains leads within the labeled rating, or the DC power input fitted to your hardware revision. See Step 1 below.
Step 2: Measure Whether the Tool is Running

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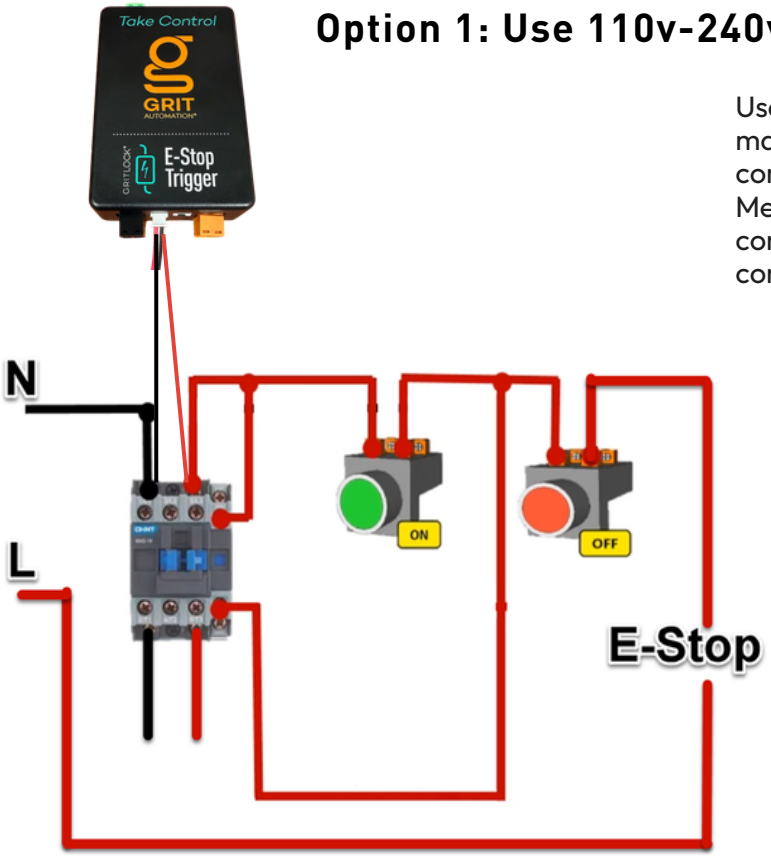
- Option 2: wire the Removable Tool Running Signal from the GRIT device inline with the tool's running signal.

Step 3: Control the Tool's Power

- Use the exact machine drawing to install the orange isolated contact in the stop-control path. Preserve the original OFF and emergency-stop controls. Do not use this contact to switch motor power.

Step 1: Power the GRIT E-Stop Trigger Device



Option 1: Use 110v-240v AC

Use the device label and exact machine drawing to select a compatible AC power source. Measure the voltage before connection. Do not choose conductors by terminal position.

Step 1: Power the GRIT E-Stop Trigger Device

Option 2: Use the Fitted DC Power Input

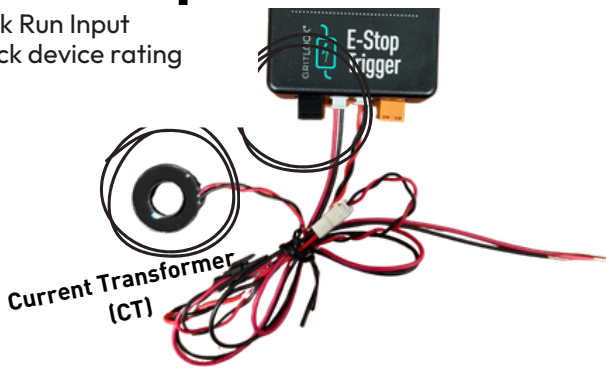
Board 5029 Rev 15 has a separate 12-24V DC converter input at DC3. CN5 connects directly to the +5V rail. Do not apply 12V or 24V to CN5. Use the input and polarity marked on the assembled unit; do not identify its rating by connector appearance.

Remember that polarity matters for DC power:

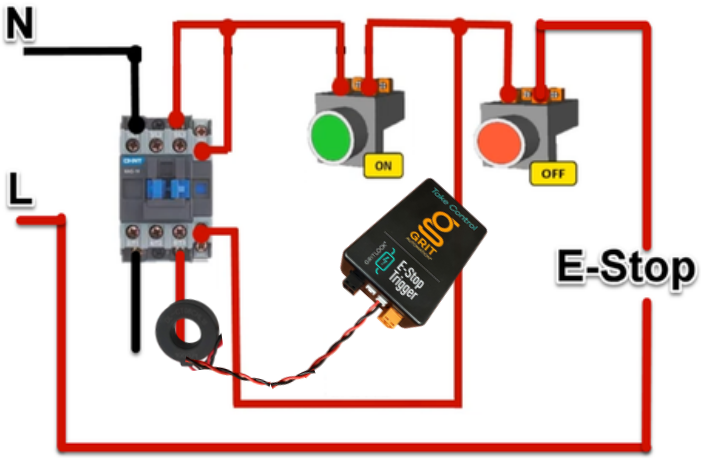
Red=Positive.
Black=Negative.

