

# **Field and Product Manual for the GEN2<sup>®</sup> Photo-Eye Accuglide**

Application Guidelines, Specifications, Installation  
Procedures, Maintenance, Parts Identification, and  
Product Index

**Use in conjunction with the most recent 8410 Accuglide Live Roller  
Conveyor Product Manual, for comprehensive information.**

**Only sections specific to GEN2 are contained here within.**



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Read these documents thoroughly before attempting to perform maintenance or repairs to the applicable Intelligrated conveyor system components or devices. Exercise extreme caution when working around moving and rotating conveyor equipment. Wear the proper clothing and safety equipment. DO NOT attempt to perform any maintenance until the equipment is de-energized, locked out and tagged out in accordance with established company procedures.

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# Package Conveyors



 <p><b>Do Not Climb, Sit, Stand, Walk, Ride, or Touch the Conveyor at Any Time</b></p>	 <p><b>Do Not Perform Maintenance on Conveyor Until Electrical, Air, Hydraulic and Gravity Energy Sources Have Been Locked Out or Blocked</b></p>	 <p><b>Operate Equipment Only With All Approved Covers and Guards in Place</b></p>
 <p><b>Do Not Load a Stopped Conveyor or Overload a Running Conveyor</b></p>	 <p><b>Ensure That All Personnel Are Clear of Equipment Before Starting</b></p>	 <p><b>Allow Only Authorized Personnel To Operate or Maintain Material Handling Equipment</b></p>
 <p><b>Do Not Modify or Misuse Conveyor Controls</b></p>	 <p><b>Keep Clothing, BodyParts, and Hair Away from Conveyors</b></p>	 <p><b>Remove Trash, Paperwork, and Other Debris Only When Power is Locked Out and Tagged Out</b></p>
 <p><b>Ensure That ALL Controls and Pull Cords are Visible and Accessible</b></p>	 <p><b>Know the Location and Function of All Stop and Start Controls</b></p>	 <p><b>Report All Unsafe Conditions Jams should be cleared ONLY BY Authorized, Trained, Personnel</b></p>

POST IN PROMINENT AREA

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## Product and Field Manual Issue and Revision Date(s)

First Issue	March 2007
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Current Revision	July 2009

## Product and Field Manual Revision Summary

Revision Date	Manual Section(s)	Revision Summary
June 2007	Section I	Add 2 new drawings USB Interpreter and DeviceNet Interpreter
August 2007	All Sections	Delete date of refer to Accuglide Product Manual
July 2009	Section I	Updated Figure I-2 and I-3 with Hardware References
July 2009	Section J	Updated part number on page J-5

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**Section A Product Summary**

**Section A Product Summary (see Product Manual 8410 Section A for generic information not related to the GEN2 zone control operation).**

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**Section B Application Guidelines (see Product Manual 8410 Section B for generic information not related to the GEN2 zone control operation. Section B contains information not applicable to GEN2.**

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**Section D Engineering Data (see Product Manual Section D for general information not related to the GEN2 zone control operation. The following information not applicable to GEN2:**

- **“Auto-Slug” ZONE length does not apply to GEN2**
- **“Pull Factors”. CAUTION: GEN2 Auto-Slug enabled is the default mode. The GEN2 Auto-Slug through-put and pull factor can vary dramatically based of the GEN2 programmable features. When in doubt, it is suggested that you use the information describing the “Slug” operation pull factors.**
- **“Sensor Position Selection”. CAUTION: Since photo eye sensors can be “offset” up to 6”, the maximum length of product that will restart may be affected.**

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**Section E Layout Dimensions (see Product Manual Section E for generic information not related to the GEN2 zone control operation. Section E contains information not applicable to GEN2.**

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**Note: D6019 (USB) Interpreter specific troubleshooting can be found under it's specifications in Section C of this manual.**

**Note: D4009 (DeviceNet) Interpreter specific troubleshooting can be found under it's specifications in Section C of this manual.**

**Section I Parts Identification**

**Section I Parts Identification (see Product Manual 8410 Section I for generic information not related to the GEN2 zone control operation. Section I contains information not applicable to GEN2.**

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## SECTION A: PRODUCT SUMMARY

### Overview

Photo-Eye Accuglide history with Humphrey valves:

- P3040 former special (basic valve only)
- 555 former special (first valve module with slug release only)
- GEN1 former standard (555 and 565 combined single valve module with slug release and Auto-Slug/Dual Zone mode selector switches).
- GEN1.5 current standard (dual valve module with slug release and Auto-Slug/Dual Zone mode selector switches).
- GEN2 is the most recent offering (of a single valve module with programmable control).

Accuglide with the GEN2 control module (G2CM) feature and photo-eye sensors is the latest development that offers a basic stand-alone default function, and a higher level of control function with an array of selectable features when a system “Interpreter” is used.

- The “Interpreter” is available in a DeviceNet or USB conventional programmable configuration that can be used to customize the operation of each zone to eliminate much of the zone to zone air piping and/or sensor special wiring previously required.
- A laptop computer (not included) with “Windows” based software loaded is used to interface with the “Interpreter” and quickly set sensor timers, turn features ON/OFF, and enable “smart” sensor eye positions that can replace some previously used photo-eyes (independently mounted) that communicate status with the parent system operating program.
- One photo-eye sensor (without a timer) in every zone.
- One GEN2 module in every zone connected to the sensor.
- Single barb air actuators connect directly to the GEN2 module in their local zone.

### Designation (LEO)

AGP2 (for Accuglide with Photo-Eye electric sensor accumulation and transportation with enhanced features of the GEN2 modules).

### Modes and Features

Note: An “Interpreter” and its software are required to change the default (enable/disable and timer) settings, as well as communicate with the host control system.

A string of GEN2 modules can operate without an “Interpreter” if an independent release solenoid (like on GEN1.5) is installed, and will provide the following basic functions:

- Accumulation (DS2 unless otherwise preset) (DS = Downstream).
- Auto Slug (at 0 second delay and all modules are enabled so that all upstream zones will slug release when any two consecutive downstream sensors are clear).

**Modes and Features  
(continued)**

See Section B Application Guidelines for in-depth description of the following modes and features:

**Sensor control for Accumulation & Singulation Release**

DS2 = Downstream second zone sensor will de-energize the zone when it is blocked for 0 seconds. This is the normal default setting.

Alternate sensor settings are available using an "Interpreter";

0 = Local zone (where the sensor eye is connected to the module).

DS1 = Downstream first zone.

0+DS1 = Local and Downstream first zone.

DS1+DS2 = Downstream first and second zones. (Also known as "Dual-Zone").

**Auto-Slug** (Default = Enabled @ 0 second delay)

**Slug** (Default = Enabled, but must have an "Interpreter" provided release signal.)

**Sleep** (Default = Disabled @ 0 second time delay.)

**Smart Sensor** (Default = Disabled) Max 3 on USB or 7 on DeviceNet "Interpreter".

**Jam** (Default = Disabled @ 0 second time delay.)

**Time Delays** (Default = 0) An "Interpreter" required to change delay settings up to 25 seconds.

**Fault Detection and Auto-Recovery**
**Section Widths (W)**

16", 22", 26", 34", 40" W (Between Side Frame Dimensions)

**In-Feed Section**

6'-0" single zone drive with one module and sensor.

**Intermediate Section**

Standard 12'-0", 9'-0", 6'-0" and 3'-0" with one module and sensor in each 36" zone.

Special 1" incremental length single zone sections with one module and sensor are available from 3'-1" to 5'-11".

Special accumulation type intermediate curve sections are available for some applications upon request.

**Discharge Section**

3'-0" single zone tail with one module and sensor.

**Section Frame Type**

Type RSH - (Rollers Set High) - 6-3/8" deep rail.

Type RSL - (Rollers Set Low) - 9" deep rail.

Type I (integral) not available for PEAG.

Type PK (pick) not available for PEAG.

**Photo-eye Sensor**

One 24 VDC retro-reflective (IP67 enclosure) photo-eye is (normally) mounted on the driver side in each zone (on the outside of the side frame at position A or B as specified).

The M8 male sensor connector is designed for use with the module. Sensor extension cables are available if the photo eye sensor must be mounted on the opposite side.

The reflector mounted on the opposite side at 0", 2" or 6" offset as specified.

Each sensor is connected to the solenoid control module in its local zone.

A disconnected (or missing) sensor will be interpreted as a blocked sensor by the solenoid control module.

**Solenoid Control Module (G2CM) GEN2**

One 24VDC, 3-way, normally-closed valve module is installed on the driver side (from the inside of the side frame normally near the middle) of each zone that has a photo-eye sensor.

The module has a 4-pin push to connect Power / Communication Cord and a PICO female connector for the sensor.

Operational mode and feature selection is via the "Interpreter" software provided using a laptop computer.

Enclosure not currently rated, but expected to test at an IP65 rating with port plug in place.

The GEN2 control module can be mounted directly to the conveyor side rail with the male or female cable oriented toward the downstream. Mounting with the exhaust port down is recommended to prevent contamination of the valve. The control module may be mounted to the inside or outside of the rail.

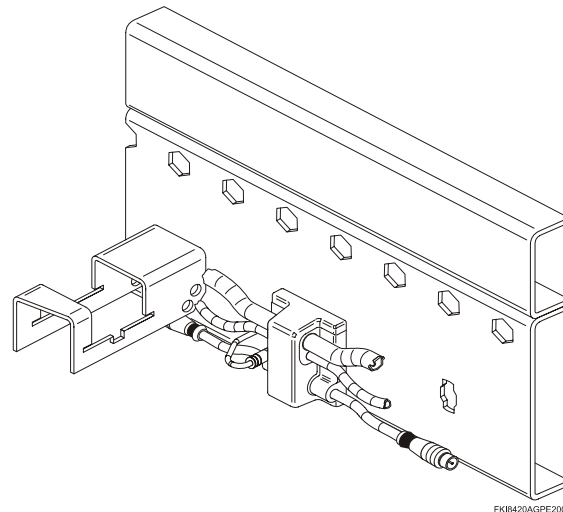
A functional system must have a minimum of three control modules. The modules must be connected to their mating components directly; no gender adapting cables can be used. The interpreter can be attached to the module chain at either the upstream or downstream end point of the line. A complete system must include only two cable terminators, a downstream terminator at the downstream end point and an upstream terminator at the upstream end point. The maximum number of control modules in a functional system is 100. The terminators define the end points of the conveyor as well as define the upstream/downstream orientation.

**Note: It is recommended to install inline voltage filtering at the power supply output per power supply manufacturer's recommendations to help ensure minimal electrical noise which may cause undesirable operation.**

### Solenoid Control Module (G2CM) GEN2 (continued)

The control module is primarily made up of a PC board and solenoid valve. It controls airflow to air "pucks" based on inputs from its local photo eye and surrounding modules according to user definable logic. There is one module for each zone on the conveyor, and with a few exceptions, each module is located in the middle of the zone it controls. The modules are designed to snap into the side frame from the inside of the conveyor allowing the status LED's to be viewed easily. Each module is connected to an associated photo-eye sensor and all modules are connected together via pneumatic tubing and electrical cables that supply power and communication between the modules. Each module is "smart" and can communicate upstream and downstream to other modules. There can be up to 100 control modules for each Interpreter.

The module is equipped with two status LEDs. One LED is a bi-color green/red to indicate module power and status (green - powered/OK, red - faulted). The red LED will flash upon a communications error with its upstream or downstream module. The second LED on the module is amber and when illuminated, indicates a signal to energize the solenoid valve.



### Power Supply

One 110VAC input / 24 VDC output transformer with overload protection can power up to 70 modules.

### Side Guides

Type RSH (rollers high) sections require side guides mounted 1" above the conveyor side frame top flange (or about 3/4" above the product carry surface).

Special side guides are mounted flush on the top flange of the side frame and with sensor sight holes, and are available by special order.

Type RSL (Rollers Low) section side frames extend 2-5/16" above the rollers. Direct Mounting (Style A) side guides can be bolted to the frames top flanges.



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## SECTION B: APPLICATION GUIDELINES

### Introduction

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**Note:** Refer to *Product Manual 8410 Accuglide Live Roller Conveyor Section B Application Guidelines* for other basic application information not contained or otherwise superseded here.

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The Accuglide GEN2 module controls zones based on inputs received from its sensor and neighboring sensors as set by the default or "Interpreter" that stores module settings and transfers control messages between the conveyor modules and the main operating system control.

The following are guidelines that are unique to the application of the Accuglide "photo-eye" Intermediate Sections.

### Minimum Product Weight

There is no minimum product weight limitation because of the fact that a photo-eye detects the presence of product when its light beam is blocked; not when a moving product of sufficient weight depresses a raised sensor roller. It is necessary to consider several factors when conveying very light items.

1. A light product (less than 2 lbs.) may not convey smoothly as it has a tendency to bounce around due to conveyor vibration, air currents, etc.
2. A light weight product may stop abruptly when entering a non-powered zone when the rollers have had time to stop turning. The following product will bump the stopped light weight product and move it further into the zone.

### Maximum Product Weight

The maximum weight is 100 lbs./ft. It will be necessary to consider several weight-related factors when conveying heavy items.

1. Heavy products may be sluggish in starting-up from a dead-stop when being released from the accumulation mode. This could affect a conveyor's release rate.
2. Heavy products will coast further than light loads into a non-powered zone. This may limit the conveyor's maximum speed, especially when handling a mix of load weights.

### Product Surface Characteristics

1. Product surfaces must not reflect the photo-eye light beam and cause sensor error.
2. Product must not be transparent or have openings that would allow the photo-eye light beam to pass through and cause sensor error.

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## Minimum Product Height

The minimum product height is officially stated to be 1" to insure that the photo-beam is adequately blocked.

## Maximum Product Length

The maximum product length is limited by the ability of an accumulated product to advance forward when a zone's rollers return to the "powered" state. See Figure B-1 (Sensor Positions).

## Sensor Positions

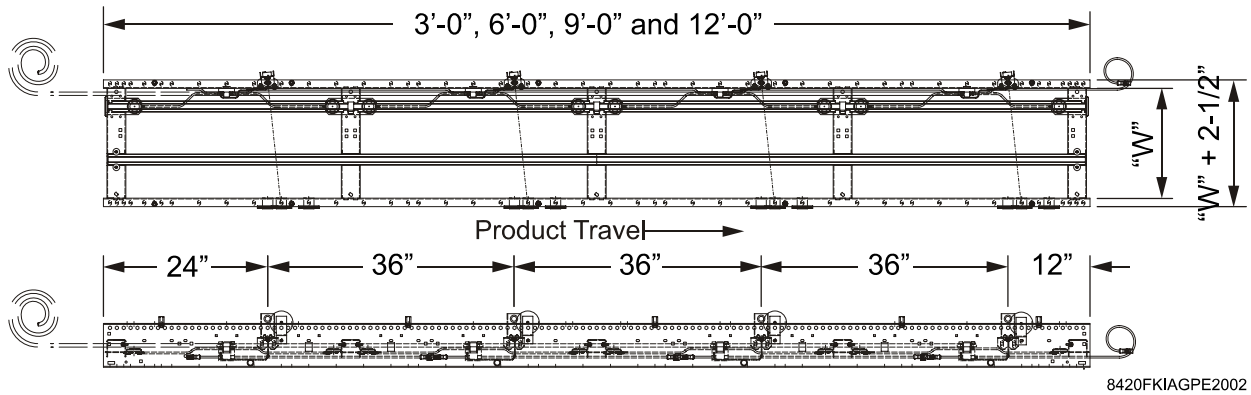
Two (2) sensor positions are available:

- Position "A" positions the sensor 24" downstream from a zone's leading edge.
- Position "B" positions the sensor 12" downstream from a zone's leading edge.

**Note:** Refer to *Product Manual 8410 Accuglide Live Roller Conveyor Section B Application Guidelines*, for selection criteria.

### Sensor Position A

The photo-eye sensors are mounted approximately 24" from the in-feed end of the zone.



### Sensor Position B

The photo-eye sensors are mounted approximately 12" from the in-feed end of the zone.

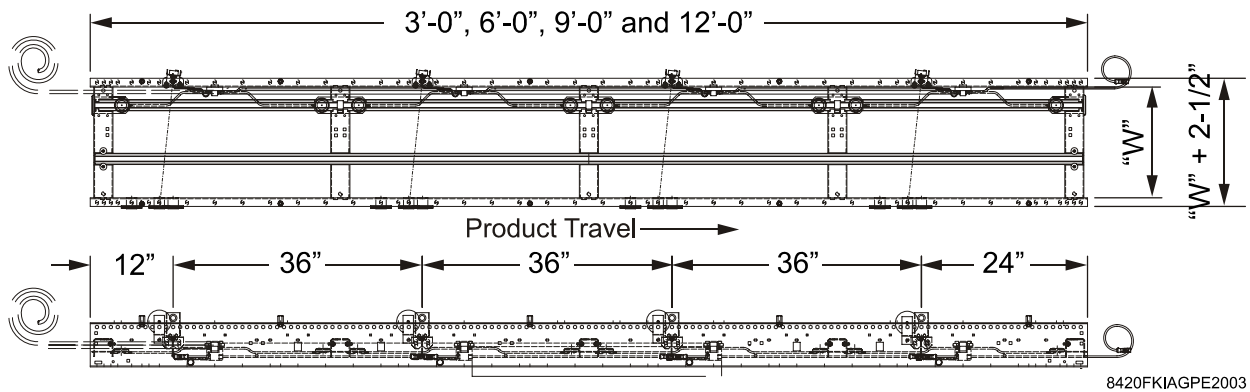


Figure B - 1 AGPE Intermediate Section Layouts

## Sensor Photo-Eye / Reflector Offset

Sensor photo-eyes are fixed (at the A or B specified position) and the reflector is normally offset to ensure that the sensor photo-eye's light-beam is broken by a product conveying in the associated zone.

A 2" offset is standard for most products.

A 6" offset is available and serves the same function as the "dual-roller" mechanical sensor previously did.

The "0" offset option is used to minimize spaces, maximize throughput, and ensure that "smart" sensors see any space available between product with vertical sides.

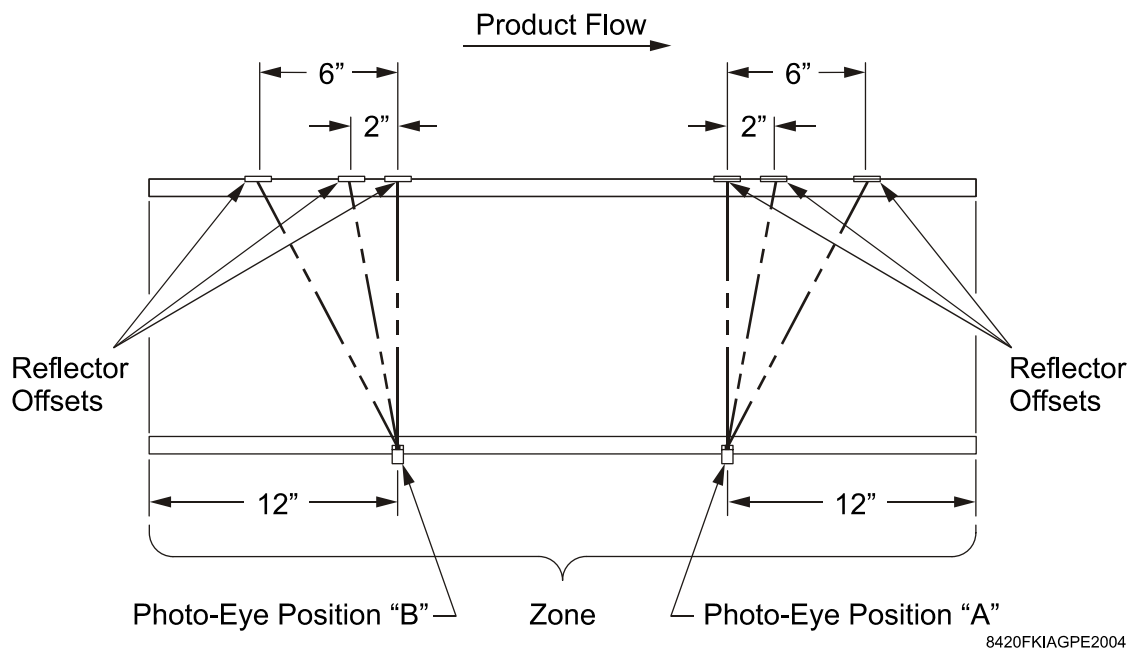


Figure B - 2 Sensor Eye / Reflector Offset

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## Frame Type(s)

The sensor-eye Intermediate Sections are available with two types of frames;

- RSH (Rollers High)
- RSL (Rollers Low)

Select the frame type that is best suited for the application requirement, see Figure B - 3

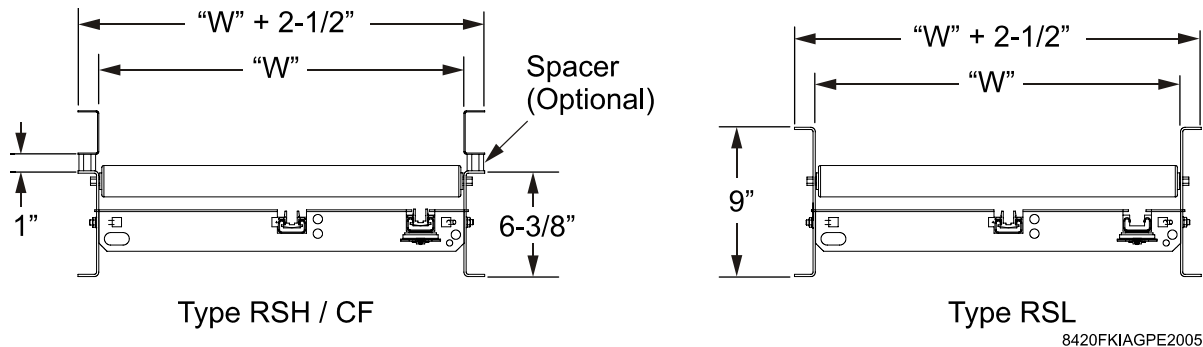


Figure B - 3 Frame Types

### RSH Frame

Frame (6-3/8" deep rail with 1-1/4" top / bottom flanges) - The standard frame depth for all of the company's powered belt and roller product lines with the top of the rollers extending 5/16" above the top flange.

Side Guides are required to contain product on the conveyor as well as protect the photo-eye sensors. For AGPE conveyors, the side-guides are limited to those that will not interfere with the sensor eye line of sight.

- Style A "Direct Mounting" flush on top of the conveyor side frame are not normally used, unless provisions are made for adding holes in the side guide for the sensor eye line of sight.
- Style B "Spaced Mounting" is standard for AGPE. It utilizes a 1" spacer to elevate the (Type A = 1-3/4" angle) (Type B = 2-5/8" channel) (Type C = 7" channel) or (Type D = 10" channel) side guide approximately 3/4" above the carry surface for the sensor eye line of sight.
- Style D "Adjustable", provided the lowest side guide channel is set 3/4" above the product carrying surface, and the distance between the side guides is equal to the between frame rail dimension.

### RSL Frame

Frame (9" deep rail with 1-1/4" top / bottom flanges) - The frame provides an integral side-guide with the top of the rollers being 2-5/16" below the top flange. Flared, 1" dia. openings in the rail allow the photo-eye's beam to be transmitted to the reflector on the other side. If required, additional Style A "Direct Mounting" side guides can be bolted to the top rail flanges.

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## Zone Control Module Logic

### Operational Modes

#### *Release*

A Release signal is sent to the "Interpreter" via switch closure or DeviceNet. The "Interpreter" sends out a release message and the downstream most zone turns on. In DS2 zone or DS1 + DS2 zone accumulation 2 discharge zones (6ft of product) will be powered on at release.

**Release supersedes modes below.**

If an "Interpreter" is not used, the last zone will need an independent valve air piped and controlled to initiate the release.

#### *Sleep*

(Default = disabled) Enabled zone module will shut down if US2, US1 and 0 Local sensor eyes are clear for a predetermined amount of time. The sleep timer is adjustable from 0 to 25 second in 0.1 second increments. The Module will "wake" when these conditions are broken or if US3 or US4 become blocked or upon any change of state of DS1 or DS2 sensor eyes.

**Sleep supersedes modes below.**

#### *Jam*

(Default = disabled @ 0 second delay) Enabled zone will activate a JAM mode when its LOCAL, US1 and US2 PE's are blocked and the DS1 and DS2 PE's are clear for a selectable time period (0 to 25 seconds in 0.1 second increments). When a jam is detected a jam signal is passed upstream from the point of the jam, terminating all slug and auto-slug signals. This allows all zones upstream of the jam to accumulate and release independently. The message is also sent to the "Interpreter" and, if connected, can be communicated to supervisory controls system. **Jam supersedes modes below.**

#### *Slug*

(Default = enabled) An external SLUG signal is sent to the "Interpreter" via contact closure or DeviceNet. The "Interpreter" sends out a slug message and all enabled modules turn on. Enabled modules return to normal accumulation mode once a slug off message is received.

**Slug supersedes modes below.**

#### *Auto-Slug*

(Default = enabled @ 0 second delay) Enabled zone modules will turn on after each individual module timer has expired (independent of local sensor status) when any two consecutive downstream sensors are clear. When there are not two consecutive (DS1 and DS2) zone modules clear, the auto-slug condition is broken, an auto-slug OFF signal is sent upstream and modules will return to their normal accumulation mode.

A timer (with range of 0 to 25 seconds in 0.1 second increments) can be set via the "Interpreter" to delay the propagation of the auto-slug ON signal. This timer is one method to control the release rate efficiency and line pressure.

Disabling modules at regular intervals (like 3 disabled then 2 enabled = 40%) is another method used to limit line pressure.

---

### *0 Zone*

Module accumulates and releases product as the Local sensor eye becomes blocked and cleared. A software timer can be set to delay accumulation from 0 seconds to 25 seconds, in 0.1 second increments, after PE blocked. Normally used at the last zone module on the end of a conveyor line when the release signal is clearing of the last sensor eye.

### *DS 1 Zone*

Module accumulates and releases product as the DS1 sensor eye becomes blocked and cleared. A software timer can be set to delay accumulation from 0 seconds to 25 seconds, in 0.1 second increments, after PE blocked. Normally used for product sizes smaller than the zone length and at low speeds.

### *DS 2 Zone*

(Default & timer @ 0.0 seconds) Module accumulates and releases product as the DS2 sensor eye becomes blocked and cleared. A software timer can be set to delay accumulation from 0 seconds to 25 seconds, in 0.1 second increments, after PE blocked. Normally used for product sizes larger than the zone length and at high speeds.

### *DS 0+1 Zone*

Module accumulates product when both the Local and DS1 sensor eyes become blocked. Zone releases when either DS1 or DS2 are cleared. A software timer can be set to delay accumulation from 0 seconds to 25 seconds, in 0.1 second increments, after PE blocked. Normally used on pallet accumulation conveyor or in conjunction with 1 Zone accumulation to ensure zone fill.

### *DS 1+2 Zone*

Module accumulates product when both the DS1 and DS2 PE's become blocked. Zone releases when either DS1 or DS2 are cleared. A software timer can be set to delay accumulation from 0 seconds to 25 second, in 0.1 second increments, after PE blocked. Normally used in conjunction with 2 Zone accumulation to ensure zone fill.

### *Smart PE*

Smart sensor photo-eyes can be enabled at any module in string controlled by the "Interpreter". The designated enabled sensor(s) can transmit status information to:

- the DeviceNet "Interpreter" can support up to 7 smart sensors.  
"Light Operate" = output '1' when sensor is clear.
- the USB "Interpreter" can support up to 3 smart sensors.  
"Dark Operate" = output '0' when sensor is clear.

---

**Note:** In some system applications, traditional system control "smart" photo-eyes will still be required (to communicate across panel break points) and it is recommended they be mounted next to the zone sensor eye.

---

---

## Speed Selection

Selecting the speed is one of the most critical aspects in engineering an accumulation conveyor that is part of an overall case-handling system.

While it is desirable to select the slowest speed applicable (to keep the system's noise level low and also to keep the equipment cost low), it is important that the selected speed be capable of meeting the conveyor's flow-rate requirements. The flow-rate will be the number of "case-feet" that a conveyor will convey per minute at a given speed.

The conveyor's flow-rate must be equal to:

1. Its "release-rate" requirement (supplying product to the adjoining downstream conveyor/equipment at its required flow-rate).
2. Its "acceptance-rate" requirement (receiving product from the adjoining upstream conveyor/equipment at its flow-rate).

Refer to *Product Manual 8410 Accuglide Live Roller Conveyor*, Section D - Engineering Data topics Acceptance Rate and Release Rate information.

## Environment Conditions

Intermediate Sections with photo-eye sensors perform properly in all temperatures between +40°F to +140°F (+4°C to + 60°C). Do not use or apply in wash-down areas.

Avoid environments where dirt, oil, etc. could build up on the photo-eye and reflector and interfere with their function.



**SECTION C: SPECIFICATIONS**

**Note:** For information not otherwise listed here within, refer to Product Manual *8410 Accuglide Live Roller Conveyor*, Section C Specifications.

**GEN2 Accuglide Conveyor**

**Control Components**

The Control Components typically consist of the following;

- One Solenoid Control module (G2CM) per zone.
- One Photo-eye sensor (without timer) per zone.
- One Interpreter (USB or DeviceNet) per conveyor. (Note: One interpreter may be used with back-to-back AGLR conveyors if the total number of zones is less than 100.)
- One power supply (for conveyors up to 70 zones).
- One T-connecting cable for the power supply.
- One Upstream Terminator.
- One Downstream Terminator.

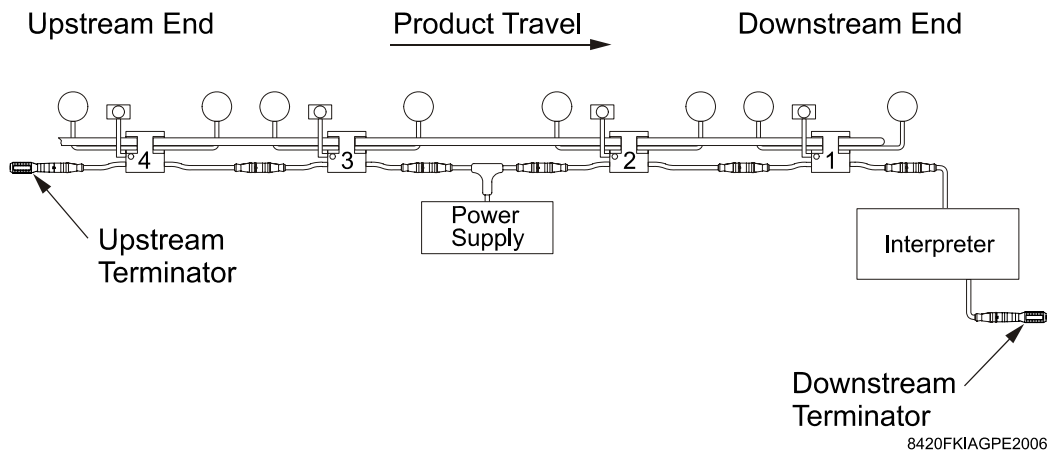


Figure C - 1 GEN2 General Control Arrangement

**Operational Zones**

Segmented chain support assemblies (UHMW track), and pneumatic actuators (mounted in crossmembers) hold the drive chain/pad in raised (powered) or lowered (non-powered) positions.

