

ALERT SAFETY PRODUCTS

Forklift Warning Systems

Improving Safety With Technology



US Patent #8,905,568

Manual

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DMA 2S Rev 1B

Dome Mirror ALERT

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Introduction

The Dome Mirror Alert flashes CAUTION and directional arrows to warn forklift operators and workers in the cross aisles that a forklift is approaching the intersection.



How It Works

The Dome Mirror Alert (DMA) has microwave sensors that detect forklifts and other vehicles as they are approaching the mirror which is mounted at the intersection or blind corner. When activated the Dome Mirror Alert will flash CAUTION and a directional arrow to warn that a forklift is approaching the intersection. Once the forklift travels through the intersection the DMA will timeout and reset for the next forklift. The DMA is configured to detect only vehicles as they approach the intersection and will not activate on pedestrians or vehicles traveling away from the intersection. The DMA is available for 2, 3 and 4-way intersections and can be customized to meet your needs at each area. The Hercules 2S sensors have independent outputs for vehicles and pedestrians and are wired so either output #1 or #2 will activate the Dome Mirror ALERT. If enabled the pedestrian field can be made smaller than the vehicle field.

Dome Mirror Alert Components

The Dome Mirror Alert consists of the mirror assembly and a 24 VDC power supply. The mirror assembly is hung at the center of the intersection and contains the sensors and warning indicators which come pre-wired from the factory. The power supply needs to be installed within 100' of the mirror and is wired to the 24VDC Vin terminals on the DMA with user supplied 2 conductor 18 gauge wire.

Dome Mirror ALERT

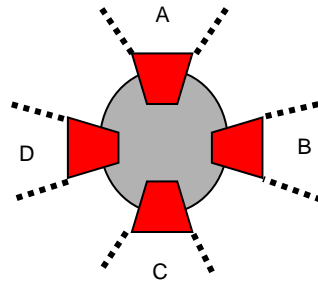
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Installation & Operation

The DMA has been designed to hang from 4 eyelets with chains like other standard dome mirrors. Just follow these steps to install the DMA.

1

Hang the DMA Mirror Assembly



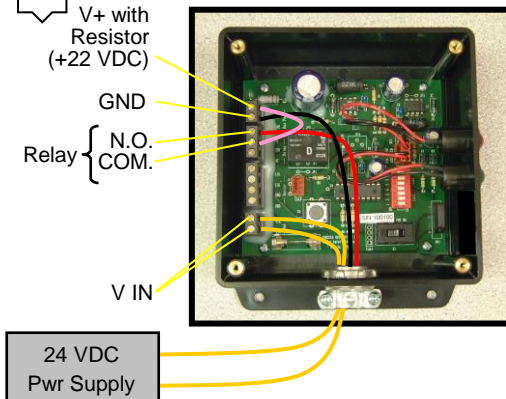
Hang the Mirror Assembly between 8' and 21' above the floor using 3 or 4 of the eye hooks. Position the mirror so that the microwave sensors are facing the center of the traffic aisle. For a 2-way system the sensors D & B will face the main traffic aisle and CAUTION displays A & C will face the cross aisle.

Hang the mirror so it is level and secure it so it doesn't rotate.

If you need to swivel the sensors left to right use a 4" angle bracket and mount the sensor bracket to this using the center hole. See "Ceiling Mount" info in the Hercules manual on p.1 section 3.2

2

Connect the Power Supply



Connect the power supply 24VDC & Gnd to the 24VDC Vin terminals on the DMA.

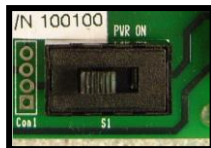
Power to the BDWA control units on the DMA is pre-wired from the factory. Keep these wires in place when connecting the power supply.

Use 18 awg 2-conductor cable to wire the power supply to the DMA. The power supply should be mounted within 100' of the Mirror ALERT.

3

Turn on 24 VDC Power Supply

Plug the 24 VDC power supply into a 120VAC outlet. The Green Power LED's on the BDWA controllers will be on and the sensor LED's will flash for 10S.



Internal Power Switch in BDWA Controllers. Default position is On from factory.

Installation of the DMA is complete. Proceed with the sensor setup.

