REDWALL®
Unrivalled performance
REDSCAN®

INSTALLATION INSTRUCTIONS

Laser Scan Detector

RLS-3060SH

CE

FEATURES

* Detection range is 30m (Approx. 100ft.) radius, max. 190 degree
* Selectable horizontal or vertical detection area
* Intelligent detection analysis for various types of application such as PTZ camera control, human hand detection, direction control, vehicle detection etc. (*1)
* Recognition of the intrusion location which can activate 4 independent outputs for PTZ control
* Flexible and easy setup of the required detection area
* Built-in heater (-40 - +60 °C, -40 - +140 °F)
* Analog (dry-contact) output and IP connection
* Selectable zone patterns for PTZ camera control using the IP connection (*1)

*1: The Redscan Manager, optional setup software, provides these functions.

REDSCAN is an area sensor that configures a fan-like detection area of 30 m (Approx.100 ft.) radius over 190 degrees arc. using laser beams.
REDSCAN detects target objects by emitting laser beams at the target and measuring the time required for the emitted beams to be reflected and returned to the detector.
There are 3 modes for detecting an intruder. Horizontal Detection Area1, Horizontal Detection Area2 and Vertical Detection Area. Each one is configured with an independent detection algorithm.

CONTENTS

1 INTRODUCTION

1-1 BEFORE OPERATION

* Read this instruction manual carefully prior to installation.
* This manual uses the following warning indications to provide information regarding correct usage of the product to prevent you and other people from being harmed and your assets from being damaged. These warning indications are described below.
  Ensure you understand these precautions before reading the rest of this manual.

⚠ **Warning**	Failure to follow the instructions provided by this warning and improper handling may cause death or serious injury.
⚠ **Caution**	Failure to follow the instructions provided by this caution and improper handling may cause injury and/or property damage.

🚫 This symbol indicates prohibition.
The specific prohibited action is provided in and/or around the figure.

❗ This symbol requires an action or gives an instruction.

⚠ **Warning**	
Do not use the product for purposes other than the detection of moving objects such as people and vehicles. **Do not use the product to activate a shutter, etc., which may cause an accident.**	🚫
Do not touch the unit base or power terminals of the product with a wet hand (do not touch when the product is wet with rain, etc.). It may cause electric shock.	❗
Never attempt to disassemble or repair the product. It may cause fire or damage to the devices.	🚫
Do not exceed the voltage or current rating specified for any of the terminals, doing so may cause fire or damage to the devices.	🚫
Ensure the power is turned off before connecting wiring.	❗
Confirm the signal name of every terminal to ensure wiring is carried out correctly.	❗
Whenever a commercial switching regulator is used, be sure to connect PE (Protective Earth Terminal).	❗
Hold the main unit securely when you install or service it. Exercise care not to bump the product against nearby objects or drop it inadvertently.	❗
This product is not capable of detecting objects in the dead zone of the laser scan. **Do not use this product for an application where it is not capable of covering the detection area required by the task.**	🚫
Please note that the product can malfunction, including producing an irregular output and committing a detection error, if it is exposed to unfavorable environmental conditions such as strong ambient light, electronic noises or mechanical vibrations.	❗
⚠ **Caution**	
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.	❗
Clean and check the product periodically for safe use. If any problem is found, do not attempt to use the product as it is.	❗
When disposing of this product, be sure to follow the waste-disposal regulations of the country or region where it is used.	❗
This product is intended to detect an intruder(s) and is not designed to prevent theft, disasters or accidents. The manufacturer shall not be held liable for any damage to user's property resulting from theft, disasters or accidents.	

1-2 PRECAUTIONS

Install the product only on a solid surface.

Install the product so that the detection area is not influenced by interference from tall grass or tree branches waving in the wind.

Do not use the product in an environment where solvent fumes or corrosive gases are present.

In the Horizontal Detection Area, this product must normally be used within the recommended installation height in order to detect an intruder.

Installation height:
0.7 m to 1 m
(2.3 ft. to 3.3 ft.)
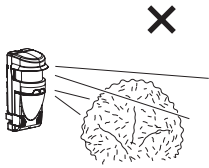
Do not install or leave the product in a location exposed to heat, vibrations or impacts.

Do not use this product in environments where there may be oil mist particles which may contaminate the window of the detector; thus causing detection errors and possible corrosion which may lead to product failure.

The symbol "×" indicates prohibited actions.

Cleaning the Product

Clean the front window on a regular basis using a wet cloth.
A smeared front window can limit the detection area due to the reduced laser sensitivity. In addition, heavy soiling of the window can induce detection errors.

Front window
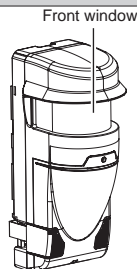
On Safety of Laser

This product is categorized as a Class 1 product in terms of the Safety Standard.

Average Power : Max. 0.015 mW (AEL)
Wavelength   : 905 nm
Pulse Width   : 4 ns
Emission period : 36 µs
Standard   : IEC60825-1

Class 1 of the Laser Safety Standard means that the safety of laser products belonging to this class is warranted under normal operating conditions (reasonably predictable operating conditions). The product is marked to indicate that it is laser equipment. No additional safety measures are necessary.

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No.50, dated June 24, 2007.

Class 1 laser product

Do not expose your eyes directly to the laser beam.

1-3 PARTS IDENTIFICATION

Mounting bracket   Main unit

Cover
Cover mounting screw

Angle adjustment screw   Main unit mounting screw

Accessories>>

4 screws
(For fixing the mounting bracket)

4 anchors
for the wall

1 mounting holes template
(printed on inside of the carton box)

2 screws
(spare parts)
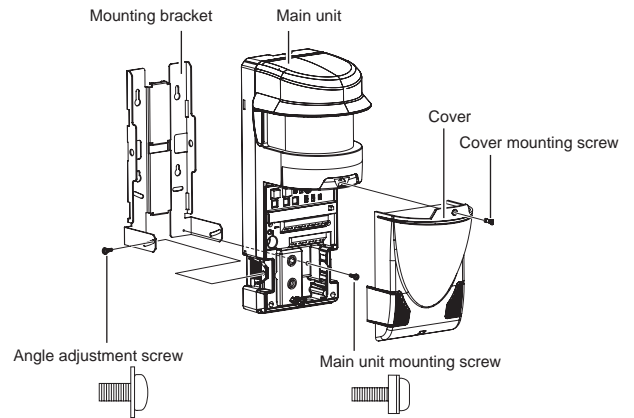
2 cable glands
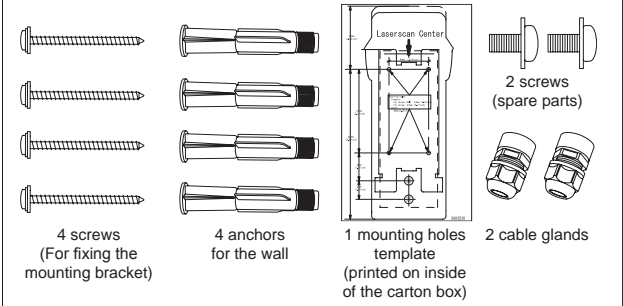
1-4 INSTALLATION WORK FLOWCHART

Choose the detection area mode and installation location. (Refer 2)

Mounting and angle adjustment. (Refer 3)

Wiring and Power On. (Refer 4)

Confirmation of location of the laser plane. (Refer 3-4) — NG

OK

Area adjustment (Refer 5, 6)

Walk-test and confirm the detection area. (Refer 8-1) — NG

OK

Completion
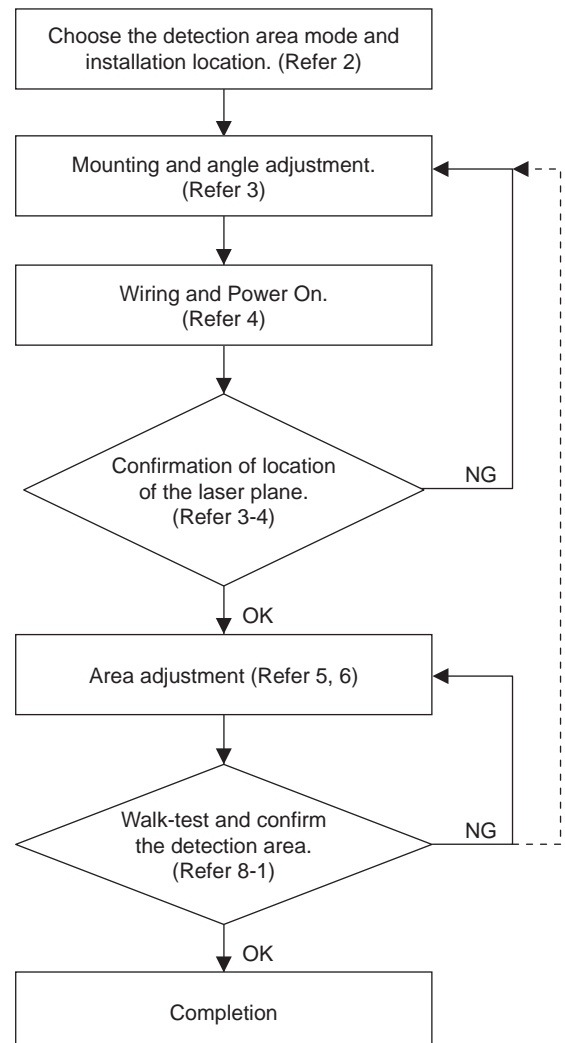
2 TYPES OF INSTALLATION METHOD AND DETECTION AREAS

2-1 TYPES OF INSTALLATION METHOD

Installing to a wall	Installing to a pole

Bracket is optional item.

