Sensata
Technologies

PreView®
R A D A R   S Y S T E M S

PRECOlink

PWL8003 and PWL8004

Operating Manual

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FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference.

INDUSTRY CANADA STATEMENT

Per RSS-Gen, Section 8.4 This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Per RSS - Gen, Section 8.4 Cet appareil est conforme à Industrie Canada exempts de licence standards RSS. Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence , y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.

This radio transmitter, 20379-PRECOLINK, has been approved by Innovation, Science and Economic Development Canada to operate with the antenna type listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Manufacturer: Antenna Factor by Linx
Model number: ANT-2.4-ID-2000-SMA
Peak Gain: 3.0dBi max
Impedance: 50-ohms

REGULATORY COMPLIANCE

The PreView Side Defender®II sensor is compliant with the following countries/regions and their regulations as of the published date of this manual. The sensor may be compliant in other countries/regions. Please check your local regulations or contact PRECO Electronics® for support.

- **United States** - FCC- Part 15.247
  - FCC ID: OXZPCLK2020
- **Canada** - RSS-247:2017
  - IC ID:20379-PRECOLINK
- **European Union** - E-Mark: 10R-06 15934
- **Australia/New Zealand** - AS/NZS 4268:2017

TRADEMARKS

The names of actual companies and products mentioned herein may be the trademarks of their respective owners. Any rights not expressly granted herein are reserved.

Contents

Safety

NOTICE

Storage and Location These Instructions

This operating manual should be stored in a safe place and be referred to when maintaining and/or reinstalling the system.

Warning and Safety Instructions in This Operating Manual

⚠ WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury
⚠ CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury
NOTICE	Indicates information considered important, but not hazard-related

⚠ WARNING	*PRECOlink is an integral part of your PreView® object detection system. The notices and warnings apply to all systems that utilize PRECOlink technology.*
	Installation, mounting and electrical connection may only be carried out by a trained specialist in accordance with information in this operating manual.
	The PreView® system is intended as an Object Detection System and should not be relied upon as the first line of defense for the safe operation of the equipment. The system does not apply braking, steering or any other vehicle control. It should be used in conjunction with established safety programs and procedures to augment the safe operation of the equipment, ground personnel, and adjacent property.
	The driver must have the authorization to drive the vehicle and have read and understood this manual. They must also be fit to drive, i.e., not be under the Influence of alcohol, drugs and/or narcotics or exceed the statutory driving times.

PRECOlink Models

The PRECOlink devices come in two models, both are to be used together as a complete wireless system.

> Model: PWL8003 – Coordinator, connects to a PreView® LED Display and any applicable PreView® Sensor(s) in/near the cab of the equipment.

> PWL8004 – End Device, connects to the applicable PreView® Sensors at the opposite end of the equipment.

> **Note:** visit sensata.com/products/blind-spot-monitoring-systems for the most current data on radar sensor models.

The frequency band used is legal throughout most of the world, but check with Sensata Technologies or your country's regulations before purchasing.

Product Description

The PreView® PRECOlink Wireless Coodinator and End Device Function as a bridge, converting messages received via J1939 CAN to wireless 802.15.4 and messages received via wireless 802.15.4 to J1939. These devices eliminate the need for long and complex body harness installations, and has the capability to support single sensor to single display communication as well as multiple sensor to single or multiple display communication. If necessary, the provided external anntenas may be connected to increase range. The Coordinator and End Device are paired by programming identical matching PAN ID's into each device during the production process.

Figure 1 - PreView® PRECOlink Coordinator and End Device

PRECOlink Operation

⚠️ **WARNING**	*To ensure compliance with the Radio Frequency (RF) exposure guidelines, this device must be used at least 8 in (20 cm) away from your body or nearby persons. Failure to observe this warning could result in the RF exposure levels exceeding the applicable limits.*

The End Device will wirelessly transmit the object detection information, health status and trigger status of the connected sensor(s) to the Coordinator that's located in or near the cab of the equipment.

The Coordinator will receive the wireless transmission from the End Device and communicate the object detection information, health status and trigger status from the sensor(s) to the LED display for operator awareness. The Coordinator will power off the display if it loses communication with the End Device.