**Sequential (Trailing) Zone Control**

Each Operational Zone is controlled by its associated Solenoid Control Module and photo-eye sensor in the programmed downstream zone.

---

## Lengths

- The Drive section is one zone 6'-0" long with rollers pre-installed at approximately 2" centers.
- The Intermediate sections are available in the following lengths;
  - 12'-0", 9'-0", 6'-0" and 3'-0" standard.
  - 3'-1" - 5'-11" in 1" increments made to order.
  - Rollers are crated and shipped separate from intermediate sections in quantities suitable for 2", 3", 4" or 6" centers.
- The Tail end section is 3'-0" long with rollers pre-installed at approximately 2" centers.

Actual frame lengths are approximately 1/16" less than stated length to allow for assembly growth and squaring.

## Frames

The Section(s) are available with two types of side frames;

- Type RSH (rollers high) 6-3/8" deep x 1-1/4" flange x 10 ga. formed steel channel rails with bolted crossmembers. Mounting holes/slots for 7/16" hex axles (or pop-out adapters) are punched at 1" centers. Rollers extend 5/16" above the top flange.
- Type RSL (rollers low) 9" deep x 1-1/4" flange x 10 ga. formed steel channel rails with bolted crossmembers. Mounting holes for 7/16" hex axles are punched at 1" centers. Rollers are 2-5/16" below the top flange. Rails have 1" diameter openings to provide a path for photo-eye's light beam to pass at 0 (perpendicular), 2" offset or 6" offset. Openings are flared to prevent product from catching.

## Widths

- Width (W) = dimension between frame rails.
- 16", 22", 28", 34" and 40" W.

## Rollers

- 1.9" OD

## Roller Mounting

- Fixed
- Pop-Out

## Sensor Pre-mounted Positions

- Position A - 24" from a zone's leading edge.
- Position B - 12" from a zone's leading edge.

## Reflector Pre-Mounted Positions

- 0" offset (perpendicular) from photo-eye.
- 2" offset from photo-eye (similar to single mechanical sensor application)
- 6" offset from photo-eye (similar to dual mechanical sensor application)

## GEN2 Zone Control Module

- One per zone.
- Two pass through 3/8" hose barb air inlet supply ports.
- Two pass through 1/8" hose barb air outlet ports.
  - NOTE: Requires 1/8"ID, (1/4"OD) hose on outlet ports and 3/8" ID, (1/2" OD) hose on inlet ports.
- One female 4 pin M8 input for connection to the photo-eye sensor.
- Push to connect cables for 3 ft. mounting centers.
- Snap-In mounting that requires a 1' wide x 1-1/4" rectangular 10 ga. frame hole.
- Enclosure; Expected to test at an IP65 rating with port plug in place, but not currently rated.
- See additional performance specifications on the following page.

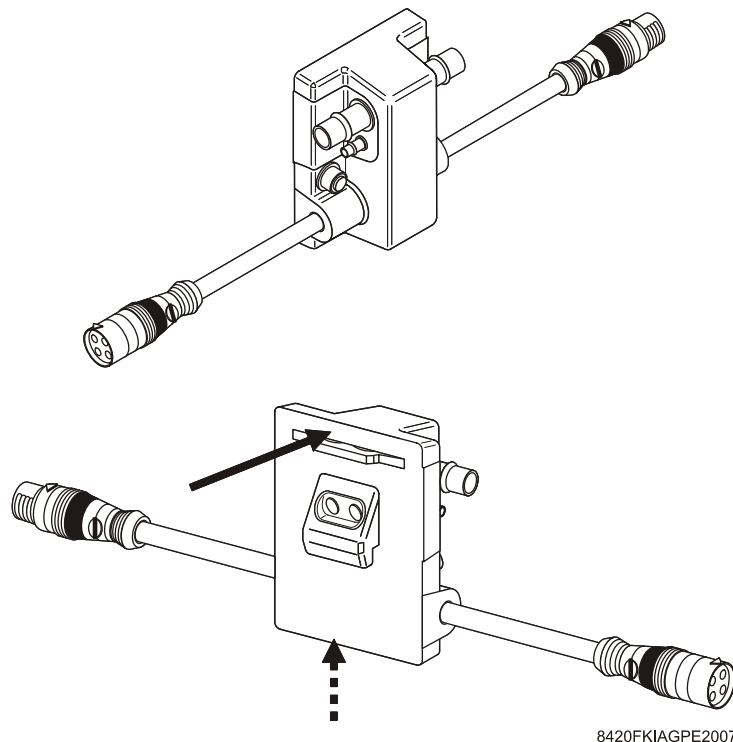
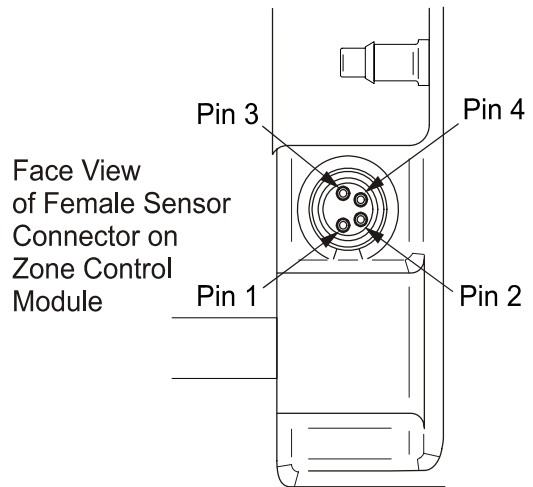


Figure C - 2 GEN2 Zone Control Module (G2CM)

## GEN2 Zone Control Module Specifications (D3032)

### Software V15R3

<b>Default Config.</b>	
Sleep Mode	Disabled
Jam Mode	Disabled
External Slug	Enabled
Auto Slug	Enabled 0.0 Seconds
Accumulation Zone	2 Zone
Accumulation Timer	0.0 Seconds
<b>Electrical</b>	
Minimum Operating Voltage (Vs Min.)	21.0 VDC
Maximum Operating Voltage (Vs Max.)	28.0 VDC
Operating Current	40 ma @ Vs = 24 VDC
EMC Requirements	TBD
<b>Pneumatic</b>	
Media	0-30 psi Compressed Air
Filtration	40 Micron Recommended
Flow	0.55 SCFM @ 30 psi
Leakage (Actuated / Unactuated)	6cc / Max. @ 30 psi
Wetted Materials	Stainless Steel, Xenoy (6370), Nickel Plated Steel, NBR Seals, Brass
<b>Connections</b>	
	Inlets (2) Barb Fitting for 3/8" ID Tubing
	Outlets (2) Barb Fitting for 1/8" ID Tubing
<b>Temperature</b>	
Operating Temperature Range	32° to 131°F (0° to 55°C)
Storage Temperature Range	-72° to 158°F (-40° to 70°C)
<b>Cables</b>	
	Yellow PVC, 4 Conductor Cable UL 2095, 16 AWG. 4 Pin
	Yellow PVC, Push-to-Connect, Male / Female Cable-End Connectors



Sensor Type:  
Retro-Reflective  
NPN (Sinking) (Light On / Normally Open)  
10-30 VDC  
4 Pin PICO 8MM Push to Connect

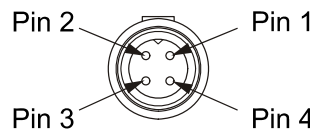
8420FKIAGPE2008

Module Pinout for Sensor

- 1 - Brown (+24 VDC)
- 2 - White (No Connection)
- 3 - Blue (DC Common)
- 4 - Black (Signal)

Pinout (12 mm-Male)

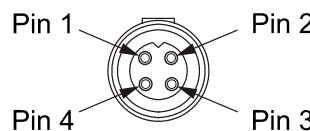
- 1 - Brown (+24 VDC)
- 2 - White (Communication 1)
- 3 - Blue (DC Common)
- 4 - Black (Communication 2)



Cable Connector Male Face View

Pinout (12 mm-Female)

- 1 - Brown (+24 VDC)
- 2 - White (Communication 1)
- 3 - Blue (DC Common)
- 4 - Black (Communication 2)

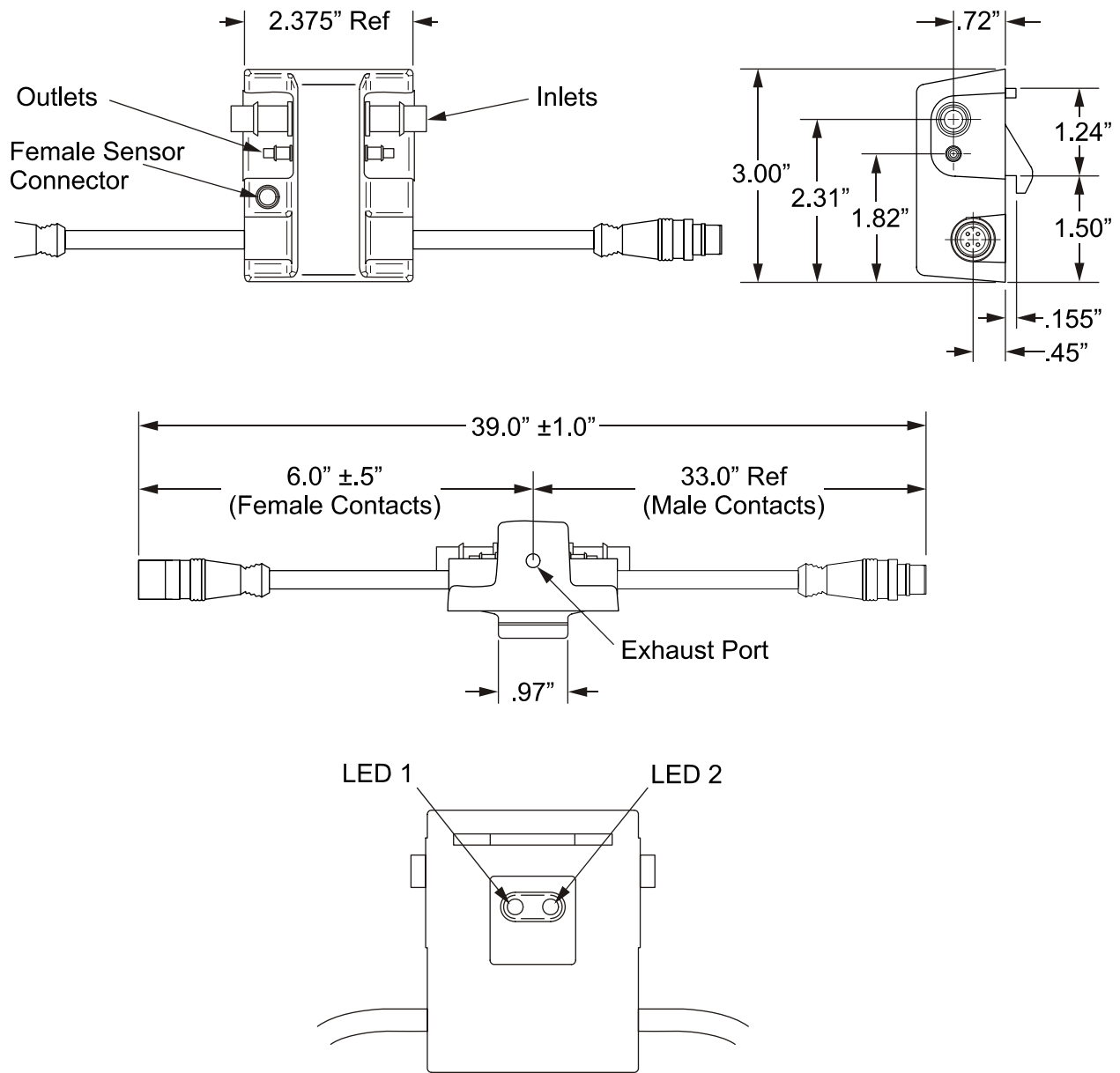


Cable Connector Female Face View

8420FKIAGPE2009

Figure C - 3 D3032 GEN2 Zone Control Module Specifications

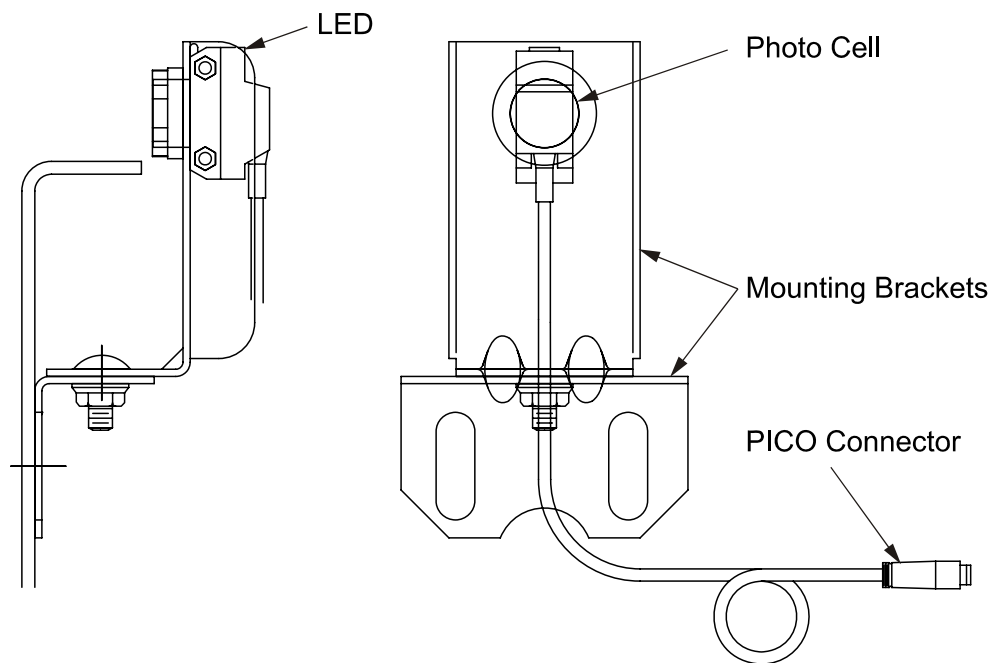
**Product Drawing GEN2 Zone Control Module (D3032)**



8420FKIAGPE2010

Figure C - 4 Product Drawing GEN2 Zone Control Module (D3032)

## Photo-Eye Sensor w/Reflector



8420FKIAGPE2011

Figure C - 5 AGPE Photo-Eye Assembly (Standard position with LED's visible from above)  
Photo-Eye

24VDC, retro-reflective, type NPN output. **NO TIMER REQUIRED.**

### Cord / Connector

Four (4) wires with male PICO push to lock connector.

### Length

25" (nominal)

### Voltage Range

10-30 VDC

### Sensing Range

12'-0"

### Temperature Range

-4° to +158°F (-20° to + 70 C)

### LED Indicators

Green LED "ON" steady indicates POWER ON.

Green LED "ON" flashing indicates output overload.

Yellow LED "ON" steady indicates normally-open output conducting (sensor unblocked)

Yellow LED "ON" flashing indicates marginal sensing condition.

---

## Mounting / Assembly

Barrel-mounted into adjustable, formed steel bracket.

Standard Assembly: LED's visible from "above".

Optional Assembly: PE inverted- LED's visible from below.

## Time-Delay

NOT REQUIRED IN SENSOR (See GEN2 module specification.)

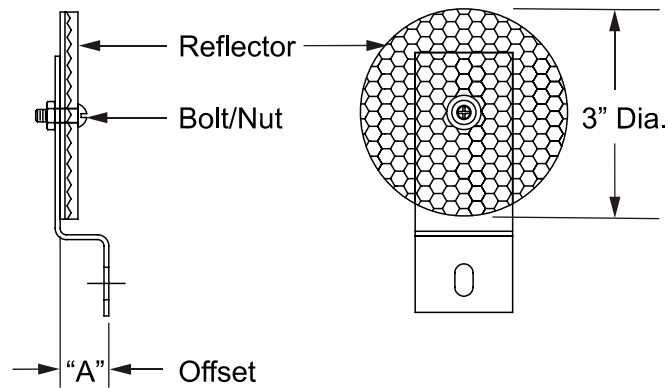
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## Reflector

3" dia., bolted to fixed, formed depth\* offset bracket.

(\* ) Depth of bracket offset based on side frame specified;

- "A" = 1-1/2" for 6-3/8" / RSH rail.
- "A" = 3/4" for 9" / RSL rail.



8420FKIAGPE2012

Figure C - 6 AGPE Reflectors



AGPE Power Supply

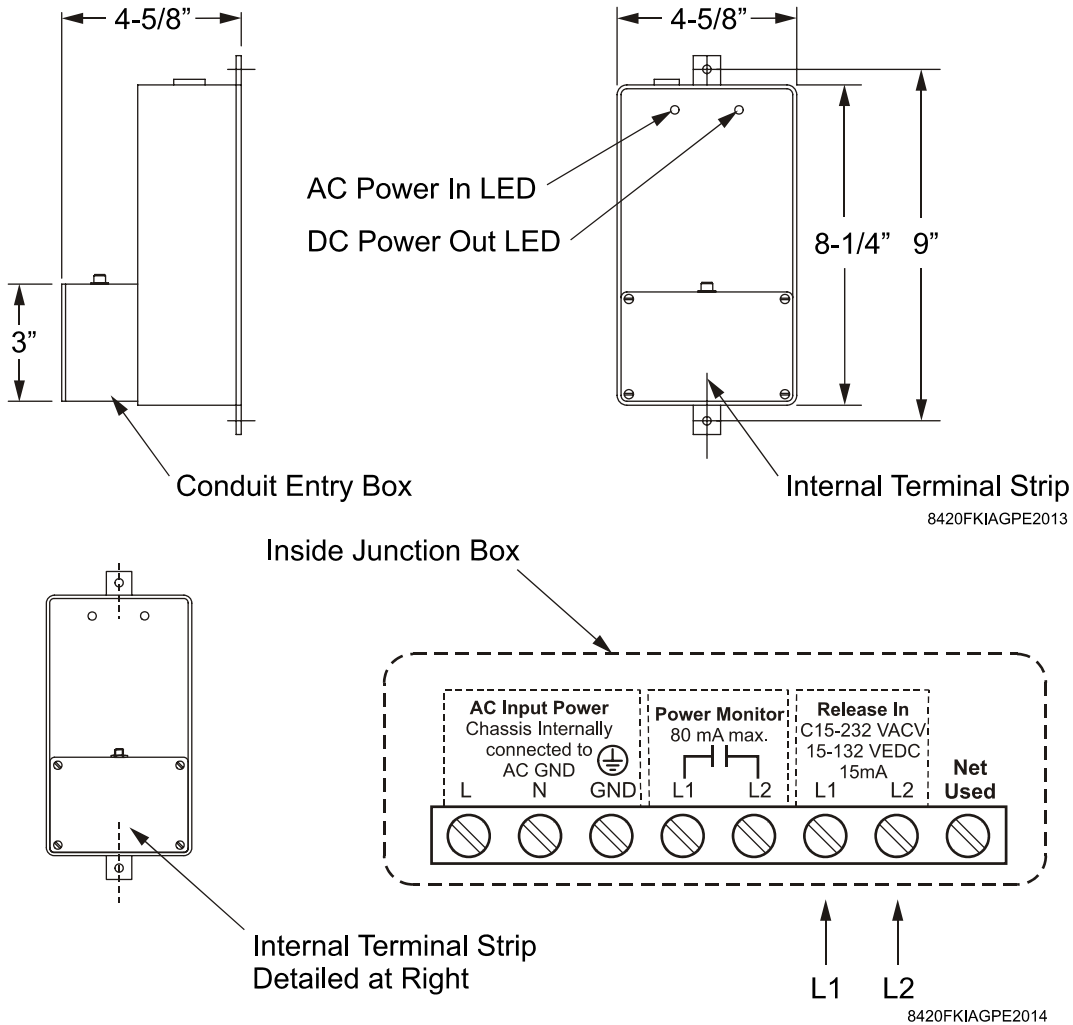


Figure C - 7 AGPE Power Supply

The Power Supply provides 24VDC zone-control power for seventy (70) operational-zones (max.)

**Note:** This same power supply is used with the GEN 1.5 Accuglide, so the "Slug release" terminals (L1 & L2) are NOT used with GEN2, because the slug signal is generated from the Interpreter.

**Note:** The Power Monitor circuit (for diagnostic output) would not normally be used with GEN2.

Enclosure

Die-cast, aluminum (NEMA 1), with On/Off switch, short-circuit, overload protection; reset; LED indicators; and internal terminal block (3 of 8 screw) for connecting power input 12mm, threaded Micro-Connector (male) output connection. UL Approved.

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## Input / Output

For Power-Supply ONLY 105-132 VAC (1.65 amp, full load) / 27VDC (3.7 amp, 100W).

## Mounting

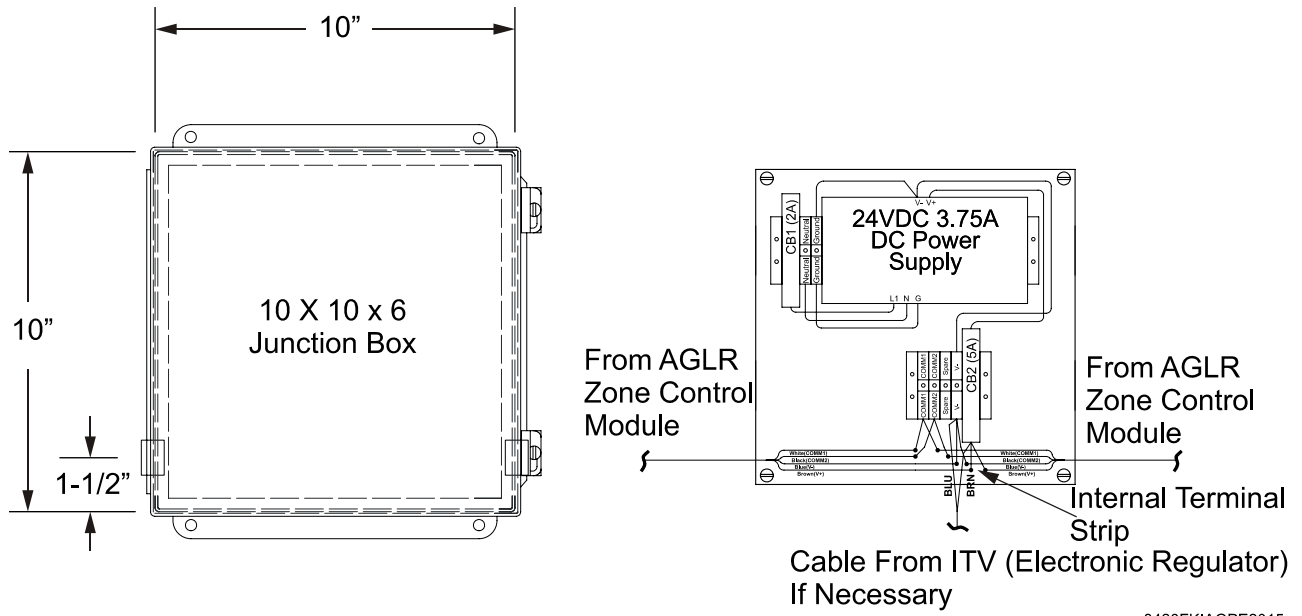
Mounting bracket included, mounting hardware not included.

## Temperature Range

32° to +131° F (0° to +55° C).

### Alternate AGPE Power Supply

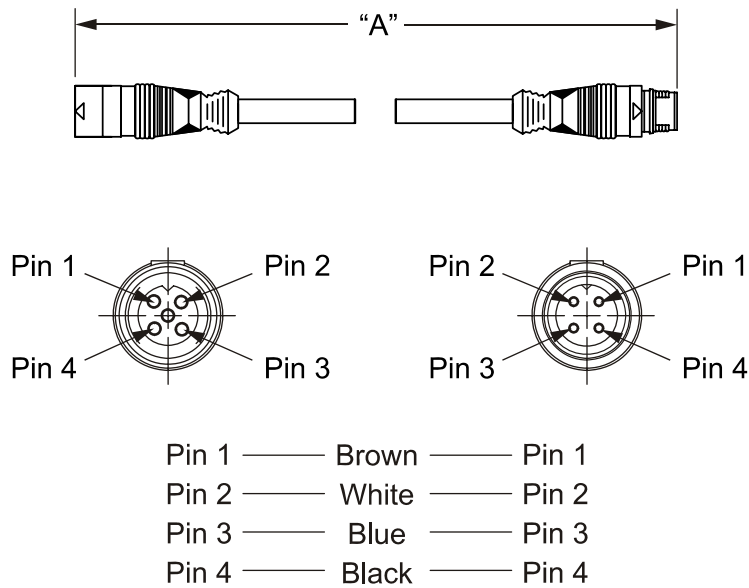
An alternate version (shown below) has the Power Supply mounted in a 10" x 10" junction box that is attached to a heavy duty floor support (not shown). It has the same 65 module capacity and is available by special order.



8420FKIAGPE2015

Figure C - 8 Alternate AGPE GEN2 Power Supply

## AGPE Power / Communication Cords



8420FKIAGPE2016

Figure C - 9 GEN2 Power/Communication Cord

Cord extensions are required when distance between Solenoid Control Modules exceeds 3'-0". Transmits power (24VDC), and inter-module communication signals.

### Cord

Four (4) wires with Yellow PVC jacket.

### Connector(s)

4-pin, 12mm push-to-connect Micro Connector (male and female).

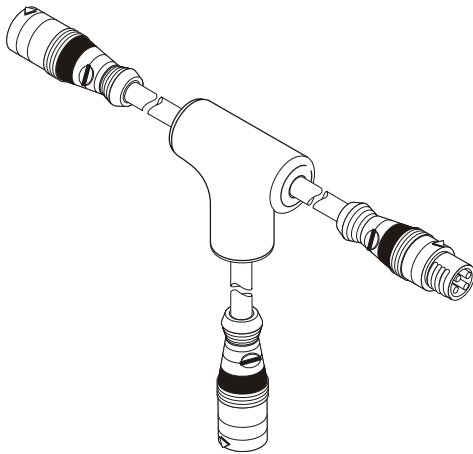
### Lengths

1'-0", 2'-0", 3'-0", 6'-0", 9'-0" and 12'-0".

## AGPE T-Cord

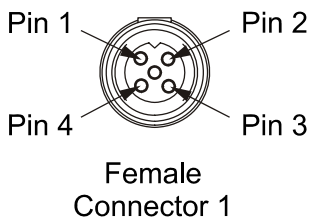
The "T-Cord" 12mm push-to-connect, has a 6'-0" leg with female micro-connector for connection to the Power Supply and a 10" leg with male/female connectors for connecting into the AGPE conveyor's Power/Communication Cord.

The "SLUG" feature is not used with GEN2.

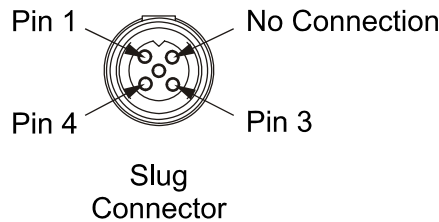
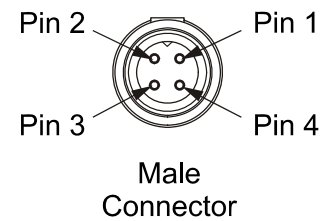


Slug / Power "T" Cable Pinouts

Connector - PIN		Connector - PIN
Female - 1	to	Slug - 1
Male - 1	to	Slug - 1
Female - 2	to	Male - 2
Female - 3	to	Slug - 3
Male - 3	to	Slug - 3
Female - 4	to	Slug - 4
Male - 4	to	Slug - 4



Pin 1 — Brown (DC Positive) — Pin 1  
 Pin 2 — White (Communication 1) — Pin 2  
 Pin 3 — Blue (DC Common) — Pin 3  
 Pin 4 — Black (Slug) — Pin 4



Required for connecting Power-Supply to the AGPE zone control modules.

8420FKIAGPE2017

Figure C - 10 AGPE T-Cord  
 Cord

Four (4) wires with Yellow PVC jacket.

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## Connector(s)

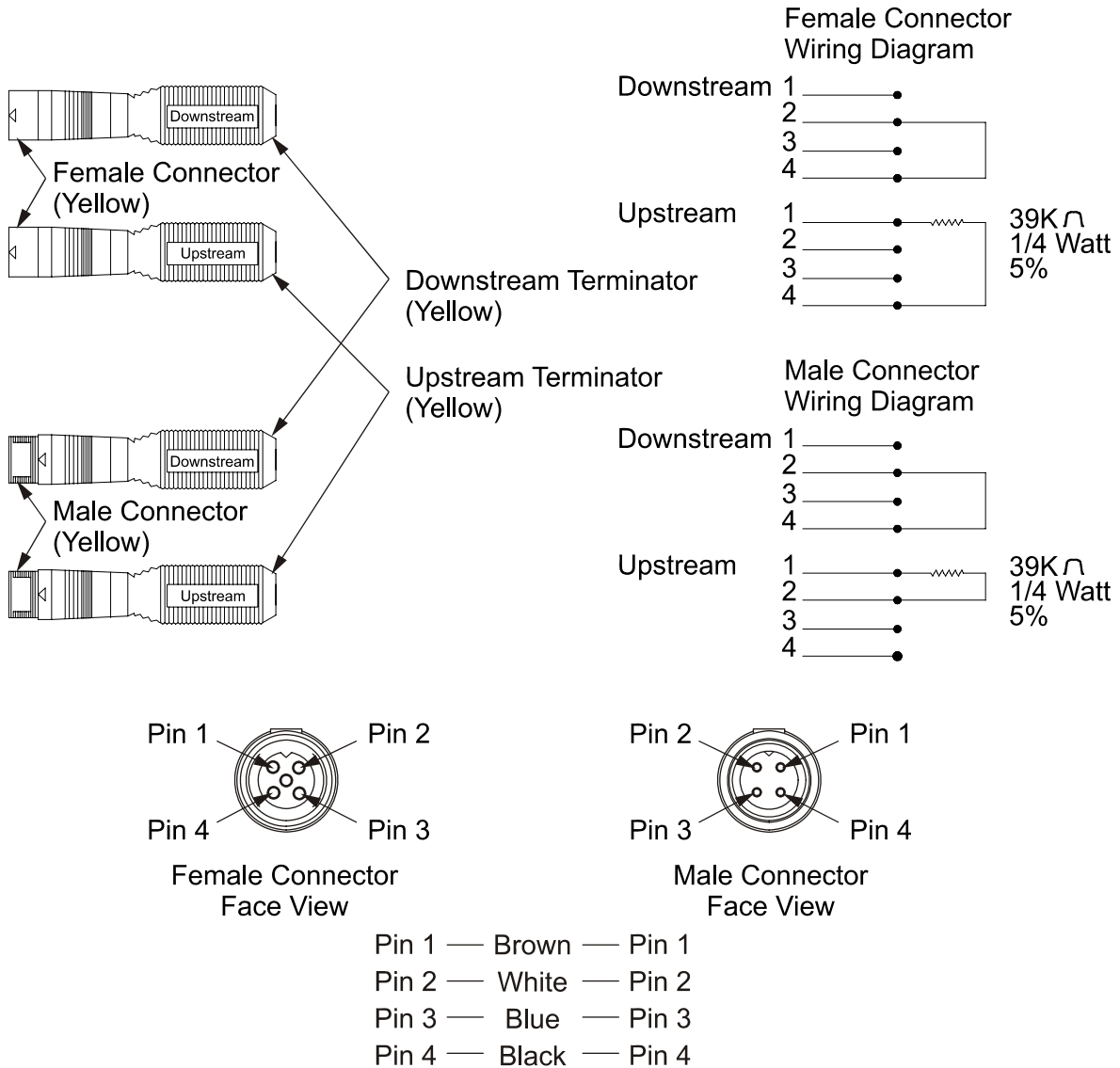
4-pin, 12mm push-to-connect Micro Connector. Long leg of the T-Cord has a female connector that attaches to the male output connector of the Power Supply/Slug-Module and male/female connectors for connecting to the connectors of two (2) inline Zone Control Modules.