Detection method
Horizontal Detection Area 1
Horizontal Detection Area 2

Laser beam

Detection method
Horizontal Detection Area 1
Horizontal Detection Area 2

Laser beam

Installing at an angle to a wall	Installing at an angle to a pole

Bracket is optional item.

Bracket is optional item.

Laser beam

Detection method
Vertical Detection Area

Laser beam

Detection method
Vertical Detection Area

Installing to a ceiling plane	Installing at an angle to a ceiling plane

Bracket is optional item.

Laser beam

Detection method
Vertical Detection Area

Laser beam

Detection method
Vertical Detection Area

2-2 TYPES OF DETECTION METHOD

The detection method comprises the three modes of operation, Horizontal Detection Area 1, Horizontal Detection Area 2 and Vertical Detection Area.

-Horizontal Detection Area 1   H1   H2   V

This mode allows setting of a fan-like detection area in the horizontal direction with a maximum radius of 30 m (Approx.100 ft.), a spread angle of 180 degrees, and a width of 1 m (3.3 ft.) (*1).
This mode detects intrusion of an object that appears from the rear side of the sensor or in a position within 1 m (3.3 ft.) (*1) from the sensor installation line and that moves toward the front of the sensor. The Redscan will generate the alarm output 1 minute (*1) after the initial detection, so long as the detected object stays in the detection area.

Cautions>>
This mode does not detect an object that appears in a position more than 1 m (3.3 ft.) (*1) away from the sensor installation line.

*1: The Redscan Manager, optional setup software, can change these values.

1 m (3.3 ft.)

180°

30 m (Approx. 100 ft.)

Sensor installation line

An object that appears in this area is not detected.

An object that intrudes from this direction is not detected.
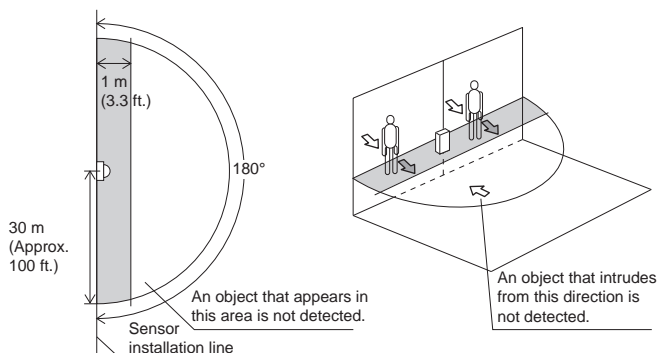
-Horizontal Detection Area 2   H1   H2   V

This mode allows setting of a fan-like detection area in the horizontal direction with a maximum radius of 30 m (Approx. 100 ft.), a spread angle of 190 degrees.
This mode detects intrusion into the detection area from any direction.
The Redscan will generate the alarm output 1 minute (*1) after the initial detection, so long as the detected object stays in the detection area.

*1: The Redscan Manager, optional setup software, can change this value.

190°
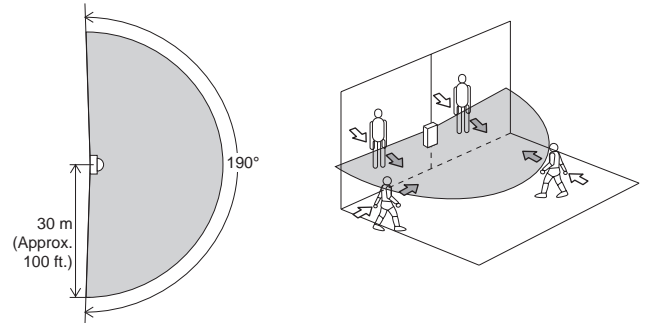
30 m (Approx. 100 ft.)

-Vertical Detection Area   H1   H2   V

This mode allows setting of a fan-like detection area in the vertical direction with a maximum radius of 30 m (Approx. 100 ft.), a spread angle of 180 degrees.
This mode creates a non detection area, 1.5 m (Approx. 5 ft.) (*1) immediately in front of the unit, in order to avoid possible false alarms caused by birds or obstructions close to the unit.
Recommended installation height is from 4 m (Approx. 13 ft.) to 15 m (Approx. 50 ft.).
This mode will detect an object that traverses the detection area.

*1: The Redscan Manager software can change this value or cancel the "non detection area" for specific applications.

30 m (Approx. 100 ft.)

Mounting height

1.5 m (Approx. 5 ft.)

Ground surface

180°
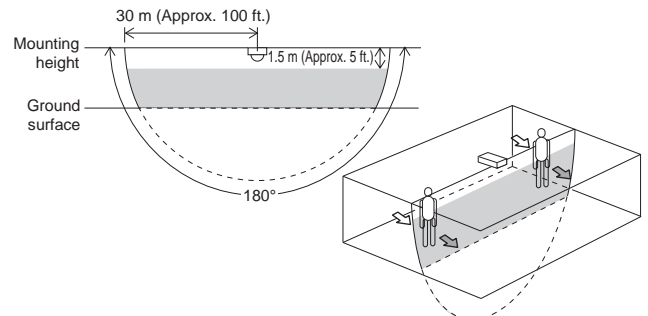
-Vertical Detection Area when the product is installed at an angle
  H1   H2   V

When you have installed this product at an angle with the optional adjustable angle mounting bracket, the detection area varies as shown below depending on the installation height and angle.

60 m (Approx. 200 ft.)

Detection distance

Position
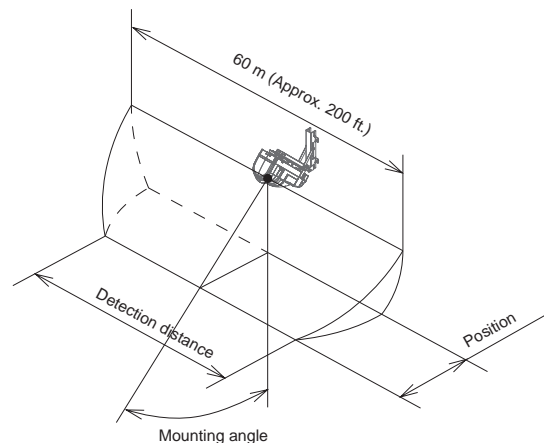
Mounting angle

Relationship between "detection distance" and mounting height and mounting angle. See diagram on page 3.

				Mounting angle		
				0°	30°	45°
Installation height	4 m (13 ft.)	Position		0 (0)	2.3 (7.6)	4.0 (13.1)
		Detection Distance	Walking	59 (195)	59 (195)	59 (193)
			Crawling	57 (187)	55 (180)	53 (174)
	8 m (26 ft.)	Position		0 (0)	4.6 (15.2)	8.0 (26.2)
		Detection Distance	Walking	58 (190)	57 (187)	56 (182)
			Crawling	53 (174)	51 (167)	48 (157)
	12m (39 ft.)	Position		0 (0)	6.9 (22.7)	12.0 (39.4)
		Detection Distance	Walking	55 (180)	53 (175)	49 (162)
			Crawling	50 (164)	48 (157)	46 (151)

Unit: m (ft.)

Note >>
> A running person may not be detected if the mounting angle is 0 degree.

2-3 AREA SETTING PROCEDURE

The Manual and Auto modes are available for setting the area. The Auto setting procedure comprises two options; P1 and P2. The setting procedure in each mode varies depending on which detection method of either H1, H2 or Vertical detection Area is selected.

-Horizontal Detection Area 1/Horizontal Detection Area 2

Manual

In this mode the fan like detection area is specified by the following rotary switches.
The rough alignment rotary switch can specify the radius in the range of 0 to 30 m in 2 m steps.
Using the fine adjustment potentiometer the area setting can be increased or decreased by up to +/- 1 m.
The detection area is divided into Area A and Area B, allowing you to specify a different radius for each. Each of Areas A and B is halved to A1, A2, B1 and B2 areas.

: Detection area

Area B2 | Area B1 | Area A1 | Area A2

30 m (Approx. 100 ft.) | 30 m (Approx. 100 ft.)
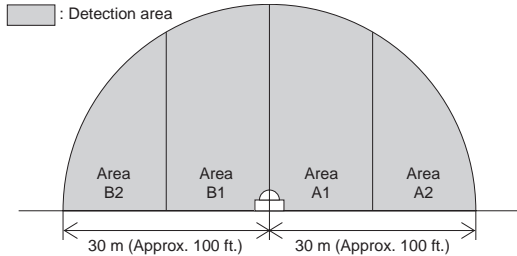
Auto

 P1 Auto Learning
The area automatically learnt by the sensor within the boundary defined by the rough alignment rotary switches and fine adjustment potentiometers.

 P2 Auto Tracing
The area automatically learnt by tracing a person walking a boundary within the area set by the rough alignment rotary switches and fine adjustment potentiometers.

