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Acuvision Instruction Manual



<u>WARNING</u>

Turn OFF all power to the Automatic Door if a Safety System is not working. Instruct the Owner to keep all power turned OFF until corrective action can be achieved by a NABCO trained technician. Failure to follow these practices may result in serious consequences. NEVER leave a Door operating without all Safety detection systems operational.

WARNING

Do not install, operate or service this product unless you have read and understood the Safety Practices, Warnings, Installation and Operating Instructions contained in this manual. Failure to do so may result in property damage or bodily injury.

> P/N 15-10848-01 Revision 05-11-10

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CAUTION

The purpose of this manual is to familiarize the purchaser with the proper installation and operation of this system. It is essential that this equipment be properly installed and operational before the door is used by the public. It is your responsibility to inspect the operation of the entrance system to be sure it complies with any applicable standards. In the United States, ANSI Standard 156.10 and 156.19 usually cover the operation of the doors.

Instruct the building owners/operator on the essentials of the operation of the door and this device. The owner should follow these instructions to determine whether the door is operating properly and should immediately call for service if there is any malfunction.

All installation changes and adjustments must be made by qualified, NABCO trained technicians.

A. Overview

On swing and folding doors, the Acuvision has been designed to provide swing side presence detection coverage similar to the coverage currently supplied by the swing side Acusensor 1B. It also provides additional protection by scanning into the threshold area of the door. The Acuvision will memorize the door swing area and door position during the first activation cycle. During the door cycle, the Acuvision will also scan the threshold area and store this information into its memory.

On sliding doors, the Acuvision has been designed to provide simultaneous motion and threshold coverage during the complete door cycle. It provides additional threshold protection by scanning backward into the visible area of the threshold of the door at full open as well as threshold re-activation protection during the closing cycle.

Reminder! No encoder signals are necessary! The Acuvision memorizes the area backward into the threshold using unique infrared learning technology.

The Acuvision can be used on new, or retro-fitted to, existing Slide, Swing and Folding doors. The output signals provided by the Acuvision are as follows:

OUTPUT #1:

On Sliding doors, output 1 connects to the activation circuit and is used as the activation signal including the threshold and motion area re-activation signal during the closing cycle.

On non-swing side of Swing or Folding Doors, output 1 connects to the activation circuit .

OUTPUT # 2: When the Acuvision is mounted on the swing side of a Swing or Folding door, output 2 connects to the safety circuit and is used for the Presence signal at the fully opened/ closed position. The approach side motion detection remains active at all times.

B. Specifications

Items	Specifications
Part Description	ACUVISION
Part Number	# 14-10823-01
Sensing System	Active reflective infrared system (Motion / Presence)
Power source	12 to 24 VAC or DC Note: Use "Class2" Power Supply
Current consumption	80mA Max. (at 12 VDC), 3 VA Max. (at 24 VAC)
Output Contacts Rating	<output 1=""> 30VAC/50VDC 0.1A Max. (Resistance load) [Semiconductor Relay] No Detection: "OPEN", Detection: "CLOSED", Power failure: "OPEN" <output 2=""> 30VAC/50VDC 0.1A Max. (Resistance load) [Semiconductor Relay] No Detection: "OPEN", Detection: "CLOSED", Power failure: "OPEN"</output></output>
Mounting height	Max. 118" above detection area
Detection area (when mounted at a height of 118")	118" (3000mm) Width x 78" (2000mm) Depth Max Five position adjustment lever is available. 10"(250mm) depth as threshold protection
Area minute adjustment	-4 to +4 degrees, at intervals of 1 degree
Output display	Waiting:Green LED Lit Safety Detection:Amber LED Lit Activation Detection:Red LED Lit Sensor malfunction:Respective LED Light Blinks
Standstill memory time (learn time)	0 sec (Motion), 2 sec, 5 sec, 15 sec, 30sec, 90 sec, 300 sec and Forever detection (∞)
Output holding time	0.5 seconds/2.0s/4.5s/8.0s
Weight	Approximately 1/2 lb.
Color	Black

C. Appearance and Dimensions

Figure 1 - Appearance









D. Installation and Adjustments

D.1 Installation

The Acuvision is designed to be installed on an entranceway header or other similar mounting surface using screws provided with the unit. A drill template is provided to assist in locating and drilling the mounting holes and the hole for the wiring.

The Acuvision is designed to detect the area including the door panels directly below the mounting surface. If the mounting surface is not vertical or if it is necessary to move the detection area in or out from the door *(refer to page 13)*, small shims can be used to make the necessary adjustments. **The unit must be mounted such that it detects the door** and still provides adequate threshold protection.