## Length

72" X 10" (+/- 1")

## GEN2 Terminators

Male and Female versions of both the Upstream and Downstream terminators are required depending on the hand of the conveyor and the direction of product travel. See example in Figure C - 1.



8420FKIAGPE2018

Figure C - 11 Upstream and Downstream Terminators





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## GEN2 USB Interpreter (D6019)

The USB interfacing interpreter allows control of up to 100 GEN2 modules using a simple USB-B connection. The properties of the GEN2 modules that can be configured with the USB Interpreter are accumulation modes, accumulation delay timers, external slug on/off, 'Smart' photo-eye assignments (up to 3 'Smart' photo-eyes can be assigned), sleep mode on/delay timer/off, jam detection on/delay timer/off, and auto-slug on/delay timer/off. The Interpreter stores valve module configurations and provides an interface point for all inputs and outputs between the valve modules and the external controls. The USB Interpreter has a connection for external slug and release switches, and a connection for feedback of jams, faults, and 'Smart' photo-eye blockage.

The following is an overview of the GEN2 USB interpreter.

### Features

Features of the interpreter include:

- 1 bi-color Module Status LED
- 1 bi-color Input Status LED
- 2 yellow quick-connect cables for connecting to GEN2 modules
- 1 input connection for slug/release (5 pin)
- 1 output connection for jam, fault, and 'Smart' photo-eye feedback (8 pin)
- 3 'Smart' Photo eye signals available ("Dark Operate" = output '0' when sensor is clear.)
- 1 USB-B input receptacle for computer interface
- Powered from GEN2 bus ( 24 VDC )
- 100% compatibility with D3073 Interpreter NPN, PNP, or Dry Contact I/O configurations available

## Installing the USB Interpreter (D6019)

To connect the USB interpreter to the conveyor system;

1. Check that the GEN2 valve modules have power supplied to them and are terminated correctly using the upstream / downstream terminators.
2. Connect the appropriate terminator to the other open yellow connector on the interpreter.
3. Connect an open GEN2 cable to the open yellow mating cable on the interpreter.
4. The Module Status LED should be solid 'Green' if the USB interpreter is connected properly to the GEN2 system. If not, recheck GEN2 valve module connections and terminators.

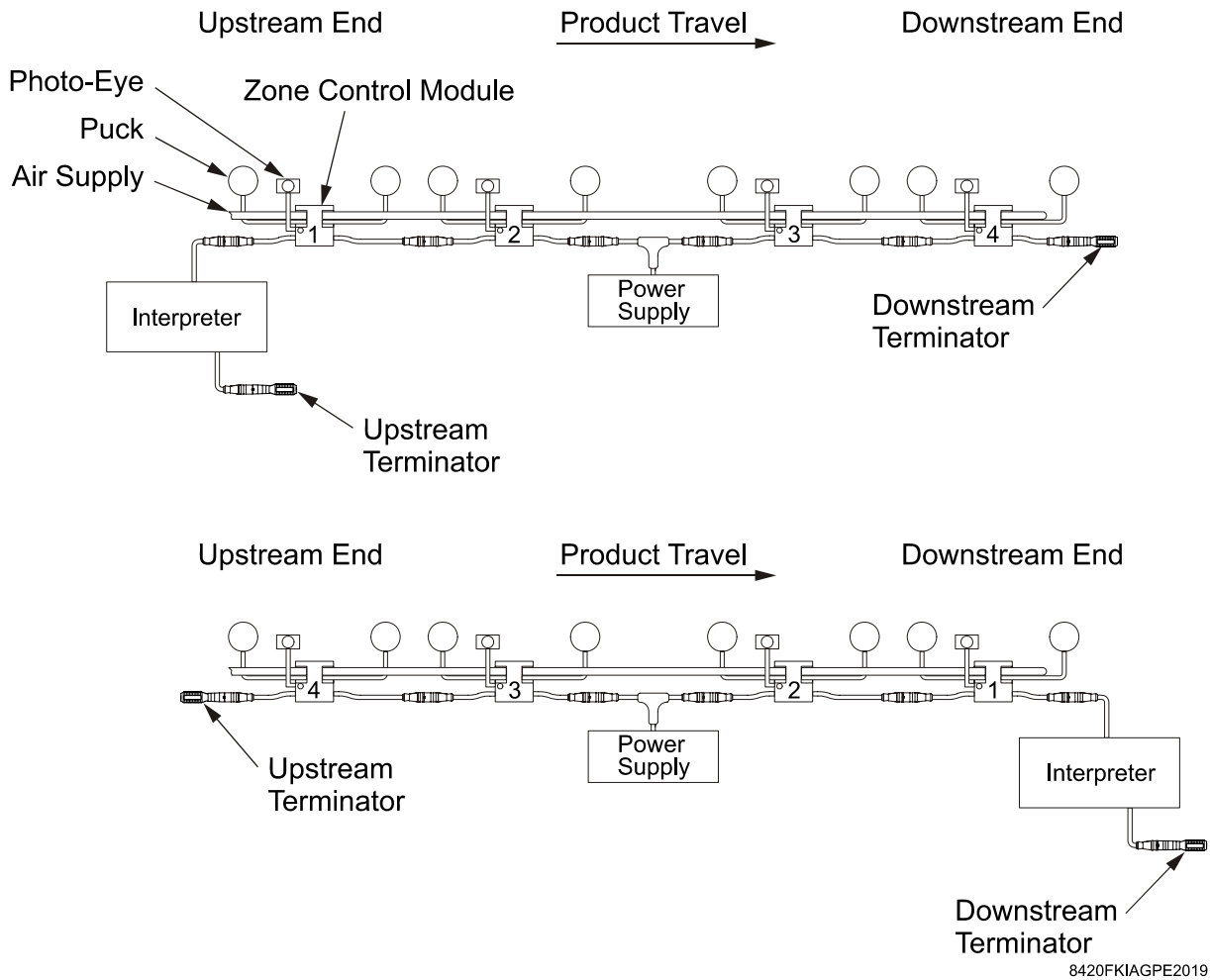


Figure C - 12 Connecting the Interpreter to the Conveyor System

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### *Mounting*

The interpreter is provided with four mounting feet and attached to a conveyor bottom flange mounting bracket.

### *Connectivity*

A functional system must have a minimum of three valve modules. The interpreter can be attached to the module chain at either the upstream or downstream end point of the line. A complete system must include only two cable terminators, a downstream terminator at the downstream end point and an upstream terminator at the upstream end point. The maximum number of valve modules in a functional system is 100. The terminators define the end points of the conveyor as well as define the upstream/downstream orientation. The power supply can be added at any point in the system.\*\*\* A center connected power supply will power the most modules. If multiple power supplies are used they must be electrically isolated from one another.

---

**Note:** \*\*\* It is recommended to install inline voltage filtering at the power supply output per power supply manufacturer's recommendations to help ensure minimal electrical noise which may cause undesirable operation.

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### **Node Controller Software**

The USB interpreter is supplied with Humphrey Products node control software for installation onto a PC. This software facilitates the configuration of the GEN2 modules on a conveyor. The following describes the Installation, use and data transfer to and from the interpreter.

#### *Installation*

From the supplied CD or downloaded file, choose the "Setup" file. Follow the onscreen instructions to install the software to the computer hard drive. Once the setup process is complete, the software is ready to run.

#### *Connecting*

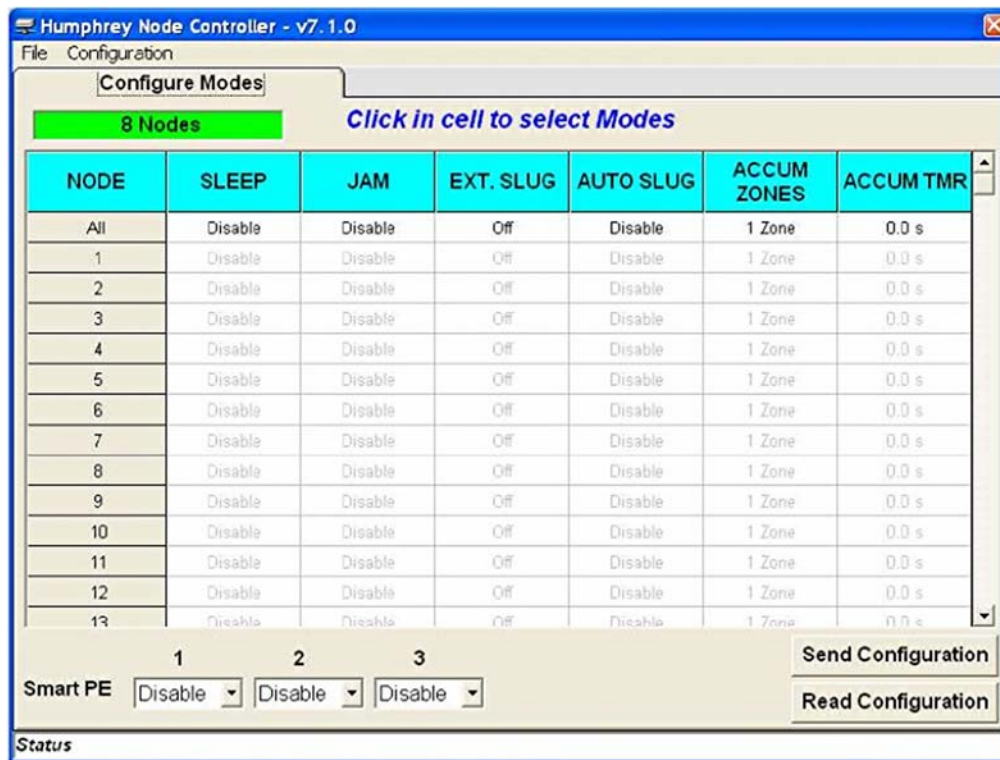
1. Connect the PC USB port to the interpreter with a USB-B cable.
2. Launch Humphrey Node Controller USB software from the start menu.
3. Status window will turn green and display the number of valve modules (nodes) connected to the interpreter. If the status window continues to display "No Connection" after connected correctly, node control software may need to be shut down and reopened.

#### *Configuring*

- To retrieve the configuration of an existing line, click the "READ CONFIGURATION" button. The configuration table will automatically update with the current line configuration settings.
- Settings can be globally altered by selecting the pull down menus in the "ALL" row under the column heading of the mode to be altered. A drop down menu allows access to all the available settings for that mode.
- Unique settings can be made by selecting the pull down menu in the row of a specific module number. Once a unique selection is made, the setting will be displayed in red and

will not change when global changes are made. A unique setting can be changed back to a generic setting by choosing the "GLOBAL" option in its pull down menu.

- Configuration information can be saved by selecting "SAVE" under the "FILE" menu.
- Files can also be retrieved by selecting "LOAD" under the "FILE" menu.
- Once the table is complete, the configuration data can be sent to the interpreter by clicking the "SEND CONFIGURATION" button at the lower right. The data will automatically be sent from the interpreter to the module chain.
- The activity window will display one of three messages, "Disconnected", "Line Break" or "# Nodes".
  - "Disconnected" indicates that the PC is not communicating with the Interpreter.
  - "Line Break" indicates that there is currently a fault on the conveyor line as reported by the interpreter to the PC.
  - "# Nodes" indicates the number of modules connected to the PC via the interpreter.
- A data table can be completed and sent to an interpreter independent of being connected to a module chain. The data will be stored in the interpreter and can be downloaded to the module chain when connected.



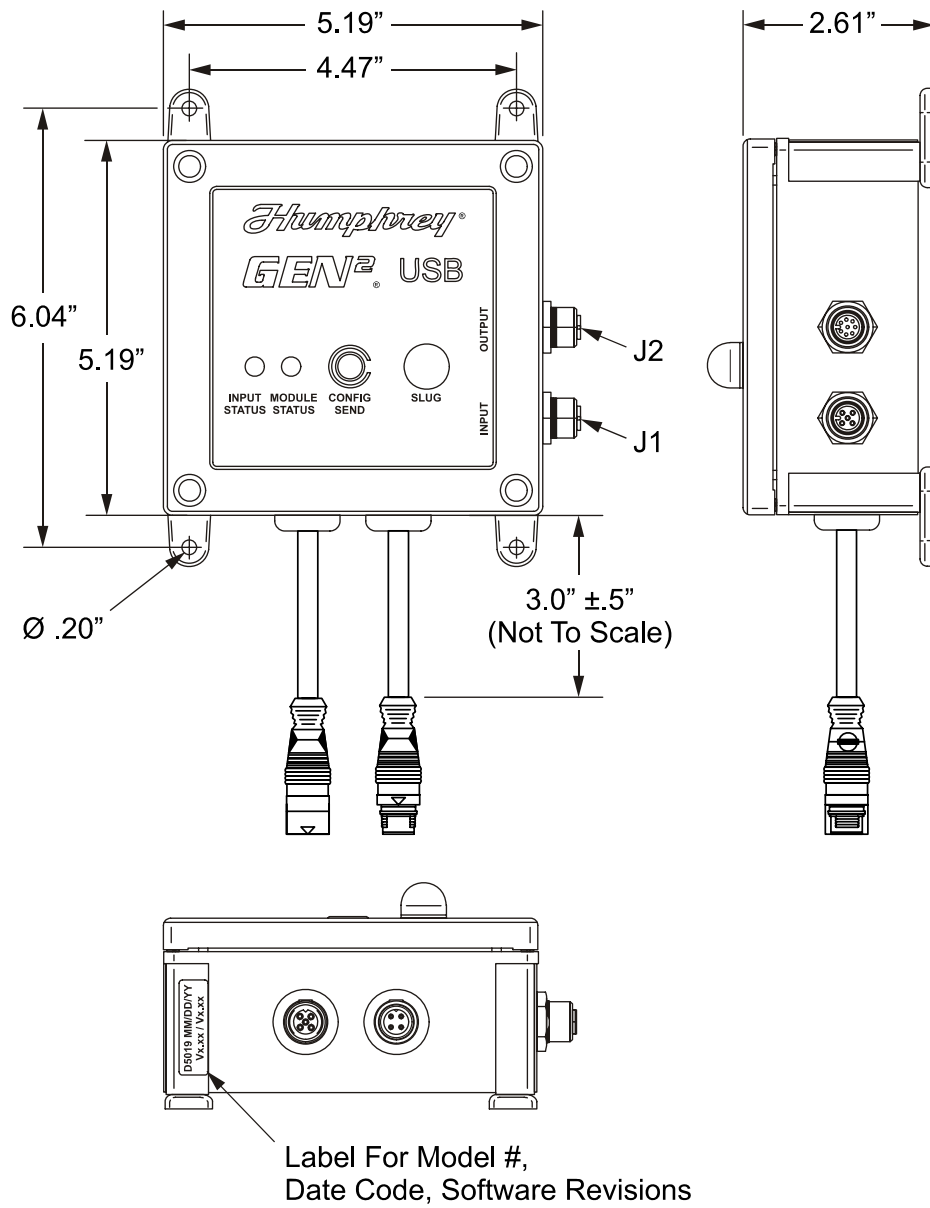
8420FKIAGPE2020

Figure C - 13 Node Controller Program for the USB Interpreter (D6019)

*General Specifications*

<b>Product</b>	USB GEN2 Interpreter
<b>Description</b>	A USB interfacing device used to configure GEN2 modules.
<b>Communication Connection</b>	USB-B receptacle.
<b>Humphrey Bus Connection</b>	1 yellow, male quick-connect cable for connecting to the modules. 1 yellow, female quick-connect cable for connect to the modules.
<b>Status Indicators</b>	Module Status: red/green bi-color LED Input Status: red/green bi-color LED
<b>Operating Voltage</b>	Humphrey Bus power (24 VDC).
<b>Mounting</b>	Four mounting feet.
<b>Size</b>	Length: 130 mm Width: 130 mm (excluding mounting feet) Height: 60 mm
<b>Operating Temperature</b>	32° to 131°F (0° - 55°C)
<b>Humidity</b>	0-95% RH, non condensing.

Product Drawing GEN2 USB Interpreter (D6019)



8420FKIAGPE2021

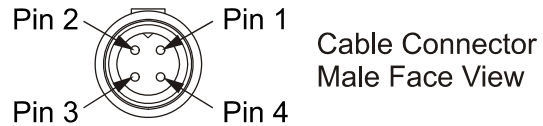
Figure C - 14 Product Drawing GEN2 USB Interpreter (D6019)

*Connection Diagram, GEN2 USB Interpreter (D6019)*

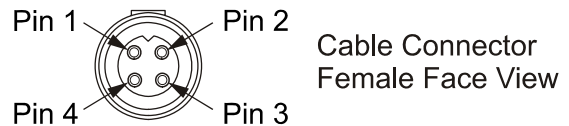
**Cables:**

Yellow PVC, 4 Conductor Cable  
 UL 2095, 16 AWG, 4-Pin  
 Yellow PVC Push-To-Connect  
 Male/Female Cable-End Connectors

Pinout (M12 - Male) 1 - Brown (+24 VDC)  
 2 - White (Communication 1)  
 3 - Blue (DC Common)  
 4 - Black (Communication 2)



Pinout (M12 - Female) 1 - Brown (+24 VDC)  
 2 - White (Communication 1)  
 3 - Blue (DC Common)  
 4 - Black (Communication 2)



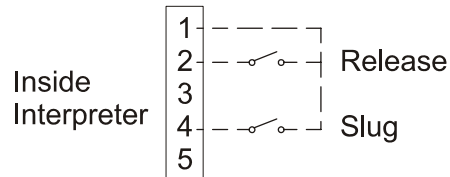
**Connectors**

Pinout J1 (Input)

5 Pin  
 Female  
 Threaded M12  
 Bulkhead  
 Connector

1 - Brown (+24 VDC)  
 2 - White (Release)  
 3 - Blue (DC Common)  
 4 - Black (Slug)  
 5 - Grey (Not Used)

**Connector Side**



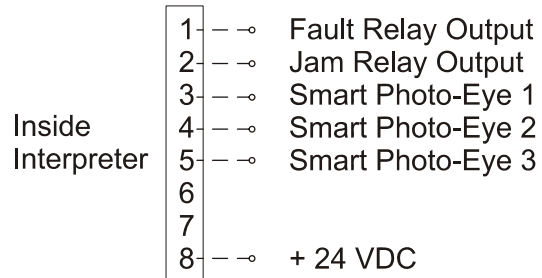
J1 Field Wiring Diagram

Pinout J2 (Input)

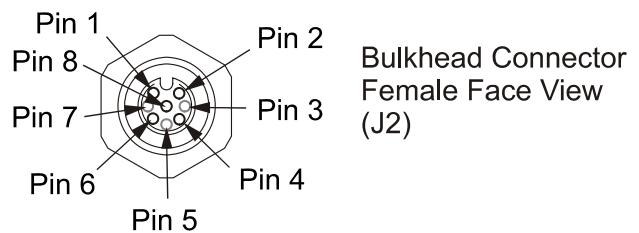
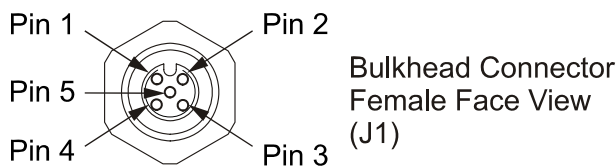
8 Pin  
 Female  
 Threaded M12  
 Bulkhead  
 Connector

1 - White (Fault Signal)  
 2 - Brown (Jam Signal)  
 3 - Green (Smart Photo-Eye 1)  
 4 - Yellow (smart Photo-Eye 2)  
 5 - Grey (Smart Photo-Eye 3)  
 6 - Pink (Not Used)  
 7 - Blue (Not Used)  
 8 - Red (Common)

**Connector Side**



J2 Field Wiring Diagram



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Figure C - 15 Connection Diagram, GEN2 USB Interpreter (D6019)

*LED Designation (D6019)*



Figure C - 16 LED Designations for GEN2 USB Interpreter (D6019)

Color	Status	Description
<b>Module Status LED</b>		
None	Off	No power to interpreter
Green	Solid	Normal operating state
Green	Flashing	Line fault with direction defined (Upstream/Downstream)
Red	Flashing	Fault detected at the interpreter
Red/Green	Flashing	Line fault with undefined direction (Upstream/Downstream)
<b>Input Status LED</b>		
None	Off	Normal Operation / Release OFF
Red	Solid	-----
Green	Solid	Release ON
<b>Slug LED</b>		
None	Off	Slug OFF
Green	Solid	Slug ON



---

**Troubleshooting GEN2 USB Interpreter (D6019)**

Condition	Possible Solution
All LED's are "Off" on the Interpreter	<ol style="list-style-type: none"> <li>1. Check to be sure Interpreter is hooked up properly. See Interpreter installation / replacement instructions.</li> <li>2. Check Valve Module LED's. If not illuminated, check power supply to conveyor.</li> <li>3. If left LED's on valve modules are illuminated GREEN or FLASHING RED, check for power at the Interpreter. If OK, replace the Interpreter. See Interpreter installation / replacement instructions.</li> </ol>
Module Status FLASHING GREEN, RED, or RED/GREEN	<ol style="list-style-type: none"> <li>1. Check LEDs on all valve modules. If they are FLASHING GREEN or FLASHING RED, follow the troubleshooting procedures for the <i>D3032 Valve Module</i> in the Maintenance Section (H-4).</li> <li>2. Check Cable Terminators for proper hook-up.</li> <li>3. Turn power supply to the conveyor OFF for 10~15 seconds, then turn power ON.</li> <li>4. If problem is not corrected, replace the Interpreter. See Interpreter installation / replacement instructions.</li> </ol>
Humphrey Node Controller program is reading an incorrect number of valves	<ol style="list-style-type: none"> <li>1. Disconnect the downstream terminator, and plug back in.</li> <li>2. If this does not work, turn power supply to the conveyor OFF for 10-15 seconds, and then turn power ON.</li> </ol>
Humphrey Node Controller program reads 'Line Break' when all valves are connected properly	<ol style="list-style-type: none"> <li>1. Disconnect cable and Cable Terminator from the USB interpreter, and reconnect the Cable Terminator, followed by the GEN2 cable.</li> <li>2. If this does not work, turn power supply to the conveyor OFF for 10-15 seconds, and then turn power ON.</li> </ol>



---

## GEN2 DeviceNet Interpreter (D4009)

The DeviceNet Interpreter allows connection of the modules to the DeviceNet.

Over DeviceNet, the user can configure the modes of operation of the GEN2 modules, i.e. accumulation modes, accumulation delay timers, dynamic (slug) on/off, 'Smart' photo-eye assignments (up to 7 'Smart' photo-eyes can be assigned), sleep mode on/delay timer/off, jam detection on/delay timer/off, and auto-slug on/delay timer/off. The DeviceNet Interpreter also provides feedback from the conveyor to the DeviceNet master on 'Smart' photo-eye states, faults, jams, and communication errors.



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Figure C - 17 GEN2 DeviceNet Interpreter (D4009)

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The following is an overview of the GEN2 DeviceNet interpreter.

## Features

The features of the DeviceNet Interpreter D4009 include:

- Defined as a Communications Adapter over DeviceNet (Type 12)
- Software configurable MACID (factory default = 63)
- Software configurable BAUD rate (factory default = 125K)
- Baud rates supported:
  - 125K, 250K, 500K
- Messaging supported: - Polled I/O
  - Explicit
    - Change-of-State (COS) Up to 7 Smart photo-eye sensors (“Lght Operate” = output ‘1’ when sensor is clear).
  - Cyclic
- 12 mm, 5-pin, male DeviceNet connector
- 1 bi-color DeviceNet Status LED
- 1 bi-color Valve Comms Status LED
- 1 green Dynamic Enabled (Slug) status LED
- 2 yellow quick-connect cables for connecting to GEN2 modules
- Powered from DeviceNet network power (11 - 25 VDC)
- Powered from Humphrey GEN2 Communications Bus (24 VDC)

## DeviceNet Architecture

A DeviceNet network is a distributed I/O system that may contain many different products from several different vendors. Products may be configured uniformly, as clusters or as distributed clusters. Including the master, up to 64 devices, may be attached to a single DeviceNet network. Any of these devices, not including the master, may be a DeviceNet interpreter. In a typical DeviceNet system, devices connected to the network would include a master, (i.e. a PLC or an industrial PC) and multiple slave devices, including the DeviceNet connected to the system.

## Operational Philosophy

The interpreter, when connected to the GEN2 system, becomes a communications tool to configure modes for the GEN2 control modules over DeviceNet. The DeviceNet interpreter also reports line status of the GEN2 system as well as 'Smart' photo-eye status instantaneously back to the master via change-of-state (COS). This information could be used to diagnose conveyor problems as well as determine conveyor capacity, speed, efficiency or other related conveyor diagnostics.

- The interpreter is a class-2 slave device on DeviceNet.
- The interpreter communicates on DeviceNet with the master using polled I/O.
- It does not interpret data sent to it from the master. It takes in the command and reformats it to be sent over the Humphrey Communications Bus to the GEN2 valve modules.
- It does not interpret data sent to it from the Humphrey Communications Bus. It takes in system status, reformats it for DeviceNet and simply reports it back to the master.
- The master then takes in the response from the interpreter, deciphers the data and takes appropriate action.

- The interpreter is placed at either the downstream or upstream end of a string of GEN2 control modules. Direction of GEN2 logic is determined by the use of a downstream terminator placed at one end of GEN2 control modules and an upstream terminator placed at the other end. One of the terminators must be connected to the interpreter.

### Interface for DeviceNet Explicit Messages

Intelligrated offers proprietary interface software, see Figure C - 18, designed with Intouch Version 9.5 and Industrial Application Server. This graphical user interface is designed to simplify explicit messaging between the controller and the interpreter.

Enter Zone # For Eye	Call Eye	Max Eye	Room Avail. Eye	Overfull Eye	Pallet Eye	PE6	PE7	B Induction Configuring : HIB250_07					
0	22	0	35	0	0	0	0						
Groups To Configure	Start Node	End Node	Sleep	Jam	Slug	Auto Slug Zone	One Zone	Two Zone	Zero Zone	Accum. Timer	Auto Slug Timer	Sleep Timer	Jam Timer
Global	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	5.0	5.0
Group # 2	4	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	5.0	5.0
Group # 3	9	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	5.0	5.0
Group # 4	14	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	5.0	5.0
Group # 6	19	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	5.0	5.0
Group # 6	23	23	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 7	24	24	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 8	25	25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 9	26	28	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 10	29	30	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 11	31	33	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 12	34	35	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 13	22	22	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.0	0.0	5.0	5.0
Group # 14	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0
Group # 15	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0
Group # 16	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0
Group # 17	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0
Group # 18	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0
Group # 19	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0
Group # 20	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.0	0.0	0.0	0.0

HIB250\_07

06/24/2006 03:47:25 AM    OPCLink Item Error Limit Exceeded CC07    CC07\_COMMS    21

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Figure C - 18 Example of Intelligrated Interface Software Screen for DeviceNet Interpreter

## Explicit Messages

Explicit messages are used for sending and receiving configuration data. This data allows changing of the GEN2 control module configuration, global configuration range settings, baud rates, and MACID.

### *DeviceNet Class Services*

The GEN2 DeviceNet Interpreter (D4009) is a group 2 Slave Device that supports the following class services and instance services:

Service Code	Service Name
05 (0x05)	Reset
14 (0x0E)	Get Attribute Single
16 (0x10)	Set Attribute Single

### *DeviceNet Object Classes*

The GEN2 DeviceNet Interpreter (D4009) supports the following DeviceNet object classes:

Class Code	Object Type
01 (0x01)	Identity
15 (0x0F)	Parameter Object
110 (0x6E)	GEN2 Interpreter Object

### *GEN2 "Interpreter" Explicit Messages by Class Service*

Service RESET	Obj. Class	Instance	Attributes Data	
0x05	0x01	0x00	0x00	Causes a power reset.
0x05	0x01	0x00	0x01	Resets baud = 125 macid = 63
0x05	0x0F	0x00	0x00	Reset to factory default
0x05	0x0F	0x00	0x01	Reset to factory default

MACID / BAUD				
0x0E	0x0F	0x01	0x01	get MACID value
0x10	0x0F	0x01	0x01 0xXX	set MACID (XX = 0-63 hex)
0x0E	0x03	0x01	0x02	get BAUD value
0x10	0x03	0x01	0x02 0x0X	set BAUD (X: 0 = 125 K, 1 = 250 K, 2 = 500 K)

GET				
0x0E	0x6E	0x00	0x64	read # of active GEN2's
0x0E	0x6E	0x00	0x65	get Photo-Eye 1 node address
0x0E	0x6E	0x00	0x66	get Photo-Eye 2 node address
0x0E	0x6E	0x00	0x67	get Photo-Eye 3 node address
0x0E	0x6E	0x00	0x68	get Photo-Eye 4 node address
0x0E	0x6E	0x00	0x69	get Photo-Eye 5 node address
0x0E	0x6E	0x00	0x6A	get Photo-Eye 6 node address
0x0E	0x6E	0x00	0x6B	get Photo-Eye 7 node address
0x0E	0x6E	0x00	0x6C	get GEN2 firmware rev. #

SET (example for setting Smart PE #1-7)				
0x10	0x6E	0x00	0x65 0x01	set Photo-Eye 1 node address
0x10	0x6E	0x00	0x66 0x02	set Photo-Eye 2 node address
0x10	0x6E	0x00	0x67 0x03	set Photo-Eye 3 node address
0x10	0x6E	0x00	0x68 0x04	set Photo-Eye 4 node address
0x10	0x6E	0x00	0x69 0x05	set Photo-Eye 5 node address
0x10	0x6E	0x00	0x6A 0x06	set Photo-Eye 6 node address
0x10	0x6E	0x00	0x6B 0x07	set Photo-Eye 7 node address

The following are GLOBAL control module parameters that are applied to every control module.

SET (examples)				
0x10	0x6E	0x01	0x01 0x00	set first node number (always 0)
0x10	0x6E	0x01	0x02 0x00	set last node number (always 0)
0x10	0x6E	0x01	0x03 0x2F	set MODE 00101111
0x10	0x6E	0x01	0x04 0x14	set accum. timer (20 tenths)
0x10	0x6E	0x01	0x05 0x1E	set auto slug timer (30 tenths)
0x10	0x6E	0x01	0x06 0x28	set sleep timer (40 tenths)
0x10	0x6E	0x01	0x07 0x32	set jam timer (50 tenths)

GET				
0x0E	0x6E	0x01	0x03	get Global MODE
0x0E	0x6E	0x01	0x04	get Global accum. timer
0x0E	0x6E	0x01	0x05	get Global auto slug timer
0x03	0x6E	0x01	0x06	get Global sleep timer
0x0E	0x6E	0x01	0x07	get Global jam timer



The following are Instance Group 2 valve parameters that are applied to one or a range of control modules. Group 2 - 20 parameters will override the Global parameters for specific valves.