Auto P1 (Auto Learning)
Auto P2 (Auto Tracing)
Manual
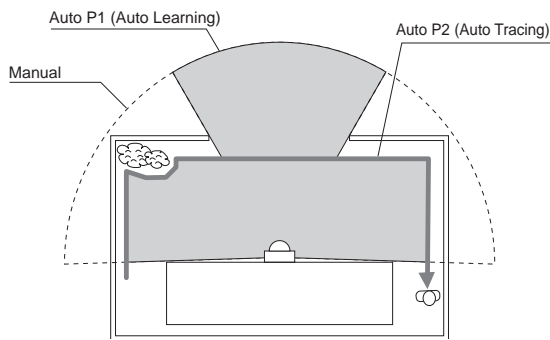
-Vertical Detection Area

Manual

Vertical Detection Area is not available in Manual mode. Turn on the Auto mode to use it.

Auto

 P1 Fixed detection area

The detection area is fixed by the "SET" of the area and by the settings of the Size and Offset parameters. The Redscan will ignore "noise" at ground level caused by grass or small changes of the ground shape.

 P2 Adaptive detection area

When an object, such as a stack of snow, is in the detection area, the Redscan will recreate the detection area around the object. Similarly, if a hole is created in the snow the Redscan will recreate the detection area to include the hole. This automatic adaptive area has a default value of +/- 1m. (*1)

*1: The Redscan Manager, optional setup software, can change this value.

30 m maximum (Approx. 100 ft.)
Installation height
Area A | Area B
Area A2 | Area A1 | Area B1 | Area B2
Ground surface
Auto P1 (Fix)
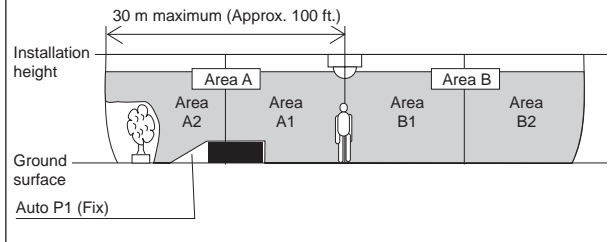
3 INSTALLATION AND ANGLE ADJUSTMENT

3-1 INSTALLING TO WALL OR CEILING PLANE

1 Remove the cover from the main unit.

① Loosen 2 cover mounging screws.
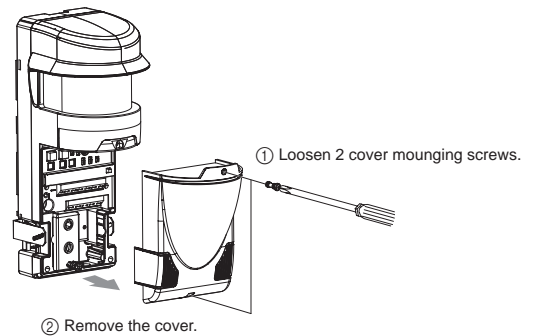
② Remove the cover.

2 Remove the mounting bracket from the main unit.

① Loosen 4 lock screws.

② Move the mounting bracket

b
c   d
a

Angle adjustment screws a and b | Main unit mounting screws c and d

(Washer without rubber) | (Washer with rubber)

③ Remove the mounting bracket by moving it over the stopper while opening the bottom of the mounting bracket slightly outward.

Main unit fall-protection stopper
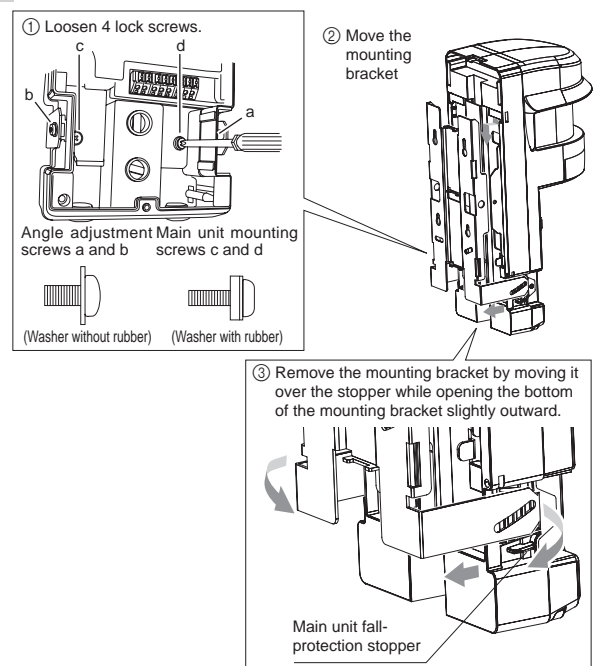
3 Attach the mounting holes template (an accessory) onto the wall or the ceiling plane, and drill 4 mounting holes in it. Drill 2 wiring holes as required.
Insert the anchor bolt (an accessory) into the mounting holes.

Mounting hole in 4 locations
Diameter 6 mm (0.24 inches)
Depth 60 mm (2.36 inches)

Wiring hole

Set the lower end of the paper template at a position at least 0.7 m (28 in.) above the ground.
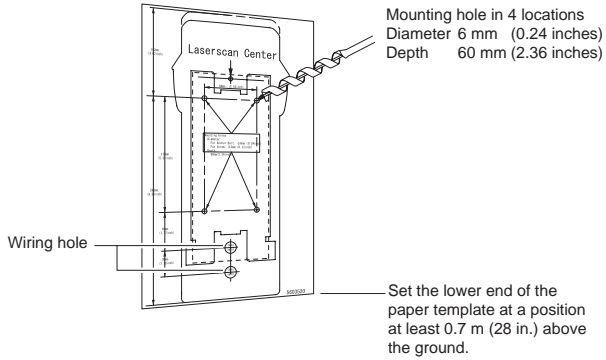
4 Fix the mounting bracket on the wall or the ceiling plane.

Tighten 4 fixing screws for the mounting bracket (accessories).

Rotate the bracket on screw A to the required position then tighten the fixing screws.

A
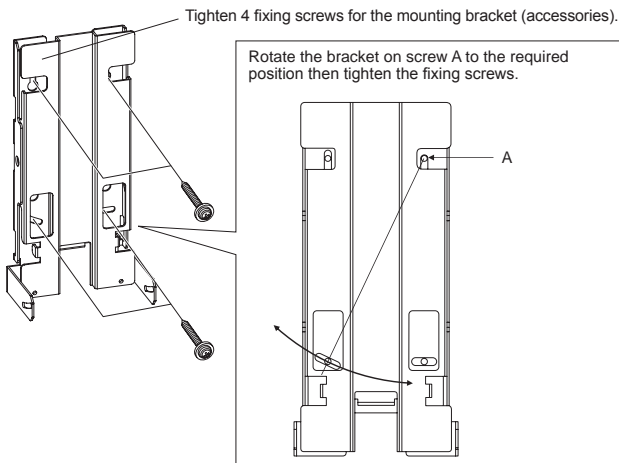
Cautions>>
When installing the product to the wall, fix the mounting bracket parallel to the ground. If the mounting bracket is set at an angle, the laser beam will not be emitted parallel to the ground, which may result in the non-detection of an intruder. An inclination of 1 degree varies the shape of the detection area of 30 m (Approx. 100 ft.) ahead by approximately 0.5 m (1.6 ft.).

5 Install the cable gland.

Ensure that any unused wiring holes are covered securely with a wiring hole cap.

Cable gland
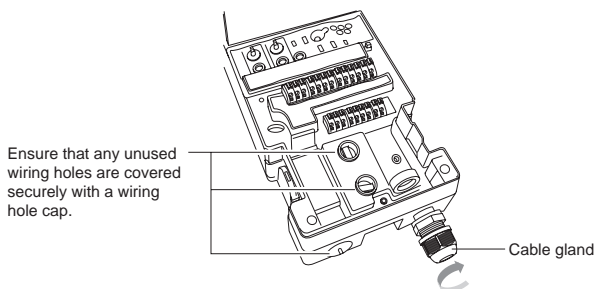
6 Install the main unit and fix it to the mounting bracket.

① Install the main unit by moving it over the stopper while opening the bottom of the mounting bracket slightly outward.

② Insert the top portion

Main unit fall-protection stopper

③ Tighten 4 lock screws.

Adjust the angle of the detector before tightening screws a and b.

c   d

b   a

Angle adjustment screws a and b

Main unit mounting screws c and d

(Washer without rubber)

(Washer with rubber)

5° 5°

7 See section " 4-1 " and connect the wires to the terminal block.

8 It is recommended that the optional Laser Area Checker (LAC-1) is used to adjust the mounting angle to achieve the required detection area. (Refer 3-4)

9 See Chapters 5, 6 and 7, make various settings and confirm that the equipment operates correctly.

10 The installation work is complete when the various settings and operational check are finished. Mount the cover.

① Install the cover.

② Tighten 2 cover mounting screws.
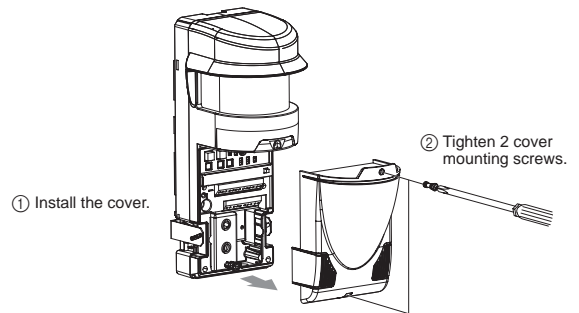
3-2 INSTALLING TO POLE

When installing the product to a pole, use the optional pole mounting bracket (RLS-PB).