Under normal circumstances the unit will be mounted in the center of the door opening on the entrance header and up to 118 inches above the floor. It **must** be mounted as close to the bottom edge of the header as possible. The dip switches have been preset at the factory for normal installation. These settings are:

Depth Coverage	Position 4
Minute Adjustment	0 degree
Mutual Interference Prevention Mode	Mode C
Sensitivity Setting	Standard
New Memory Timer	
Width Coverage	All seven zones

CAUTION:

To prevent electrical shock, make sure that there are no electrical wires or other products in the area close to the place where you are going to drill.

D.2 Wiring

D.2.1) General Wiring Information

Color of wire	Function		Notes	
Brown	12VDC	24)/AC	Lloo "Close 0" Power Supply	
Red	GND	240AC	Use Class 2 Power Supply	
Black (N.O.)	OUTPUT #1 Activation Signal Output		30VAC/50VDC 0.1A Max.	
Green (COM)			(Resistance load) [Semiconductor Relay]	
Gray (INPUT)	INPUT #1 Fully Closed			
Yellow (INPUT)	If there is a possibility of ing slightly from the fully of or stack pressure, this inp in order for the sensor to in the fully closed position netic door closed switch is tion. This signal can be from Microprocessor U quired on Sliding doors	A dry switch contact is required. For swing doors use: 1 x P/N 14-11313 For folding doors use: 1 x P/N 14-11343-20 1 x P/N 14-11313-20		
White (N.O.)	OUTPUT #2 Safety Sig			
Swing/folding side of the Swing/Folding Doors> Safety Signal Output: Connected to Locked out safety input of Control box. Sliding Door> Not used		30VAC/50VDC 0.1A Max. (Resistance load) [Semiconductor Relay]		















D.3 Turning ON the power

- **3A)** After installation and adjustments are completed, turn "ON" the power to the sensor, wait three minutes, then confirm the detection area. The Acuvision will detect within three seconds after the power switch is turned ON. However, if the reflected light intensity within the detection area is not sufficiently stable based on the sensor dip switch settings, the sensor will require additional time to stabilize.
 - * To finalize correct sensor calibration, and to ensure that the presence detecting function operates properly, do not step in the detection area for about three minutes.
- **3B)** If the sensor does not detect or mis-detects, confirm the detection area and mode setting and re-adjust if necessary.
- **3C)** Turn "OFF" the power before executing the following procedures. If the following procedures are executed with power "ON", the sensor will keep detecting based on the time set for Presence Detection Time.

The doors will recycle or remain open indefinitely if the sensitivity is set to "Forever detection" in the following conditions:

- a. When adjusting detection area or setting mode
- b. When moving a mat within the detection area, such as when cleaning the mat
- c. When replacing a mat
- d. When moving things within the detection area or placing something new in the detection area

CAUTION:

Confirm that the wiring is correct <u>before</u> turning on the power. Turn power off <u>before</u> making adjustments to the sensor.

D.4 Customized Settings

The following information describes how to change the settings for depth of coverage, width of coverage, sensitivity and memory. Any changes to these settings that are made on site by the installer are the responsibility of the installer. Proper system operation must be verified according to ANSI Standard 156.10 and 156.19 or any local codes that apply to door operation.

D.4.1) Setting up for Depth Coverage (Ref. Figure 2, Page 12)

There are five options for the depth of coverage. The options are achieved by moving the position of the area lever on the side of the unit. Position 1 provides the least depth of coverage and option 5 provides the greatest coverage. Normally, maximum coverage is preferred. Depending upon how the Acuvision is used, other settings may be suitable. <u>Remember to turn off the power before making any changes</u>. Changes will not take effect if the power is not removed.

As an Activation Sensor

When the Acuvision is intended to be used as a door activating device, the depth of coverage should comply with ANSI requirements. Under normal conditions, the depth lever on Acuvision should be set to position #5, the sensitivity on Standard or High and the new memory timer for 30 seconds. This will provide the maximum coverage with the greatest sensitivity and adequate time to sense slow moving pedestrians or objects.

D.4.1) Setting up for Depth Coverage (continued....)

As a Presence/Threshold Sensor Only

When other sensors are being used for the activation function, it may not be desirable to reduce the sensing coverage area of the Acuvision. Adequate threshold or swing zone coverage should be achieved by setting the area lever to position #1 or #2. Coverage should always be checked to be sure it is adequate. For best detection of slow moving pedestrians or objects, the sensitivity option should be on Standard or High and the time set for 30 seconds.