SET (examples)				
0x10	0x6E	0x02	0x01 0x04	set first node number
0x10	0x6E	0x02	0x02 0x08	set last node number
0x10	0x6E	0x02	0x03 0x2F	set MODE 00101111**
0x10	0x6E	0x02	0x04 0x14	set accum. timer (20 tenths)
0x10	0x6E	0x02	0x05 0x1E	set auto slug timer (30 tenths)
0x10	0x6E	0x02	0x06 0x28	set sleep timer (40 tenths)
0x10	0x6E	0x02	0x07 0x32	set jam timer (50 tenths)

\*\*MODE Byte

GET (examples)				
0x0E	0x6E	0x02	0x01	get first node number
0x0E	0x6E	0x02	0x02	get last node number
0x0E	0x6E	0x02	0x03	get Global MODE
0x0E	0x6E	0x02	0x04	get Global accum. timer
0x0E	0x6E	0x02	0x05	get Global auto slug timer
0x0E	0x6E	0x02	0x06	get Global sleep timer
0x0E	0x6E	0x02	0x07	get Global jam timer

**Note:** Repeat for Instance Groups 3-20 as required.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Debug Enabled	Zero Zone Enabled	2 Zone Enabled	1 Zone Enabled	Auto-Slug Enabled	Slug Enabled	Jam Enabled	Sleep Enabled
8 bin	4 bin	2 bin	1 bin	8 bin	4 bin	2 bin	1 bin

## DeviceNet Status Bytes

### *Output from DeviceNet to Interpreter*

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Configure	Reflash					Dynamic (Slug)	Release
8 bin	4 bin	2 bin	1 bin	8 bin	4 bin	2 bin	1 bin

**Configure** configures the DeviceNet chip on the D4009 with the new settings for the control modules.

**Reflash** sends the new settings onto the Humphrey Bus.

To configure the control modules with new settings, a Configure must be done first, then a Reflash second.

The same Reflash and Configure command can be sent using one command: 0xC0 instead.

Dynamic (Slug) and Release can be set at the same time using 0x03.

### *Input to DeviceNet from Interpreter*

#### **Byte 0: (Smart Photo-Eye Status)**

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	PE 7 Status	PE 6 Status	PE 5 Status	PE 4 Status	PE 3 Status	PE 2 Status	PE 1 Status
8 bin	4 bin	2 bin	1 bin	8 bin	4 bin	2 bin	2 bin

#### **Byte 1**

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Interchip Comm. Fault	Jam	Dynamic (Slug) Active	HP Line Fault	Release Active			Initializing
8 bin	4 bin	2 bin	1 bin	8 bin	4 bin	2 bin	1 bin

---

## Change-of-State (COS)

Change-of-State is the function of sending a slave's input data back to the master without the host asking for it explicitly. For the DeviceNet Interpreter, "Smart Photo-eye" status, "Fault" and "Jam" status are used as COS.

## Device Default Configuration

The BAUD rate is factory set to 125K and the MACID is factory set to 63. All other parameters are software configurable.

## Product Version and EDS

This manual applies to the D4009 DeviceNet Interpreter V5.04 and higher. An EDS (Electronic Data Sheet) is supplied with your device.

## Quick Start

To quickly connect the Interpreter to a DeviceNet network, do the following:

1. Check that the GEN2 control modules have power supplied to them and are terminated correctly using the upstream / downstream terminators.
2. At one end of the conveyor, connect an open GEN2 cable to a yellow mating connector on the interpreter.
3. Connect the appropriate terminator to the other open yellow connector on the interpreter.
4. Connect a DeviceNet cable to the 12mm, 5-pin plug on the Interpreter according to cable wiring specifications for DeviceNet.
5. Ensure that the DeviceNet network is terminated properly.
6. The factory default MACID address for the DeviceNet is set at 63. Make sure that no other device on the network is set to 63, or change the DeviceNet address to one that is not being used.
7. Ensure power is being supplied by the DeviceNet network.
8. After power-up, the D4009 will go through it's initialization routine and the DeviceNet Status LED will begin flashing 'Green' until the master recognizes the device and establishes the connection at which point the LED will stay solid 'Green'.
9. The Valve Comms Status LED should be solid 'Green' if the DeviceNet is connected properly to the GEN2 system. If not, recheck GEN2 control module connections and terminators.
10. When both status LEDs are solid 'Green' the interpreter is ready to operate over DeviceNet.

### *Changing the Node Address*

The MACID address is only configurable over DeviceNet. Refer to the Electronic Data Sheet (EDS) for the explicit message to set the address. When changing the MACID, a power reset needs to be performed either by a power disconnect or send the command explicitly.

### *Changing the DeviceNet Baud Rate*

The DeviceNet baud rate for the interpreter is only configurable over DeviceNet. Refer to the Electronic Data Sheet (EDS) for the explicit message to set the baud rate.

## Hardware Installation

### *Device Power*

The interpreter is powered by both the DeviceNet network as well as the GEN2 communication bus.

DeviceNet requires a connection to a 11-25 VDC power supply. The GEN2 communication bus requires connection to a 24 VDC power supply.

### *DeviceNet Network*

DeviceNet specifies trunk and drop line lengths to ensure integrity. They are as follows:

<b>Baud Rate</b>	<b>Trunk Length (Max.)</b>	<b>Drop Length (Max.)</b>	<b>Cumulative Drop Length</b>
125K	1640 ft.	20 ft.	512 ft.
250K	820 ft.	20 ft.	256 ft.
500K	328 ft.	20 ft.	128 ft.

### *Termination of the DeviceNet Network*

The interpreter does not require a DeviceNet terminator per the DeviceNet specification for devices on drop lines. The main truck line does, however, require a network terminator.

### *DeviceNet Connector Wiring*

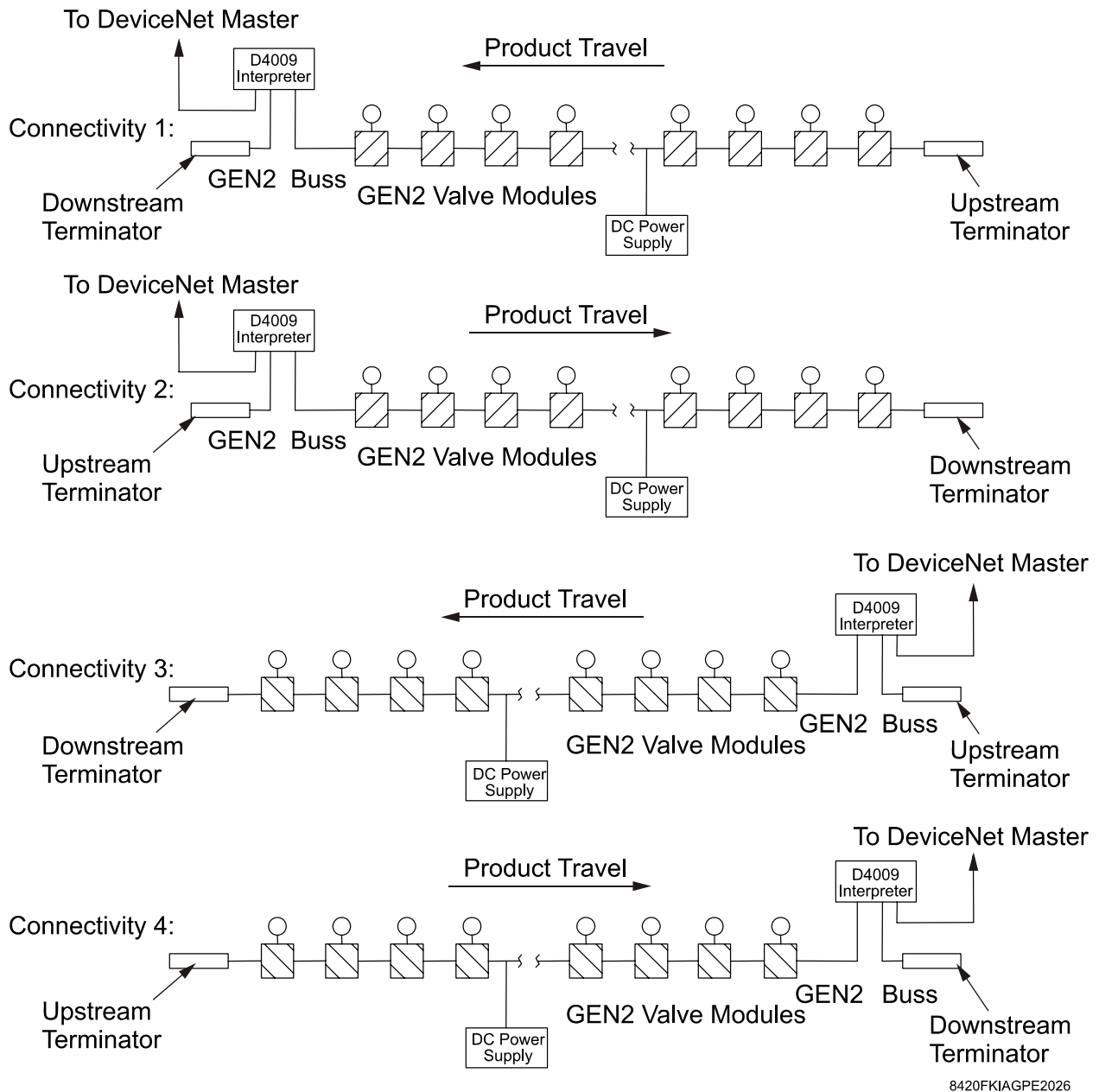
See Figure C - 20 for pin-out identification of the 12mm, 5-pin DeviceNet connector on the D4009 for proper wiring.

### *Mounting*

The interpreter is provided with four mounting feet and attached to a conveyor bottom flange mounting bracket

Connectivity

The Interpreter can be attached to the GEN2 module chain at either the upstream or downstream end point of the line. A complete system must include only two cable terminators (i.e., a downstream terminator at the downstream end point and an upstream terminator at the upstream end point). The terminators define the end points of the conveyor as well as define the upstream/downstream orientation. The Interpreter is powered via being connected to the GEN2 control modules and through the DeviceNet connector. Both connections must be made for the system to function properly. See Figure C - 19 for connectivity options.



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Figure C - 19 Connection Diagram

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**General Specifications GEN2 DeviceNet Interpreter (D4009)**

Product	DeviceNet GEN2 Interpreter.
Description	A communications gateway between a Humphrey GEN2 Communications Bus device and a DeviceNet network.
DeviceNet	Designed to conform to the ODVA DeviceNet Specification.
Conformance	Volume 1, Version 2.0 and Volume II, Version 2.0

*Communications*

<b>DeviceNet I/O Protocols</b>	
DeviceNet Baud Rates	125K, 250K, 500K software configurable (default 125K)
DeviceNet Address Selection	Software configurable to MACID 1 - 63, (default MACID = 63).
DeviceNet Connection	12 mm, 5-pin, male pluggable header.
Humphrey Bus Connection	1 yellow, male quick-connect cable for connecting to GEN2 modules. 1 yellow, female quick-connect cable for connecting to GEN2 modules.
Status Indicators - red/green bi-color LED	DeviceNet Status Valve Comms Status red/green bi color LED Dynamic Enabled green LED
Operating Voltage	DeviceNet network power (11 - 25 VDC) GEN2 Communication Bus power (24 VDC)
Mounting	Four mounting feet
Size	Length: 5.19" Width: 3.22" (excluding mounting feet) Height: 3.10"
Operating Temperature	32-140° F (0-60° C)
Humidity	0-95% RH, non-condensing.

*Product Drawing and Connection Diagram, GEN2 DeviceNet Interpreter (D4009)*

**Specifications**

**Software** DeviceNet V1.016  
 HP Bus V5.03

**Enclosure**

Material A9S  
 Ingress Protection NEMA4/IP66

**Electrical**

Operating Voltage (DeviceNet @Node)  
 V Min. 11.0 VDC  
 V Max. 25.0 VDC  
 Operating Current (DeviceNet @Node)  
 I Max. 40 mA  
 Operating Voltage (HP Bus)  
 V Min. 21.0 VDC  
 V Max. 28.0 VDC  
 Operating Current (HP Bus)  
 I Max. 20 mA

**Temperature**

Operating Range 32° To 140° F (0°-60° C)  
 Storage Range -40° to 150° F  
 Humidity 0-95%RH, Non-Condensing

**Cables**

Yellow PVC, 4 Conductor Cable  
 UL 2095, 16 AWG, 4-Pin  
 Yellow PVC Push-To-Connect  
 Male/Female Cable-End Connectors

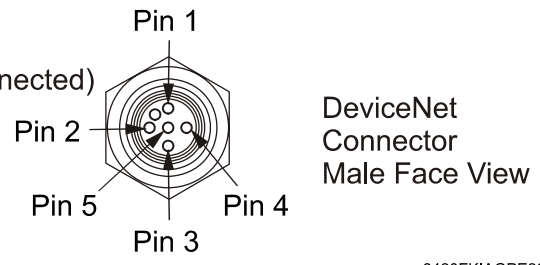
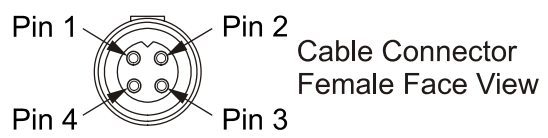
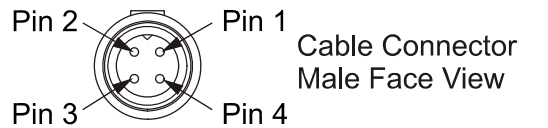
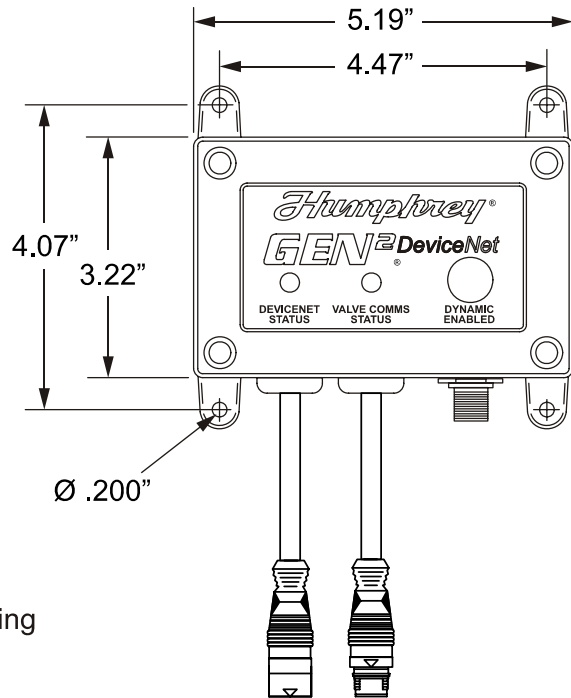
Pinout (12mm - Male) 1 - Brown (+24 VDC)  
 2 - White (Communication 1)  
 3 - Blue (DC Common)  
 4 - Black (Communication 2)

Pinout (12mm - Female) 1 - Brown (+24 VDC)  
 2 - White (Communication 1)  
 3 - Blue (DC Common)  
 4 - Black (Communication 2)

**Connectors (DeviceNet)**

5-Pin, Female, Threaded, Bulkhead Connector

Pinout (12mm - Male) 1 - Drain (Not Internally Connected)  
 2 - + 24 VDC [V+]  
 3 - 24 VDC Return [V-]  
 4 - CAN H  
 5 - CAN L



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Figure C - 20 Product Drawing and Connection Diagram, GEN2 DeviceNet Interpreter (D4009)

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*LED Designation*

<b>Device Net Status LED</b>		
<b>Color</b>	<b>Status</b>	<b>Description</b>
None	Off	No power to the Interpreter
Red	Solid	Duplicate DeviceNet node address. Two nodes cannot have the same address. Bus off, unrecoverable fault.
Red	Flashing	Run-time fault, recoverable fault.
Green	Solid	Normal operating state.
Green	Flashing	The "Interpreter" is online but not allocated to a master.

<b>Valve Comms Status LED</b>		
<b>Color</b>	<b>Status</b>	<b>Description</b>
Red	Solid	N / A
Red	Flashing	Fault detected at the local node.
Red/Green	Flashing	Line fault with undefined direction (Upstream/Downstream)
Green	Solid	Normal operating state
Green	Flashing	Line fault with direction defined (Upstream/Downstream)

<b>Slug Enabled Status LED</b>		
<b>Color</b>	<b>Status</b>	<b>Description</b>
None	Off	Normal operating state.
Green	Solid	Slug mode is enabled.



**Troubleshooting, GEN2 DeviceNet Interpreter (D4009)**

<b>Condition</b>	<b>Possible Solution</b>
<ul style="list-style-type: none"> <li>• Interpreter is connected to DeviceNet.</li> <li>• DeviceNet Status LED is solid red</li> <li>• Valve Comms Status LED is flashing red.</li> <li>• GEN2 bus is connected</li> </ul>	A duplicate MACID node address has been detected. Also a fault was detected on the GEN2 bus at the local node. Check for proper connections on the GEN2 bus and change the Interpreter MACID address and cycle power.
<ul style="list-style-type: none"> <li>• Interpreter is connected to DeviceNet</li> <li>• DeviceNet Status LED is flashing red</li> <li>• Valve Comms Status LED is flashing green</li> <li>• GEN2 bus is connected</li> </ul>	A DeviceNet run-time fault was detected at the interpreter and GEN2 line fault was detected but has the direction of logic defined. The line fault could have been caused by a control module on the conveyor. To quickly debug this problem cycle DeviceNet power and GEN2 power. If Valve Comms Status LED is still flashing green, locate the control module that is flashing red on the conveyor and perform the following: <ul style="list-style-type: none"> <li>• Check all cable / terminator connections</li> <li>• Cycle power on GEN2 bus</li> <li>• If DeviceNet Status LED is solid green, perform a GEN2 module configuration.</li> <li>• If the condition still exists, replace the valve module with the flashing red LED.</li> </ul>
<ul style="list-style-type: none"> <li>• Interpreter is connected to DeviceNet</li> <li>• DeviceNet Status LED is flashing green</li> <li>• Valve Comms Status LED is solid green</li> <li>• GEN2 bus is connected</li> </ul>	The interpreter is online but not allocated to a master. Check the DeviceNet master if scanning for DeviceNet devices. Once the master recognizes the interpreter, the DeviceNet Status LED should turn solid green.
<ul style="list-style-type: none"> <li>• The interpreter is connected to DeviceNet</li> <li>• DeviceNet Status LED is off</li> <li>• Valve Comms Status Led is off</li> <li>• GEN2 bus is connected</li> </ul>	The interpreter is not properly connected to DeviceNet. Check the wiring of the mating DeviceNet 12mm, 5-pin connector. If incorrect, re-wire. Refer to Figure C-20 for connector pin-out, then reconnect DeviceNet connector. Upon connection, both status LEDs should light. If not, check the DeviceNet network power supply.
<ul style="list-style-type: none"> <li>• Interpreter is connected to DeviceNet</li> <li>• DeviceNet Status LED is solid green</li> <li>• Valve Comms Status LED is flashing red/green</li> <li>• GEN2 bus is connected</li> </ul>	A line fault over the GEN2 bus was detected. This means that the interpreter does not know which end of the conveyor is downstream or upstream. Check the GEN2 bus power supply. Also check the control module connections leading up to the interpreter. Perform a cycle power to the GEN2 bus.

<ul style="list-style-type: none"> <li>• Interpreter is connected to DeviceNet</li> <li>• DeviceNet Status LED is solid green</li> <li>• Valve Comms Status LED is solid Green</li> <li>• Dynamic Enabled Status LED is solid green but control modules are not performing dynamic mode</li> </ul>	<p>The GEN2 control modules may have Slug mode disabled or the Slug mode was enabled but a reflash/configure command (C0 hex) was not sent over DeviceNet. Check configuration settings on DeviceNet and send a configure command. When GEN2 control modules are being configured, their status LEDs will go from solid green to solid red and then back to solid green.</p>
<ul style="list-style-type: none"> <li>• Interpreter is connected to DeviceNet</li> <li>• DeviceNet Status LED is solid green</li> <li>• Valve Comms Status LED is solid green</li> <li>• With 7 'Smart' Photo-eyes configured, over DeviceNet, the status byte for 'Smart' photo-eyes shows '7f' hex</li> </ul>	<p>When 7 'Smart' Photo-eyes are enabled, typically, the status byte over DeviceNet should read '00' hex. To correct incorrect status byte information, send a reflash/configure command ( C0 hex) and perform a power reset on both the DeviceNet connector and the GEN2 bus.</p>

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## SECTION D: ENGINEERING DATA

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**Note:** Refer to Product Manual *8410 Accuglide Live Roller Conveyor* Section D Engineering Data. The application engineering process for an Accuglide conveyor with GEN2 photo-eye sensors is very similar to that of a conveyor with GEN1.5 photo-eye sensors.

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### GEN2 Unique Features

The following GEN2 unique features may affect your engineering procedures and selections:

- GEN2 "Interpreters" may be pre-programmed with the conveyor specific or a set of customer typical settings.
- GEN2 DS1 +DS2 release rate is equivalent to the GEN1.5 "Dual Zone".
- GEN2 offers a sensor reflector set at "0" position (perpendicular to the side frame) to improve product density, rates, and smart eye feed-back by ensuring the sensors see any gaps in product when they exist.
- GEN2 "Auto-Slug" operates somewhat differently than GEN1.5 Auto-Slug.
  - GEN1.5 Auto-Slug can be set up to release and transport a grouping (normally 2, 3, or 4 zones) of accumulated product (with a nominal 3'-0" gap between the slugs) when the normal downstream sensor and the next downstream sensor are unblocked.
  - GEN2 Auto-Slug default setting will slug release all "enabled" upstream zones whenever two consecutive downstream sensors are unblocked.
  - GEN2 Auto-Slug Release rates may vary from the rates posted in the Product Manual *8410 Accuglide Live Roller Conveyor*, Section D, they are based on customized settings and product size.
    - GEN2 Auto-Slug time delay (0 to 25 seconds) can be set to delay slug propagation, adjust the release rate efficiency, and control line pressure.
    - GEN2 Auto-Slug can be disabled in any individual or set of modules to vary the release rate.



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## *SECTION E: LAYOUT DIMENSIONS*

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**Note:** Refer to Product Manual *8410 Accuglide Live Roller Conveyor* Section E Layout Dimensions. The layout dimensions for an Accuglide conveyor with GEN2 photo-eye sensors is identical to that of a conveyor with GEN1.5 photo-eye sensors.

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### GEN2 Unique Features

The following GEN2 unique features may affect your engineering layout and selections.

- GEN2 has a photo-eye sensor in the drive section and the tail end idler section, since every zone has a module and a sensor.



**SECTION F: ACCESSORIES AND OPTIONS**

**Note:** Refer to Product Manual *8410 Accuglide Live Roller Conveyor Section F Accessories and Options* for accessories and options not otherwise listed here within.

Accessories and options for GEN2 Accuglide Photo eye Sensor conveyor are very similar to those that can be selected for the GEN1.5 Accuglide.

Be aware of the following exceptions and additions applicable to GEN2;

- Refer to AGPE Retro-Fit Kit listed in *Product Manual 8410 Accuglide Live Roller Conveyor, Section F*, for GEN1.5 only and NOT available for GEN2 (at this time), except by special order.

**AGPE Air Control Assembly Kit**

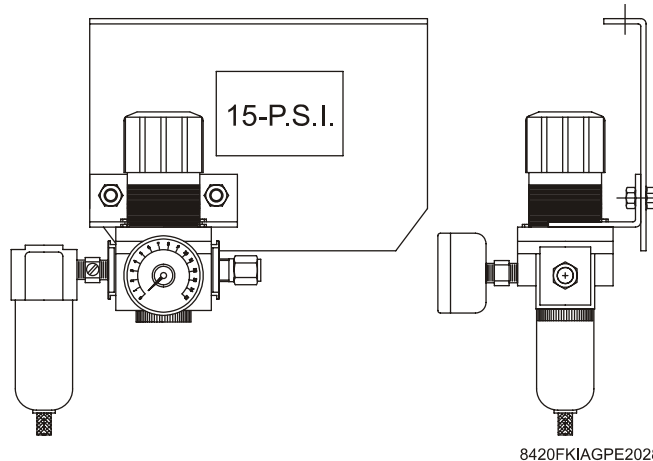


Figure F - 1 AGPE Air Control Assembly Kit

## AGPE Power Supply

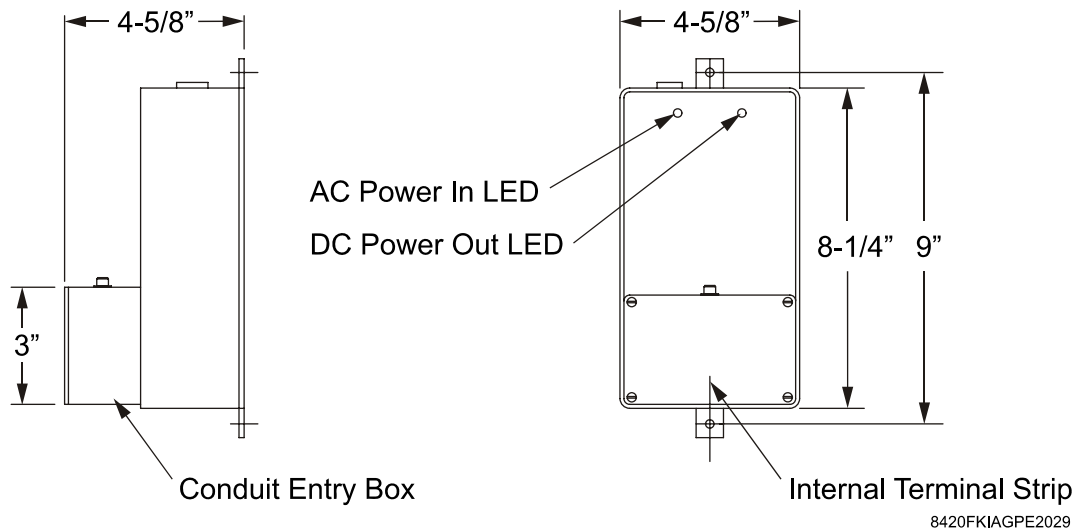


Figure F - 2 AGPE Power Supply

## GEN2 Terminators

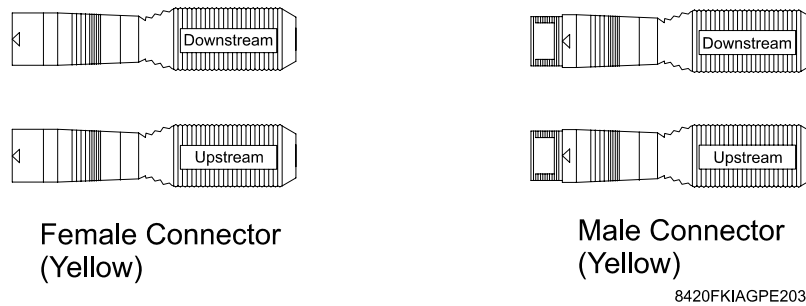


Figure F - 3 GEN2 Terminators

## AGPE Connector Cords

The connector cords come in various lengths and are used to connect modules that are spaced more than 3'-0" on center or to an end of the line Interpreter more than 1'-6" from the end module.

- Transportation Curve extension cable lengths are charted in Product Manual 8410 *Accuglide Live Roller Conveyor*, Section J.
- One 3 ft. Connector Cord is suitable to connect the Drive module to the Tail module (back-to-back) condition.

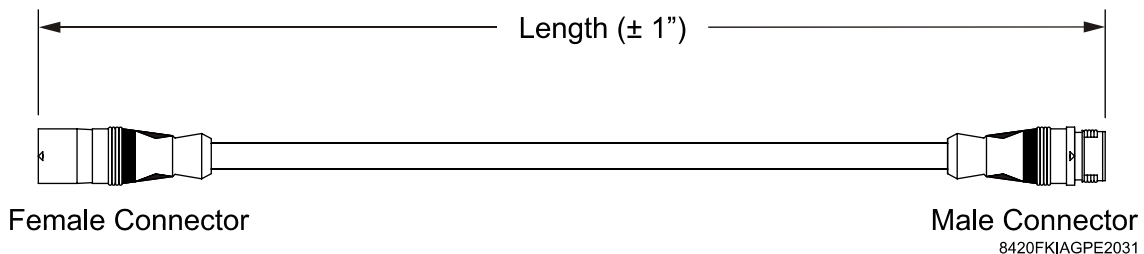
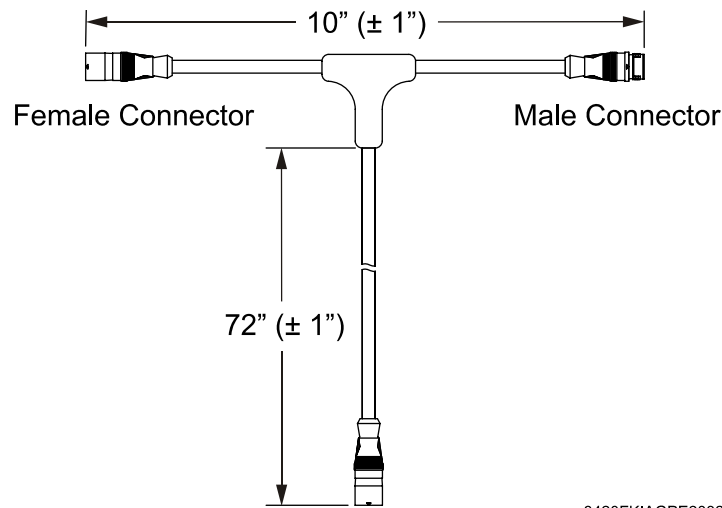


Figure F - 4 Connector Cords

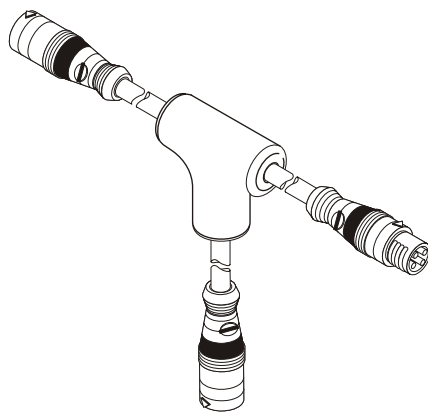


## AGPE T-Cord

The T-Cord is used to connect the power supply between two module cables.