Stainless belt (included with the pole mounting bracket)

Pole mounting bracket (optional)
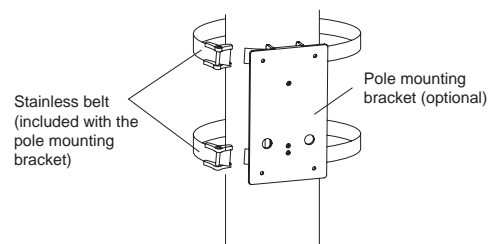
Note >>
For detailed handling procedures, see the manual attached to the pole mounting bracket.

3-3 INSTALLING AT AN ANGLE TO WALL, CEILING PLANE OR POLE

When installing the product at an angle to a wall, ceiling plane or pole, use the optional adjustable angle mounting bracket (RLS-SB).

Points >>
The mounting holes for the adjustable angle mounting bracket align with similar holes in the main unit mounting holes indicated on the mounting holes template.

Wall	Ceiling plane

The angle varies according to the bolt insertion position.

45°
40°
30°
20°
10°
0°

30°

The angle varies according to the bolt insertion position.
10° 20° 30° 40° 45°

45°

Pole

Stainless belt (included with adjustable angle mounting bracket)

Adjustable angle mounting bracket

Note >>
For detailed handling procedures, see the manual attached to the adjustable angle mounting bracket.

3-4 CONFIRMATION OF LOCATION OF THE LASER PLANE

It is recommended that the optional Laser Area Checker (LAC-1) is used to confirm the location of the laser plane.
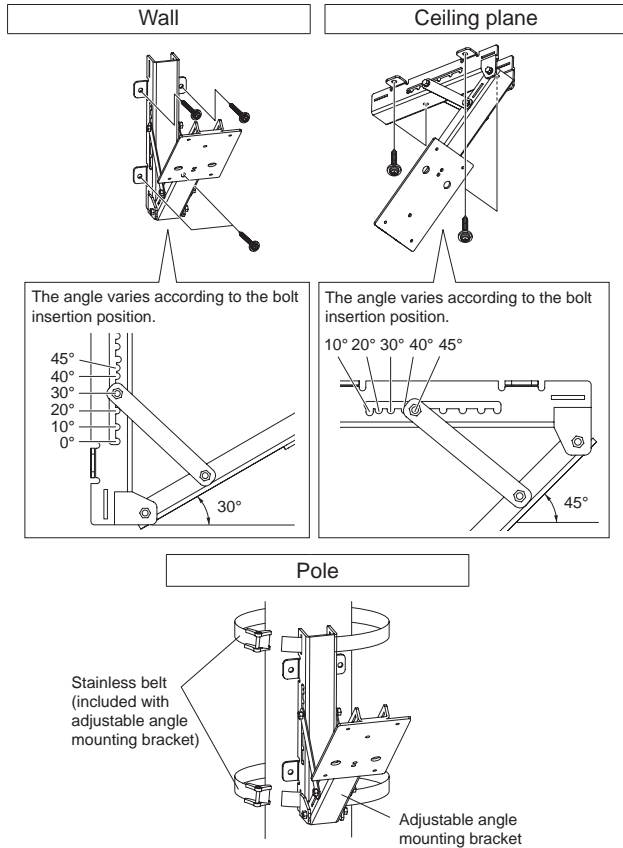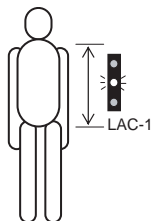
-Horizontal Detection Area
Ensure that the laser beam is hitting the human target between the shoulder and hip line in all of the detection area taking into consideration the possibility that the ground level may not be flat.

LAC-1

-Vertical Detection Area
Adjust the mounting angle so that the laser beam is hitting the ground at the required location.
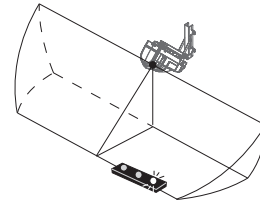
Note >>
For detailed instructions see the LAC-1 Instruction manual.

4 PARTS LAYOUT INSIDE THE COVER AND THEIR FUNCTIONS

4-1 WIRING

D.Q OUTPUT (N.C.)
D.Q OUTPUT (N.O.)
A2 area ALARM OUTPUT (N.O.)
A1 area ALARM OUTPUT (N.O.)
B1 area ALARM OUTPUT (N.O.)
B2 area ALARM OUTPUT (N.O.)
TAMPER OUTPUT (N.C.)

HEATER POWER INPUT
TROUBLE OUTPUT (N.O.)
TROUBLE OUTPUT (N.C.)
ALARM OUTPUT (N.O.)
ALARM OUTPUT (N.C.)
POWER INPUT

ETHERNET CONNECTOR
WALK TESTER CONNECTOR
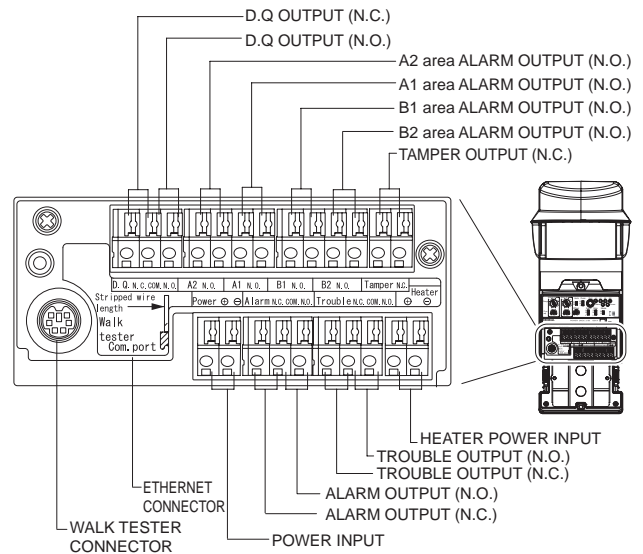
*1: TAMPER terminals to be connected to a 24 hour supervisory loop.

Power wires should not exceed the following lengths.

WIRE SIZE	Sensor		Heater
	24V DC	24V AC	24V AC/DC
AWG20 (0.52 mm²)	120 (394)	60 (197)	80 (262)
AWG18 (0.83 mm²)	200 (656)	100 (328)	130 (427)

m (ft.)

9 mm

Stripped wire length

Wires must be stripped back 9 mm.
Use the gauge on the panel for correct measurement.
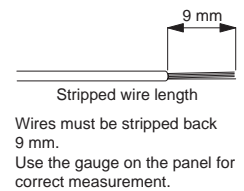
Cautions >>
Power for the heater is separately from the power to the Redscan.
If the power for the Redscan and the Heater is supplied from the same power supply, ensure that sufficient power is provided for both. See 9-1 specifications for power requirements.

4-2 SIGNAL OUTPUT

-D.Q. output

D.Q. N.C. COM. N.O.
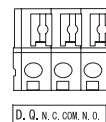
The algorithm specific to REDSCAN allows for detection during foggy conditions. However, during severe conditions such as heavy rain, dense fog or snow storms the Environmental DisQualification (EDQ) output is activated.

Refer to the end of this manual for the connection example.

-Alarm output

| A2 N.O. | A1 N.O. | B1 N.O. | B2 N.O. |
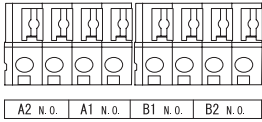
Upon detecting an intruder, this product outputs the alarm specific to the general area (Area A1, Area A2, Area B1 or Area B2) where the intrusion happened.

When combined with a CCTV camera monitoring system employing PTZ, this product works efficiently to provide early detection of intruders.

-Tamper output

Tamper N.C.

This output is enabled when the terminal cover is removed.

-Trouble output

Trouble N.C. COM. N.O.

It is generated when an error has occurred on the sensor.

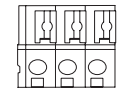| Name	Function
Anti-masking	It is activated when an obstacle has been placed in front of the sensor in order to block the detection area. It is reset after such obstacles are removed.
Anti-rotation	It is activated when the area being scanned changes by a significant amount as a result of the unit being rotated from its original settings. **Not applicable in Manual mode.**
Soiling of the window	It is activated when the front window is heavily soiled which may induce detection errors. Clean the front window using a wet cloth.
Sensor error	It is activated when the sensor has detected an internal self check error.

-Alarm output

Alarm N.C. COM. N.O.
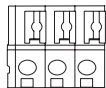
The alarm output is generated if an intruder is detected in one or more of the divided areas (Area A1, Area A2, Area B1 and Area B2).

4-3 CONNECTING WALK TESTER
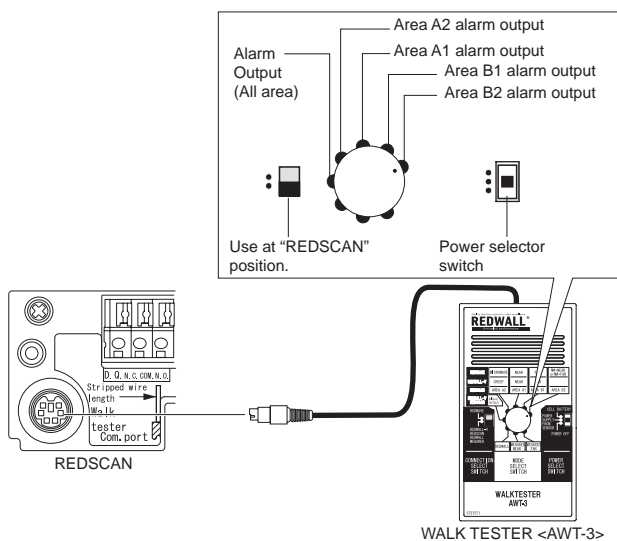
WALK TESTER <AWT-3>

① Turning on the power selector switch after plugging the cable into the Walk Tester Connector generates a continuous beep at a constant sound level.

