



USER'S MANUAL

This guide contains directions on the legally mandated requirements for a proper Installation. Improper installation and/or modifications to the device not expressly approved by SCAN~LINK Technologies Inc. may expose the operator to harmful radiation and may void the user's authority to operate the equipment.

The SCAN~LINK Armour System™ is to be used only as a tool to assist a vehicle operator and does not replace any safety procedures in place, nor does it remove any responsibility for the safe operation of the vehicle from the driver.

CAUTION: Changes or modifications not expressly approved by SCAN-LINK Technologies Inc. could void the user's authority to operate the equipment.

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Product Specification

Antenna Unit

Item	Value	Notes
Input Voltage	12V-28V DC	Absolute 9V to 36V DC
Input Current	850mA	Max
Power Consumption	7.5W	Max
Reverse Input	Positive Active 9-36V DC	Reverse signal is detected if the input is connected to a voltage between 12 and 28 volts. Disconnected signal or when connected to ground will be interpreted as the vehicle not in reverse
Longitudinal Range	6m	Typical
Temperature Range	-20°C to +50°C	Ambient
RFID Sensor Radio Frequency	902.3 – 927.7 MHz	North American unlicensed band
Wireless Link Frequency	2.405 – 2.480 GHz	North American unlicensed band
Industry Canada ID	9283A-SLAU279MR	Registered under SCAN-LINK Technologies Inc.
FCC ID	YUU-SLAU279MR	Registered under SCAN-LINK Technologies Inc.
Ingress Protection	Designed for IP-65	Do NOT immerse
RoHS Compliant	Yes	

Operator Display Unit

Item	Value	Notes
Input Voltage	12V-28V DC	Absolute 9V to 36V DC
Input Current	120mA	Max
Power Consumption	1W	Typical
Reverse Input	Positive Active 9-36V DC	Reverse signal is detected if the input is connected to a voltage between 12 and 28 volts. Disconnected signal or when connected to ground will be interpreted as the vehicle not in reverse
Wireless Link Frequency	2.405 – 2.480 GHz	North American unlicensed band
Industry Canada ID	8254A-ZIC24100	Registered under California Eastern Laboratories
FCC ID	W7Z-ZIC2410P0	Registered under California Eastern Laboratories
Audible Warning Intensity	99dB(A) 88dB(A)	Max @ 20cm (8 inches) typical Min @ 20cm (8 inches) typical
Ingress Protection	Indoor use only	
RoHS Compliant	Yes	

Product Description

The SCAN~LINK Armour System™ has been designed to increase the probability of detection of a ground worker in the vicinity of mobile heavy equipment. The SCAN~LINK Armour System™ consists of two units, the Antenna Unit, and the Display Unit. The Antenna Unit is typically mounted on the back of a vehicle to detect the presence of ground workers wearing an Armour equipped Safety Vest and/or Hard Hat. When a ground worker is detected, the Antenna Unit sends a message to the Display Unit mounted inside the cab which then alerts the operator through an audible and visual alarm. The Display Unit displays the operational status of the SCAN~LINK Armour System™ whenever the vehicle ignition is on, but only gives visual and audio alarms for ground worker detection when the Reverse Input Line to the Antenna Unit or the Display Unit is Positive Active. The SCAN~LINK Rapid Pair™ software is used to configure the operating parameters of the SCAN~LINK Armour System™, including which Reverse Input Line to use to enable visual and audio alarms.

Antenna Unit

The Antenna Unit transmits and receives digital RFID signals over the 902MHz-928MHz frequency band to search for Armour safety apparel within its detection range. The Antenna Unit processes information from the responding tags to identify if any genuine Armour vests and/or safety hats are in the range. If Armour safety apparel is detected, the Antenna Unit transmits a separate signal in the 2.4GHz frequency band to the Display Unit to activate an audible and visual warning.

The Antenna Unit requires power from the vehicle's power source. It also requires a positive activation of the Reverse Input Line if this input is configured to be used to activate the Antenna Unit only on reverse vehicle operation. All other functions of the antenna are performed over the 2.4GHz radio link. The wires into the Antenna unit are routed with a splash-proof connector to protect the device against water leakage. A moisture vent is incorporated in the Antenna Unit case so that moisture inside the case can vent to the outside.



Figure 1: SCAN~LINK™ Antenna Unit

Operator Display Unit

The Operator Display unit seen below is to be installed inside the vehicle cabin in the vicinity of the operator, **but no closer than 20cm**, so that it can be clearly seen and heard. The Operator Display receives signals from the antenna when genuine Armour safety apparel is detected in the range of the Antenna Unit.

The Display Unit is in periodic contact with the Antenna Unit to ensure the communication link and tag detection throughput between the antenna element and the display is functioning properly and reporting no errors. If the wireless connection between the display and the antenna is compromised, the power LED will blink amber and an optional audible sound (if enabled through the SCAN~LINK Rapid Pair™ software) will be generated. SCAN~LINK™ apparel will not be detected if the power LED is amber.

