

# NoPileups ADAM Wiring Guide

VERSION 3.51 | REVISED 12/2020

## Overview

This guide describes how to wire the ADAM 6060 to a Tunnel Controller so that NoPileups can read and send information.

To operate, NoPileups needs the ability to:

1. Know when the conveyor is on and off.
2. Read the pulse signal.
3. Read the photo/enter eye signal.
4. Stop the conveyor by triggering an emergency stop (e-stop).
5. Start the conveyor OR stop the conveyor while a signal is being sent. (NoPileups Smart Exit)

Optionally, NoPileups can be wired to activate a device when NoPileups stops the conveyor.

The wiring specifics will vary based on tunnel controller, but this guidance should apply to any site. Follow all company electrical safety protocols and operating procedures during the installation process.

## Contacting NoPileups Support

For assistance wiring the ADAM 6060, contact NoPileups support by phone at [\(833\) 667-4538](tel:(833)667-4538) or [\(208\) 789-0405](tel:(208)789-0405); or by email at [support@NoPileups.com](mailto:support@NoPileups.com).

Installation support is available Monday - Friday, 9 AM to 7 PM Eastern Standard Time (EST).

General software support is available Monday - Friday 7 AM to 9 PM Eastern Standard Time (EST), and Saturday and Sunday 9 AM to 6 PM EST.

## Smart Exit

NoPileups is configured to function like a traditional exit anti-collision system at the end of the tunnel. When the distance between cars at the end of the conveyor drops below a set number of feet, the conveyor is stopped. When the front car pulls ahead more than a set distance, NoPileups restarts the tunnel without any staff action required. At exits where stalled customers are frequent, this improves staff attentiveness and reduces stop duration when compared to manually starting the tunnel. Loaders are notified that the conveyor is paused and have a live view of the exit through the Load-on Monitor when Smart Exit is engaged. **Smart Exit is only available at the conveyor exit, all other NoPileups stops will require manual input to restart the conveyor.**

## Installation

### Power

The ADAM is powered using 24VDC. An existing power source can be used, or the 110-240VAC to 24VDC Power Supply in the ADAM kit can be installed. When the ADAM is powered, the status light will flash red. After the ethernet cable is connected, the status light will flash green and amber. The Speed/Comm light will flash amber.

If you are using a previously installed power supply skip to step 2.

1. Connect the AC hot wire to L on the power supply, neutral to N, and Ground to  $\frac{1}{\text{G}}$ . When connected properly the DC OK light will turn green.
2. Run a wire for the following:
  - a. +V on the power supply to (R) +Vs on the ADAM.
  - b. -V on the power supply to (B) GND on the ADAM.
3. Verify the ADAM has power. The Status/Link on the ADAM should flash red.
4. Plug the ethernet cable that runs to the NoPileups server into the ADAM.
5. Verify network connectivity. The Status/Link light should flash green and amber. The Speed/Comm light should flash amber.

### Conveyor Running Status

NoPileups needs to know when the conveyor turns on and off. Use the normally open contacts on a mechanical relay and the ADAM 6060's DI0 and ISO GND contacts to accomplish this.

1. In the Tunnel Controller/PLC, locate the leads that energizes when the conveyor is on and de-energizes when the conveyor is off.
2. Determine the voltage (AC or DC) and mount the corresponding mechanical relay.
3. Run a wire for the following:
  - a. The positive/hot lead in the Tunnel Controller/PLC to contact #8 on the mechanical relay.
  - b. The negative/common lead in the Tunnel Controller/PLC to contact #7 on the mechanical relay.
  - c. Contact #3 on the mechanical relay to contact DI0 on the ADAM 6060.
  - d. Contact #5 on the mechanical relay to contact ISO GND on the ADAM 6060.
4. Verify the relay is working. The mechanical relay should change states (click) when the conveyor turns on and off.

### Pulse Signal

NoPileups uses the pulse signal that the Tunnel Controller uses to determine conveyor speed and vehicle location. Use the Crydom solid-state relay and the ADAM 6060's DI1 and ISO GND contacts to make the connection.