② The beep sound becomes stronger and continues for a longer period if an object is detected.

4-4 POWERING ON

Power ⊕ ⊖

Connect 24 VAC/DC to the power input terminal to turn power on.

As power is turned on, the indicators (A1, A2, B1, B2, Status and Power) light for about 30 seconds and then go out.

During this period, REDSCAN initializes itself.

Indicator Power remains lit as long as power is turned on.

Approximately 30 seconds (Initialization is turned on)

| Legend | ○ OFF | ● Light | ☀ Blink |
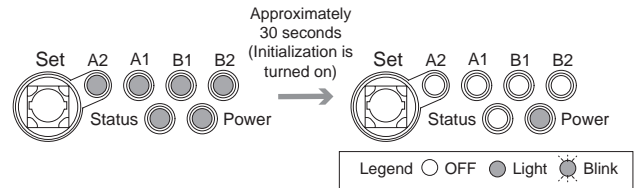
4-5 HEATER POWER INPUT

Heater ⊕ ⊖

Connect 24 VAC/DC to the heater power input terminals to utilize the heater.

The heater is controlled by a thermostatic switch which turns on when the temperature drops to approx. 5 °C (41 °F), and turns off when the temperature rises to approx. 18 °C (64 °F).

4-6 SWITCH LAYOUT
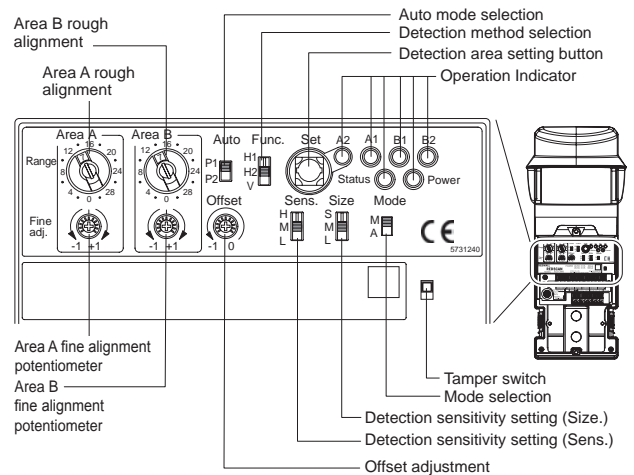
4-7 LED FUNCTIONS
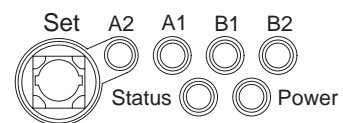
-In the normal operation

Symbol	Colour	DETECTOR STATUS
A2	Red	Area A2 alarm output
A1	Red	Area A1 alarm output
B1	Red	Area B1 alarm output
B2	Red	Area B2 alarm output
Status	Yellow	Lit during auto setup of the unit. (Turned off during normal operation.)
Power	Green	Lit when power is turned on

-When an abnormality occurs

Status		A2	A1	B1	B2	Status	Power
D.Q.		Blink	Blink	Blink	Blink	OFF	Blink
Anti-masking		OFF	Light	Light	Light	OFF	OFF
Anti-rotation		Blink	Light	Light	OFF	OFF	OFF
Soiling of the window		Blink	Light	OFF	OFF	OFF	OFF
Sensor error	Error 1	OFF	OFF	OFF	Blink	OFF	OFF
	Error 2	OFF	Light	OFF	Blink	OFF	OFF
	Error 3	Blink	OFF	OFF	Blink	OFF	OFF
	Error 4	OFF	Light	Light	Blink	OFF	OFF
	Error 5	Light	OFF	OFF	OFF	OFF	OFF

Legend ○ OFF ● Light ◉ Blink

4-8 INITIALIZATION TO FACTORY DEFAULT

Set A2 A1 B1 B2
Status Power
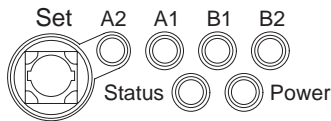
You can restore the sensor to the factory default settings (IP ADDR 192.168.0.126) using the following procedure.

• Turn power on, and push and hold down "Set" button within 20 seconds.
• Keep holding the button down until the green power indicator is exinguished.
• Only the "Status" indicator is lit during the initialization.
• When ALL indicators are extinguished, power cycle (off/on) the Redscan.

5 SETTING HORIZONTAL DETECTION AREAS 1 AND 2

5-1 SELECTOR SWITCH OPERATION

-Detection method selection

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Select the desired method using the detection method selector switch.

Func.

H1
H2
V

SELECTOR POSITION	FUNCTION
H1	It selects Horizontal Detection Area 1.
H2	It selects Horizontal Detection Area 2. (Factory default)
V	—

-Selection of the area setting method

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Select the desired method using the mode selector switch.

Mode

M
A

SELECTOR POSITION	FUNCTION
M	Selects the Manual setting.
A	Selects the Auto setting. (Factory default)

-Selecting the Auto mode

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Select it using the Auto mode selector switch.

Auto

P1
P2

SELECTOR POSITION	FUNCTION
P1	Turns on the Auto Learning. (Factory default)
P2	Turns on the Auto Tracing.

-Selecting the detection sensitivity

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Set the detection sensitivity using the SIZE and SENS selector swithes as per the following chart.

	SELECTOR POSITION	FUNCTION	
Size S M L	S	Approx. 150 mm (0.5 ft.) or above	This switch specifies the width of the target object to be detected.
	M	Approx. 300 mm (1 ft.) or above (Factory default)	
	L	Approx. 1000 mm (3.3 ft.) or above	
Sens. H M L	H	Approx. 500 mm (1.6 ft.) or above	This switch specifies the distance that the object has to move before it is considered to be an intruder.
	M	Approx. 1000 mm (3.3 ft.) or above (Factory default)	
	L	Approx. 2000 mm (6.6 ft.) or above	

5-2 MANUAL SETTING OF HORIZONTAL DETECTION AREA

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Set a fan-like detection area using the rough alignment rotary switch and fine alignment potentiometer.

-Rough alignment rotary switch
You can specify the radius in the range of 0 to 30 m in 2 m steps. Setting the rough alignment rotary switch to 0 m deletes the detection area.

Example: if you specify "Detection distance in Area A: 30 m" and "Detection distance in Area B: 14 m" in a location where the radius is 30 m or more without obstacles within the detection area, the following detection areas will result.
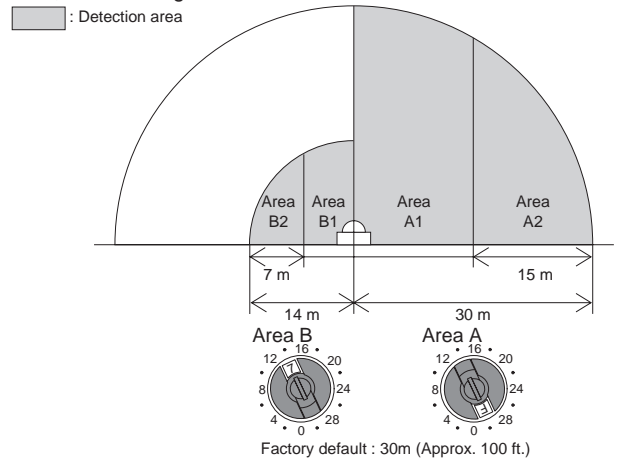
▢ : Detection area

Area B2   Area B1   Area A1   Area A2

7 m   15 m
14 m   30 m

Area B   Area A

Factory default : 30m (Approx. 100 ft.)

-Fine alignment potentiometer
This potentiometer can fine tune the value set with the rough alignment rotary switch by +/- 1 m. within the range of 0 m minimum and 30 m maximum.

Area A   Area B
Range

Fine adj.
-1 +1   -1 +1
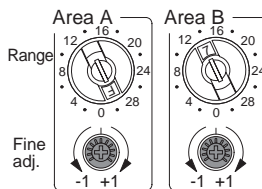
Setting done in rough alignment	Range available for fine alignment
When 0 m is set	0 to +1 m (From -1 to 0 m on the scale is not usable)
When 2 to 28 m is set	±1 m
When 30 m is set	-1 to 0 m (From 0 to +1 m on the scale is not usable)

-Offset adjustment

You can reduce a set detection area using the offset potentiometer. Use this adjusting function when windblown grass or tree branches interfere with the currently set detection area.

You can adjust the boundary of a given detection area inward (toward the sensor) in the range of 0 to -1 m.
Recommended setting is 10cm minimum.