Data LED

Solid blue when power is applied. Quickly flashes green when data is being communicated between the Coordinator and End Device. A slow flash indicates no data is currently being communicated.

Signal LED

Flashes red indicating the signal strength of the wireless communication between the devices. The stronger signal, the faster the flash.

PRECOlink Installation

⚠ WARNING	*If the PreView® system is not installed properly, it may not operate as intended, which could result in a failure to warn the operator of a hazardous situation.*

Before you Begin

Prior to installing the PreView® system with the PRECOlink wireless devices, take time to familiarize yourself with all documentation, theory of operation, and system components.

Device Location

Coordinator

Installs in the cab, secured behind the dash or behind the seat and towards the left or right side of the equipment. This allows the display to be installed at the preferred location in the cab, and if required, the optional external antenna to be mounted on the outside of the equipment.

End Device

Installs at the same end of the equipment the sensor(s) is installed, and at the same side as the Coordinator.

Both devices should be installed in locations that provides signal strength of Medium to High and is not easily susceptible to damage.

External Antenna

If there is approx. 0.5 seconds between flashes on the Signal LED, the signal strength is too low. If signal strength is low or no signal strength, the external antennas will need to be used. The antennas are recommended to be in line of sight to reach optimal signal strength.

⚠ **CAUTION**

Note: The antennas must be oriented in the same direction either horizontal or vertical to achieve increased signal strength. Vertical orientation is preferred. Horizontal orientation is not recommended for tractor/trailer or articulated vehicles.
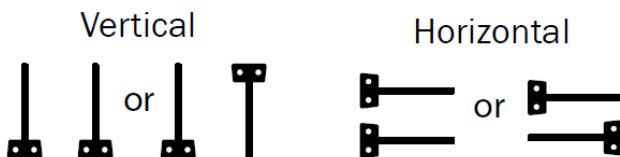

Figure 2 - External Antenna Orientation

System Connections

	If the PreView® system is not wired properly, it may not operate as intended, which may result in a failure to warn the operator of a hazardous situation.

In backing applications where there is only a rear sensor(s), the sensor is typically powered by the reverse signal such as the backup alarm or reverse light. In other applications, especially when connected to multiple PreView® sensors, the sensor(s) are typically powered by ignition and the rear sensor(s) are triggered by reverse. See Figure 3 diagram for examples of a system powered by reverse, and a system triggered by reverse.

Coordinator - Locate the vehicle's ignition power to connect to the red wire on the PWL81CD harness and connect the black wire to ground.

End Device - Locate the vehicle's reverse power source (i.e., back-up alarm or reverse light) to connect the red wire on the PWL8187 harness and connect the black wire to ground.

If it is necessary to extend the wires on the supplied harnesses, use 18 AWG, 20 AWG wire as a minimum.
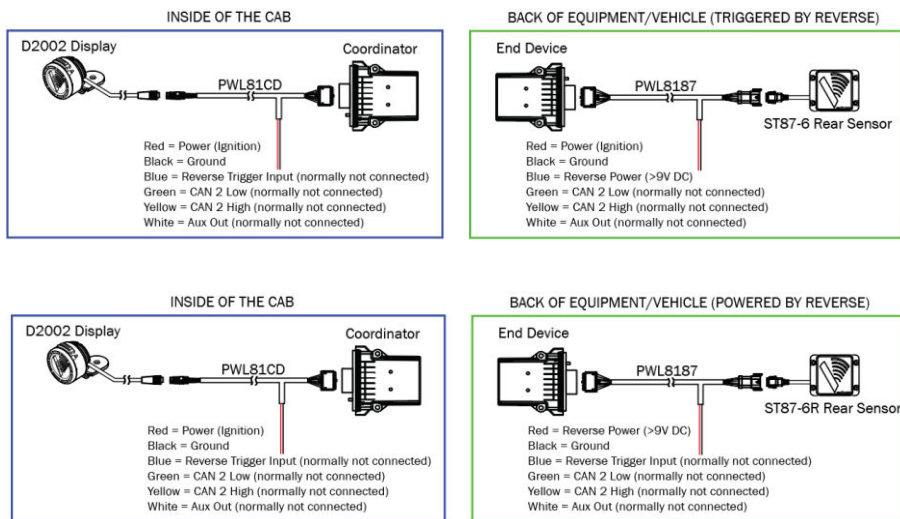

Figure 3 - Common System Wiring Connections

Refer to the supplied Install Guide in the kit for specific wiring connections.