Step 2: Measure Whether the Tool is Running

Black Run Input
Check device rating

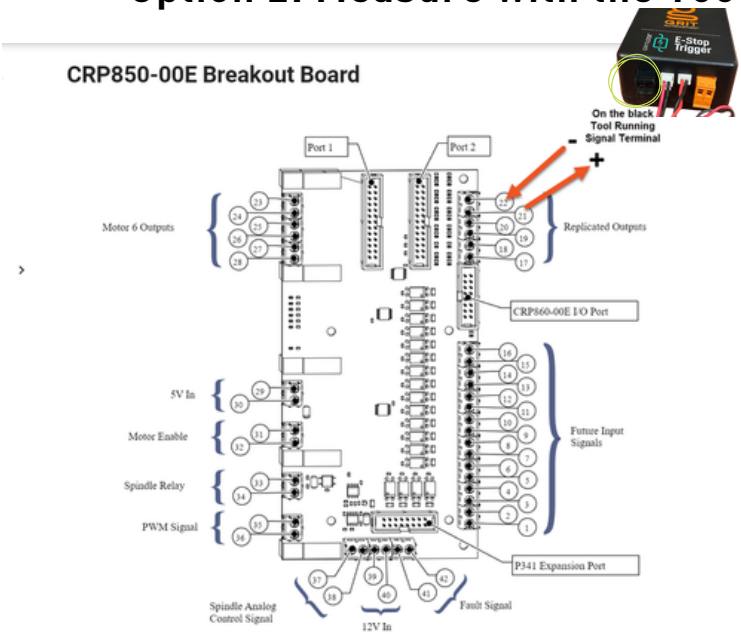


Option 1: Measure with the CT



Unscrew one of the load wires leading to the motor.
Insert it through the middle of the CT, then re-secure the wire in its terminal.

Option 2: Measure with the Tool's Low-Voltage Running Signal



This is a schematic for an AVID CNC. Please, consult the manual for your specific tool to locate the Tool Running Signal in your machine, if applicable.

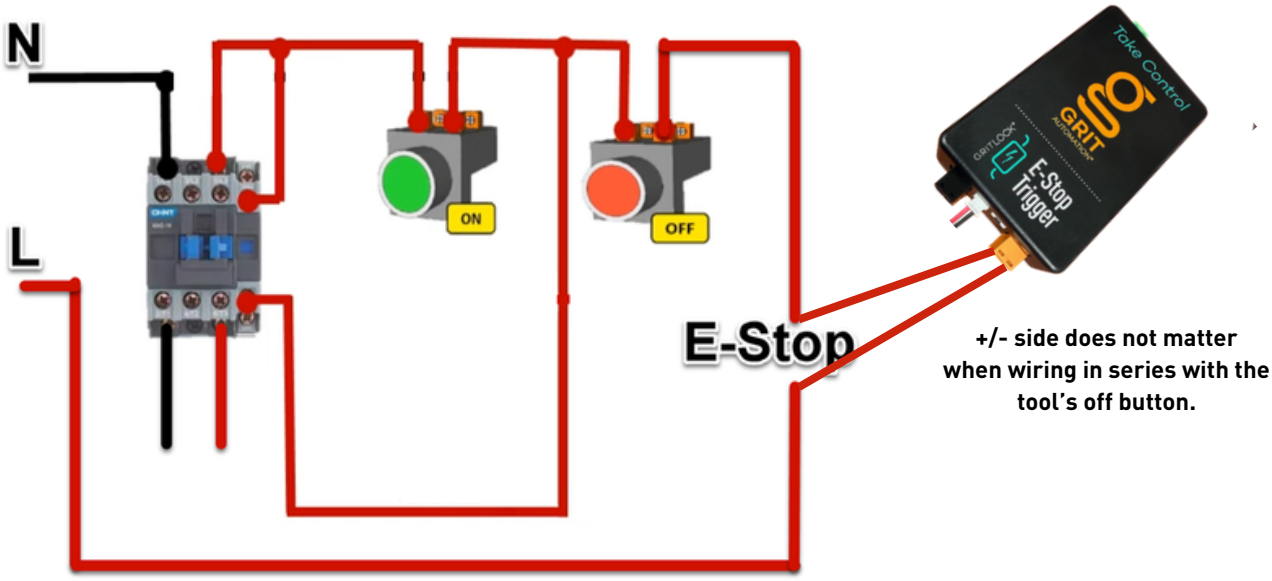
Using the Tool Running Signal (this is 5v on your AVID), insert the positive signal wire from terminal 21 into the right side of the black terminal (marked with a +) on the GRIT device.