Offset

Factory default:
Approx. -0.5 m

Offset

Offset

5-3 STARTING SECURITY PROTECTION IN MANUAL MODE

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

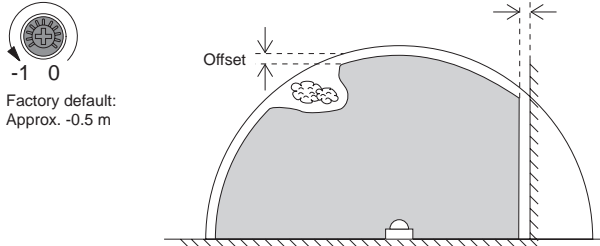When "Manual" is chosen from the mode selector switch, turning the power on starts the security protection in manual mode.

Cautions >>
In "Manual" mode, obstacles in the detection area may cause false alarms.
If there are obstacles in the detection area always use "Auto" mode.

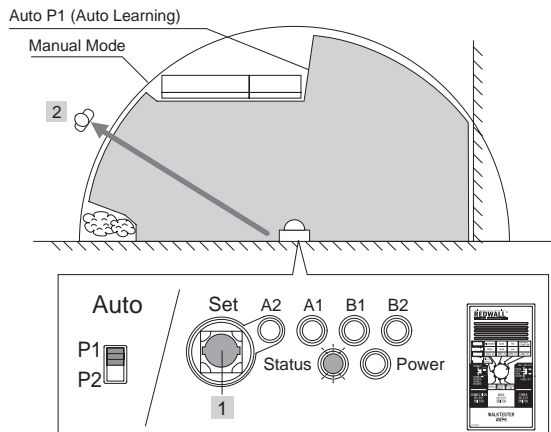## 5-4 AUTO SETTING OF HORIZONTAL DETECTION AREA

-Function of the detection area setting button

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Set A2   This button starts the auto function of either P1 or P2 whichever has been selected.
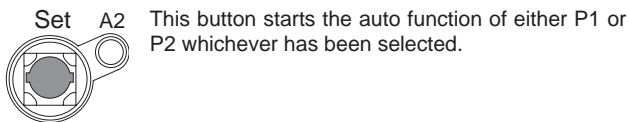
-Setting P1 (Auto Learning)

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Auto P1 (Auto Learning)
Manual Mode

Auto
P1
P2
Set A2 A1 B1 B2
Status   Power

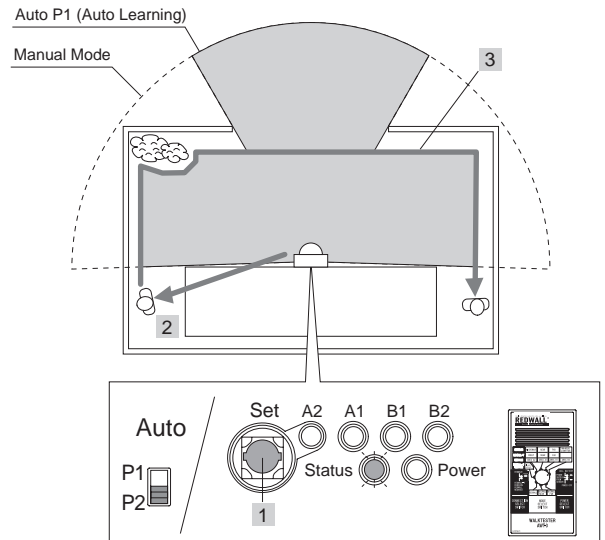|	Sequence of operation	Status indicator	Time	Action of REDSCAN/ Response of Walk Tester
1	Hold down the detection area setting button for 1 second.	Flashing starts	For 1 second	Pitch of Walk Tester sound changes for 2 seconds
2	Evacuation from the area	Flashing (*1)	For 15 seconds	—
	—	Fast flashing (*2)	For 10 seconds	Scan of the detection area is executed
	—	ON	For 15 seconds	Scan of the detection area is completed and the data are saved
	—	Flashing	For 3 seconds	—
	—	OFF	—	Security protection of the detection area is started

*1: Flashes once a second
*2: Flashes twice a second

Cautions >>
Do not enter the area while the area scan is being carried out. An unwanted object in the area interferes with the correct scanning of the target area.

-Setting P2 (Auto Tracing)

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Auto P1 (Auto Learning)
Manual Mode

Auto
P1
P2
Set A2 A1 B1 B2
Status   Power

	Sequence of operation	Status indicator	Time	Action of REDSCAN/ Response of Walk Tester
1	Hold down the detection area setting button for 1 second.	Flashing starts	For 1 second	Pitch of Walk Tester sound changes for 2 seconds
2	Evacuation from the area	Flashing (*2)	For 15 seconds	—
	—	Fast flashing (*3)	For 10 seconds	Scan of the detection area is executed
3	Walking along the boundary of the area (*1)	Flash (*4)	For 5 minutes	Tracing started Pitch of the Walk Tester sound changes in 3-second cycles
			(Last 30 seconds)	Pitch of the Walk Tester sound changes in 1-second cycles
	—	ON	For 15 seconds	Tracing is completed and the data are saved
	—	Flashing	For 3 seconds	—
	—	OFF	—	Security protection of the detection area is started

*1: The tracing is automatically ended after 5 minutes. When movement of the target object along the area boundary has finished before this time, you can terminate the tracing without waiting for 5 minutes by holding down the detection area setting button for 3 seconds.
*2: Flashes once a second
*3: Flashes twice a second
*4: A flashing sequence of flashing twice a second and not flashing for a second is repeated

Cautions >>
Do not enter the area while the area scan is being carried out. An unwanted object in the area interferes with the correct scanning of the target area.

Note >>
Any area left untraced will revert to the Auto learning area settings.

6 SETTING VERTICAL DETECTION AREA

6-1 SELECTOR SWITCH OPERATION

-Detection method selection

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Select the desired method using the detection method selector switch.

Func.
H1
H2
V

SELECTOR POSITION	FUNCTION
H1	—
H2	—
V	Selects the vertical detection area.

-Selection of the area setting method

Select the desired method using the mode selector switch.

Mode

M ☐
A ☐

SELECTOR POSITION	FUNCTION
M	NOT APPLICABLE
A	Selects the Auto setting. (Factory default)

-Selecting the Auto mode

Select it using the Auto mode selector switch.

Auto

P1 ☐
P2 ☐

SELECTOR POSITION	FUNCTION
P1	Fixed detection area. (Factory default)
P2	Adaptive detection area.

-Setting the detection sensitivity

Set the detection sensitivity using the SIZE and SENS selector switches as per the following chart.

Size

S ☐
M ☐
L ☐

Sens.

H ☐
M ☐
L ☐

SELECTOR POSITION	FUNCTION	
S	Approx. 250 mm (0.8 ft.) or above	This switch specifies the height from offset position of the target object to be detected.
M	Approx. 350 mm (1.2 ft.) or above (Factory default)	
L	Approx. 500 mm (1.6 ft.) or above	
H	100 ms or longer. This setting is recommended when the target object can run through the detection area.	This switch specifies the duration during which the target object stays in the detection area.
M	150 ms or longer (Factory default)	
L	200 ms or longer.	

6-2 SETTING DETECTION AREA IN VERTICAL DETECTION AREA

Set a fan-like detection area using the rough alignment rotary switch and fine alignment potentiometer.

-Rough alignment rotary switch

It can specify the radius in the range of 0 to 30 m in 2 m steps. Setting the rough alignment rotary switch to 0 m deletes the area.
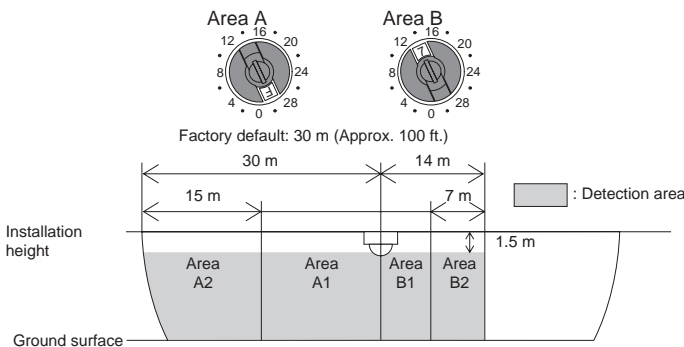
Area A   Area B

Factory default: 30 m (Approx. 100 ft.)

Installation height

Area A2 | Area A1 | Area B1 | Area B2

Ground surface

-Fine alignment potentiometer

This potentiometer can fine tune the value set with the rough alignment rotary switch by +/- 1 m. within the range of 0 m minimum and 30 m maximum.
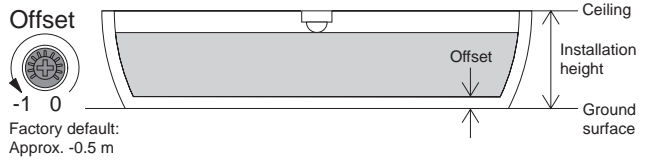

Area A   Area B

Range

Fine adj.   -1 +1   -1 +1
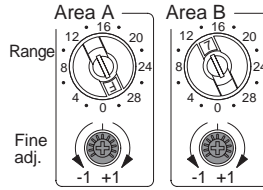
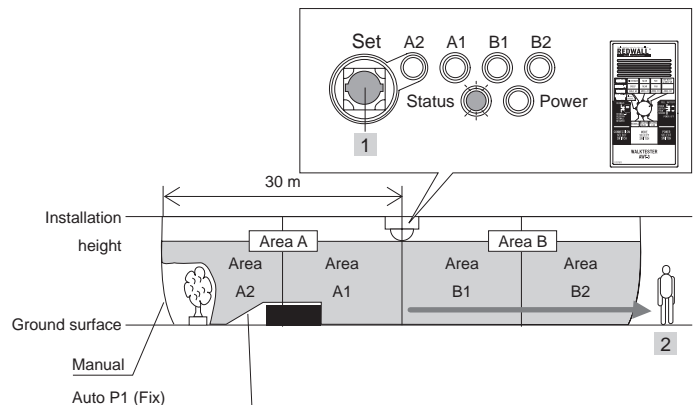| Setting carried out in rough alignment	Range available for fine alignment
When 0 m is set	0 to +1 m (From -1 to 0 m on the scale is not usable)
When 2 to 28 m is set	±1 m
When 30 m is set	-1 to 0 m (From 0 to +1 m on the scale is not usable)

-Offset adjustment

You can reduce a set detection area using the offset potentiometer. Use this adjusting function when windblown grasses or tree branches interfere with the currently set detection area.
You can adjust the dead zone from the ground in the range of 0 to -1 m.
Recommended setting is 10cm minimum.