Maintenance and Testing

⚠ WARNING	*If the PreView® system is not maintained properly, it may not operate as intended, which may result in a failure to warn the operator of a hazardous situation.* *A walk around test shall be performed every day to verify proper function of the system and to familiarize the operator with the zone of detection. More frequent inspections should be performed when:* • *The equipment is operating in a particularly dirty or harsh environment.* • *The operator has reason to suspect the system has been damaged.*

If the PREOClink devices are utilizing the external antennas, the antennas should be inspected daily for damage. Since the PRECOlink devices may be installed in locations that do not allow the Data and Status LEDs to be easily seen, their function can be validated by testing the connected sensor(s).

This test should be performed with two people, the operator who remains in the cab, and the assistant who walks through the sensor's detection zone.

1. Move the equipment to an open field larger than the detection zone to test.
2. Clean the sensor face of any accumulation of dirt, mud, snow, ice, or debris.
3. Visually inspect the attached wiring and cable and verify that they are properly secured, not chafing or dangling free where they could become snagged and damaged. Inspect the PRECOlinks, Sensor(s) and Operator Display and verify that they are securely attached to the equipment.
4. Activate the sensor by powering on the equipment. For backing applications this may require placing the vehicle in reverse. Make sure the equipment has been secured and remains stationary.
5. Verify the sensor is operational. Depending on the HMI, this may be green LED (for display), green icon (in-cab video monitor), or beep (buzzer or SAS).
6. Assure the detection zone has been cleared of all objects. Any object in the detection zone will interfere with the test.
7. The assistant should start straight out from the sensor outside of the detection zone and walk in towards the sensor. When the warning activates the operator should signal to the assistant so the location of detection can be marked/noted.
8. The assistant should continue to walk to the sensor and the operator signal when the alert increases (visually and/or audibly) indicating detection in a closer proximity zone, mark/note the proximity zone change.
9. The assistant should walk the complete sensor field while the operator notes the detection edges of the entire coverage area.
10. Finally, after the test the operator and the assistant need to communicate the details about the detection zone.

Safety Message

Safety Message to Equipment Operators with PreView® Systems

1. Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death. It is necessary to read, understand and follow all instructions shipped with the product.
2. The equipment operator must check for proper operation at the beginning of every shift or safety inspection period.
3. The PreView® system is intended as an Object Detection System and should not be relied upon as your first line of defense for the safe operation of the equipment. It should be used in conjunction with established safety programs/procedures to augment the safe operation of the equipment and to protect ground personnel and adjacent property.
4. People's lives depend on the proper installation of this product in conformance with these instructions. Should the system become inoperative, it could jeopardize the safety or lives of those who depend on the system.
5. The PreView® Object Detection System is intended for commercial use. Proper installation of the object detection system requires a good understanding of equipment electrical systems and procedures, along with proficiency in the installation.
6. Store these instructions in a safe place and refer to them when maintaining and/or reinstalling the system.

For questions, call +1.866.977.7326 toll free in the USA. Call +1.208.323.1000 or send a fax request to +1.208.323.1034 for outside the USA, or submit an online request at sensata.com/contact-us-technical-support

Troubleshooting

NOTICE

Low Signal Strength

Step 1: If signal strength is low, attempt moving either the Coordinator, End Device, or both as close to the side of the vehicle as possible. If this fails to improve signal strength, rotate either the Coordinator, End Device or both, if possible.

Step 2: If Step 1 fails, connect the supplied external antennas, one to the Coordinator and one to the End Device. The antennas must have the same orientation (i.e., both pointing up or both pointing down, both pointing left or both pointing right, see Figure 2) and must be installed on the same side of the vehicle.

Data LED Does Not Flash

Step 1: Verify both Coordinator and End Device are powered On. If the End Device or rear sensor(s) are powered by the reverse signal, place the equipment into reverse.