The width and depth of coverage for an actual installation may vary from Table 1 & 2. This is typically the result of:

- 1. A variance in mounting height
- 2. Normal manufacturing and component tolerances
- 3. Variances in field measurements, procedures and conditions from ANSI standards.
- 4. Use of spacers for mounting

D.4.2) Non-Detection Zone

It is possible to have a non-detection zone in the sensing pattern. Figure 2 shows how changing the position of the lever affects the sensing pattern. White areas are non-detection zones. In Position # 4, the non-detection zone is small enough that most objects will not go undetected. With the lever in Position #5, it is possible for small stationery objects to go undetected. However, if an object moves into one of the sensing zones the Acuvision will detect a change.

Figure 2 - Depth of coverage and Lever Position



Table 1 - Depth of coverage based on Lever Position

	Lever Position				
Mounting Height	#1	#2	#3	#4	#5
84"	8"	17"	30"	43"	59"
118"	12"	24"	43"	59"	79"

Note:

The above detection area dimensions are for reference only. Adjust sensor patterns to meet the specific requirements of the installation.

Non-detection

zone

D.4.3) Minute Adjustment of depth coverage

Adjust the minute setting to move the detection area in close to the doors. Adjust the detection area by sliding the minute area adjustment knob.



Figure 3 — Minute Adjustment

Note: Do not over tighten the adjustment knob

The direction where detection area is tilted toward the door is regarded as minus (-). There are 9 adjustment positions within the range between -4 to +4 degrees.

If the mounted height is 8 ft, each adjustment position (1 degree) causes the detection area to move about 2 inches.

The adjustment knob is factory set to 0 degrees.

CAUTION:

When detection area is tilted toward the door, the bottom edge of the header can block the sensor pattern if the sensor is installed too high on the header. Refer to page 7. Do not use the adjustment knob to widen the detection area.

D.4.4) Adjusting for Width Coverage

The width coverage is achieved in seven increments as shown below. Up to six increments of detection width can be turned off, resulting in a reduction in coverage for the entire width. This may prove useful for the narrower openings on single slide or swing doors. All detection areas except Area 4 can be turned off (see Figure 5). Under normal conditions, all seven areas should be used. If any detection area zone is turned off, it will be necessary to check the detection area to be sure the correct ANSI Standard is achieved.

Note: Sensed areas are not true rectangles but rectangular approximations. Pattern size will be affected by floor surface color and texture.

Figure 4 - Front view of Coverage Area Zones



D.4.4) Adjusting for Width Coverage... (continued)

Mounting Height	Coverage Areas 1-7 Active	Coverage Width change per Zone Switch	
84"	84"	12"	
118"	118"	15"	

Table 2— Overall Dimension of Coverage Area Zones

D.4.5) Setting Width coverage

Adjust the pattern width to achieve proper detection area width per ANSI



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Important Note to the Installer

CAUTION:

The Acuvision emits active reflective infrared rays that detect the changing light intensity reflected from the floor surface in the detection area. The detection area is the reference area as determined by the Acuvision. Detection sensitivities can vary depending on the color of the object being detected. Care should be taken to ensure sensor is adjusted to reliably detect colored objects consistently.

Detection areas will fluctuate as the sensitivity is adjusted.

Be sure to confirm that the detection area is properly adjusted after any sensitivity adjustments are made.

D.4.6) Operation Mode Set Up

D.4.6.1) Mutual Interference Prevention Setting

Sensors placed close to each other should be set to different Interference Prevention Settings. (Sensors that experience interference should be set to Modes A and D respectively)



When multiple Acusensor, Acuvision and Acumotion sensors are used in close proximity to each other (approximately 118 inches or less), such as in a vestibule, the use of different modes will help prevent mutual interference.

Using the mode switch, four modes are possible through a combination of positions on switches #1 and #2. Following is an example of one combination which might be used in a vestibule.



D.4.6.2) Activation Signal Setting

For swing or folding doors: Dip switch #3 <u>must be OFF</u> For sliding doors: Dip switch #3 must be ON



D.4.6.3) Sensitivity setting

Four sensitivities are available. High is the most sensitive setting. Snow is the least sensitive setting. Under normal circumstances the "standard" setting should be used. When adequate detection cannot be achieved, use a higher sensitivity. If the Acuvision activates unnecessarily, use the lower sensitivity. When low or snow sensitivity is used, care must be taken to assure that adequate sensing is maintained.