Offset

-1 0

Factory default: Approx. -0.5 m

6-3 AUTO SETTING OF VERTICAL DETECTION AREA

Set A2 A1 B1 B2

Status Power

30 m

Installation height

Area A2 | Area A1 | Area B1 | Area B2

Ground surface

Manual

Auto P1 (Fix)

	Sequence of operation	Status indicator	Time	Action of REDSCAN/ Response of Walk Tester
1	Hold down the detection area setting button for 1 second.	Flashing starts	For 1 second	Pitch of Walk Tester sound changes for 2 seconds
2	Evacuation from the area	Flashing (*1)	For 15 seconds	—
	—	Fast flashing (*2)	For 10 seconds	Scan of the detection area is executed
	—	ON	For 15 seconds	Scan of the detection area is completed and the data are saved
	—	Flashing	For 3 seconds	—
	—	OFF	—	Security protection of the detection area is started

*1: Flashes once a second
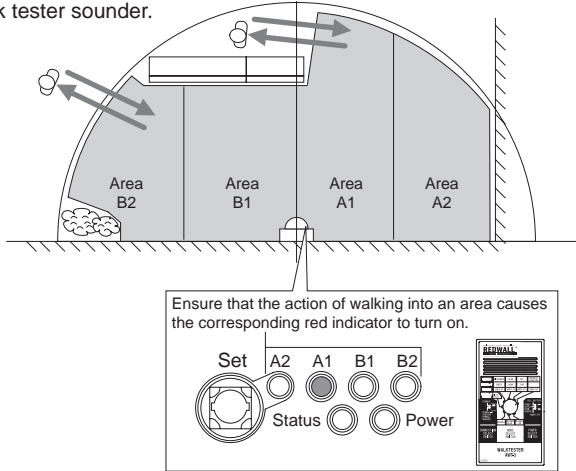*2: Flashes twice a second

Cautions >>
Do not enter the area while the area scan is being carried out. An unwanted object in the area interferes with the correct scanning of the target area.

7 | AREA CHECKUPS

7-1 WALK TEST

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

Ensure that the detection area has been correctly set by observing the red LED indicators or by the changing pitch of the walk tester sounder.

Area B2 | Area B1 | Area A1 | Area A2

Ensure that the action of walking into an area causes the corresponding red indicator to turn on.

Set   A2   A1   B1   B2

Status   Power

-When a detection area has not been correctly set

1 Before pressing the detection area setting button, ensure that the detection method switch and the detection mode switch are set to the correct position, respectively.

2 Set the detection again with reference to " 5-4 " for the horizontal detection area and " 6-3 " for the vertical detection area.

7-2 CHANGING THE SETTINGS DURING SETUP

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

You can change the settings as required during the set up without the need to press the area setting button after each change.

If you shift the mode selector switch from Manual (M) to Auto (A), the area that has been specified previously in Auto (A) is selected as the detection area. When the area is not set in Auto, set it with reference to the procedure described in " 5-4 " or " 6-3 ."

Summary of detection area switch settings

Function	AUTO MODE (Press Detection area setting button to initiate)		MANUAL MODE
	P1	P2	
H1	Automatically learns the detection area within 1 m (*1) x area set by Rough alignment rotary switches and Fine adj. potentiometers	N/A	Detection area is 1 m (*1) x Area set by Rough alignment rotary switches and Fine adj. potentiometers
H2	Automatically learns the detection area within the area set by Rough alignment rotary switches and Fine adj. potentiometers	Automatically learns the detection area by tracing a person walking a boundary within the area set by Rough alignment rotary switches and Fine adj. potentiometers	Detection area is the Area set by Rough alignment rotary switches and Fine adj. potentiometers
V	Automatically learns the detection area within the area set by Rough alignment rotary switches and Fine adj. potentiometers	Automatically adapts to the changing shape of the ground area below the REDSCAN	N/A

*1: The Redscan Manager, optional setup software, can change this value.

7-3 SYSTEM FUNCTION AFTER POWER FAILURE

| H1 Manual | H1 Auto | H2 Manual | H2 Auto | V Auto |

The REDSCAN setup is not lost after a power interruption.

8 | IP CONNECTION WITH REDSCAN

8-1 DEFAULT SETTINGS

- IP address :   192.168.0.126 (Can be changed)
- Subnet mask : 255.255.255.0 (Can be changed)

8-2 REDSCAN MANAGER

(Optional Setup Software, attached to RLS-AT)

REDSCAN Manager is a software program that allows you to configure various settings easily via a local network when installing the REDSCAN unit or performing maintenance work. REDSCAN Manager can register and manage the REDSCAN unit located within the local network and display the area information and the switch setting information obtained from the REDSCAN unit. Also, it enables you to change the obtained detection area and switch settings and set them back into the REDSCAN unit.

REDSCAN Manager also provides the following useful functions.
Selectable application template
    *Outdoor (Default)
    *Indoor
    *Indoor Ceiling / Wall Protection
    *Vehicle Detection
Selectable detection area pattern
    *4 zone / 8 zone
    *Various zone template
Activate / Inactivate functions
    *Environmental resistance function
    *Alarm hold function
    *Anti-masking function
    *Anti-rotating function
    *Soiling of the window function
    *D.Q. function
Customize parameters
    *Detection width adjustment in H1 mode
    *Auto adjustment height in V mode
    *Non detection area adjustment in V mode
Redwall Event Code setup
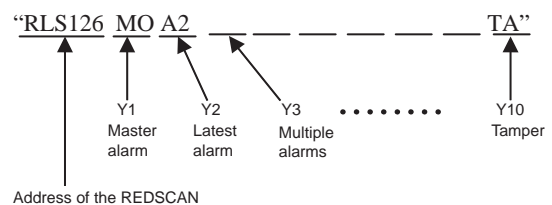   *Protocol
    *Destination IP address

> **Note >>**
> For detailed features and operations, see the help attached to the REDSCAN Manager.

8-3 REDWALL EVENT CODE

REDSCAN generates event codes which can be used by a NVR or VMS software to control PTZ cameras and other devices. Redwall event code can be sent to the assigned port using UDP or TCP protocol. The default port number is "1234".
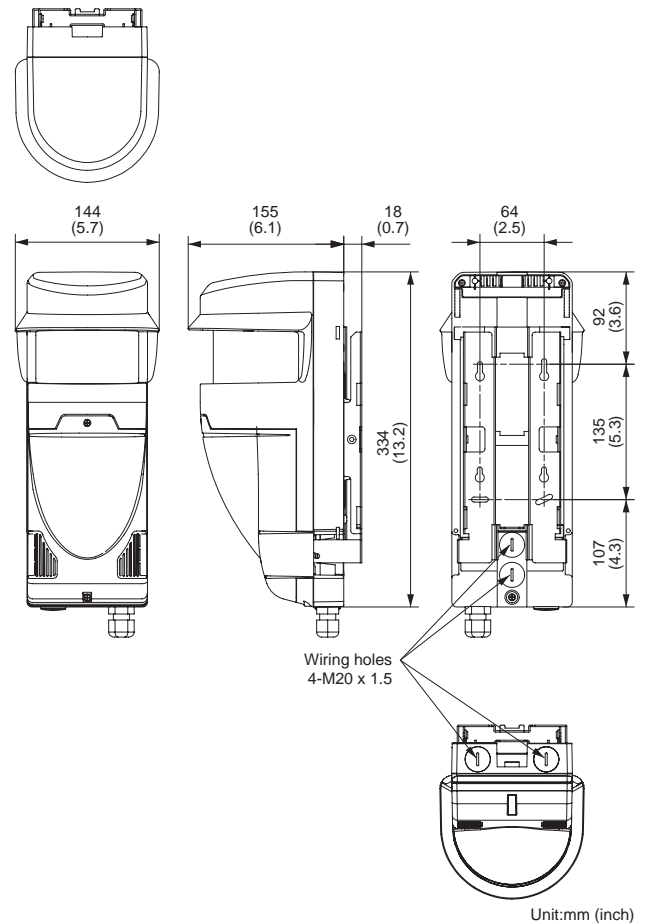
Code format

"RLS126 MO A2 _ _ _ _ _ _ TA"