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Microwave Sensor Setup

The microwave 2S sensors settings can be read and changed from the floor using a remote control. A detailed description of the sensor settings and programming is in the Hercules 2S sensor manual from Bircher that is included with the system. Other than checking and possibly changing the setting for the sensor mounting height, all other sensor presets should work for most applications.

2S Sensor Configuration Mode

The sensor will time out of the configuration mode 30 minutes after it was last powered on or accessed. If the configuration mode has timed out it can be entered by powering the sensor off and back on or by using the following commands:

- 1) Press the start key G, one of the keys 1-4 will light up.
- 2) Press D then 9, D and 2 light up.
- 3) Enter the four digit code 1234
- 4) Press D, D and 2 should light up, the configuration mode is now activated.

Any other remote control commands can now be accessed for 30 minutes.
The G key only needs to be pressed 1x as long as the remote remains powered on.

Programming the Mounting Height

The sensor should be programmed with the correct mounting height. The default setting from the factory is from 10' to 13' measured from the floor to the sensor. If this is not the correct mounting height for the sensor follow these steps to program the correct mounting height for the sensor.

- 1) Make sure the sensor is in the configuration mode as described above.
- 2) Press G then A followed by the desired height setting:
 - 1 for a sensor height of 6' 6" to 8'
 - 2 for a sensor height of 8 1" to 10'
 - 3 for a sensor height of 10 1" to 13' default
 - 4 for a sensor height of 13 1" to 16 6"
 - 5 for a sensor height of 16 7" to 19 5"
 - 6 for a sensor height of 19 6" to 23'
- 3) To read the sensor height setting press G then A.
The sensor height setting of 1 thru 6 will be displayed on the remote.

The other sensor commands can be programmed and read in a similar fashion as described in the Hercules 2S manual.

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Microwave Sensor Defaults

The 2S Microwave Sensors have with the following default settings which should work for most applications. Refer to the included Bircher Hercules 2S sensor manual for additional sensor specifications and settings. A small green LED on the sensor will come on (output #1) when vehicles are detected. The factory default for output #2 (small red LED on sensor) is off, this can be changed using the remote control.

Mounting Angle & Field Size

The mounting angle of the sensor is adjustable and can be changed to adjust the field size. Setting it at 60 degrees will provide a detection field that covers 25' to 45' from the sensor and is approximately 12' wide. This is with a mounting height of 14' and the field dimension set at 4. The field size can be adjusted by changing the angle and field dimension setting of the sensor. A mounting angle of 0 degrees is pointing directly at the floor.

The sensors should be pointing directly towards the approaching traffic. If they need to be swiveled they can be mounted on a 4" angle bracket using the center hole in the sensor bracket. This is shown on page 3 "optional ceiling mounting" in the Bircher 2S sensor manual.

Sensor Default Settings - Hercules 2S

Following are the default settings and commands for the microwave sensors:

Access Code:	1234 (code saved)	D,9,(2)
Mounting Height:	1-6 (13.1 to 16.5')	A,(4)
Field Size:	1-5 (large)	D,(4) output #1
	(small)	E,(2) output #2
Relay Hold Interval:	1-9 (2.0S delay)	F,1,(4) output #1
	1-9 (output off)	F,2,(9) output #2
Output Configuration:	1-9 (Vehicles, Forwards)	B,(1) output #1
	1-9 (People & Vehicles Fwds)	C,(7) output #2
Output Logic:	1,2 (Normally Open)	F,3,(1) output #1
	1,2 (Normally Open)	F,4,(1) output #2
Cross-Traffic Optimization:	1-4 (High)	F,5,(4)
Wide Field:	off	use internal programming buttons
Slow Motion Detection:	1,2 (Off)	F,7,(1)
Interference Filter:	1,2 (Off)	F,6,(1)