D.4.6.4) Standstill memory time (Learn Time)

The Acuvision sensor will establish a base memory pattern of the total detection area when power is applied. Changes within the memorized detection area, whether on the floor or above the floor, will generate a signal to open the door. The base memory pattern will be relearned automatically after the selected memory time set lapses when there is no movement within the detection area. The time interval at which these memory pattern changes will occur, can be adjusted using dip switches #6, #7 and #8.

**Motion Detection (0 second)* - If an object in motion stops, the Acuvision will cease sending an activation signal at that time. It retains that object in that position in it's memory immediately.

**Forever Detection (Perfect presence)* - After initial setup, any new object in the detection area will cause the Acuvision to send an activation signal indefinitely until that object is removed from the area. It will never update its memory on that object's location. This setting should be used where no changes in the detection area, other than door traffic, is anticipated.



D.4.6.5) Door Mode Setting

Select the type of the door unit.



D.4.6.6) Output Time delay (Additional Hold Open Time)

Select the required sensor time delay.



D.5 Output

Output LED Indicator

		Power On					
Dev	Dowor	St	Stand by		ecting		
Status	Off	Fully closed position	Positions other than fully closed	Normal	Presence Detection	Mis-detection	Out of order
Operation Display	LED's off	Green LED on	LED's off	Red LED on	Amber LED on	Respective LED Blinks	Red LED Blinks Continuously

D.6 Usage Tips

D.6.1) Door Panel Detection

For the Acuvision to work correctly, it must detect the door panel. If necessary use the Area Minute Adjustment Mechanism to enable the detection area to reach the door panel, otherwise the position of the door can not be detected resulting in improper operation. Use the LED display as follows to confirm that the sensor detects the door panel.

When the green LED is blinking, the sensor is not detecting the door panel. When this happens, auto-recognition will not function correctly. To correct this, make adjustments using the Area Minute Adjustment Mechanism to tilt the detection area in toward the door.

If the amber LED is blinking when door is at full open position, or while door is opening from mid-point of travel to full open, adjust the detection area outward away from the door. (See page 13 in this Instruction Manual.)

Note:

Refer to page 7. If the sensor doesn't reliably recognize the fully closed door position, a closed switch signal must be sent to the sensor via the Gray and Yellow (Input # 1) wires.



D.6.2) Unplug the sensor first before changing settings

Be sure to unplug the sensor first <u>before</u> changing the detection or mode settings (If the settings are changed when the power is ON, the Acuvision may malfunction.)

D.6.3) Power consumption

Electric power consumption is 80mA at 12VDC, and 3VA at 24VAC per sensor. When the power consumption exceeds the maximum electric current flowing from the automatic door controller, the voltage may drop causing the Acuvision to malfunction. Provide an ample power supply, taking into account that optional devices also consume electric current.

D.6.4) Exterior Interference

If you install an Acuvision in a place where rain falls and puddles form, or excessive automobile exhaust or insects accumulate, the Acuvision may malfunction. To avoid this, lower the sensitivity. (See pages 16 in this Instruction Manual.)

D.6.5) Moving items

If you have a short split curtain, flowerpot or any other items that may shake in the detection area, the Acuvision may falsely activate. Move the items out of the detection area.

D.6.6) Removable items in detection area

If a door mat is used on the floor, a shop sign or a shopping baskets are stored in the detection area, do not set the standstill object detection time to "forever detection". Changes to the detection area will cause the door to be held open.

D.6.7) Sensors close together

If two or more Acuvision, Acusensor or Acumotion sensors are in close proximity to one another, ghosting may occur due to mutual interference. Be sure that every sensor has a different mutual interference mode. (See page 15 in this Instruction Manual.)

D.6.8) Reflected light

Too much reflected light off the floor may reduce the sensitivity causing the Acuvision to malfunction. Adjust sensitivity accordingly.

D.6.9) Precipitation interference

If the Acuvision is installed in a place where rain or snow falls on it, ghosting or damage to the sensor may occur. In this case, use Acusensor Rain Cover (P/N 14-10278).

D.6.10) Changes in background conditions

If the background condition within the infrared detection area suddenly changes due to a strong snowstorm, the Acuvision could ghost. In this circumstance, lower the sensitivity or choose the Snow mode. After the sensor is set to Snow mode, make sure the detection area is properly set. (See pages 16 in this Instruction Manual.)