Y1 Master alarm
Y2 Latest alarm
Y3 Multiple alarms
Y10 Tamper

Address of the REDSCAN

	Status Code	Status
Y1	MO	Master alarm
Y2	A1-B2	Latest alarm
Y3	AA-AB	Multiple alarms
Y4	CC	Multiple alarms
Y5	DQ	Environmental disqualification
Y6	AR	Anti-rotation
Y7	AM	Anti-masking
Y8	TR	Trouble
Y9	SO	Soiling of the window
Y10	TA	Tamper

9 SPECIFICATIONS

9-1 SPECIFICATIONS OF THE MAIN UNIT

Model	RLS-3060SH
Detection method	Infrared Laser Scan
Laser protection class	Class 1 — IEC / EN60825-1 Second edition 2007 Class I — FDA 21CFR 1040.10,1040.11 (Laser Notice No.50)
Wavelength of laser emission	905 nm (infrared laser)
Coverage for vertical mounting	Radius: 30 m (Approx. 100 ft.), Arc: 180°
Coverage for horizontal mounting	MAX. 60 m (Approx. 200 ft.)
Detection resolution	0.25°
Power input	24V AC/DC ±10%
Current draw	400 mA (24VDC) 600 mA (24VAC)
Heater power input	24V AC/DC ±10%
Heater current draw	400 mA (24V AC/DC)
Vertical mounting height	From 4 m (Approx. 13 ft.) to 15 m (Approx. 50 ft.) (recommended)
Horizontal mounting height	0.7 m (28 in.) (recommended)
Communication port	Ethernet, RJ-45, 10BASE-T/100BASE-TX
Protocol	UDP, TCP/IP *Redwall event code
Walk tester com. port	Special terminal for optional walk tester, AWT-3.
Area alarm output	N.O. 28V DC, 0.2A × 4 outputs
Master alarm output	Form C, 28V DC, 0.2A max.
Trouble output	Form C, 28V DC, 0.2A max.
Tamper output	N.C. 28V DC, 0.1A max.
Environmental disqualification circuit	Form C, 28V DC, 0.2A max.
Alarm period	Approx. 2 sec. Off delay timer
Warm-up period	Approx. 30 sec.
Operating temperature	-20 – +60 °C (-4 – +140 °F)
Operating temperature with heater	-40 – +60 °C (-40 – +140 °F)
IP rating	IP66
Dimensions (H × W × D)	334 × 144 × 155 mm (13.2 × 5.7 × 6.1 in.)
Weight	2.5 kg (88 oz.)
Accessories	Mounting screw, anchor fixing for wall, mounting holes template, cable gland and Installation Instructions

* Specifications and design are subject to change without prior notice.

9-2 DIMENSIONAL DRAWING

144 (5.7) 155 (6.1) 18 (0.7) 64 (2.5)

334 (13.2) 92 (3.6) 135 (5.3) 107 (4.3)

Wiring holes
4-M20 x 1.5

Unit:mm (inch)

9-3 OPTIONS

AWT-3 : Audio Walk Tester
RLS-PB : Pole mount bracket
RLS-SB : Adjustable angle mounting bracket
LAC-1 : Laser area checker
RLS-AT : Redscan Adjusting Tools
(Laser area checker and Redscan Manager software)

Conversion Table (meter to feet)

m	0	1	2	4	6	8	10	12	14
ft.	0.0	3.3	6.6	13.1	19.7	26.2	32.8	39.4	45.9

m	16	18	20	22	24	26	28	30
ft.	52.5	59.1	65.6	72.2	78.7	85.3	91.9	98.4

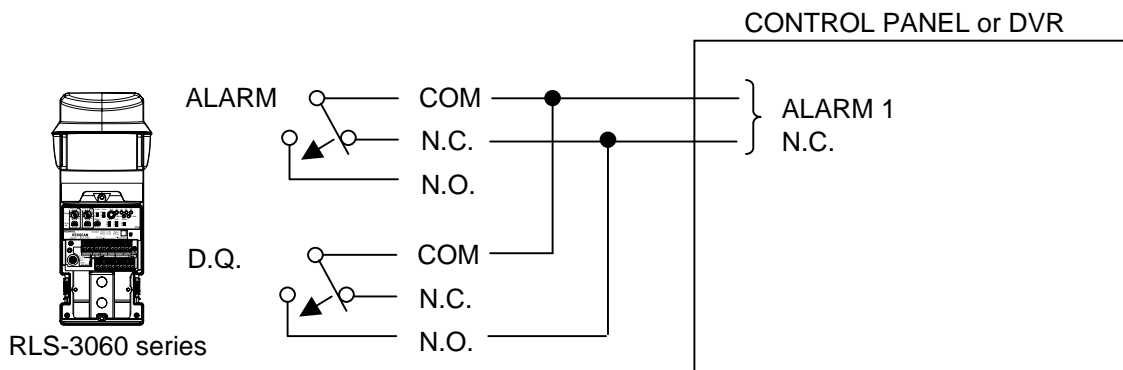## *D.Q. OUTPUT (ENVIRONMENTAL DISQUALIFICATION)*

The algorithm specific to REDSCAN allows detection of an intruder during fog.
However, during severe conditions such as heavy rain, dense fog or snow storms
the Redscan detection capability may be reduced. During such conditions,
the Enviromental DisQualification (D.Q.) output will be activated.
When this output is activated, other solutions are required to secure the area.
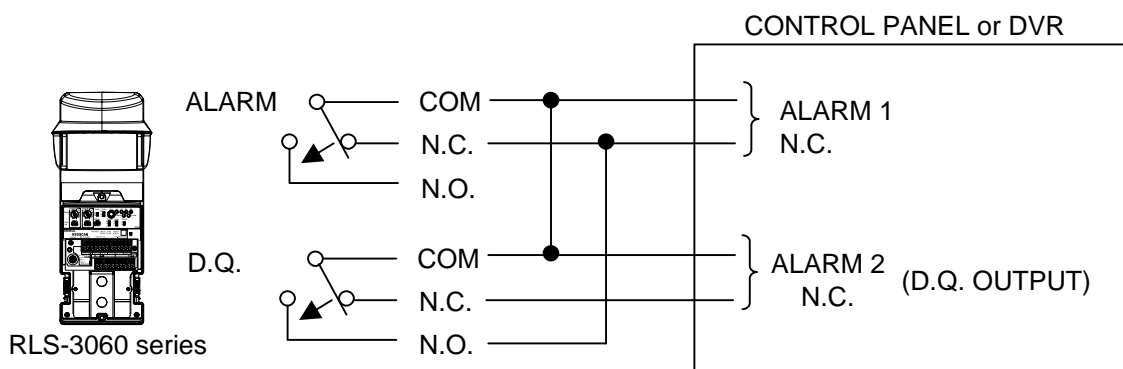
A. Alarm Output + D.Q. Output <RECOMENDED SYSTEM>
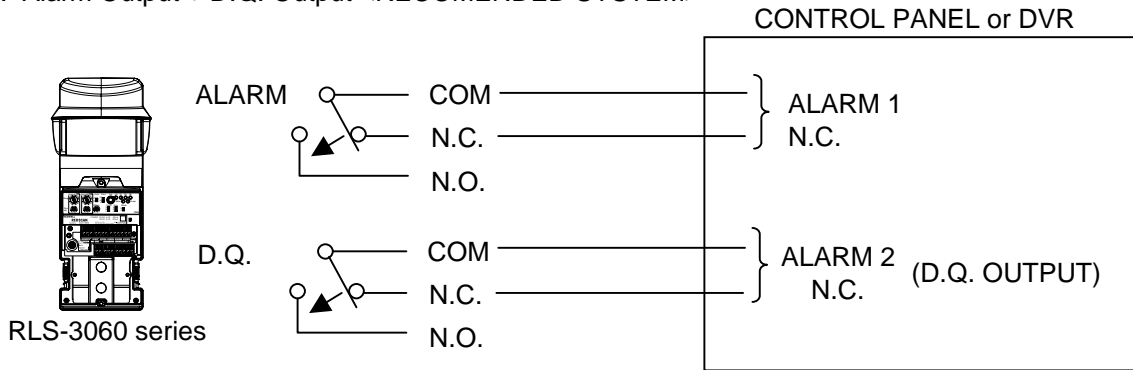
CONTROL PANEL or DVR

ALARM   COM   ALARM 1
     N.C.   N.C.
     N.O.

D.Q.   COM   ALARM 2   (D.Q. OUTPUT)
     N.C.   N.C.
RLS-3060 series   N.O.

B. Bypass Alarm when DQ is activated

CONTROL PANEL or DVR

ALARM   COM   ALARM 1
     N.C.   N.C.
     N.O.

D.Q.   COM
     N.C.
RLS-3060 series   N.O.

Note: With this connection, when the D.Q. output is activated, the alarm circuit is held closed.

C. Bypass Alarm when DQ is activated + D.Q. Output

CONTROL PANEL or DVR

ALARM   COM   ALARM 1
     N.C.   N.C.
     N.O.

D.Q.   COM   ALARM 2   (D.Q. OUTPUT)
     N.C.   N.C.
RLS-3060 series   N.O.

Note: With this connection, when the D.Q. output is activated, the alarm circuit is held closed.
     If the control panel's or DVR's input terminal have the same common, the alarm out, and
     D.Q. output can be triggered simultaneously.

NOTES : Options B and C above, should only be used in cases where high numbers of
      false alarms are being encountered during adverse weather conditions.