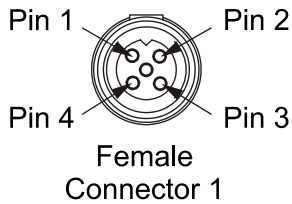


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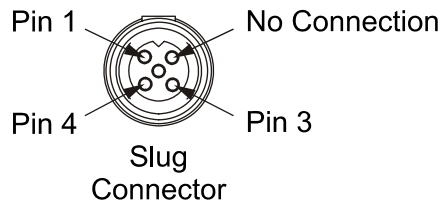
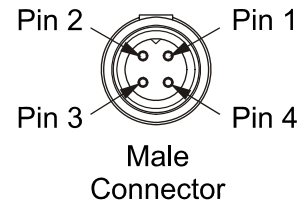


### Slug / Power "T" Cable Pinouts

Connector - PIN		Connector - PIN
Female - 1	to	Slug - 1
Male - 1	to	Slug - 1
Female - 2	to	Male - 2
Female - 3	to	Slug - 3
Male - 3	to	Slug - 3
Female - 4	to	Slug - 4
Male - 4	to	Slug - 4



Pin 1 — Brown (DC Positive) — Pin 1  
 Pin 2 — White (Communication 1) — Pin 2  
 Pin 3 — Blue (DC Common) — Pin 3  
 Pin 4 — Black (Slug) — Pin 4



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Figure F - 5 AGPE T-Cord

## AGPE Power Isolation Cord

The Power Isolation Cord is used to allow communication between modules, but isolate the power supplies, since up to 100 modules can communicate together, but a power supply is limited to 65 modules.

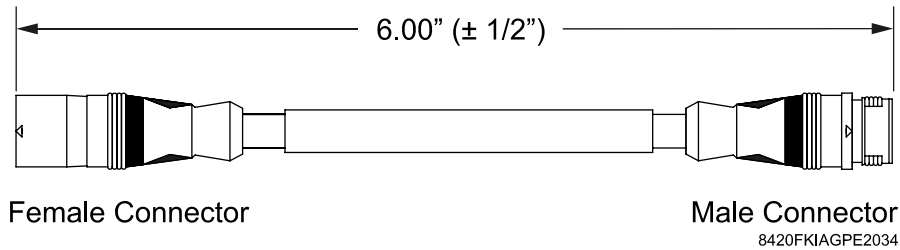


Figure F - 6 Power Isolation Cord

## GEN2 USB Interpreter (D6019)

- Option including four (4) terminators.
- Option including four (4) terminators and a mounting bracket.

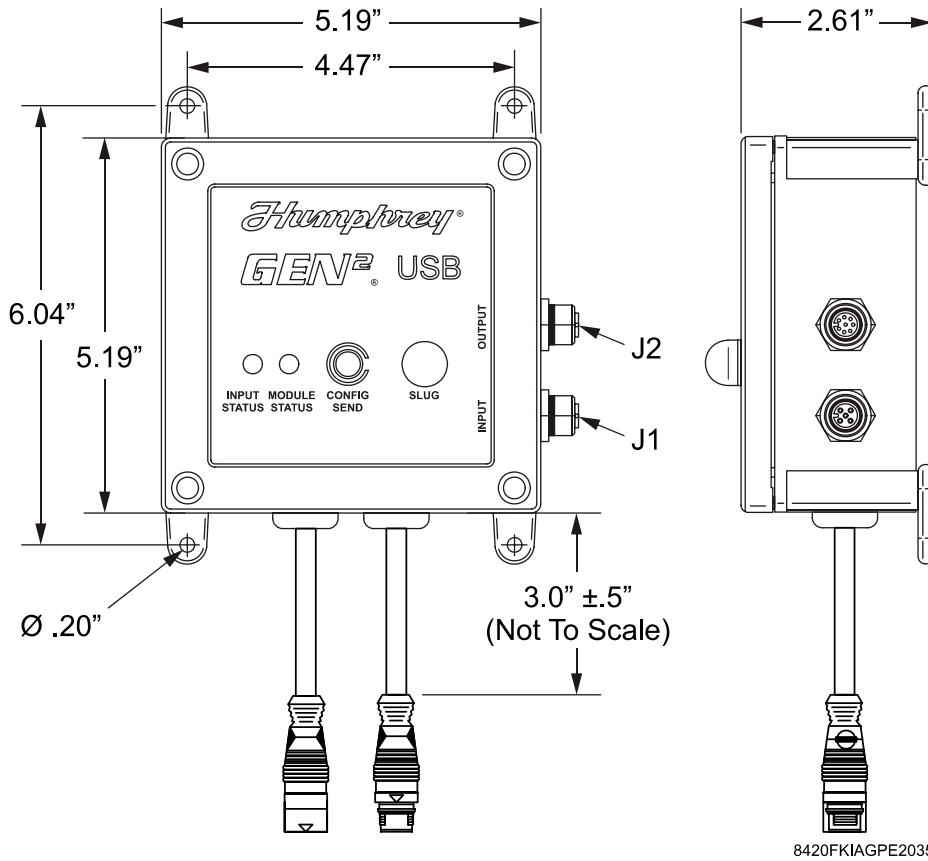
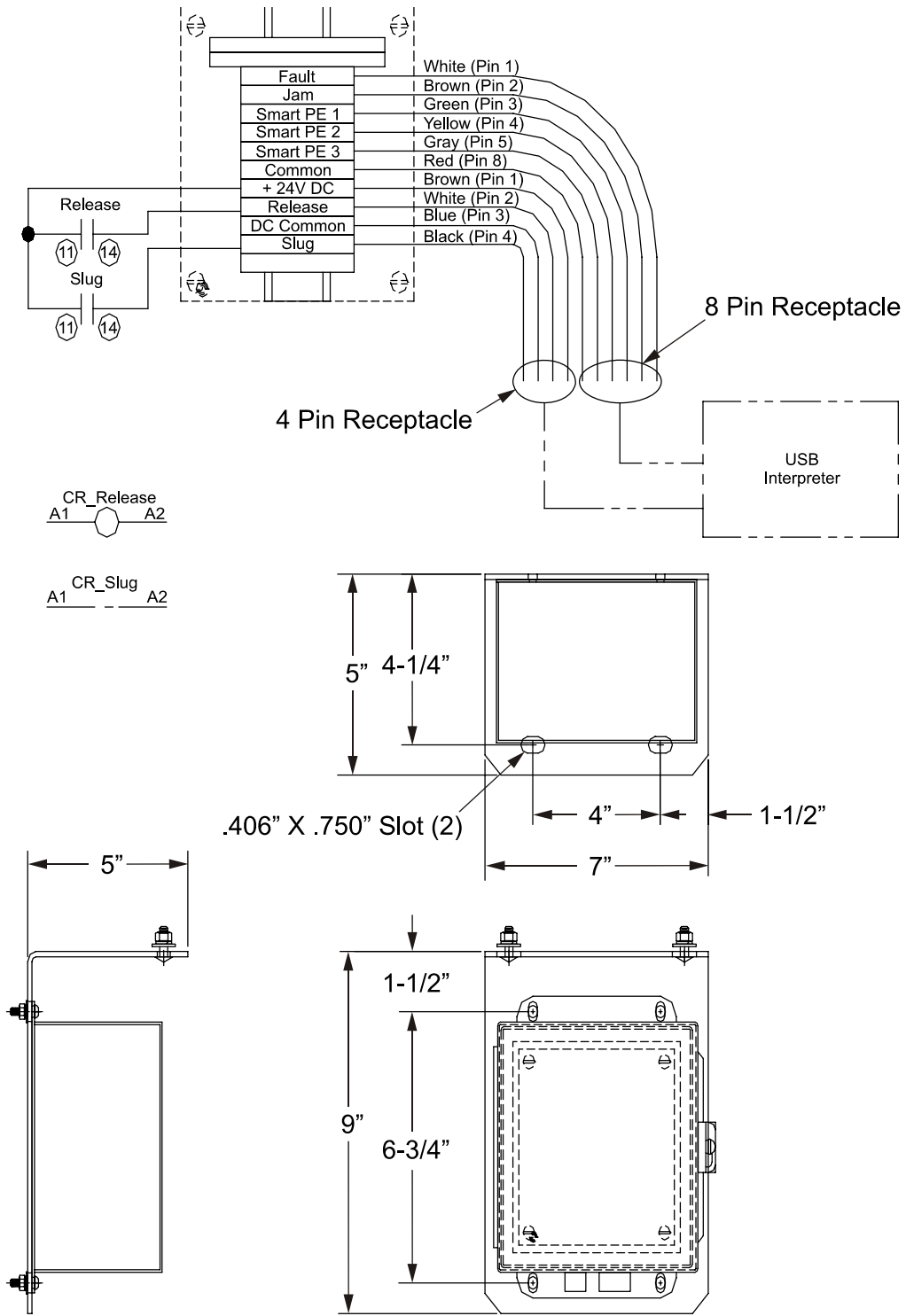


Figure F - 7 GEN2 USB Interpreter (D6019)

GEN2 Interface box for USB Interpreter

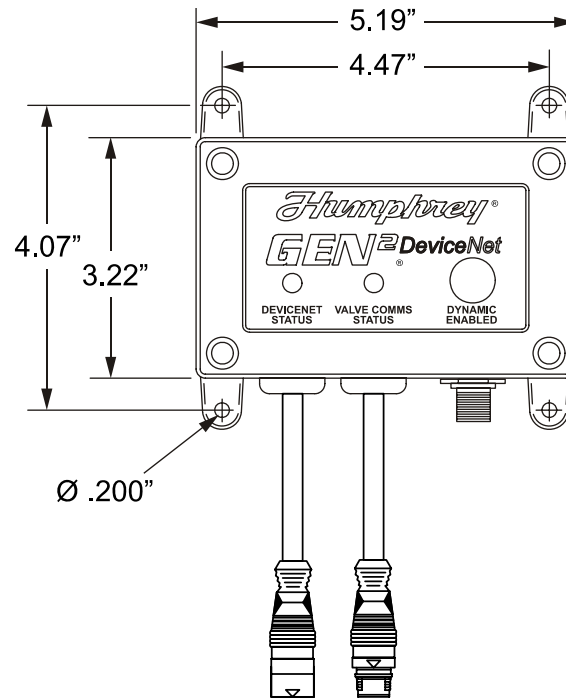


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Figure F - 8 Typical Interface Box for USB Interpreter

## GEN2 (DeviceNet) Interpreter (D4009)

- Option including four (4) terminators.
- Option including four (4) terminators and a mounting bracket.



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Figure F - 9 GEN2 DeviceNet Interpreter (D4009)

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## Fixed and Adjustable Side Guides

Standard bolt-on Side Guides are available to extend the frame rails above, or beyond, the carrier rollers.

Fixed or adjustable side guides are specified by the guide type, mount type and face type.

Side guides are shipped separately and field installed. All mounting hardware is supplied. Refer to the *Product Manual 5320 Side Guides* for additional information.

### Fixed Side Guides

Fixed guide types include;

- Type A - 1-3/4" angle
- Type B - 2-5/8" Channel
- Type C - 7" Channel, and
- Type D - 10" Channel.

Fixed Guide mounting types include:

- Style A - Direct bolted to the top of the side frame.

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**Note:** Style "A" is not suitable for Photo-eye sensor RSH bed sections unless specially ordered with holes added.

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- Style B - Spaced 1" above the side frame.

### Adjustable Side Guides

- Style C - Adjustable side guides must have the lowest side guide channel set 3/4" above the product carry surface and not offset outside the conveyor normal between frame dimension, due to interference with the sensors and reflectors



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**SECTION G: INSTALLATION PROCEDURES**

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**Note:** Refer to Product Manual *8410 Accuglide Live Roller Conveyor* Section G Installation Procedures for information not otherwise listed here within.

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**Accepting Shipment**

Immediately upon delivery, check that all equipment received agrees with the bill of lading or carrier's freight bill. Any shipping discrepancy or equipment damage should be clearly noted on the freight bill before signing.

**Shortages or Errors**

Report any shortages or errors to the Manufacturer's Customer Service in writing within ten days after receipt of shipment.

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**Note:** The drive pad may be shipped separate from the conveyor. If this occurs, the drive pad carton will be marked with the following label

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**CONTENTS: CONVEYOR DRIVE PAD  
ATTN: CONVEYOR INSTALLER**

Figure G - 1 Carton Contents Label

**Lost or Damaged Shipment**

Report lost shipments to the Manufacturer's Shipping Department.

If shipping damage is evident upon receipt of the equipment, note the extent of the damage on the freight bill and immediately contact the transportation carrier to request an inspection. Do not destroy the equipment crating and packing materials until the carrier's agent has examined them. Unless otherwise agreed by the manufacturer, the Purchaser (User) shall be responsible for filing claims with the transportation carrier. A copy of the inspection report along with a copy of the freight bill should be sent to the Manufacturer's traffic department.

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## Claims and Returns

All equipment furnished in accordance with the Manufacturer's Agreement is not returnable for any reason except where authorized in writing by the Manufacturer. Notification of return must be made to the Manufacturer's Customer Service Department, and if approved, a "Return Authorization Tag" will be sent to the Purchaser (Users). The return tag sealed in the "Return Authorization Envelope" should be securely affixed to the exterior surface on any side of the shipping carton (not top or bottom), or affixed to any smooth flat surface on the equipment, if not boxed.

- Send authorized return shipment(s) transportation charges prepaid to the address indicated on the Return Authorization Tag. If initial shipment is refused, the Purchaser (User) shall be liable for all freight charges, extra cost of handling, and other incidental expenses.

## Codes and Standards

The equipment is designed and manufactured to comply with the American National Standard Institute's "Safety Standards for Conveyors and Related Equipment" (ANSI/ASME B20.1) and with the National Electrical Code (ANSI/NFPA70).

The Purchaser/Operator shall be familiar with, and responsible for, compliance with all codes and regulations having jurisdiction regarding the installation, use, and maintenance of this equipment. Appropriate lockout/tag out policy and procedures shall comply with the minimum safety requirements outlined in the American National Standard Institute's current publication (ANSI Z244.1).

## Safety Precautions

- DO turn off power source(s) and affix appropriate lockout/tag out device(s) to operating controls before servicing the equipment. ONLY trained and qualified personnel who are aware of the safety hazards should perform equipment adjustments or required maintenance while the equipment is in operation.
- DO observe all warning signs, lights, and alarms associated with the equipment operation and maintenance, and be alert at all times to automatic operation(s) of adjacent equipment.
- DO use extreme caution near moving parts to avoid the hazard of hands, hair, and clothing being caught.
- DO NOT sit on, stand on, walk, ride, or cross (over or under) the equipment at any time except where suitable catwalks, gates, or bridges are provided for personnel travel.
- DO NOT attempt to repair any equipment while it is running, replace any component without the appropriate replacement part, or modify the equipment without prior approval by the manufacturer.
- DO NOT operate the conveyor until all safety guards are securely in place, all tools and non-product materials are removed from or near the conveying surfaces, and all personnel are in safe positions.
- DO NOT remove or modify any safety devices provided on or with the equipment. DO NOT clear jams or reach into any unit before first turning off the all power source(s) and affixing appropriate lockout/tag out device(s)



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## Safety Precautions Regarding Pop-Out Rollers and Spill Guards

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**WARNING:** There is a risk of injury with live roller conveyors with trapped rollers. Turn off conveyors before handling product or servicing. Limit access to maintenance personnel. Some live roller conveyors are designed to allow the carrier rollers to "pop-out" should some object accidentally become caught between the carrier roller and the drive belt. This feature is required whenever the conveyor is installed in an area that is readily accessible to general plant personnel. However, when the conveyor is installed overhead, take provisions to prevent this feature from becoming a hazard to personnel below (due to falling rollers). Use the following guidelines to properly install the conveyors.

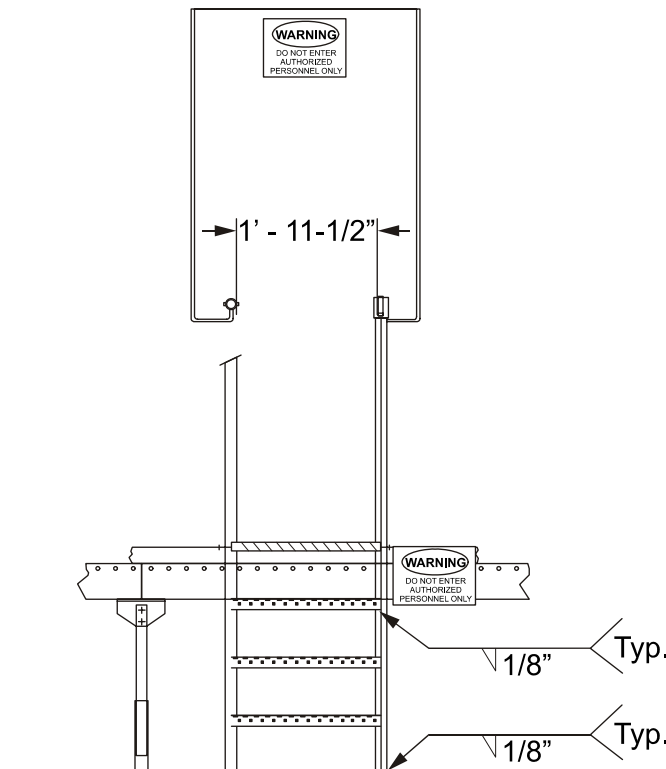
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1. For conveyors not installed overhead (below 8'-0" elevation):  
All carrier rollers must be free to "pop out" (an exception to this is the carrier rollers installed at 2" centers). Do not use roller hold-downs or side guide types "A" or "C" since these trap the rollers in the frame if they pop out.
2. For conveyors installed overhead (8'-0" or higher) with no access (no catwalk, walkway, platform, etc.):  
Prevent carrier rollers from falling on personnel below. Accomplish this by securing the carrier rollers in the frame by installing roller hold-down straps or by using intermediates with fixed rollers. Install hold-down straps on both sides of the conveyor under the top flange of the conveyor frame. If the side guides are mounted directly to the frame (such as arrangements "A" and "C"), then the side guide serves to trap the rollers in place and no additional hold-down strap is required. Also see item #5 below on spill guards.
3. For conveyors mounted overhead (8'-0" or higher), but accessible to operators by a platform:  
Carrier rollers must be free to "pop-out" as described in item #1 above (assuming conveyors are less than 8'-0" above platform). However, if the platform does not provide a surface which would suffice as a spill guard, then provide a spill guard. The spill guard must protect personnel below from carrier rollers that may "pop-out" of the frame. Refer to item #5 below for more information on spill guards.
4. For conveyors installed overhead (8'-0" or higher), but accessible by catwalk or walkways:  
Prevent carrier rollers from falling on personnel below. Accomplish this by securing the carrier rollers in the frame with roller hold-down straps or side guides mounted on frames, or with fixed rollers as described in item #2 above. If this is done, do not consider the walkways or catwalks to be operator platforms and post signs limiting access to maintenance personnel. The signs must also warn against the danger of pinch points caused by trapped rollers. In addition, provide an emergency stop pull cord for stopping the conveyor while clearing jams or performing maintenance. Also see item #5 below on spill guards.
5. For all conveyors installed overhead:  
Provide spill guards if product may fall off the conveyor for any reason and if personnel would be endangered. In any overhead installation, if the conveyed material is likely to fall (i.e., loose bottles in trays, poorly packaged products, etc.), install spill guards where the conveyor is above aisles or work spaces

## Warning Signs

Warning signs and labels posted on or near the equipment shall not be removed, painted over, or altered at any time. All safety devices, warning lights, and alarms associated with the system should be regularly tested for proper operation and serviced as needed. If the original safety item(s) become defective or damaged, refer to the parts list(s) of bill(s)-of-materials for replacement part numbers.

**WARNING:** For conveyors installed at floor level in an "Authorized Personnel Access Area Only", fixed rollers (3" centers) may be used in conjunction with an emergency pull cord. The area must be apart from normal working areas and access must be marked with a sign, "Warning - Do Not Enter - Authorized Personnel Only".  
 Part Number for ordering Warning Sign is 957305.  
 The illustration below shows the location for installation of the sign.



**To Order Ladder Supports Per Crossover:**

Qty:	Part Number:	Part Description:
1	957173	X-Over Sign Frame
2	957174	3/8" Dia. Nylon Loop Clamp (To Attach Sign To Frame)
3	957175	1-1/4" Dia. Pipe Ring w/Bolt (To Attach Sign To Ladders)
4	957305	Sign, Warn By-WS10 Seton M2540

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Figure G - 2 Ordering Ladder Supports Per Crossover

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## Parts Replacement

To minimize production downtime, selected conveyor spare parts should be stocked for replacement of defective components when required. Refer to the equipment bill(s)-of materials where quantity requirements or code numbers are not indicated on the conveyor parts list. For added convenience, a list of selected spare parts for standard products is included in this manual (see Section I).

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**Note:** Replacement parts for this conveyor should be obtained from Intelligrated. The owner of this conveyor will be responsible for any consequences that result from the use of substandard replacement parts or subassemblies.

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## Factory Assistance

Contact Customer Service for installation, operation, or maintenance assistance, or replacement parts.

## Installing the Conveyor

Before starting installation, remove any shipping braces and filler blocks, and check the alignment of the frames.

Corner-to-corner diagonal frame measurements of each section should be equal within 1/16".

For general information installing conveyors, floor supports, and ceiling hangers, refer to *Product Manual 5310, Floor Supports & Ceiling Hangers*.

## Shipment of Intermediate Sections

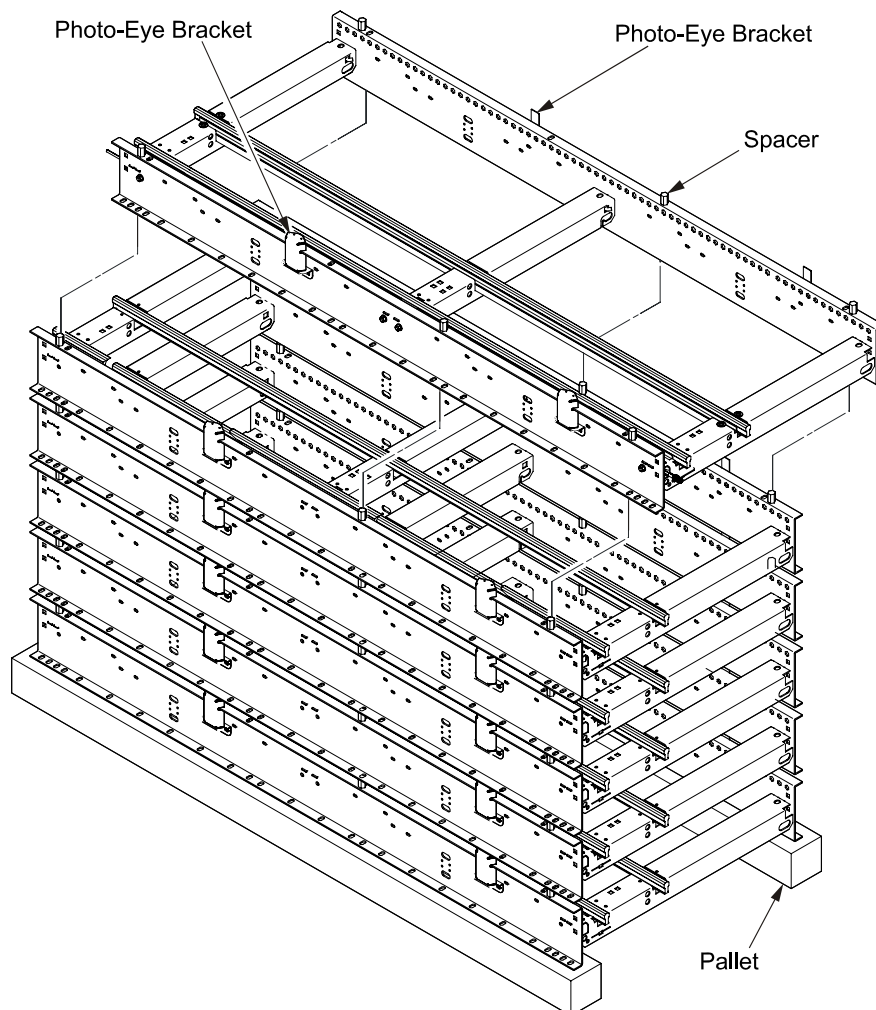
Photo-eye Sensor Accuglide Intermediate bed sections are normally shipped eight (8) sections high on a wooden skid. The base section is secured to the skid, and then each additional section is bolted to the top flanges of the section below. Protective boards are secured to protect the top and sides of the sections.

The Type RSH sections (6 3/8" deep rails with rollers set high) will use 1" long spaces to separate one section from the one below (see Figure G - 3).

## Un-stacking a Shipment of Intermediate Sections

**CAUTION:** When unstacking these sections, be careful not to damage the factory-installed and adjusted photo-eye and reflector assemblies.  
DO NOT discard the spacers and mounting bolts, etc. See Figure G - 3.

- Make sure that the skidded sections are always transported and stored right-side up.
- Remove the top and side crating members.
- Unfasten the mounting hardware and remove each section from the stack.
- For Type RSH sections, remove the bolts that attach the top section's bottom flanges to the spacers that are also attached to the lower section's top flanges.
  - DO NOT discard these bolts, etc.; they will be used later when installing side guides.
  - DO NOT unfasten the bolts that attach the spacers to the top flanges of the next lower section. The spacers will provide a 1" spacing between the side guide and the frame rail that provides an opening for the photo-eye's light beam to pass.
- Repeat the preceding steps as necessary until all the sections are removed from the stack.



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Figure G - 3 Stacked Type RSH Intermediate Sections with 1" Spacers

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## Installing GEN2 Accuglide

The installation of the GEN2 Accuglide Photo-Eye Sensor conveyor sections is nearly identical to that of GEN1.5 described in *Product Manual 8410 Accuglide Live Roller Conveyor* in Section G - Installation Procedures except for the zone control module connections and programming. Note the following that may affect your installation;

- **GEN2 Accuglide bed sections are "handed"**. The sensor and reflector mounting position "A" or "B" determines the hand of the conveyor. Verify the part number on the B/M.
- Sensor eyes used on GEN2 Accuglide should not have timers built into the eye. The timer function is variable via programming into the valve control module.
- Photo-eye sensors and the GEN2 modules are mounted on the driver pad side as standard. Special limited access applications may require field modification including sensor extension cables and/or module remounting and air piping. Side frames of the bed sections are symmetrical, so all mounting holes are in both the RH and LH formed side frames.
- One sensor eye in each zone is shop mounted, connected, powered and preliminarily aligned with the reflector mounted at the order specified offset. Alignment must be verified after field side guide installation.
- End of line terminators define the direction of product travel to the Interpreter. **It is critical one labeled "Downstream" be plugged in at the Tail (discharge) end and one labeled "Upstream" be plugged in at the Drive (infeed) end.**
- One Interpreter is supplied for each control module string, and can be mounted at either end of the string as specified by the Controls Engineering drawings.
- **DO NOT cut, splice, or pigtail GEN2 communication/power cables.** The proper male/female gender and length extension cables are available.
- **GEN2 Accuglide zone control modules have only the default function at time of shipment.** An interpreter is required for the "higher level functions" (slug, release, Smart eyes, and jam/fault signals).
- Applications that do not require a GEN2 Interpreter will only operate with the "DEFAULT" module settings and will require an independent valve control for Tail end release.
- Replacement of any GEN2 module requires an Interpreter download, before it will operate as originally programmed.
- One GEN2 valve module in each zone is shop air piped to the single barb inlet air pucks in that zone via **1/8" ID clear tubing.**
- GEN2 zone modules in the same bed section are shop connected [via the 3/8" ID (1/2" OD) red air supply line] directly to the nearest valve modules barb fitting.
- Only the red 3/8" ID air supply line and the yellow power/communication cord are normally connected between shipped bed sections at field final assembly.
- See the project drawings for special "air piping conditions" and "valve module logic settings".
- An AGPE Power Supply transformer can provide (24VDC) power for up to 70 zones (max.) See the typical connection arrangements that follow.

## Single AGPE Power Supply Installation for GEN2 with Up to 70 Zone Modules

An AGPE T-Cord is used at each AGPE Power Supply connected to the G2CM Power/Communication Cord at the 1/4 and 3/4 points (along the conveyor's length) to provide power (when there is more than 70 but less than 100 zone modules).

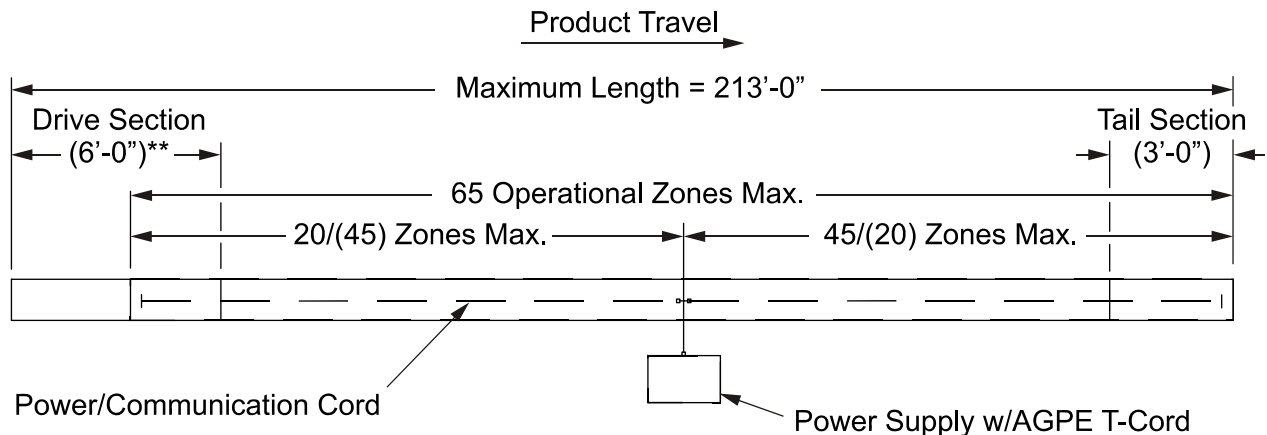
DO NOT exceed 55 zones on either side of the "T" connection.

---

**Note:** Check the Connector cord's length. The connector cords are available in lengths up to 12' and supplied as specified for the conveyor being installed.

---

1. Mount the AGPE Power Supply (1) to any appropriate structure within reach of the AGPE Connector Cord supplied.
2. Connect the AGPE Connector Cord's female Micro-Connector (2) to the AGPE Power Supply's male Micro-Connector (3).
3. Connect the cord's other end (with male Micro-Connector) to the G2CM's female Micro-Connector (4).
4. Wire the 110VAC power source to the AGPE Power Supply's internal connector strip.