1. In the Tunnel Controller/PLC, locate the pulse signal.
2. Determine the voltage and select the appropriate solid-state relay. (If DC, use the Crydom ED06C5 or Crydom ED10C5; if AC, use the Crydom ED06E5 or Crydom ED10E5)
3. Run a wire for the following:

- a. The positive/hot lead in the Tunnel Controller/PLC to contact #5 on the solid-state relay.
  - b. The negative/common lead in the Tunnel Controller/PLC to contact #1 on the solid-state relay.
  - c. Contact #3 on the solid-state relay to contact DI1 on the ADAM 6060.
  - d. Contact #4 on the solid-state relay to contact ISO GND on the ADAM 6060.
4. Verify it is working properly by turning on the conveyor. The Input Status LED on the solid-state relay should flash on/off in-sync with the pulse.

## Enter Eye Signal

NoPileups uses the photo-optic sensor or gate wired to the Tunnel Controller to detect vehicle length at the entrance. Use a mechanical relay and the ADAM 6060's DI2 and ISO GND contacts to connect to the enter eye signal.

1. In the Tunnel Controller/PLC, locate the enter eye signal.
2. Determine the voltage (AC or DC) and mount a corresponding mechanical relay.
3. Run a wire for the following:
  - a. The positive/hot lead of the sensor to contact #8 on the mechanical relay.
  - b. The negative/common lead of the sensor to contact #7 on the mechanical relay.
  - c. Contact #3 on the mechanical relay to contact DI2 on the ADAM 6060.
  - d. Contact #5 on the mechanical relay to contact ISO GND on the ADAM 6060.
4. Verify the relay is working. The mechanical relay should change states (click) as the enter eye state changes.

## Emergency Stop

When NoPileups detects there is a risk of a collision it will request an emergency stop. This connection uses a mechanical relay's normally closed contacts and the ADAM 6060's RL 0+/- contacts.

1. Determine the estop contacts in the Tunnel Controller/PLC.
2. Mount a 24VDC mechanical relay.
3. Run a wire for the following:
  - a. The positive lead on the 24VDC power supply to RL 0- on the ADAM 6060.
  - b. RL 0+ on the ADAM 6060 to contact #8 on the mechanical relay.
  - c. Contact #7 on the mechanical relay to the negative lead/common on the power supply.
  - d. Contact #5 on the mechanical relay to one of the e-stop leads.
  - e. Contact #1 on the mechanical relay to the other e-stop lead.

**This must be a latching/sealing contact. The conveyor should not restart until an employee turns it back on.**

## Smart Exit (Conveyor Stop and Restart)

When Smart Exit triggers, a signal will be sent from the ADAM 6060 to shut off the conveyor until the signal is disengaged. Wire Smart Exit EITHER using stop and start circuits OR by wiring and configuring a Tunnel Controller input

## Stop and Start Circuits

When Smart Exit engages, RL 0 on the ADAM 6060 will close, triggering an e-stop. When Smart Exit disengages it will open RL 0 and close RL 1 momentarily, sending a conveyor start signal.

1. Connect the ADAM 6060 to the e-stop circuit (by now this should be done).
2. Connect RL 1+/- to the start circuit. A 24VDC mechanical relay may be required.

## Wire and Configure Tunnel Controller Input

When Smart Exit engages, NoPileups will close RL 1 on the ADAM 6060. RL 1 will open when Smart Exit disengages. The conveyor must stop when the contact closes and start when the contact opens again. This is achieved by using an input on the Tunnel Controller that is programmed to stop and start the conveyor when the status changes.

1. Connect RL 1+ on the ADAM to the positive side of an input in the tunnel controller.
2. Connect RL 1- on the ADAM to the negative side of an input in the tunnel controller.
3. Configure the tunnel controller to pause the conveyor when the input is on and start the conveyor when it turns off.

## Optional Wiring

### Horn or Light

When NoPileups triggers an e-stop, it can be wired to also activate a horn or other device. This is done by wiring the power supply for the device through RL 2+/- . The relays on the ADAM are rated up to 30VDC and 120VAC.

1. Run a wire for the following:
  - a. The positive lead on the device's power supply to RL 2+ on the ADAM 6060.
  - b. RL 2- on the ADAM 6060 to the positive lead on the device.
  - c. Connect the negative lead on the device to the negative lead on the device's power supply.

## Testing Functionality

NoPileups will verify the functionality of all ADAM 6060 connections during the installation process. For assistance, [contact NoPileups support](#).

## Additional Information

Please refer to the NoPileups ADAM Wiring Diagram for visual instructions that complement this document.

For assistance, [contact NoPileups support](#).