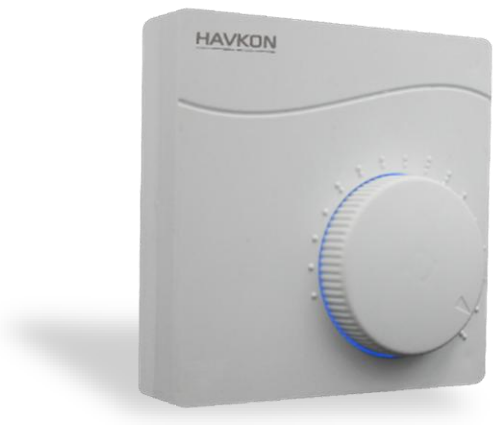
ACP Series

Using One ACP.10K Potentiometer to Control Multiple Frequency Inverters **20260622R1**

Technical Knowledge Base



Application Description

In some applications, multiple frequency inverters (VFDs) are required to operate at the same speed reference and start/stop simultaneously. This can be achieved using a single ACP.10K potentiometer equipped with an integrated ON/OFF switch.

The ACP.10K provides:

A1, A2, A3 : Potentiometer terminals
S1, S2 : Dry contact switch terminals

Typical inverter terminals are:

24V : Digital input supply voltage
DIN / RUN : Digital run command input
AIN : Analog speed reference input (0-10V)
GND / ACM : Analog common

Analog Speed Reference Connection

The potentiometer terminals are connected as follows:

- If the inverter provides a dedicated +10V reference output.

The AIN inputs of multiple inverters may be connected in parallel so that all drives receive the same speed reference signal.

ACP.10K	Inverter Terminal
A1	+10V / VR Reference Output*
A2	AIN (Analog Input)
A3	GND / ACM

Start / Stop Command Connection

The integrated switch can be used to provide a common RUN command.

Connection example:

- Inverter 24V → ACP.10K S1
- ACP.10K S2 → DIN / RUN inputs of all inverters

When the switch closes, the RUN signal is sent to all connected inverters simultaneously.

Warnings

Before installing and operating the device, carefully read the user manual and the instructions below.

- The user is responsible for any damage, loss, or injury caused by improper use or failure to follow these instructions.
- Do not modify, disassemble, or attempt to repair the device.
- Ensure correct supply voltage before powering the device.
- Disconnect power before installation and wiring.

Failure to comply with these instructions may result in device malfunction and will void the warranty.

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Important Notes

1. **Do Not Parallel Multiple +10V Reference Outputs**

   If multiple inverters provide a +10V reference output, **these outputs must never be connected together.**

   Only one inverter's +10V reference should be used, or an external isolated reference source should be provided.

2. **Verify Analog Input Type**

   This application is intended for inverters with **a 0-10V analog input**.

   Do not connect the inverter's 24V terminal directly to the potentiometer analog circuit, as this may apply excessive voltage to the analog input.

3. **Common Ground Connection**

   All inverter analog commons (GND/ACM) should be connected together to ensure stable operation and accurate speed control.

4. **Recommended Solution for Large Systems**

   For installations with several inverters, the recommended approach is to use:

   - An isolated 0-10V signal distributor, or
   - An analog signal isolator

   This prevents interaction between inverter analog circuits and improves system reliability.

Summary

A single ACP.10K potentiometer can be used to control the speed of multiple frequency inverters simultaneously by connecting:

- A2 to all AIN inputs,
- A3 to all GND/ACM terminals,
- S1/S2 as the common RUN command.

For reliable operation, only one +10V reference source should be used, and inverter analog grounds must be common.

ACP.10K CONNECTION TO TWO FREQUENCY INVERTERS