Connect the negative ground from terminal 22 to the left side of the same black terminal (marked with a -) on the GRIT device.

Plug the black terminal back into the E-Stop Trigger.

Step 3: Control the Tool's Power

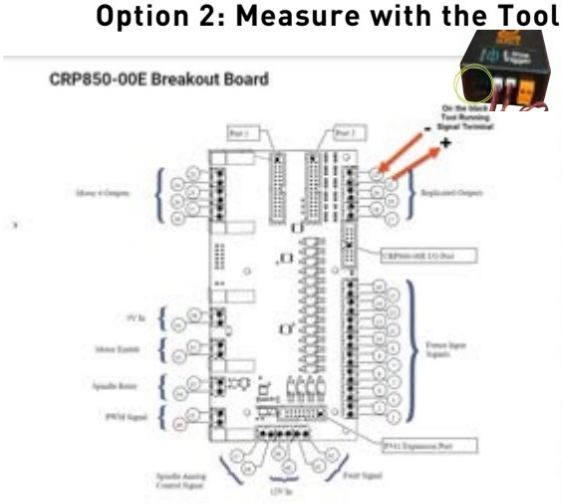
Wire the orange contact in series with the stop-control circuit shown on the machine drawing. Keep the original OFF and E-stop functions operational.



+/- side does not matter when wiring in series with the tool's off button.

***Extra wire and a wire nut are provided if an extension is required.**

Option 2: Measure with the Tool's Low-Voltage Running Signal



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Low-voltage run-signal example. Terminal numbers shown in a machine example are not universal; use the drawing for the exact tool.

BIND TO HUB

1. **Enable binding.**
   In the GRIT App, go to Admin > Settings > Allow New Devices and select Yes, or press the center blue Bind button on the front of the GRIT Hub.

2. **Confirm the device is ready.**
   Apply power and wait for the device status LED to indicate that it is ready to bind.

3. **Open the device record.**
   Go to Devices > Trigger, select the newly discovered device, and name it the connected machine or match the equipment label used in the shop.

APP CONFIGURATION

SETTING	FUNCTION	GUIDANCE
Trigger Name	Name the machine	Match the machine label used in the shop
GRIT Lock Enabled	Enables control through the orange contact	Yes only when the stop contact is wired and commissioned
Activation Method	Measure Current, Low Voltage Signal, or Both	Match the installed sensing method

Low Voltage Sensing Type	Momentary or Latching	Match the machine signal behavior
Low Voltage Activation	High or Low	Choose the state that means running
Emergency Stop Button Type	Open Circuit or Closed Circuit	Most contactor / latching E-stop paths use Open Circuit; verify the machine
Activation Level	Current threshold for running	Set between idle and stable running current when CT sensing is used
Power Profile	Normal, Delay, Spike, or Advanced	Choose from the observed power graph
Associated Collector / Gates	Dust-collection actions	Select the devices this tool should command

Activation Level: Run the machine and use its power graph. Set the threshold above idle / accessory current and below stable tool-running current. Low thresholds are more sensitive to electrical noise.

COMMISSIONING CHECK

1. **Verify sensing.**
   Run and stop the machine. Confirm the Trigger changes state only when the machine is actually running.
2. **Verify dust collection.**
   Confirm associated gates and collector follow the configured tool state.
3. **Verify GRIT Lock.**
   With the machine stopped, lock the Trigger and confirm the machine cannot start. Unlock and confirm normal operation returns.
4. **Verify the native E-stop.**
   Operate the machine's original E-stop and OFF controls. They must continue to stop the machine independently of GRIT.

TROUBLESHOOTING

SYMPTOM	CHECK / CORRECTION
Trigger never shows running	Check Activation Method, CT placement or signal polarity, Activation Level, and the power graph.

Trigger always shows running	Check for idle accessory current above the threshold or an inverted Low Voltage Activation setting.
Machine will not start after installation	Confirm the orange series circuit is complete, GRIT Lock state is Unlock, and Emergency Stop Button Type matches the machine.
GRIT Lock does not prevent start	Do not use the system until the orange series contact and circuit type have been corrected and recommissioned.
Device will not bind	Enable Allow New Devices, confirm power and mesh range, then repeat binding.

REVISION HISTORY

REV	DATE	DESCRIPTION	AUTHOR
1.0	August 16, 2026	Standardized E-Stop Trigger installation and app-configuration guide	GRIT Automation

Maintenance update: October 23, 2026. Corrected AC supply selection; distinguished 5029 Rev 15 DC connections; retained physical installation photographs.