Step 2: Check reverse power and sensor to End Device connections.

Display Does not Turn On

Step 1: Verify the Coordinator is powered On. If the End Device or rear sensor are powered by the reverse signal, place the equipment into reverse. The Coordinator will power Off the display if there is no communication from the End Device.

Step 2: Check the connection to the Coordinator.

Display is Showing an Error

Please reference your specific display manual or v2 display Quick Guide

Visit our manuals online at:

sensata.com/blindspotmonitoring/manuals

Or

Scan the code below for quick access:

PRECOlink Pin Out

CONNECTOR END VIEW

CINCH 5810118039
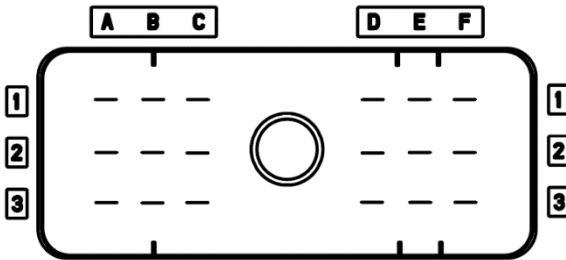
CONNECTOR PINOUT		
PIN	**END DEVICE**	**COORDINATOR**
1A	SENSOR GROUND	
1B	CHASSIS GROUND	CHASSIS GROUND
1C	CAN 1 HIGH	CAN 1 HIGH
1D	CAN 2 HIGH	CAN 2 HIGH
2A	SENSOR POWER	
2B	CHASSIS POWER (+)	CHASSIS POWER (+)
2C	CAN 1 LOW	CAN 1 LOW
2D	CAN 2 LOW	CAN 2 LOW
3B		DISPLAY POWER (+)
3F		AUX OUTPUT / DISPLAY GROUND

Figure 4 - Wiring Connections

Specifications

NOTICE

Wireless Communication Standard:	IEEE 802.15.4 (2.4GHz)
Transmission Power:	< +10dBm
Connector:	CINCH 5810118039, See Figure 4
Protection Rating:	IP69K, IP67
Housing Material:	30% - 33% Glass Filled Polymer
Dimensions:	5.1" x 5.3" x 1.7" (13.0 x 13.4 x 4.2 cm)
Weight:	0.55 lb (0.25 kg), with external antenna 0.75 lb (0.34 kg)
Mating Connector Torque Screw	15 – 20 in-lbs (1.69 – 2.26 Nm).
Operating Temperature:	-40°F TO +185°F (-40°C TO +85°C)
Storage Temperature:	-67°F TO +221°F (-55°C TO +105°C)
Vibration:	8G
Shock:	50 G
Mounting:	Two 0.292" (7.42mm) diameter mounting holes.

Operating Characteristic

Latency:	< 50 ms
Frequency:	2.4 GHz, IEEE 802.15.4
Power Supply:	9-33 VDC, reverse polarity and over-voltage protected
Current:	< 0.5 A

Communications Interface

J1939 CAN-bus Baud Rate:	J1939 Compliant, 250/500K bits/sec
Wireless LR-WPAN:	802.15.4
Visual Indicators:	Power (Blue LED), Signal (Red LED) and Data (Green LED)

Regulatory Compliance
Compliant with FCC Part 15.247

FCC ID:	OXZPCLK2020
IC ID:	20379-PRECOLINK
'CE' 'E' mark:	E13 10R-06 15934
AS/NZ:	4268 2017

PRODUCT MANUFACTURED IN THE USA

Warranty Information

MANUFACTURER STANDARD LIMITED WARRANTY AND LIMITATION OF LIABILITY

Manufacturer warrants that on the Date of Purchase this Product will conform to Manufacturer's published specifications for the product, which are available from Manufacturer on request, and Manufacturer warrants that the product is free from defects in materials and workmanship. This Limited Warranty for the sensor extends for twenty four (24) months from the date of shipment. Manufacturer will, at its option, repair or replace any product found by Manufacturer to be defective and subject to this Limited Warranty.

This Limited Warranty does not apply to parts or products that are misused; abused; modified; damaged by accident, fire or other hazard; improperly installed or operated; or not maintained in accordance with the maintenance procedures set forth in Manufacturer's Installation and Operating Instructions.