Within 118"





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D.7) Troubleshooting

D.7.1)	Sensor symptoms and how to solve them
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Symptoms Possible Causes		Measures		
	Power · Connector Defects	Check Wiring Cable and Connector		
No Function	Abnormal Power Voltage	Rated Voltage for This Sensor is 12 ~ 24V AC/DC. Do not apply voltages other than the rated voltages. Use Class 2 power		
	Sensor Lens is stained with dirt, water, etc.	Wipe off the stain with neutral detergent applied soft cloth. (Do not use such chemicals as Thinner or Alcohol, etc.)		
No Detection	Low Sensitivity	Set higher sensitivity		
	Wrong Detection Area Set- ting	Make readjustments with Area Setting Switches, Area Setting Lever, Area Fine Adjustment Mechanism		
	High Sensitivity	Lower Sensitivity at the Setting Switch.		
	Detection Area Overlapped by other Detecter(s)	Set the different Interference Prevention Modes by setting switches.		
	Not Detecting Door	Check to ensure Detection Area is tilted toward Door panel.		
	Movable Object(s) placed in Detection Area	Readjust the Detecting Area to avoid objects or remove the object(s) to outside the Detection Area.		
Mis-detection	Conditions in Detection Area altered	When conditions in Detection Area change, the Sensor keeps on detecting as long as the time set for Presence Detection. Shorten the Presence Detection Time at the setting switch.		
	Operation Display Red LED Blinks Several Times at Fully Opened Position	Detection is made by Door Detector. Lower the sensitivity. (Example: SW4=OFF, SW5=ON)		
	Operation Display Amber LED Blinks Several Times at Fully Open Position	Detection is made by Door Detector. Lower the sensitivity. (Example: SW4=OFF, SW5=ON)		
Operation Disp	lay Green LED Blinks	The sensor does not recognize the movement of Door. Readjust the area toward Door side by Area Fine Adjustment Mechanism.		
Operation Disp	lay Red LED Blinks	Self-Diagnosis Function Determines the unit Out of Order.		
Standstill Mem Short	ory Time (Learn Time) is	After turning power on, allow up to 3 minutes without anyone entering the detection pattern for the sensor to stabilize.		

D.7.2) Sensor symptoms using wrong Door Mode settings

Mode Type	Folding Door Setting	Sliding Door Setting	Swing Door Setting
Folding Door	 Normal Operation 	Repeated reverse motions or opens at fully closed position.	△ Operational
Sliding Door	No activating signal at fully closed position, thus no opening door.	 Normal Operation 	No activating signal at fully closed position, thus no opening door.
Swing Door	Operational	Repeated reverse motions or opens at fully closed position.	 Normal Operation

E. NABCO ENTRANCES Return Policy

If it is necessary to return a malfunctioning unit to NABCO, please use the following guidelines. Return Material Tags (RMT) are to be used for in and out of warranty materials. The RMT is also used for repair and return as well as return for credit transactions. An RMT must accompany all returned items.

Complete one RMT for each items that will be returned. The following information should be recorded on the tag:

- Serial No. or Part No. Serial numbers for electronic components are stamped, engraved or printed on stickers and located on the component. Non-electrical parts usually do not have serial numbers.
- Part Name (description)
- Exp. Date Expiration dates for electronic components are stamped, engraved or printed on stickers and located on the component. Non-electrical parts usually do not have expiration dates. For "Warranty claims of non-electrical parts", please include a photocopy of the original NABCO invoice the part was purchased on.
- **Date Returned** The fate that the part is returned to NABCO Entrances INC.
- **Requested Repair and Return Action** Specify in/out warranty for R&R, Exchange, or in warranty for credit. For requests for credits, please write the number of the invoice you want credited.
- Distributor Name
- Date of Installation
- Installed at Job
- Describe part problem

The RMT tag is printed in triplicate. Please keep the top copy of the tag for your returns. Send the remaining two copies along with the part to the attention of the Repair and Return Department at NABCO ENTRANCES. Please remember to package the parts properly. Ship the parts freight prepaid. Collect shipments will be refused. If inquiring on the returned part, please use the RMT number associated with that part.

NABCO ENTRANCES Standard Term & Conditions and Warranty govern all returned items. These are provided in detail in the Warranties, Terms & Conditions section of NABCO ENTRANCES Price Book.

If you have any questions on warranty or the use of the RMT tags, please call NABCO's Customer Service Department toll free at 1-877-NABCO WI (1-877-622-2694).

Questions? Call Nabco Entrances @ 1-877-622-2694 or 1-866-622-8325