\*\* Drive Sections Includes One (1) Operational Zone  
Terminators and Interpreter Not Shown

8420FKIAGPE2040

Figure G - 4 Single AGPE Power Supply Installation for GEN2 with Up to 65 Zone Modules

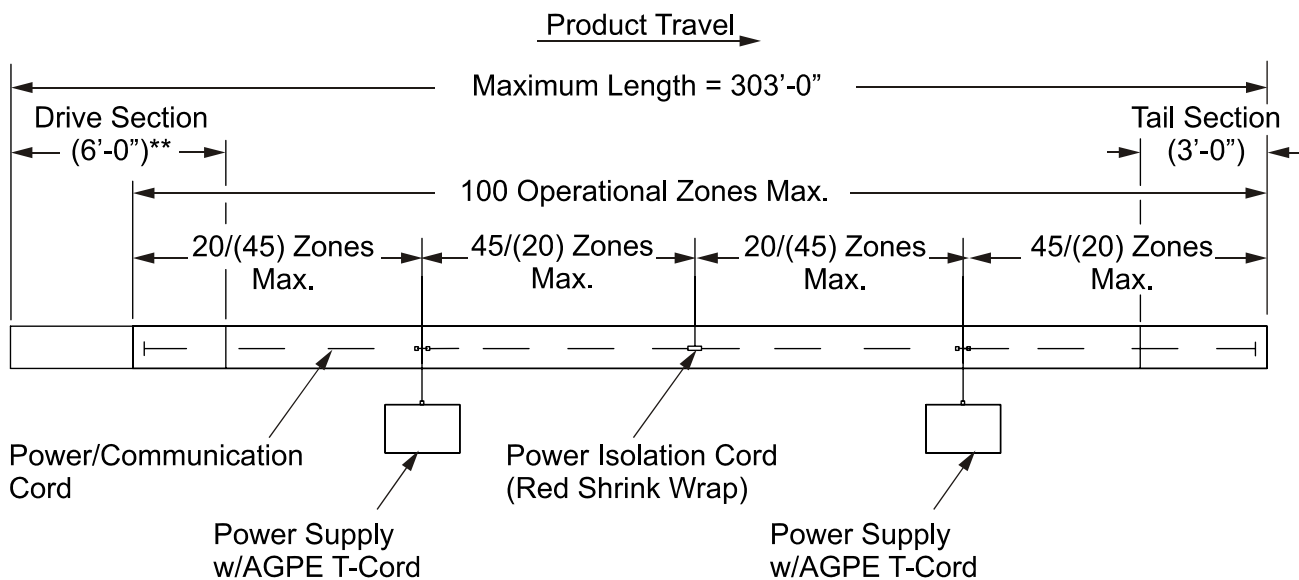
## Dual AGPE Power Supply Installation for GEN2 with up to 100 Zone Modules

An AGPE T-Cord is used at each AGPE Power Supply connected to the G2CM Power/Communication Cord at the 1/4 and 3/4 points (along the conveyor's length) to provide power (when there is more than 70 but less than 100 zone modules).

DO NOT exceed 55 zones on either side of the "T" connection.

1. Determine the zone in which the AGPE Power Supply is to be connected.
2. Mount the AGPE Power Supply to an appropriate structure within reach of the AGPE T-Cord. NOTE: Adding extension cables to the T-Cord may increase the voltage drop and reduce the number of modules powered.
3. Connect the AGPE T-Cord's long leg (with male Micro-Connector) to the AGPE Power Supply's female Micro-Connector.
4. Connect the AGPE T-Cord's two short lengths to the appropriate Micro-Connectors of the upstream G2CM and the downstream G2CM.
5. Wire the 110VAC power source to the AGPE Power Supply's internal connector strip.
6. An AGPE Isolation Cord Installation is required when two AGPE Power Supplies are installed in a single GEN2 operational unit. The AGPE Isolation Cord separates a series of modules powered by one source (70 zones max.) from the adjoining series of modules powered by second source. The AGPE Isolation Cord isolates the power of the two sources while allowing communication signals to pass through between adjoining zones.

**Note:** The AGPE Isolation Cord is normally located at the midpoint of the conveyor since a GEN2 arrangement using an Interpreter is limited to a maximum of 100 modules and requires end terminators in order for it to automatically determine the direction of product flow.



\*\* Drive Sections Includes One (1) Operational Zone Terminators and Interpreter Not Shown

8420FKIAGPE2041

Figure G - 5 AGPE Isolation Cord Connection and Dual Power Supply Installation

## AGPE Air-Control Assembly Installation

**Note:** An AGPE Air-Control Assembly Kit contains the air-filter/regulator/gauge/mounting bracket = (FRG), 15PSI label, the necessary air lines and connector fittings required to pipe the assembly into the conveyor's main air-supply line.

Use the following steps to install the AGPE Air-Control Assembly:

1. Mount the FRG to the conveyor or other convenient structure near the location(s) specified on the System Layout Drawing.
2. Cut the conveyor's red 3/8" ID air supply line tubing (in the specified zone(s) generally near the middle of the conveyor) and connect the T-Connector Fitting to the cut ends.
3. Connect the FRG to the T-Connector Fitting using 3/8" OD tubing and a 3/8" X 1/2" Reducer fitting
4. When a conveyor requires two (2) or more FRG assemblies, terminate the conveyor lines so that each supplies an independent conveyor area.

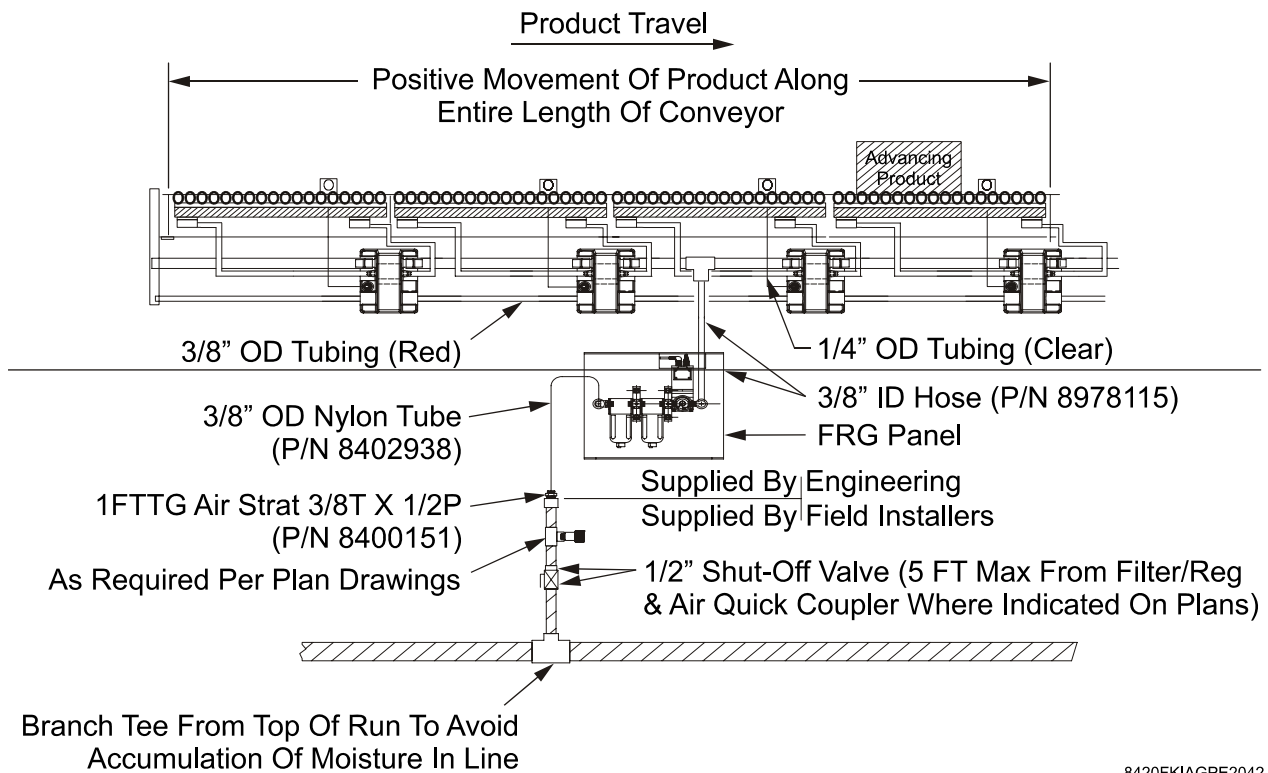


Figure G - 6 Filter/Regulator Connection Diagram

8420FKIAGPE2042



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## AGPE GEN2 Example Special Project Drawing and Documentation

A GEN2 Accuglide system may require project drawings or documentation to direct consistent effective programming and installation of the conveyor system.

The "example only" drawings that follow are one method previously used to document;

- GEN2 global and specific application (zone, timer, enable/disable) settings.
- GEN2 interpreter location
- Special side guide installation.
- Unique air piping arrangements.
- Field modifications, etc.

---

# GEN2 CONFIGURATION EXAMPLES FOR REFERENCE ONLY

EXAMPLE PROJECT DRAWINGS USED TO DIRECT PROGRAMMING AND INSTALLATION OF GEN2 ACCUGLIDE .  
FEATURES AND PART NUMBERS SHOWN MAY NOT MATCH YOUR SPECIFIC APPLICATION.

YOUR ACTUAL SET-UP REQUIREMENTS WILL VARY DEPENDING ON THE APPLICATION, PRODUCT AND SPEED.  
THIS IS JUST ONE METHOD PREVIOUSLY USED TO DOCUMENT AIR PIPING AND PROGRAMMING.

THE FOLLOWING EXAMPLES UTILIZED A NON-STANDARD INDEPENDANT TAIL END REGULATOR OPERATING AT  
A HIGHTER AIR PRESSURE AND AN ELECTRONICALLY CONTROLLED AIR REGULATOR AT THE CONVEYOR  
MID-POINT.

**Introduction “Special Example Only”**

- GEN2 General Description of Operation
- Device Net Interpreter mounted at tail (discharge) end. Limited to a Max of 99 modules & 7 Smart Sensors. Typical Smart Sensor locations:
    1. Over Full - at sensor in the drive.
    2. Room Available - at 3rd sensor from the drive.
    3. Max Supply - at 8th sensor from the drive.
    4. Call - at 11th sensor from the tail end.

- Accumulation Modes Enabled and operating at higher air pressure (unless otherwise specified)
- "Extended Zone" valve controlled by DS2 sensor is configured for high speed applications unless otherwise noted.
  - "Release Signal" from Interpreter turns on:
    - a) First valve module prior to downstream terminator (@ Tail). This valve will also turn on when its locally programmed configuration is achieved.
    - b) Second valve module prior to downstream terminator only when its locally programmed configuration is DS2.
  - "Timer" in modules are to be set to "0" second delay except as noted below:
    - a) Those from the drive unit thru the max supply sensor are to be set to "1" second delay.
    - b) Local and US1 at any "smart" sensor or device net eye downstream of the max supply eye (i.e. call eyes) are to be set to "1" second delay.
    - c) Those following an AG curve are to be set per dwgs -M06AP/110 thru /113.
    - d) Timer set to "1" second on (5) eyes downstream of set down conveyor.
  - "Auto-Slug" turns on all enabled upstream zones (prior to upstream terminator) when any two consecutive sensors clear for a (0 second) set time.
  - "Autoslug" is disabled on first (5) modules back from the tail when brakes are immediately upstream of tail per DWG -M06AP/105.
  - "Auto-Slug" is enabled in 100% of valve modules at AG's for Ticking, Cart, Repack, Reject & directly prior to Shipping Sorter inductions.
  - "Auto-Slug" is enabled in 40% of valve modules at AG's for all other applications. The 40% will be configured from the tail back as a repeating (3) zones disabled then (2) zones enabled.
  - "Auto-Slug" is disabled on all modules controlling zones upstream of an AG transportation curve to prevent product push-over onto curve.
  - Sensor eye provided at every valve module (even if sensor not directly controlling a valve module in some cases) to enhance operation of "Sleep", "Awake" and "Jam" modes.

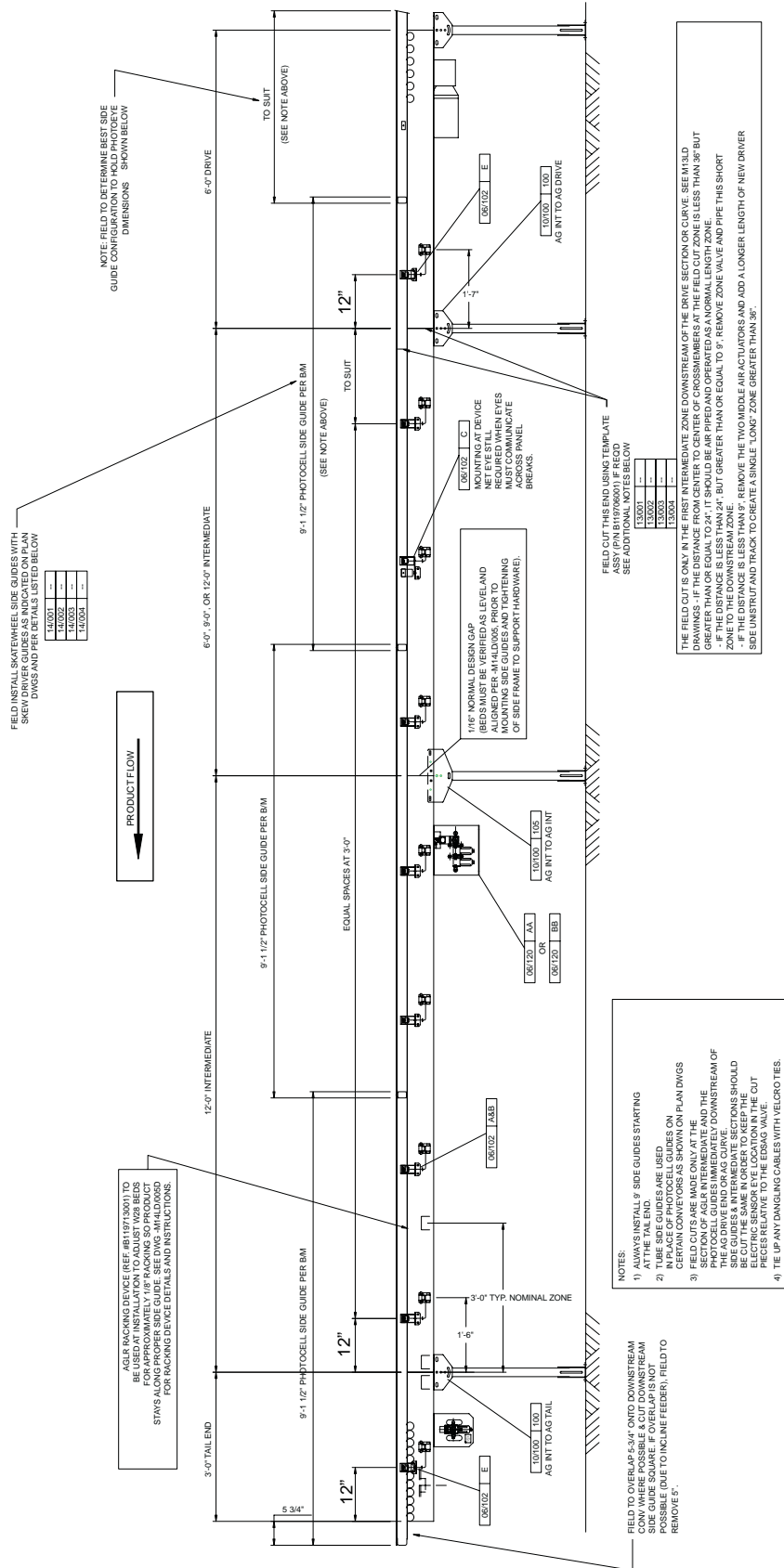
- Dynamic Slug Modes Enabled and operating at lower air pressure (unless otherwise specified)
- "Slug" turns on all zones between downstream and upstream terminators.
  - "Jam" detection shifts conveyor from transportation mode into accumulation mode (still at lower air pressure) when sensors DS1 & DS2 are clear, while the local, US1 & US2 are blocked for a (5 second) time. NOTE: Last two modules prior to the downstream terminator have no jam detection, since no DS2 sensor exists downstream. Also, the first two zones in direction of travel are "Jam Disabled" since no US2 zones exist.
  - Sleep Mode Enabled and operating during Accumulation and Transportation modes (unless otherwise specified)
  - "Sleep" occurs as any local, US1 & US2 sensors are clear for a (2 second) time. NOTE: First and second module from upstream terminator (@ Drive end) have no sleep since no US2 sensor exists.
  - "Awake" occurs as any DS1, DS2, Local, US1, US2, US3, US4 sensor changes state. Sleep mode is overridden by release signal from interpreter to last (two in extended mode) modules prior to downstream terminator (@ Tail end).
  - Normally "Enabled" with a 5 second delay timer where possible.

- LED Indicators on valve module
- "Green On" = powered and communicating
  - "Red Flashing" = Local Fault (check connections and cycle power)
  - "Amber On" = Valve powered on (zone rolling)
  - "Green Flashing" = Fault on conveyor (look for flashing red)

LEGEND	
	PHOTOEYE ASSEMBLY WITH RETROREFLECTIVE GEN2 COMPATIBLE SENSOR AND AD MOUNTING BRACKETS
	GENZ HUMPHREY VALVE P/N 8005552 - 0.5 WATT 24VDC 3-WAY NORMALLY CLOSED VALVE WITH CABLE FOR 3 FT VALVE CENTERS
	AIR ACTUATORS - P/N 2980028 (ONE AIR INLET) AND P/N 2980029 (TWO AIR INLETS)
	DOME NUT P/N 8978286 AND 1/8" MPT X 3/8" ID HOSE
	MINI-BARBED FTG P/N 8903480
	3/8" UNION TEE W/ 1/8" RUN P/N 8978060
	DOWNSTREAM TERMINATOR, INTERPRETER, & UPSTREAM TERMINATOR
	1/8" ID X 1/4" OD CLEAR POLYURETHANE TUBING P/N 8978025
	3/8" ID X 1/2" OD CLEAR POLYURETHANE TUBING P/N 8978115
	1/4" ID X 3/8" OD WHITE NYLON TUBING P/N 8402398
	COPPER PIPE TYPE "L" HARD
	AIR UNIVERSAL QUICK COUPLER 1/4" MPT P/N 8400055 AND 1/2" COPPER SWEAT TEE WITH 1/4" FPT BRANCH
	QUICK EXHAUST VALVE P/N 8078021 WITH 10-32 FEMALE TEE P/N 8978272, 10-32 TO 1/8P FTGS P/N 8978225, AND GASKET KITS P/N 8701250.
	MAC VALVE 3-WAY SINGLE SOLENOID WITH 1/8" PORTS P/N 8002653 WITH 1/8" MPT X 1/8" HOSE FITTING P/N 8978250 AND 1/8" MPT X 3/8" ID HOSE FITTING P/N 8903480.

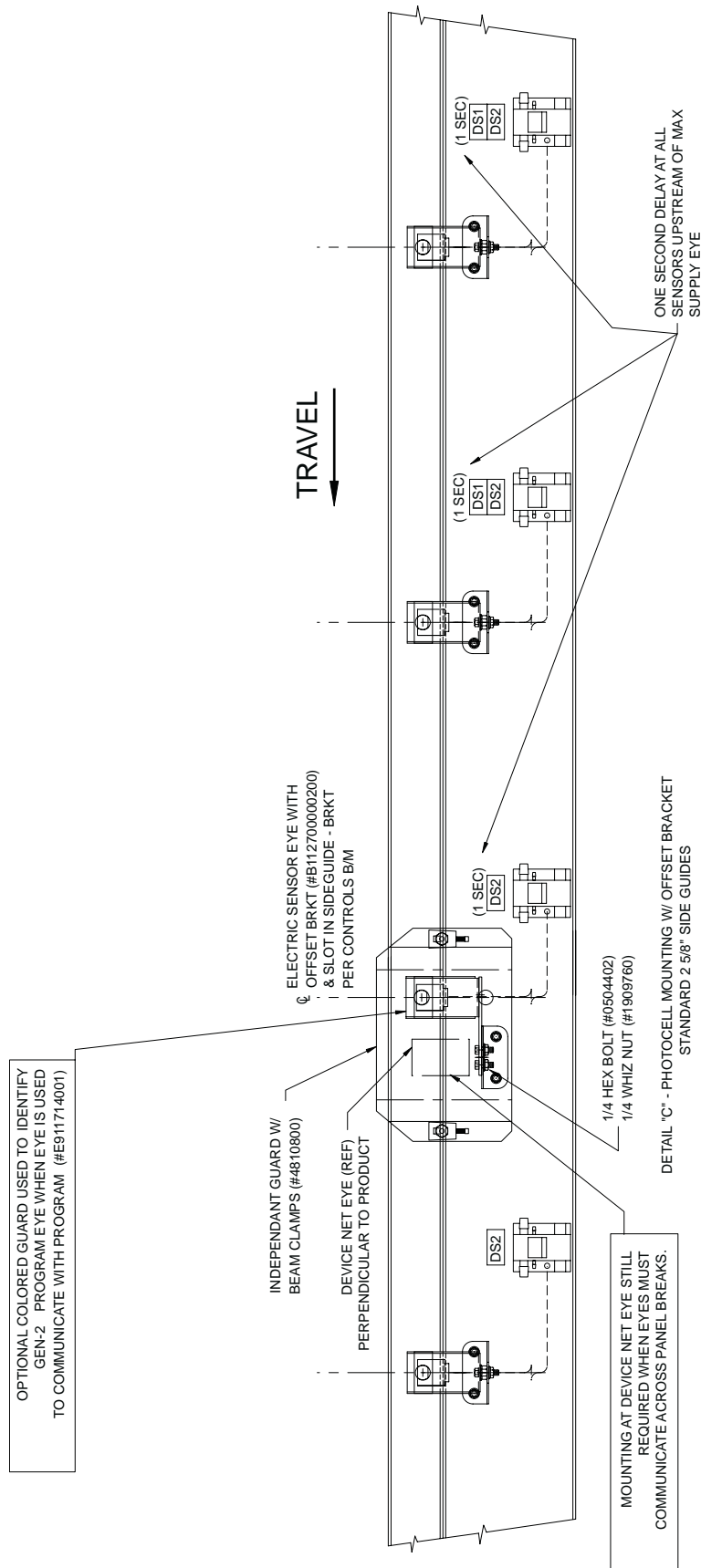
0	REFERS TO LOCAL ACCUMULATION MODE WHERE THE VALVE IS TURNED OFF IF THE EYE CONNECTED TO IT IS BLOCKED. IF THE EYE IS NOT DETECTED IT IS ASSUMED TO BE BLOCKED.	EXAMPLE: LAST MODULE AT A 'DEAD END' (LIKE MBP LINE AND PALLET AG HAND LINE).
DS1	REFERS TO STANDARD ACCUMULATION MODE WHERE THE VALVE IS TURNED OFF IF THE FIRST DOWNSTREAM EYE IS BLOCKED. IF THE EYE IS NOT DETECTED IT IS ASSUMED TO BE BLOCKED.	EXAMPLE: MODULE IMMEDIATELY UPSTREAM OF BRAKE OR IMMEDIATELY UPSTREAM OF 'DEAD END' CONDITION.
DS2	REFERS TO EXTENDED ACCUMULATION MODE WHERE THE VALVE IS TURNED OFF IF THE SECOND DOWNSTREAM EYE IS BLOCKED. IF THE EYE IS NOT DETECTED IT IS ASSUMED TO BE BLOCKED.	EXAMPLE: 'DEFAULT' (NORMAL CONDITION) ON CASE CONVEYOR UNLESS OTHERWISE SPECIFIED.
DS1	REFERS TO DUAL EXTENDED ACCUMULATION MODE WHERE THE VALVE IS TURNED OFF IF BOTH THE FIRST AND SECOND DOWNSTREAM EYES ARE BLOCKED. IF THE EYES ARE NOT DETECTED	EXAMPLE: TWO MODULES IMMEDIATELY UPSTREAM OF A 'SMART' SENSOR. TWO MODULES IMMEDIATELY DOWNSTREAM OF A BELT RUNNING 100% FASTER, OR ONE
0	REFERS TO NORMAL LOCAL ACCUMULATION MODE WHERE THE VALVE IS TURNED OFF IF BOTH THE LOCAL AND THE FIRST DOWNSTREAM EYES ARE BLOCKED. IF THE EYES ARE NOT DETECTED THEY ARE ASSUMED TO BE BLOCKED.	EXAMPLE: NORMAL CONDITION OF PALLET ACQUISITION.
DS1		

## Legend and Description of Operation



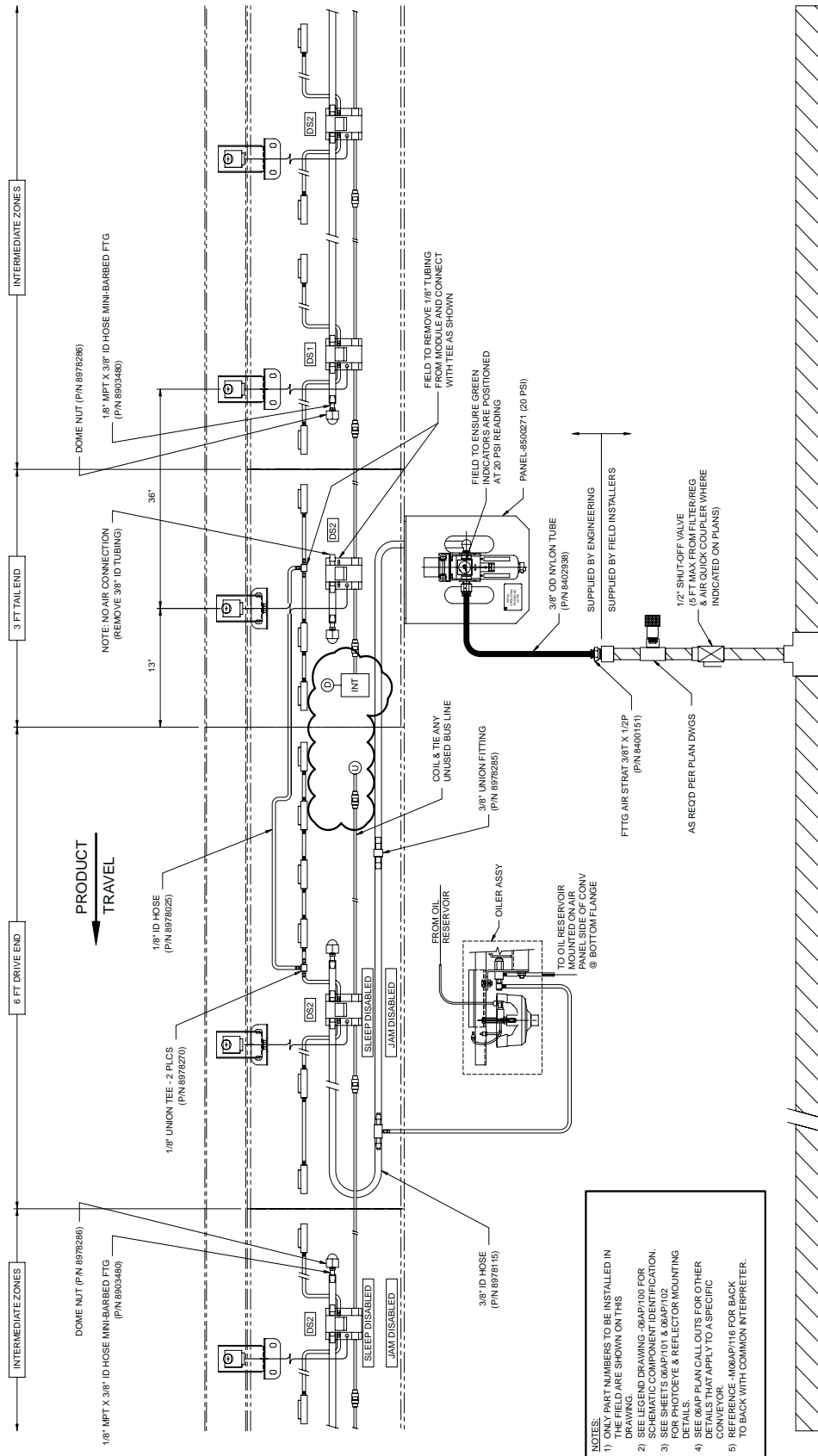
ELEVATION VIEW OF GEN-2 ELECTRIC DYNAMIC SENSOR ACCUGLIDE

### Sensor 'A' Position with Special Side Guide Mounting



**Special Smart Eye Across Panel Communication Break Points**





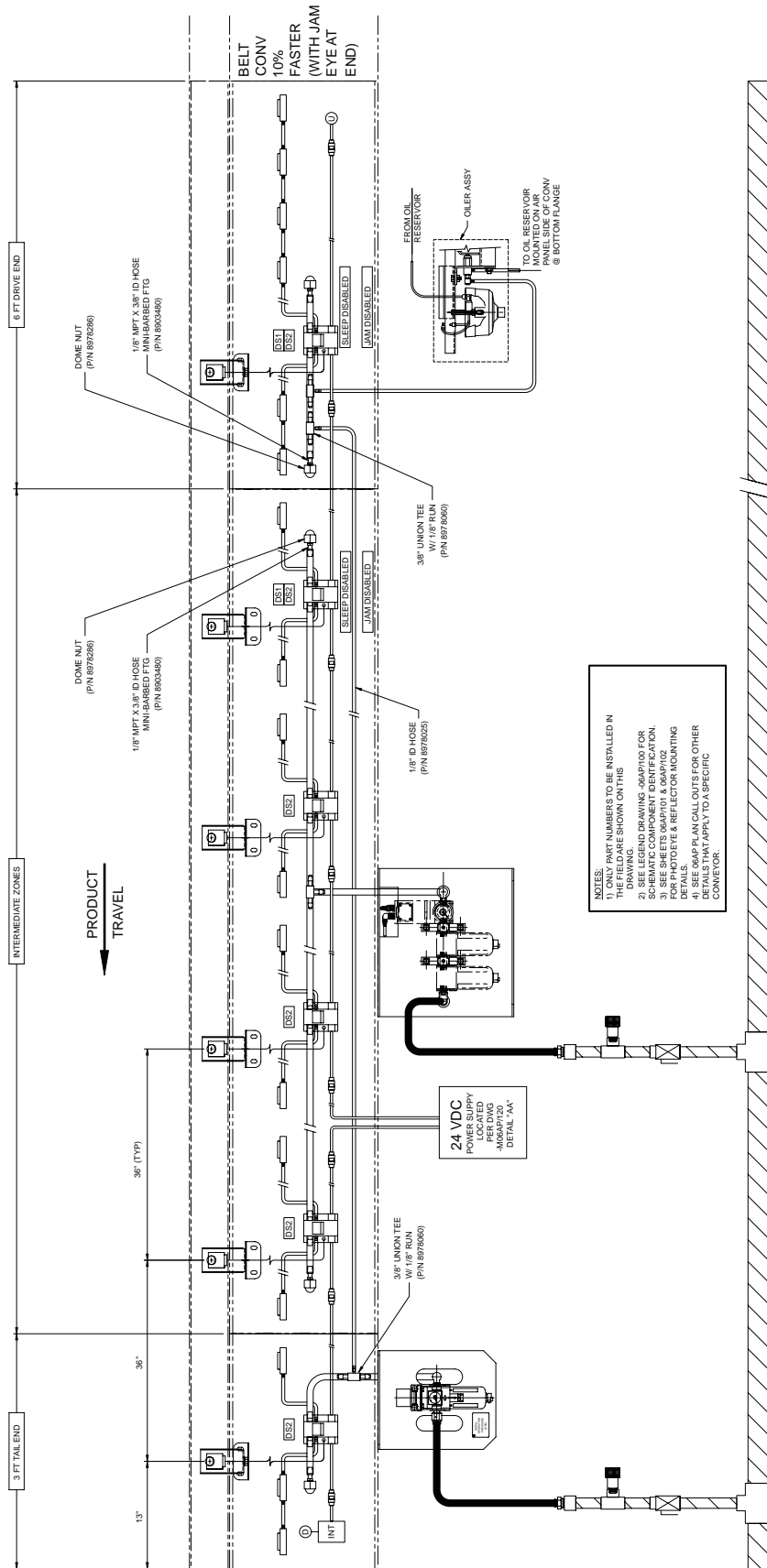
- NOTES:**
- 1) PART NUMBERS TO BE INSTALLED IN THE FIELD ARE SHOWN ON THIS DRAWING.
  - 2) SEE LEGEND DRAWING -06AP/100 FOR SCHEMATIC COMPONENT IDENTIFICATION.
  - 3) SEE SHEETS 06AP/101 & 06AP/102 FOR PHOTOE & REFLECTOR MOUNTING DETAILS.
  - 4) SEE 06AP PLAN CALL OUTS FOR OTHER DETAILS THAT APPLY TO A SPECIFIC CONVEYOR.
  - 5) REFERENCE -M06AP/116 FOR BACK TO BACK WITH COMMON INTERPRETER.