To obtain warranty service, you must ship the product(s) to the specified Manufacturer location within thirty (30) days from expiration of the warranty period. To obtain warranty service, call Customer Service at +1.866.977.7236 or +1.208.323.1000 or fax your request to +1.208.323.1034. Customer Service will issue warranty authorization and further instructions. You must prepay shipping charges and use the original shipping container or equivalent.

EXCLUSION OF OTHER WARRANTIES: MANUFACTURER MAKES NO OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY. THE IMPLIED WARRANTIES FOR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED AND SHALL NOT APPLY TO THE PRODUCT. BUYER'S SOLE AND EXCLUSIVE REMEDY IN CONTRACT, TORT OR UNDER ANY OTHER THEORY AGAINST MANUFACTURER RESPECTING THE PRODUCT AND ITS USE SHALL BE THE REPLACEMENT OR REPAIR OF THE PRODUCT AS DESCRIBED ABOVE.

LIMITATION OF LIABILITY: IN THE EVENT OF LIABILITY FOR DAMAGES ARISING OUT OF THIS LIMITED WARRANTY OR ANY OTHER CLAIM RELATED TO MANUFACTURER'S PRODUCTS, MANUFACTURER'S LIABILITY FOR DAMAGES SHALL BE LIMITED TO THE AMOUNT PAID FOR THE PRODUCT AT THE TIME OF ORIGINAL PURCHASE. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR LOST PROFITS, THE COST OF SUBSTITUTE EQUIPMENT OR LABOR, PROPERTY DAMAGE, OR OTHER SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES BASED UPON ANY CLAIM FOR BREACH OF CONTRACT, NEGLIGENCE OR OTHER CLAIM, EVEN IF MANUFACTURER OR A MANUFACTURER'S REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Manufacturer shall have no further obligation or liability with respect to the product or its sale, operation and use, and Manufacturer neither assumes nor authorizes the assumption of any other obligation or liability in connection with such product.

This Limited Warranty gives you specific legal rights, and you may also have other legal rights, which vary, from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

Any oral statements or representations about the product, which may have been made by salesmen or Manufacturer representatives, do not constitute warranties. This Limited Warranty may not be amended, modified or enlarged, except by a written agreement signed by an authorized official of Manufacturer that expressly refers to this Limited Warranty.

More PreView® Safety Products

PreView® Radar Blind Spot Monitoring

- **Sentry®** – 150° fully adjustable detection zone. Detects distance, relative velocity, and angle of up to 16 objects simultaneously from 0 to 30 m (98') away.
- **Side Defender®** – 150° intelligent side object detection radar.   Ignores stationary objects while warning of other vehicles in your side blind spots when traveling > 10 mph (16 km/h) and warns of stationary and moving objects when traveling < 10 mph (16 km/h).
- **Side Defender®II** – 150° intelligent side object detection radar with VRU protection. Ignores stationary objects while warning of bicycles, vehicles and people in your side blind spots at all vehicle speeds.
- **Sentry®X** – Designed with a narrower FOV than the Sentry®, Sentry®X supports installations that must be inset, such as large haul trucks.

PreView® Camera Monitor Solutions

- **PreView® Plus** – 7" IP67 monitor supports 1 to 4 cameras with 1 to 24 radar sensors providing combined camera and radar technologies to deliver the most complete active blind spot monitoring solution available.
- **Monitor 5 HD** – 5" heavy-duty IP67 monitor supports up to 3 cameras.
- **Monitor 5 LD** – 5" monitor for closed cabs. Supports a single camera.
- **Mini Cam** – Compact cameras with 120°. 150°, or 180° field of view.
- **Heavy-Duty Cam** – IP67 Heavy- Duty camera with 118° field of view, IR LEDs, and built-in heater.

PreView® VideoLink – Make your existing camera system an active safety resource by adding visual and audible alerts from a PreView® Radar sensor to your in-cab monitor.

PreView® Software

Configuration Tool – Allows the end user to configure various settings for the Sentry®, Sentry®X, Side Defender®, Side Defender®II, v2 Displays, and CD6102 and SOD displays.

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