Values in () are read back when command is entered

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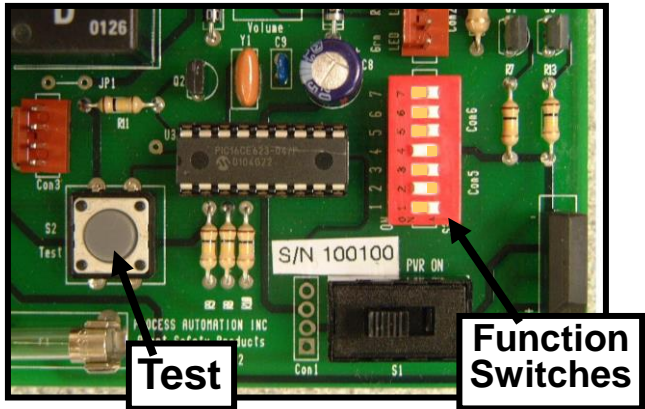
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Control Unit Settings

The BDWA control units that are mounted on top of the Mirror ALERT assembly have a programmable warning duration that is added to the sensor relay hold time. This delay will begin after the sensor relay hold time has timed out.

Additional Warning Duration

An additional warning duration in the DMA control unit can be adjusted from 2 seconds to 32 seconds. Use a small screwdriver to flip the switches. You can try your settings by pressing the Test switch. The default setting for this from the factory is 2S



Microwave Sensor & System Testing

The microwave sensors can be manually activated by entering the command F,1,8. The small green LED on the sensor will come on and the BDWA and warning devices will turn on. Enter the command F,1,4 to turn the sensor off and set the hold time to 2S.

To test system with pedestrian traffic enter the command F,2,8. The red LED on the sensor and the BDWA and warning devices will turn on as you walk towards the sensor and are in the small pedestrian detection field. Enter the command F,2,9 to turn the sensor output #2 off.

Press and hold the "G" button on the remote for 2 seconds to turn on the remote.

Function Switches							Duration Seconds
1	2	3	4	5	6	7	
				*	**	---	2
On				*	**	---	4
	On			*	**	---	6
On	On			*	**	---	8
		On		*	**	---	10
On		On		*	**	---	12
	On	On		*	**	---	14
On	On	On		*	**	---	16
			On	*	**	---	18
On			On	*	**	---	20
	On		On	*	**	---	22
On	On		On	*	**	---	24
		On	On	*	**	---	26
On		On	On	*	**	---	28
	On	On	On	*	**	---	30
On	On	On	On	*	**	---	32

Legend:

Blank = Off
 SW 5(*):
 Not Used
 SW 6(**)
 Not Used
 SW 7 (---)
 Not Used

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Specifications

Special Message

While we cannot anticipate all of the conditions you may encounter, we hope that we have given you enough information that your inventive spirit will take over to solve those really challenging cases. On the other hand, our consulting services are always available to create custom solutions for unique problem areas.

Specifications

- Hercules 2S Sensor:
 - Max Range: 55'
w/appx field width of 12' at 35'
 - Mounting angle: 0 to 90 degrees
adjustable in 15 degree increments
 - See Bircher Hercules 2S sensor manual for additional sensor specifications
- Power Requirements
 - 120 VAC Standard Wall Outlet
 - 70W 24VDC Switching Supply
 - Fuse: 5.1 Amp, slow-blow, 5x20 mm
- Mounting:
 - 4 mounting eyehooks
- BDWA Controller Adjustments:
 - Timeout Warning Duration
 - 2S to 32S in 2 second steps.

Dome Mirror Alert is intended to enhance safety, not to relieve the user's responsibility to comply with OSHA and other safety requirements. The user is responsible for maintaining and testing all ALERT Safety components. See the "Terms and Conditions of Sale" for specific warranty and other information.

Important Notice!!!

The use of this system or any other warning device does not insure that all drivers and pedestrians can or will observe or react to a warning signal. Never take the right-of-way for granted, it is your responsibility to be sure you can proceed safely. The effectiveness of this warning system is highly dependent upon correct mounting, wiring and installation. Vehicle operators and plant personnel should insure daily that all features of the system are operating correctly.

Alert Safety Products are intended to enhance safety, not to relieve the user's responsibility to comply with OSHA or other safety requirements. The user is responsible for maintaining, testing and cleaning all Alert Safety components including photo sensors and reflectors. Alert Safety Products, Inc assumes no liability for any loss resulting from the use of this warning system. See the "Terms and Conditions of Sale" for specific warranty and other information.



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