

# Limitations of using drive outputs for proof of flow

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**PROOF OF FLOW USING DRIVE OUTPUT**

Advanced HVAC Fan and Pump VFD's may include a feature for detecting a broken belt or coupling shear. This feature is used to protect pumps from running without liquid and damaging bearings- often referred to as 'dry run'. Typically, there are quite a few adjustments to make to enable this feature, including alarm and trip levels, delays and motor trip points. Rarely is this feature available without in depth programming and it is almost never defaulted to an alarm or relay output, so that will need to be programmed as well. Once programmed, VFD dry run will provide true status motor status while the VFD is operational. However, if the drive is part of a bypass package, this status output can possibly be a false trip signal while the drive is on bypass.

**Pros**

- True status based on coupling shear or belt loss Not every drive uses drive run the same way it may be programmed off, and the relay option may be programmed to another feature.

**Cons**

- Will require in depth programming and a free relay or alarm channel output
- Does not take into consideration bypass operation (false negative)

**PROOF OF FLOW USING SENVA VFD CURRENT SENSOR**

Senva's unique VFD current sensor is designed to provide true proof of flow of your fan or pump while on VFD operation or if equipped, on Bypass. The Senva VFD current sensor automatically calibrates to the VFD output volt/Hz curve, memorizes it and trips whenever there is a coupling or belt loss. If there is a bypass package with the drive, the VFD current sensor will still provide status monitoring- no false negatives.

**Pros**

- True status based on coupling shear or belt loss.
- Status while on VFD and in Bypass if included- no false negatives.
- Quick and easy installation, automatic calibration. Save time and money programming VFD settings.
- Isolated digital alarm- no interposing relays.

**Cons**

- Small additional cost which could be more than covered by the savings in drive setup costs.



2350VFD Autoset current sensor self-learns for positive proof of flow on both VFD and constant volume fans and pumps

GO/NO STATUS	Install Time	Set-up	Reliability	Cost
VFD RUN OUTPUT	Low	Low	False positives and negative status; in particular with bypasses	Low
VFD CURRENT SENSOR	Low	Low	True Status	Low
PROOF OF FLOW	Install Time	Set-up	Reliability	Cost
VFD "DRY RUN" OUTPUT	Low	High programming	False negatives possible with bypasses	High
VFD CURRENT SENSOR	Low	Low	Absolute proof of flow	Low