AIR PIPING DETAIL "DB"  
 DYNAMIC RELEASE TAIL FOR BACK TO BACK WITH  
 SEPARATE INTERPRETER

**Back to Back with Separate Interpreter**





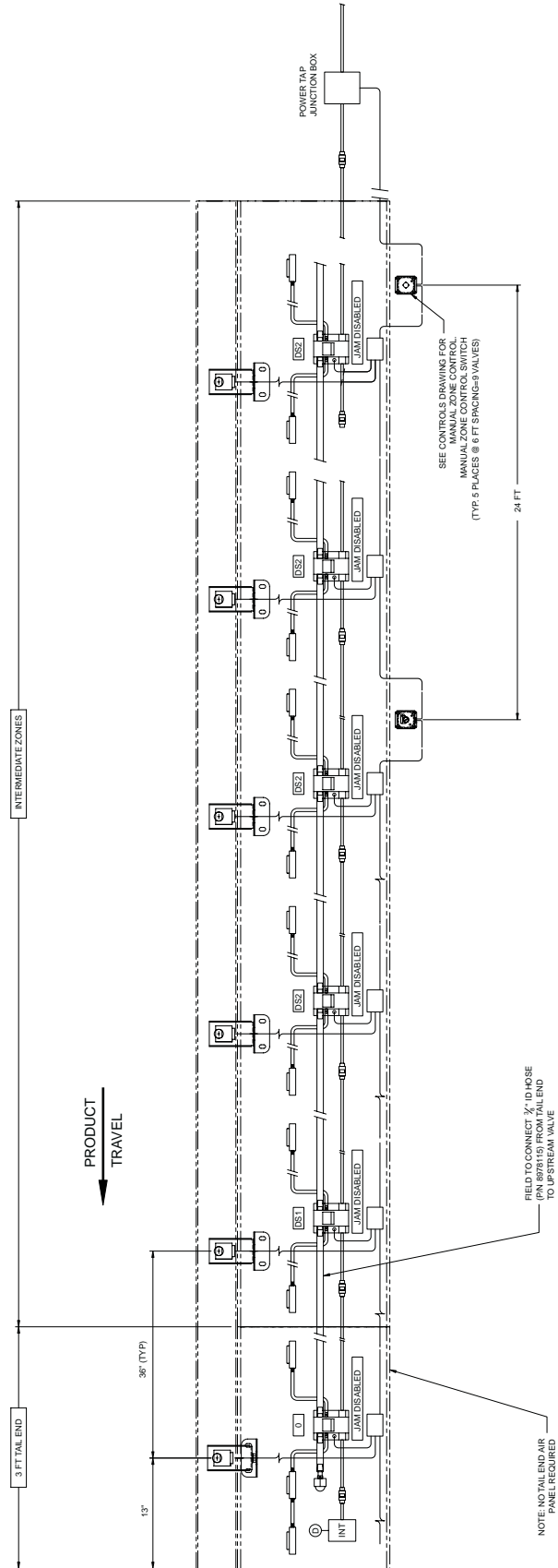


NOTES:  
 1. THE PART NUMBERS TO BE INSTALLED IN THIS DRAWING ARE SHOWN ON THIS DRAWING.  
 2. SEE LEGEND DRAWING 06AP100 FOR OVERVIEW OF PHOTO-EYE APPLICATION.  
 3. SEE SHEETS 06AP101 & 06AP102 FOR PHOTO-EYE & REFLECTOR MOUNTING DETAILS.  
 4. SEE SHEETS 06AP103 & 06AP104 FOR OTHER DETAILS THAT APPLY TO A SPECIFIC CONVEYOR.

AIR PIPING DETAIL "FB"  
 MODIFICATIONS WHEN BELTS WITH JAM EYE AT DISCHARGE ARE RUNNINGS 10% FASTER THAN AGLR  
 SIMILAR TO DWG 06AP103 EXCEPT WITH 20 PSI PRESSURE PIPED FROM TAIL REGULATOR TO DRIVE SECTION

Drive End Following a Faster Belt w/Jam Eye





AIR PIPING DETAIL "EL"  
ACCUGLIDE END OF LINE

- NOTES:
- 1) CIRCLED PART NUMBERS TO BE INSTALLED IN DRAWING.
  - 2) SEE LEGEND DRAWING 06AP1002 FOR SPECIFICATIONS FOR PHOTOEYE & REFLECTOR MOUNTING DETAILS. PLAN CALL OUTS FOR OTHER DETAILS THAT APPLY TO A SPECIFIC CONVEYOR.
  - 3) SEE SHEETS 06AP1001 & 06AP1002 FOR PHOTOEYE & REFLECTOR MOUNTING DETAILS.
  - 4) DETAILS THAT APPLY TO A SPECIFIC CONVEYOR.

End of Line Module Programming



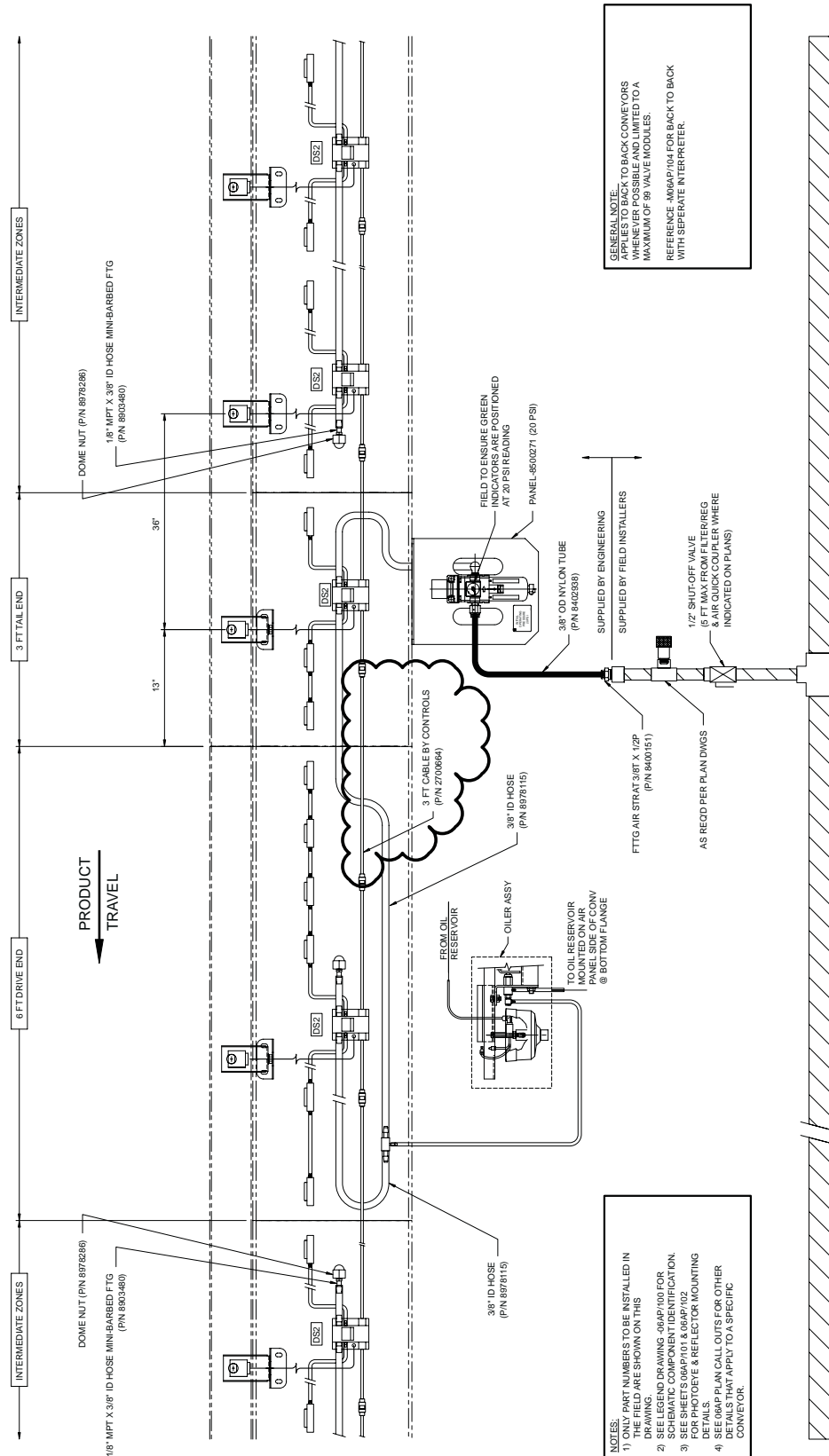












**GENERAL NOTE:**  
 TO BACK CONVEYORS  
 WHERE POSSIBLE AND LIMITED TO A  
 MAXIMUM OF 80 VALVE MODULES.  
 REFERENCE 408AP1004 FOR BACK TO BACK  
 WITH SEPARATE INTERPRETER.

**NOTES:**  
 1) ALL PART NUMBERS TO BE INSTALLED IN  
 THE FIELD ARE SHOWN ON THIS  
 DRAWING.  
 2) SEE LEGEND DRAWING 06AP/100 FOR  
 SCHEMATIC COMPONENT IDENTIFICATION.  
 3) SEE SHEETS 06AP101 & 06AP102  
 FOR DETAIL & REFLECTOR MOUNTING  
 DETAILS.  
 4) SEE 06AP PLAN CALL OUTS FOR OTHER  
 DETAILS THAT APPLY TO A SPECIFIC  
 CONVEYOR.

AIR PIPING DETAIL "DB"  
 DYNAMIC RELEASE TAIL FOR BACK TO BACK WITH  
 COMMON INTERPRETER

**Back to Back with Common Interpreter**

## Checking Zone Control Components - GEN2

1. Each Solenoid Control Module has two (2) LED indicators.

Check for the normal desired "color" of each indicator.

"**GREEN**" LED indicates that all Power/Communication cords between the module and the Power Supply are properly connected and the module is receiving power (24VDC) from the power supply.

"**AMBER**" LED indicates that its associated solenoid-valve is actuated and its operational zone is in the "**powered**" state.

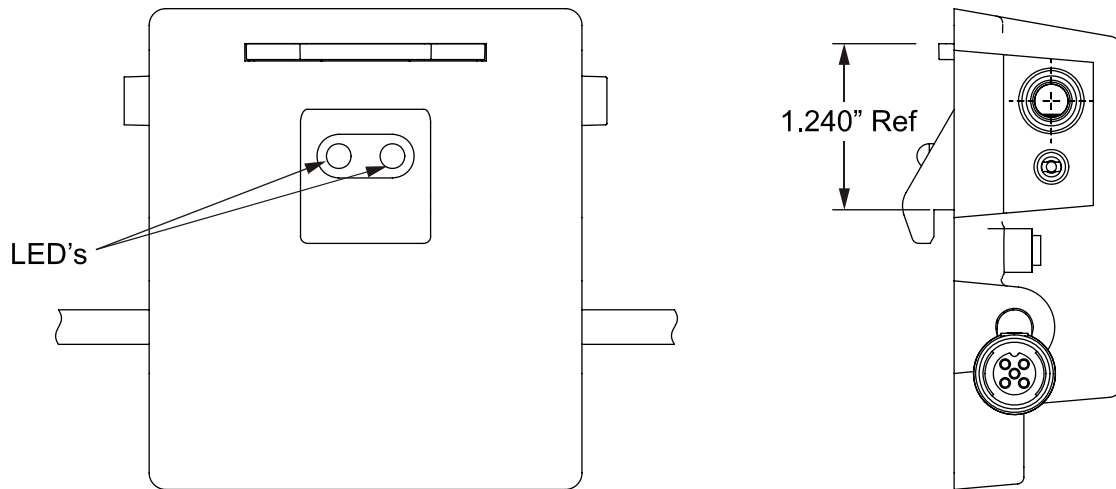


Figure G - 7 LED Indicators (As seen from outside of conveyor)

2. Each Photo-Eye Sensor has one or more LEDs that indicate the sensor's current operational condition and status. Depending on the model/brand of photo-eye supplied, the color(s) of the LEDs may vary from those described in the following.

Check each photo-eye's LED indicators

A "**GREEN**" LED indicates that the photo-eye is properly connected to the Solenoid Control Module and receiving power.

A "**AMBER**" (steady) LED indicates that the photo-eye is properly aimed and receiving a reflective beam back from its reflector.

There are two status LEDs for each valve module. A bi-color LED on the left (GREEN or RED) and an AMBER LED on the right (see Section 4, Figure 7). The following table describes each status:

LED	Status	Description
GREEN (LED1)	Powered / OK	Normal with power present at zone and system operating properly.
FLASHING GREEN (LED1)	Zone OK / Fault elsewhere	Present zone operating properly. Fault present elsewhere.
ALTERNATING GREEN/RED (LED1)	Zone power and communication OK. Cannot find endpoints	Present zone operating properly. Fault present elsewhere before power up or terminators are incorrect or missing.
RED (LED1)	Not ready / Powering up	Temporary condition at zone as it receives program information.
FLASHING RED (LED1)	Fault at this zone	Power at zone. Communication system not operating properly.
AMBER (LED2)	Power to Solenoid Valve	Communication system has sent signal to energize solenoid valve.
NONE (LED1)	No Power	Electricity not present at valve module.

## Module LED Condition

### *FLASHING GREEN:*

- Locate FLASHING RED control module on the conveyor. Follow troubleshooting instructions for FLASHING RED.
- Check cables upstream and downstream of that control module for proper hook-up. If not OK, hook up per previous instructions.
- Cycle power supply OFF for conveyor for approximately 10 seconds, and then turn ON.
- If condition still exists, replace the FLASHING RED module.

### *ALTERNATING GREEN/RED:*

- Locate FLASHING RED control module on the conveyor. Follow troubleshooting instructions for FLASHING RED.
- Check cables upstream and downstream of that control module for proper hook-up. If not OK, hook up per previous instructions.
- Cycle power supply OFF for conveyor for approximately 10 seconds, and then turn back ON.
- If condition still exists, replace the FLASHING RED module.
- If all control modules are ALTERNATING GREEN/RED the line can not determine its upstream/downstream orientation. Check cable terminators for correct type and installation.
- Once terminators are corrected, cycle power supply OFF for conveyor for approximately 10 seconds, and then turn ON.

---

*FLASHING RED:*

- If all control modules on the conveyor are FLASHING RED, check / correct the Cable Terminators at each end of the conveyor for proper hook-up.
- If not, check / correct cables upstream and downstream of that control module for proper hook-up.
- Cycle power supply OFF for conveyor for approximately 10 seconds, and then turn ON.
- If condition still exists, replace the FLASHING RED module.

---

**Note:** If more than one module indicates an error and the above troubleshooting does not pinpoint the problem, temporarily do one of the following to locate the defective module by process of elimination;

1. Move terminator (opposite the Interpreter end) toward the Interpreter to shorten the number of modules in the string.
  2. Use a connection extension cable to jumper around one module at a time until the defective module is isolated.
- 

*NO GREEN or AMBER:*

- Be sure power is present in the system.
- If so, find the module nearest to the Power Supply and replace it per previous instructions.

*STEADY GREEN and AMBER (but rollers not powered):*

- Check for air pressure at regulator.
- If OK, carefully remove tubing line from between control module and "air puck" (Do not put side load on barbed fittings). Check for air passing from valve to "air puck." If present, valve is OK.
- If not present, replace the control module per previous instructions.

*STEADY GREEN but NO AMBER (and rollers not powered):*

- Flag photo-eye at local zone, then upstream 1 and upstream 2 and check for AMBER LED at local zone.
- If no AMBER LED, check / correct photo-eyes for proper alignment. Once aligned, flag photo-eye at local zone, then upstream 1 and upstream 2 and check for AMBER LED at local zone.
- If problem continues, replace the control module per previous instructions.

---

## Pre-Start-Up Preparation

Check-out all of the following before turning the electrical power "ON" and running an Accuglide Conveyor for the first time.

1. Check that the conveyor is level (across its width) and that adjoining sections are aligned.
2. Check that the conveyor's elevation is correct.
3. Check that the drive chain / pad's path is correct
4. Check that the drive chain / pad is properly tensioned.
5. Check that the reducer's lubricant is up to the oil level plug opening.

---

**Note:** If additional lubricant is required, refer to the manufacturer's tag (attached to the reducer) before adding.

Before re-installing the reducer plugs, wrap "thread-tape" around the plugs to prevent oil leakage.

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6. Check that the Track Lubricator's Oil Reservoir is filled with SAE 10 NON\_DETERGENT motor oil.
7. Check that all tools and installation materials are removed from the conveyor.
8. Check that all safety guards are installed.
9. Check other wiring connections and test all of the conveyor / system electrical control for proper operation.
10. Review Safety Precautions listed in this section.

## Initial Start-Up

1. Turn on the conveyor's air supply and electrical power.
2. Jog the power unit motor's "starter" to check that the rotation is correct for the required direction of travel. Change motor wiring if necessary.
3. Check that the Drive Chain / Pad does not jump a tooth on the drive sprocket when the power unit is turned on.
4. Check the power unit motor and reducer for any unusual noises, leakage or other condition(s) that might cause a problem.

---

**Note:** The reducer will tend to run hot when first put into operation. This condition will continue for approx. 120 hours (until the maximum break-in efficiency is reached).

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### Checking Transportation Function

Check that product conveys positively and smoothly along the full length of the conveyor.

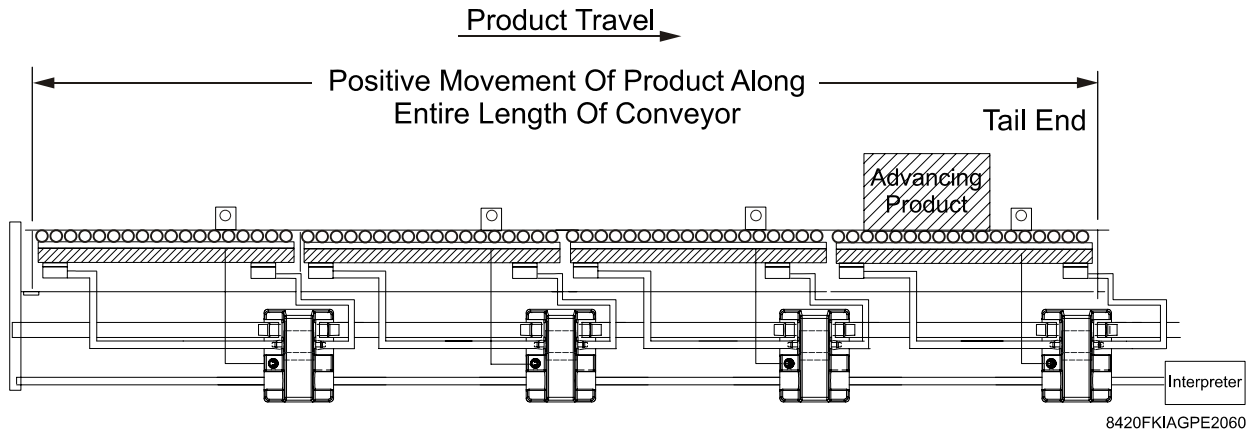


Figure G - 8 Product(s) Travel Positively Along Conveyor

### Checking Accumulation Function

Example assuming; DS1, Auto-Slug is disabled, Slug is off, and sensor timers are set to zero.

Confirm that the first product coasts to a stop in the last operational-zone at the conveyor's discharge-end and that trailing products accumulate rearward without a buildup of line pressure.

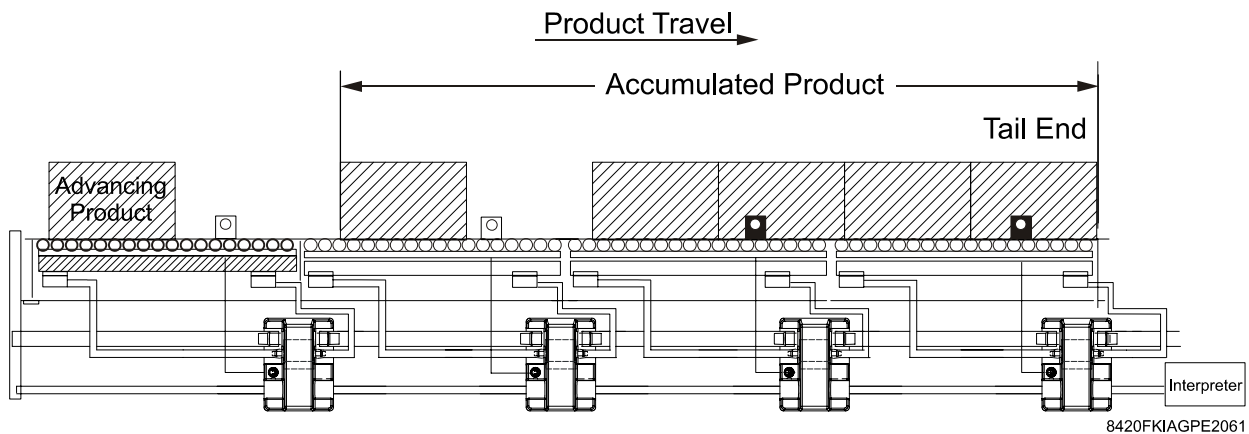


Figure G - 9 Product Accumulation

## Checking Operational Mode - Singulation

Verify Solenoid-Control Module (SCM) that is set for the "singulation" operational-mode responds to its associated photo-eye sensor mounted in a (DS1 or DS2) downstream zone.

Example assuming; DS1, Auto-Slug is disabled, Slug is off, and sensor timers are set to zero;

- Solenoid Valve "A" powers Zone A when a release signal is provided by the Interpreter (or an independently controlled valve not shown).
- When sensor "a" is unblocked, solenoid Valve "B" powers Zone B.
- While sensor "b" is momentarily blocked, it will remove power from Zone C.
- Since sensor "c" is unblocked, Zone D will be powered.

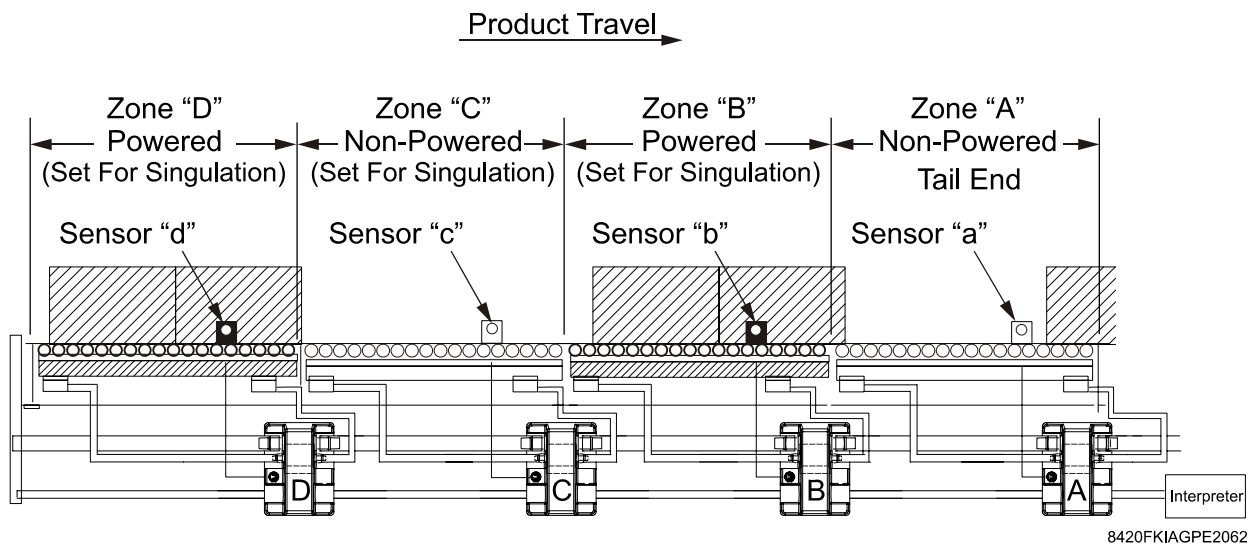


Figure G - 10 Singulation Operational Mode

## Checking Operational Mode - Release and Rate

Example assuming; DS1, Auto-Slug is disabled, Slug is off, and sensor timers are set to zero;

1. Product Release: Provide a "release" signal to the Tail End SCM and confirm that:
  - Accumulated product (sitting in the first operational zone "A") advances.
  - Accumulated product (sitting in the upstream operating zone "B") advances when the downstream zone's photo-eye sensor "a" is cleared by product "A".
  - Confirm that this process continues rearward until all product is moving forward with approx. 3' lg. gaps between products.
2. Product Acceptance: Check that the volume of product being fed onto the conveyor properly advances on the conveyor with gaps (approx. 3' long) between each product (or groups of smaller products).

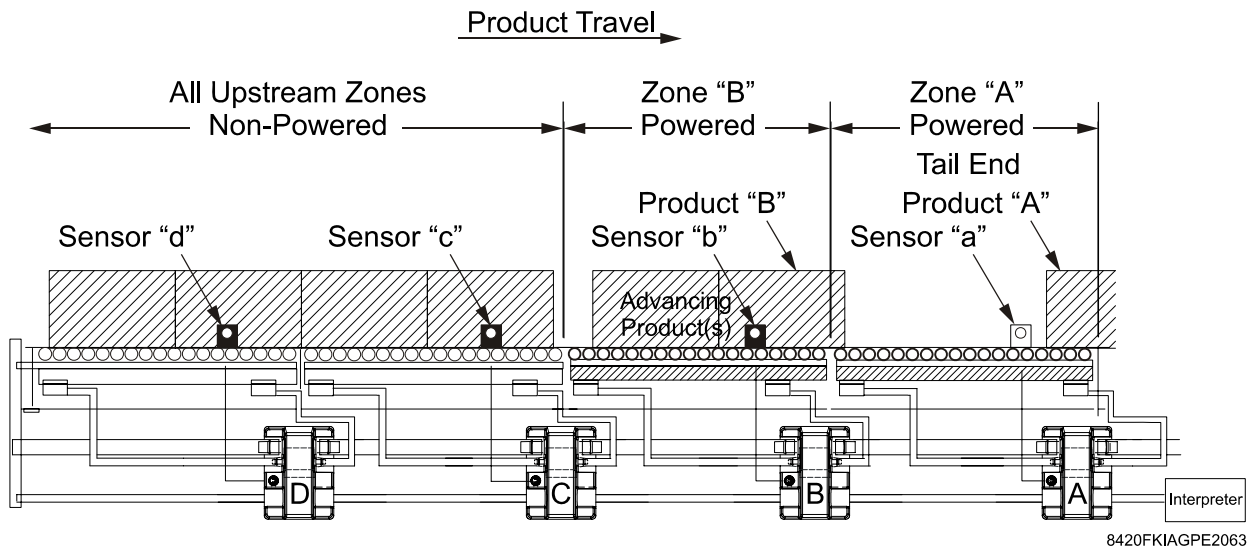


Figure G - 11 Singulation Release



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## Checking Operational Mode - GEN2 Special Features

Verify operation of each enabled GEN2 feature;

- Auto-Slug; All enabled upstream zones release in slug when any two consecutive downstream sensors are clear.
- Slug; All zones release in slug when signal is provided by the Interpreter.
- Jam; All enabled upstream zones accumulate when two downstream sensors are clear and three upstream sensors are blocked.

## Conveyor Start-Up Test Run

For Start-Up Test Run information, Refer to *Product Manual 8410, Accuglide Live Roller Conveyor* - Section G - Installation Procedures.

## Personnel Training

ONLY trained personnel should operate conveyors. They must be knowledgeable about each conveyor and its intended use as well as the operation of the total system. They must also know what steps are to be taken in an emergency situation.



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## SECTION H: MAINTENANCE

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**Note:** Refer to Product Manual *8410 Accuglide Live Roller Conveyor* Section H Maintenance for information not otherwise listed here within.

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### Maintenance Safety

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**WARNING:** Maintenance must be performed only by qualified personnel who are trained in normal and emergency operations of the conveyor and who are knowledgeable of all safety devices, their locations, and functions.

Before performing maintenance on a conveyor, make certain that the conveyor's power disconnect is locked in the OPEN position and tagged to prevent accidental or unexpected application of power.

Do not perform maintenance while the conveyor is running unless specifically instructed to do so in this manual.

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Before restarting a conveyor that has been shut down for maintenance:

- Remove all foreign objects from the conveyor.
- Be sure that all guards and safety devices are properly installed and working.

Make sure that all persons are clear of the conveyor and aware that the conveyor is about to be restarted.

### Maintenance Not Related to the Zone Control

Maintenance Procedures not related to GEN2 Accuglide Photo eye Sensor conveyor are very similar to those for the GEN1.5 Accuglide.

Be aware of the following exceptions and additions applicable to GEN2.

## Installing / Replacing a GEN2 Control Module(s)

A GEN2 module is removed from the frame rail and module network by following the steps;

1. Detach the photo-eye cable from the module to be replaced.
2. Disconnect the yellow cables from the modules immediately upstream and downstream of the module to be replaced.
3. Disconnect pneumatic supply tubing from the modules immediately upstream and downstream of the module to be replaced. Carefully disconnect small pneumatic tubing from air "pucks."
4. Using a flat screwdriver, push in the white retainer clip found just above the status LED's while slowly sliding the module up. This will remove the module from the side frame of the conveyor.

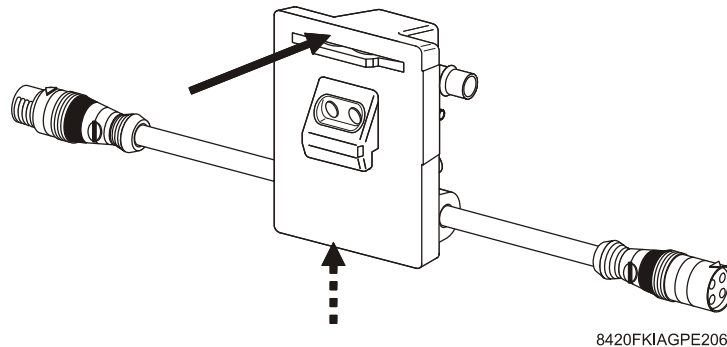


Figure H - 1 GEN2 Module

To Install and Configure a GEN2 Control Module

1. Snap the new module into the side frame of the conveyor.
2. Reconnect the Cable Terminator.
3. Connect the yellow cables from the new module to the cables from the modules on either side.
4. Reconnect pneumatic supply tubing from the modules immediately upstream and downstream of the module to be replaced. Reconnect small pneumatic tubing from air "pucks."
5. Attach the photo eye cable to the new module.
6. Depending on system settings, send the 'Configuration' from the Interpreter (this will give the new module the information it needs for operation without having to hook up a computer).
7. Verify solid GREEN LED status on valve module. If not solid GREEN, see troubleshooting instructions.