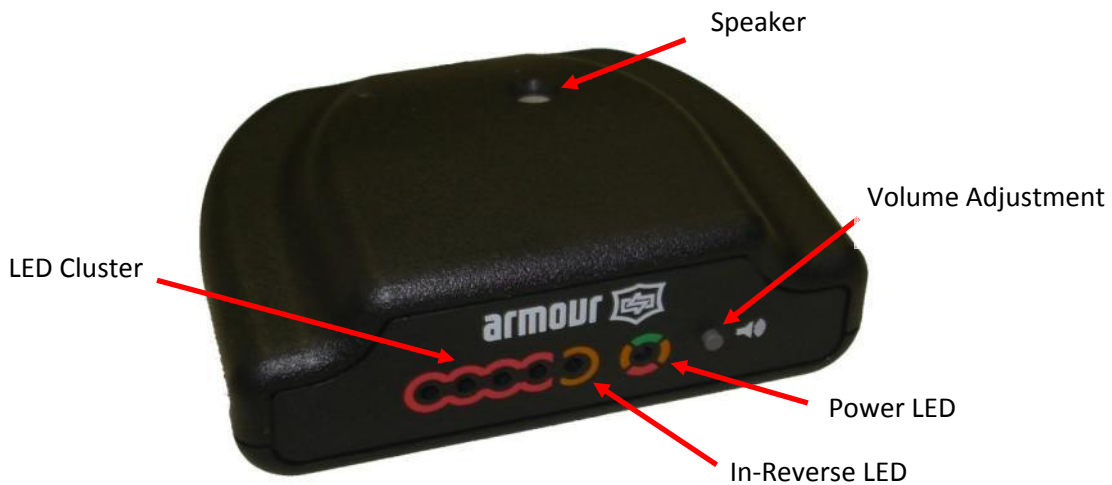









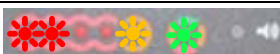



Figure 2: SCAN~LINK™ Display Unit

Display Unit Interface

Function	Description
Power LED	Solid Green : Normal operation Flashing Amber : Communication Error with Antenna Unit Solid Red : Display hardware error
Reverse Indicator	ON when the Reverse Input is Positive Active
LED Cluster	<ul style="list-style-type: none"> In normal operation the LED cluster illuminates when SCAN~LINK™ Apparel is detected. When adjusting the volume, the warning volume level is shown. When in Diagnostics Mode, the Error Codes are displayed.
Speaker	SCAN~LINK™ Apparel is begin detected and the vehicle is in reverse
Volume Button	Press momentarily or continuously to adjust the volume. As the volume is being adjusted, the LED cluster will indicate the volume settings. The more LEDs that are on, the higher the volume.

Operator Display Unit Indications

The following display modes are possible with the SCAN~LINK Display Unit.

DISPLAY INDICATORS	AUDIBLE	MEANING
	NONE	OFF (unpowered)
	NONE	DISPLAY UNIT and ANTENNA UNIT functioning Properly
	NONE	DISPLAY UNIT and ANTENNA UNIT functioning Properly. Reverse Input is Positive Active.
	0.5Hz if 'Buzz on Communications is enabled' using SCAN~LINK Rapid Pair™	Wireless Communications Error
	NONE	DISPLAY UNIT Hardware Error
	BEEPING 3Hz	DISPLAY UNIT and ANTENNA UNIT functioning Properly. Reverse Input is Positive Active. SCAN~LINK™ Apparel detected.
	BEEPING 0.5Hz	Throughput Detection Error
	BEEPING 0.5Hz	Throughput Detection Error
	BEEPING 0.5Hz	Antenna Parameter Setup Error
	BEEPING 0.5Hz	Tag Detection Power Setting Error
	BEEPING 0.5Hz	Antenna Detection Error

Detection Range

The factory set detection range is approximated as a fan shaped beam, shown in Figure 3. The range is adjustable using the SCAN~LINK Rapid Pair™ software. The strength of the received digital RFID signals increases as the separation between the Antenna Unit and the SCAN~LINK Armour System™ safety apparel decreases. The onset of detection typically begins at 6 meters, however, consistent detection at 6 meters cannot be guaranteed.

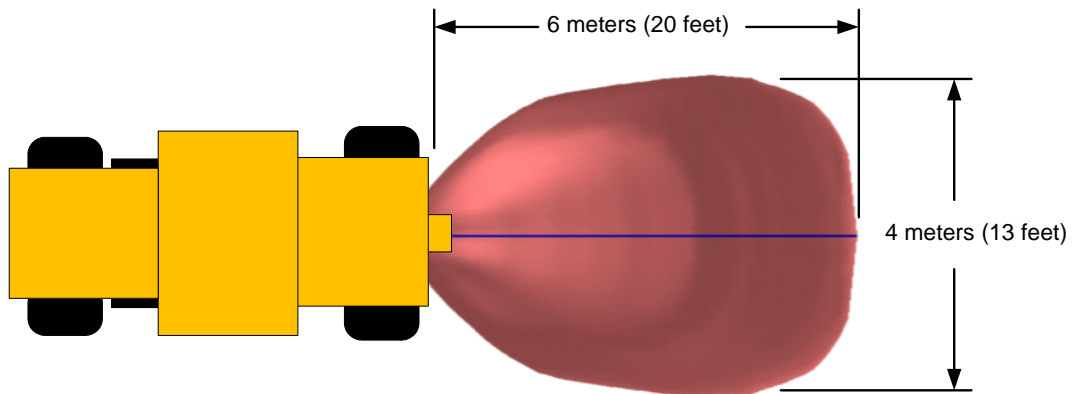


Figure 3: Approximate Detection Range

Agency Certifications

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.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the SCAN~LINK™ Antenna Unit and the Operator Display Unit must be installed to provide a separation distance of at **least 21 cm (8.5 inches)** from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.