## Installing / Replacing Cables and Terminators

Terminators, extension cables and other connectors can be disconnected by applying an axial tension force of approximately 5 lbs. The connection can be made with an axial compression force.

---

## Troubleshooting GEN2 Basics

### Start-Up

Any power up is considered a "start-up" event. During start-up, the GEN2 accumulation conveyor system automatically detects upstream/downstream orientations, line integrity, and line length. For a start-up to be successful, the GEN2 system must be complete per hook-up drawings. A complete line includes a 24VDC power supply, termination of upstream and downstream ends and no breaks in the line. Power may be supplied before or after the line is complete. The line may also be re-configured with power applied (i.e. zones added, Interpreter re-located up or downstream).

### Fault

A fault is detected when a module does not find a functional module, terminator or Interpreter connected to either left or right communication line (cables). A fault can be detected at start-up or during operation if communication has not occurred in over 2 seconds. When a fault is detected, a fault message is sent to the Interpreter. The Slug and auto-slug commands are terminated upstream of the fault. The LED(s) of the module(s) that find the fault will go into a FLASHING RED status until corrections are made. The LED's of modules in the rest of the line will be in a FLASHING GREEN status. This indicates a fault elsewhere on the line and they are running in a non-optimized mode.

### Recovery

The LEDs of modules with a FLASHING RED status will continue to look for a correction in operation and will "self recover" when a communication failure is corrected. This module will then cancel the fault status and the line will begin operation at full capacity again. This capability will allow the system to "self recover" when temporary failure occurs. An additional "built in" function automatically allows each module to reboot itself if it becomes "locked up" during operation. Again, this allows the system to "self recover" if a temporary error occurs.

## Troubleshooting a GEN2 Control Module (D3032)

There are two status LEDs for each valve module. A bi-color LED on the left (GREEN or RED) and an AMBER LED on the right (see Section 4, Figure 7). The following table describes each status:

LED	Status	Description
GREEN (LED1)	Powered / OK	Normal with power present at zone and system operating properly.
FLASHING GREEN (LED1)	Zone OK / Fault elsewhere	Present zone operating properly. Fault present elsewhere.
ALTERNATING GREEN/RED (LED1)	Zone power and communication OK. Cannot find endpoints	Present zone operating properly. Fault present elsewhere before power up or terminators are incorrect or missing.
RED (LED1)	Not ready / Powering up	Temporary condition at zone as it receives program information.
FLASHING RED (LED1)	Fault at this zone	Power at zone. Communication system not operating properly.
AMBER (LED2)	Power to Solenoid Valve	Communication system has sent signal to energize solenoid valve.
NONE (LED1)	No Power	Electricity not present at valve module.

### Module LED Condition

#### *FLASHING GREEN:*

- Locate FLASHING RED control module on the conveyor. Follow troubleshooting instructions for FLASHING RED.
- Check cables upstream and downstream of that control module for proper hook-up. If not OK, hook up per previous instructions.
- Cycle power supply OFF for conveyor for approximately 10 seconds, and then turn ON.
- If condition still exists, replace the FLASHING RED module.

#### *ALTERNATING GREEN/RED:*

- Locate FLASHING RED control module on the conveyor. Follow troubleshooting instructions for FLASHING RED.
- Check cables upstream and downstream of that control module for proper hook-up. If not OK, hook up per previous instructions.
- Cycle power supply OFF for conveyor for approximately 10 seconds, and then turn back ON.
- If condition still exists, replace the FLASHING RED module.
- If all control modules are ALTERNATING GREEN/RED the line can not determine its upstream/downstream orientation. Check cable terminators for correct type and installation.

- 
- Once terminators are corrected, cycle power supply OFF for conveyor for approximately 10 seconds, and then turn ON.

#### *FLASHING RED:*

- If all control modules on the conveyor are FLASHING RED, check / correct the Cable Terminators at each end of the conveyor for proper hook-up.
- If not, check / correct cables upstream and downstream of that control module for proper hook-up.
- Cycle power supply OFF for conveyor for approximately 10 seconds, and then turn ON.
- If condition still exists, replace the FLASHING RED module.

---

**Note:** If more than one module indicates an error and the above troubleshooting does not pinpoint the problem, temporarily do one of the following to locate the defective module by process of elimination;

1. Move terminator (opposite the Interpreter end) toward the Interpreter to shorten the number of modules in the string.
  2. Use a connection extension cable to jumper around one module at a time until the defective module is isolated.
- 

#### *NO GREEN or AMBER:*

- Be sure power is present in the system.
- If so, find the module nearest to the Power Supply and replace it per previous instructions.

#### *STEADY GREEN and AMBER (but rollers not powered):*

- Check for air pressure at regulator.
- If OK, carefully remove tubing line from between control module and "air puck" (Do not put side load on barbed fittings). Check for air passing from valve to "air puck." If present, valve is OK.
- If not present, replace the control module per previous instructions.

#### *STEADY GREEN but NO AMBER (and rollers not powered):*

- Flag photo-eye at local zone, then upstream 1 and upstream 2 and check for AMBER LED at local zone.
- If no AMBER LED, check / correct photo-eyes for proper alignment. Once aligned, flag photo-eye at local zone, then upstream 1 and upstream 2 and check for AMBER LED at local zone.
- If problem continues, replace the control module per previous instructions.

## General Troubleshooting

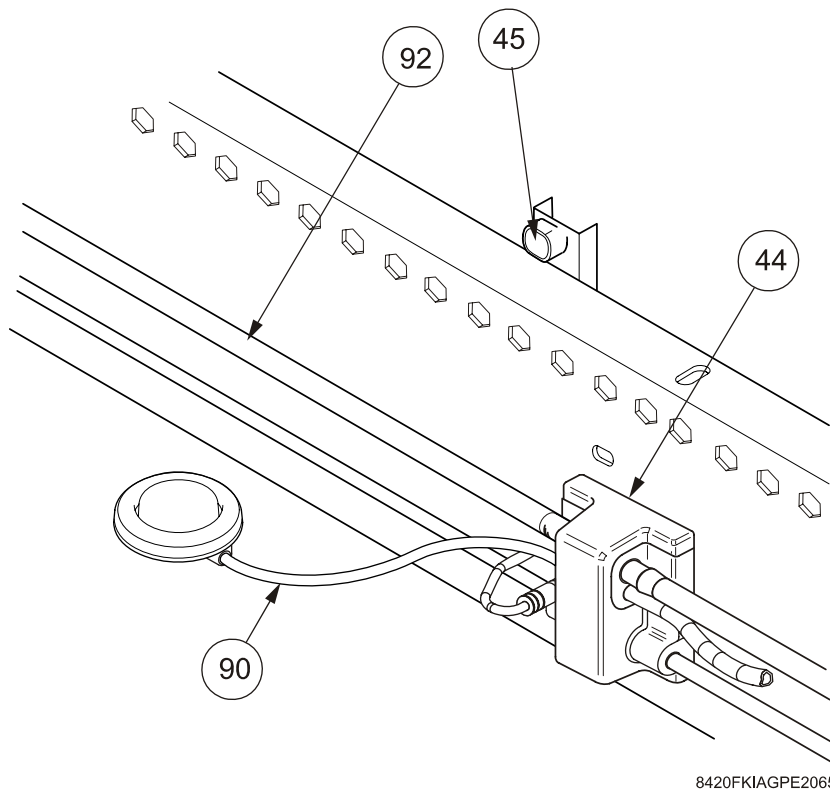
Condition	Possible Cause	Possible Solution
<b>Problem - Photo-eye Not Receiving Power</b>		
PE Green and Red LEDs - OFF	PE-G2CM Cord connection.	Verify connection.
	Power/Communication Cord connection.	Verify connection.
	PS-Power/Communication Cord connections.	Verify connection.
	No PS 24VDC output.	Refer to Troubleshooting - Power Supply (PS)
	G2CM faulty.	Replace G2CM.
<b>Problem - Photo-Beam Signal Obstructed / Weak</b>		
PE Green LED - ON and PE Yellow LED - OFF	PE / RF beam path obstructed.	Accumulated product block eye - condition normal; no problem.
		Clear obstruction.
	PE / RF not properly aligned.	Verify PE/ RF alignment.
	PE Lens / RF dirty.	Clean PE Lens / Reflector.
	RF damaged.	Replace RF.
	PE defective.	Replace PE.
PE Green LED - ON and PE Yellow LED - Flashing	PE / RF not properly aligned.	Verify PE/RF alignment.
	PE Lens / RF dirty.	Clean PE Lens / RF
	RF damaged.	Replace RF.
<b>USB Interpreter</b>		
	See troubleshooting specific to the USB Interpreter under its separate heading in Section C Specifications	Provided by Humphrey Products.
<b>DeviceNet Interpreter</b>		
	See troubleshooting specific to DeviceNet Interpreter under its separate heading in Section C Specifications.	Provided by Humphrey Products.



**SECTION I: PARTS IDENTIFICATION**

**Note:** Refer to Product Manual *8410 Accuglide Live Roller Conveyor Section I Parts Identification* for other than the GEN2 related zone control components listed here within.

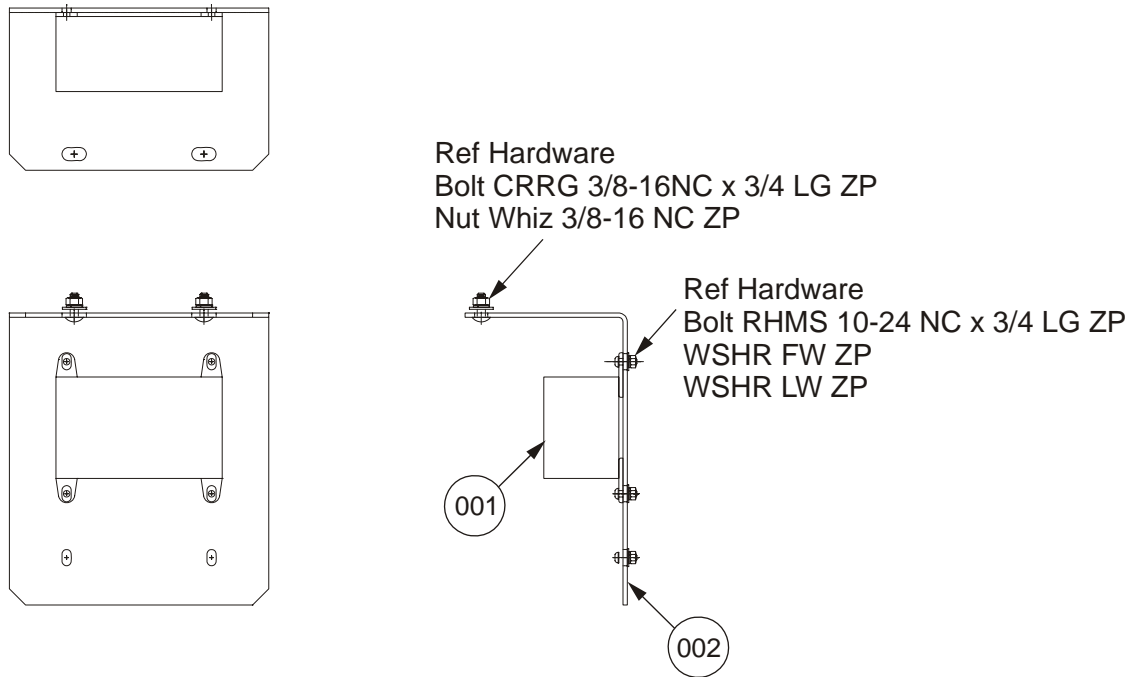
Be aware of the following exceptions and additions applicable to GEN2. This section covers AGPE GEN2 Accuglide repair and replacement parts most likely to be needed in the maintenance program.



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Figure I - 1 Photo-eye Sensor and Zone-Control Components

Key No.	Description	Part Number
45	Photo-Eye with bracket, 24 VDC, NPN, 25" Cord w/4 pin PICO Male	7035263'
45	Photo-Eye only, 24 VDC, NPN, 25" Cord w/4 pin PICO Male	7035265
44	GEN2 control module, 24 VDC w/Power/Communication Cord	8005552
92	Tubing (per foot), 3/8" ID (1/2" OD), Red	7036231
90	Tubing (per foot), 1/8" ID (1/4" OD), Clear	8978025
45	Reflector w/ Bracket (not shown) for RSL (9" Rail)	7035261
45	Reflector w/Bracket (not shown) for RSL (6-3/8" Rail)	7035262



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Figure I - 2 DeviceNet Interpreter Kit

Key No.	Description	Part Number
	Interpreter Device Net (DVN) Kit Including:	4884009
001	I/O DVN Intf Interp for vlvs with Cable Terminators	1704163
002	Interpreter Mounting Brkt Kit	48-00009B
100	One Copy of Drawing	48-84009B

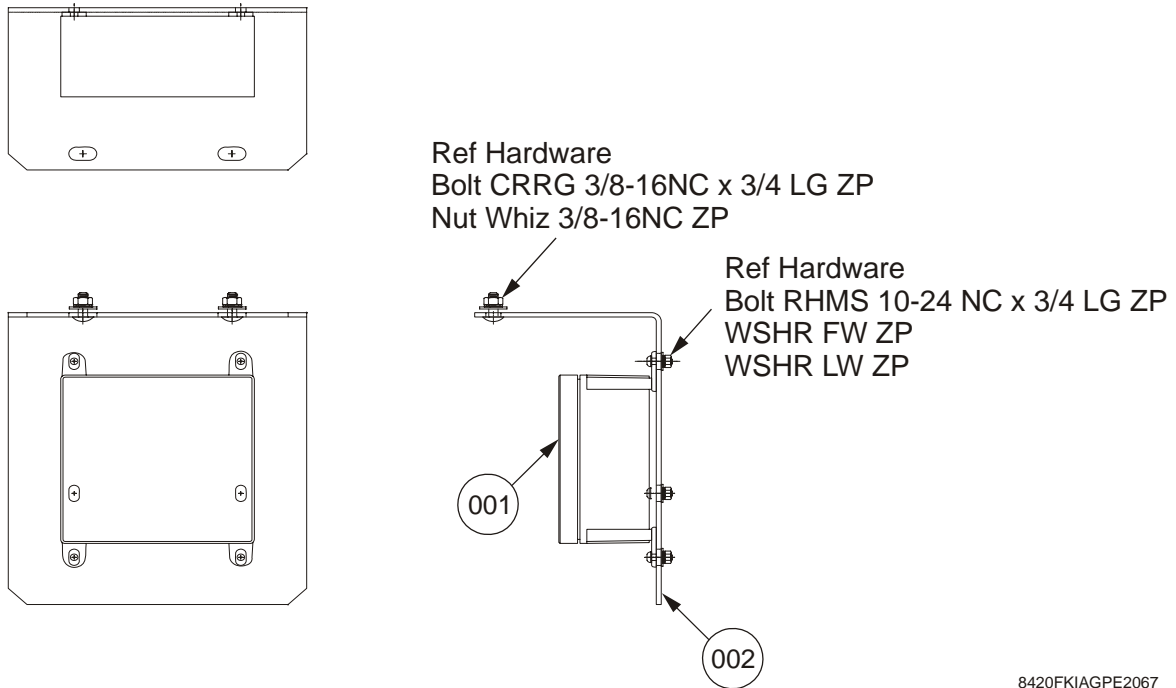


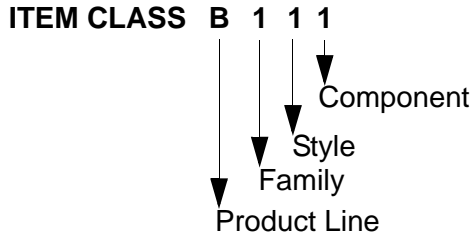
Figure I - 3 USB Interpreter Kit

Key No.	Description	Part Number
	Interpreter USB Kit Including:	4886019
001	I/O USB Intf Interp for vlvs with Cable Terminators	1704870
002	Interpreter Mounting Brkt Kit	4800009B
100	One Copy of Drawing	4886019B



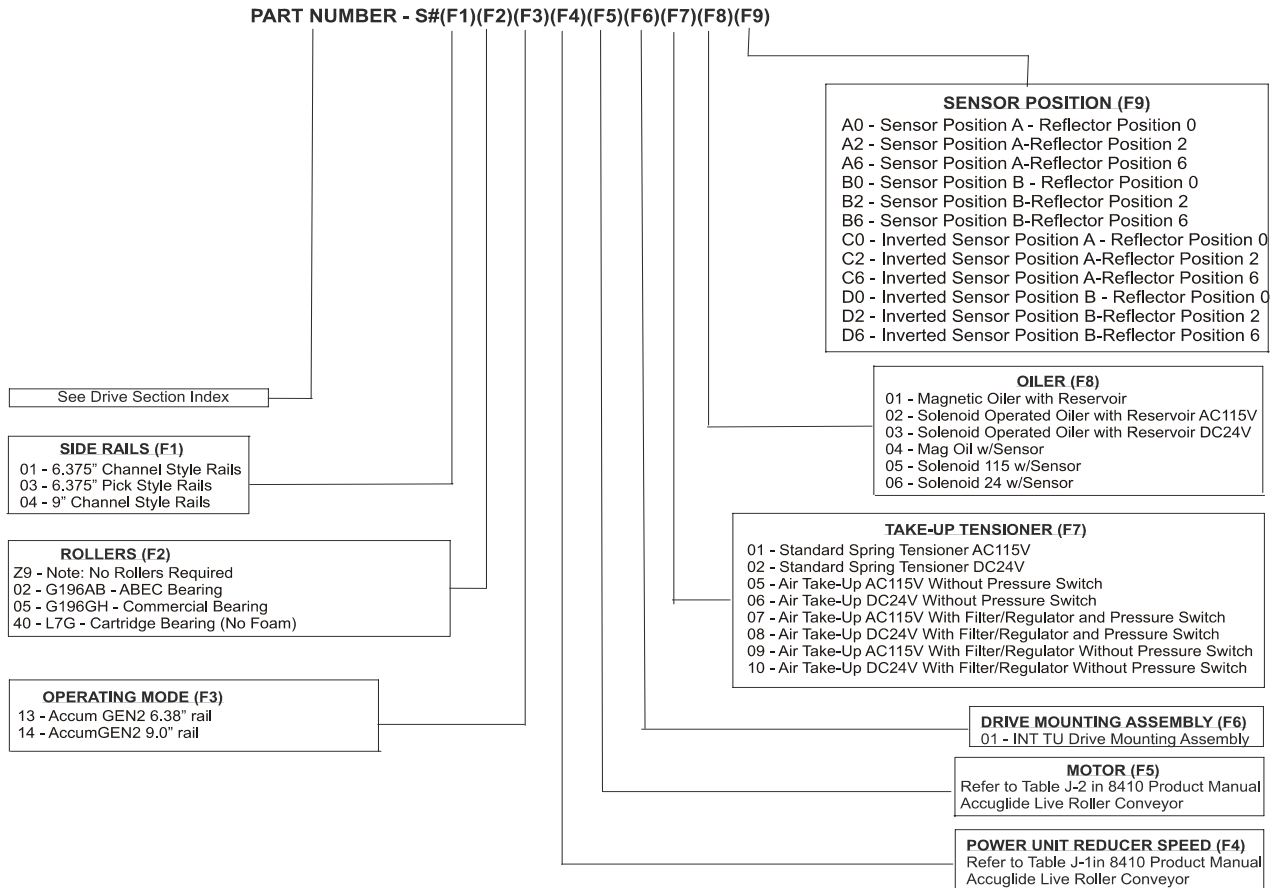
**SECTION J: PRODUCT INDEX**

**Drive Section**



- |                               |                        |
|-------------------------------|------------------------|
| (F1) SIDE RAILS               | (F5) MOTOR             |
| (F2) ROLLERS                  | (F6) DRV MTG ASSY      |
| (F3) OPERATING MODE           | (F7) TAKE-UP TENSIONER |
| (F4) POWER UNIT REDUCER/SPEED | (F8) OILER             |

Description	Dwg. No.	16" W	22" W	28" W	34" W	40" W
AG INFDRV W/TU 6-0/ __RH	18937 D	827406	827407	827408	827409	827410
AG INFDRV W/TU 6-0/ __LH	18937 D	827411	827412	827413	827414	827415



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Figure J - 1 Drive Section

## AGPE Intermediate Section - Straight

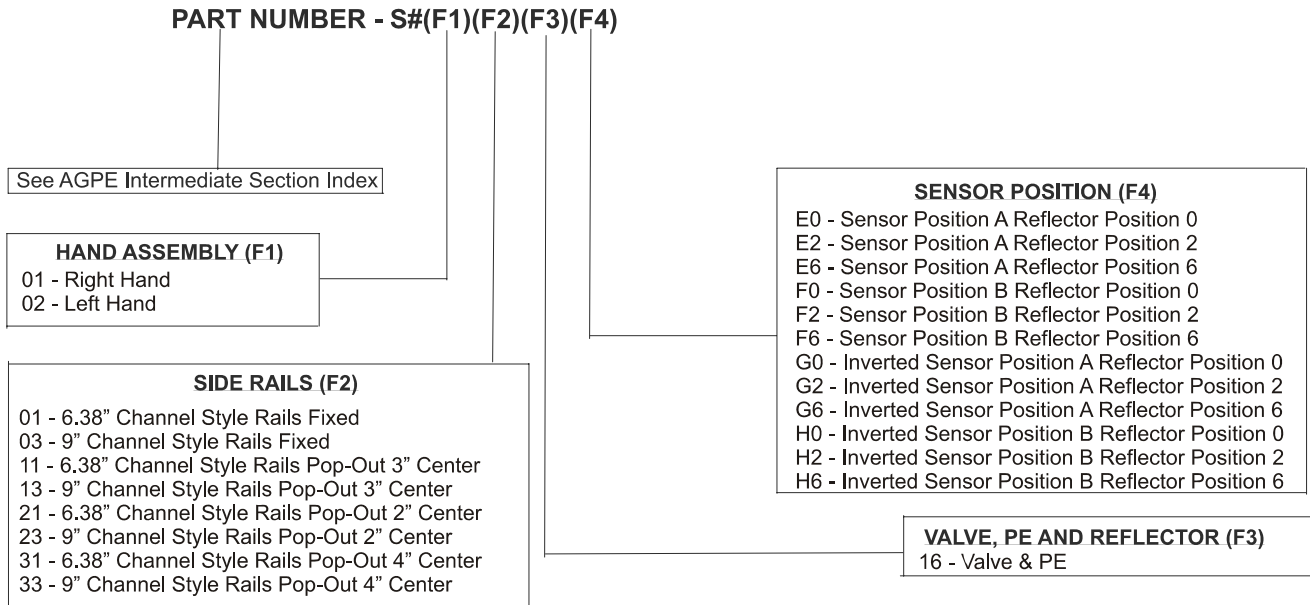
### ITEM CLASS B 1 1 3

(F1) HAND ASSY  
(F2) SIDE RAILS

(F3) VALVE, PE and REFLECTOR  
(F4) SENSOR POSITION

Description	Dwg. No.	16" W	22" W	28" W	34" W	40" W
<b>Standard Sections (3'-0" Incremental Zone Lengths)</b>						
AGP1 IS-3 3-0 ACCUM W_	27323	829051	829052	829053	829054	829055
AGP1 IS-3 6-0 ACCUM W_	27322	829056	829057	829058	829059	829060
AGP1 IS-3 9-0 ACCUM W_	27321	829061	829062	829063	829064	829065
AGP1 IS-3 12-0 ACCUM W_	27320	829066	829067	829068	829069	829070
<b>Standard Sections (1" Incremental Lengths)</b>						
AGP1 IS 1"INC 3-1 - 3-11 W_	27324	829036	829037	829038	829039	829040
AGP1 IS 1"INC 4-0 - 4-11 W_	27324	829041	829042	829043	829044	829045
AGP1 IS 1"INC 5-0 - 5-11 W_	27324	829046	829047	829048	829049	829050

For Carrier Rollers - Refer to Cover Sheet Components.



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Figure J - 2 AGPE Intermediate Section - Straight

## Idler Section

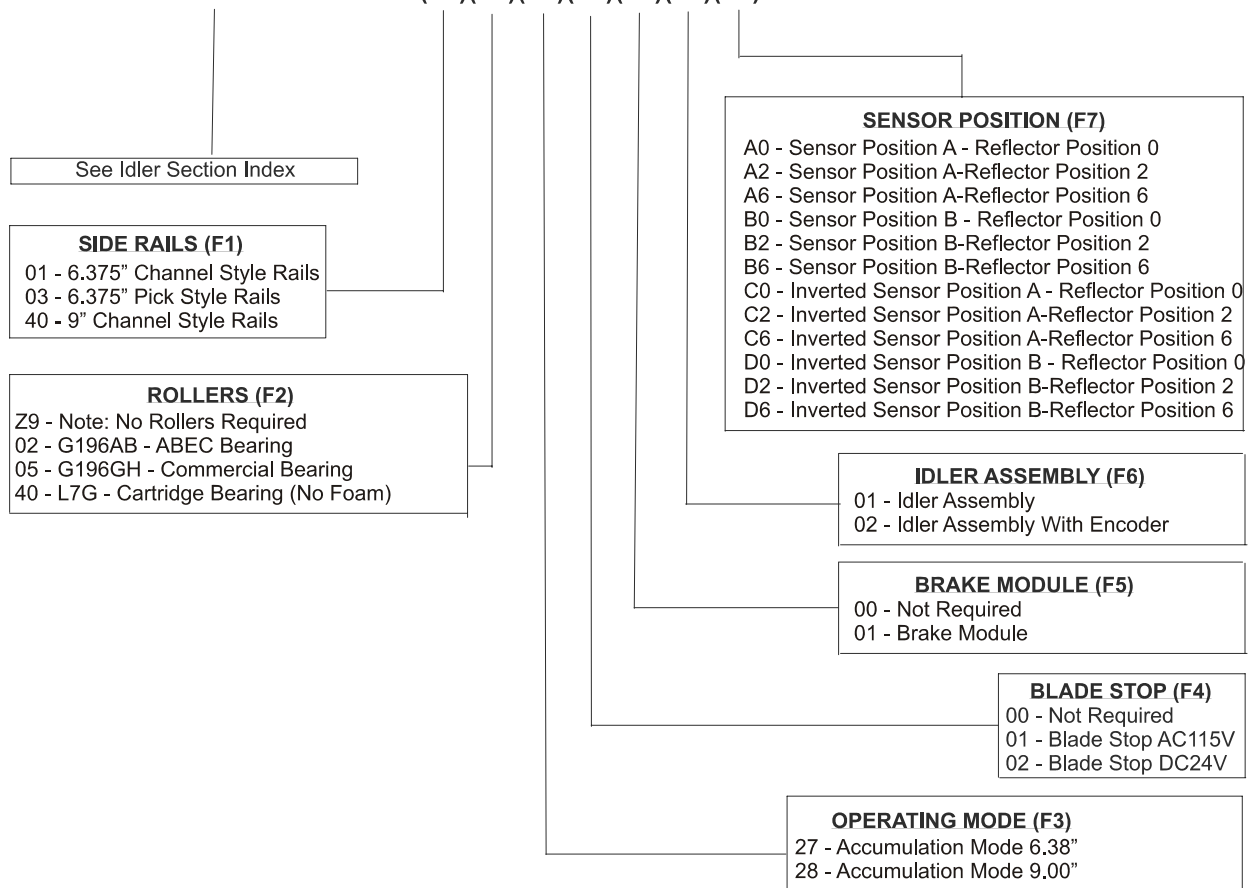
### ITEM CLASS B 1 1 2

(F1) SIDE RAILS  
(F2) ROLLERS  
(F3) OPERATING MODE

(F4) BLADE STOP  
(F5) BRAKE MODULE  
(F6) IDLER ASSY

Description	Dwg. No.	16" W	22" W	28" W	34" W	40" W
AG DIS-IDLER 3-0/___RH	18938 D	825450	825451	825452	825453	825454
AG DIS-IDLER 3-0/___LH	18938 D	825455	825456	825457	825458	825459

### PART NUMBER - S#(F1)(F2)(F3)(F4)(F5)(F6)(F7)



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Figure J - 3 Idler Section

## Accessories

### ITEM CLASS B 1 1 3

**Note:** For description and usage requirements for the following components, see Section F Accessories of this Product Manual, and Section J of Product Manual 8410 Accuglide Live RollerConveyor.

LEO Code	Description	Dwg. No.	Part No.
N/A	Drive/Idler Piping Hose - 78.00" Lg.	N/A	7036231
AFR	AGPE Air Control Assembly Kit	23335 D	004763
PWA	AGPE Power Supply w/T-Cord	27148	7040152
AGP1_CC01	AGPE Connector Cord - 1'-0"	25883 B	7035543
AGP1_CC02	AGPE Connector Cord - 2'-0"	25883 B	7035544
AGP1_CC03	AGPE Connector Cord - 3'-0"	25883 B	7035545
AGP1_CC04	AGPE Connector Cord - 4'-0"	25883 B	7035996
AGP1_CC06	AGPE Connector Cord - 6'-0"	25883 B	7035546
AGP1_CC09	AGPE Connector Cord - 9'-0"	25883 B	7035547
AGP1_CC12	AGPE Connector Cord - 12'-0"	25883 B	7035548
N/A	AGPE T-Cord (Provided w/Power Supply)	N/A	7035992
AGP1_PIC	AGPE Power Isolation Cord	N/A	7035993



## Accessories (continued)

LEO Code	Description	Dwg. No.	Part No.
N/A	AGPE CRV Air Line & Cord - 6'0" (Provided w/Curve)	N/A	7040227
N/A	AGPE CRV Air Line & Cord - 9'-0" (Provided w/Curve)	N/A	7040228
N/A	AGPE CRV Air Line & Cord - 12'-0" (Provided w/Curve)	N/A	7040229
N/A	AGPE CRV Air Line & Cord - 13'-0" (Provided w/Curve)	N/A	7040230
N/A	AGPE CRV Air Line & Cord - 15'-0" (Provided w/Curve)	N/A	7040231
N/A	AGPE CRV Air Line & Cord - 18'-0" (Provided w/Curve)	N/A	7040232
N/A	AGPE CRV Air Line & Cord - 21'-0" (Provided w/Curve)	N/A	7040233
NOTE: See Product Manual 8410 dated March , 2006 Page J-15			

N/A	AGPE Guide Spacer Kit	N/A	004771
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N/A	AGPEGEN2 Air-Components Kits	N/A	N/A
N/A	AGPEGEN2 Zone PE Retro-Kit	N/A	N/A

N/A	Cable Terminator, Female, Downstream - 1 w/Interpt	N/A	2700727
N/A	Cable Terminator, Female, Upstream - 1 w/Interp	N/A	2700728
N/A	Cable Terminator, Male, Downstream - 1 w/Interp	N/A	2700729
N/A	Cable Terminator, Male, Upstream - 1 w/Interp	N/A	2700730

N/A	Interpreter, DeviceNet, with Cable Terminators (Included w/Kit #4884009)	N/A	1704163
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N/A	Interpreter, USB, with Cable Terminators (Included w/Kit #4886019)	N/A	1704870
N/A	Interpreter, Mounting Bracket Kit (Included w/Kit #4884009 or 4886019)	N/A	N/A

N/A	Interpreter, USB, Interface Box w/Mnt. Brkt.	4810676 B	4810676
N/A	Sensor, Extension Cable, 3 Ft.	N/A	2700666

