Controlled A c c e s s

The Leader in Pedestrian Control Systems Waist & Full Height Turnstiles and Matching Gates

RD-70 Security Revolving Door

Service & Installation Manual





Important Note: Please keep this service manual after installation. If an installation is done by a construction company or outside installer, please pass this book along to the end user.

Security Begins With Controlled Access 1636 W. 130th Street, Brunswick, OH 44212 Toll Free Phone: (800) 942-0829 | Fax: (800) 942-0828 / Phone: (330) 273-6185 | Fax: (330) 273-4468 Web: <u>http://www.controlledaccess.com</u> | E-mail: <u>sales@controlledaccess.com</u>

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QTY	DESCRIPTION
1	ROTOR TREE ASSEMBLY
1	BOTTOM ROTOR FLANGE
1	BOTTOM ROTOR BEARING
5	STANDARD CAGE PANELS
1	SPECIAL CAGE PANEL WITH 3/4" PINS IN THE TOP & BOTTOM OF ONE
1	EXTURSION, THIS CAGE PANEL WILL BE USED AS THE SERVICE PANEL
9	³ / ₄ " X 90" SUPPORT RODS (THREADED BOTH ENDS) FOR CAGE PANELS
2	³ / ₄ " X 90" SUPPORT ROD HOLLOW (TREADED BOTH ENDS) FOR CAGE PANEL
	FOR ACCESS CONTROL CONDUIT
3	3/8" X 5" REMOVABLE BOLT TYPE FLAT HEAD PHILLIPS HEAD
	CONCRETE ANCHORS FOR BEARING FLANGE MOUNTING TO FLOOR
12	5/16 x 1/2" FLAT HEAD SCREWS TO SECURE DOOR VANES ONTO THE ROTOR
as	EPOXY GEL FOR ANCHORING RODS TO CONCRETE
needed	
1	CANOPY PLATE STEEL FRAME WITH ALUMINMUM FACE
2	CANOPY WRAP 6" X 52 1/2" ALUMINUM (CUT TO FIT IN FIELD IF NECESSARY)
2	CANOPY WRAP 6" X 62 1/2" ALUMINUM (CUT TO FIT IN FIELD IF NECESSARY)
11	³ / ₄ " NUTS FOR THE TOP OF THE CAGE PANEL SUPPORT RODS
4	3%" CONTROL HEAD NUTS
4	³ / ₈ " WASHERS FOR THE CONTROL HEAD
4	³ / ₈ " LOCK WASHERS FOR THE CONTROL HEAD
1	CONTROL HEAD PRECONFIGURED TO ORDER SPECIFICATIONS
1	EXTERNAL MOUNT HYDRAULIC SHOCK ABSORBER FOR CONTROL HEAD
4	5/16 x 3/4 BUTTON HEAD CAP SCREWS FOR EXTERNAL SHOCK MOUNTING
3	ROTOR COVER PANELS TO COVER ROTOR BETWEEN DOOR VANES
<mark>36</mark>	10 – 24 X ¹ / ₂ " FLAT HEAD MACHINE SCREWS FOR ROTOR COVER PANELS
<mark>15</mark>	10 – 24 X ¹ / ₂ " FLAT HEAD MACHINE SCREWS FOR CANOPY WRAP
3	ALUMINUM DOOR PANELS CONSTRUCTED WITH GLASS WINDOWS AND
5	STAINLESS STEEL PUSH BAR HANDLES
3	CANOPY LIGHTS WITH LENSE AND FASTENERS
1	ULTRASONIC SENSOR USED AS WRONG WAY SENSOR
1	LOOP RECORDER TO PLAY MESSAGE IN CASE OF WRONG WAY PASSAGE

The Monitor RD70 Full-Height Turnstile • Interior Application

The Monitor RD70 Series is a stylish 3-vane high security portal. It is designed for locations requiring improved visitor security or as the barrier between production and office areas. Instead of a traditional physical barrier to prevent passage in the wrong direction, the RD70 comes equipped with a high tech ultrasonic sensor. This sensor allows for a full door panel appearance while still enforcing standard turnstile passage flow.

Measurements:

Exterior Height: 91" Diameter: 72" Pedestrian Clearance: 30"





RD70 shown with optical anti-tailgating.

We're the #1 Choice of Top Architects, Security Pros and Engineers

For two decades, Controlled Access has been the globally trusted name in pedestrian control equipment. Made in Ohio and shipped worldwide, we are the first choice of leading architects, facility managers, security consultants and engineers. Whether your project requires high security full-height turnstiles, waist-high units, or matching ADA accessible gates, Controlled Access is the secure choice. We're experienced in access control systems, from card readers to biometric scanning, to give you the power to control access.



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Also available with integrated metal detection portal (shown below on the T80).

RD70

The Monitor RD70

Full-Height Turnstile • Interior Application

Applications:

The Monitor RD70 Series is a full security card access, tamper-resistant revolving door that's designed for locations requiring improved visitor security or as the barrier between production and office areas.

Product Specifications:

Dimensions:

Exterior Height: 91 " Interior Height: 84 " Diameter: 72 " Pedestrian Clearance: 30 "

Finish:

Standard anodizing finish is clear. Other colors can be quoted upon request.

Construction:

Materials:

Various 6061 & 6063 extruded aluminum 3/16" scratch-resistant polycarbonate

1/4" clear tempered glass

7 & 11 gauge steel (mainframe/canopy)

Anodized aluminum sheet, canopy wrap

Assembly and Hardware:

- All exposed fasteners stainless steel
- Canopy & outer cage panels secured to concrete with 3/4" threaded rods, epoxied into concrete
- Rotor pivots on a sealed load runner bearing, secured with stainless steel coupling anchored onto concrete
- Outer cage panels pre-assembled with concealed spring pins and solid rods
- Door panels and cosmetic covers secured with flat head screws

Operation:

6500 Series Control Head, featuring:

- Auto-indexing (self-centering) with adjustable hydraulic shock suppression
- Hardened tool steel locking bars, cam and roller assemblies
- Permanently lubricated bearings
- Nearly universal integration to any number of access control systems
- Your choice on each electronic direction of locking or unlocking on power failure

RD70 Specific Features:

- Ultrasonic barrier detects if a presence enters the wrong area of the portal – and in that event, the turnstile will not allow the person to advance and will reverse allowing them only to exit thru the defined "unsecure" side.
- Audible message via loop recorder when ultrasonic sensor detects a presence
- Low voltage canopy lighting

Options:

- Card reader mounting plates
- Daylight visible indicator lights
- 8 digit key resettable LCD counter with seven year lithium battery
- Metal detection portal
- Custom height decorative aluminum top
- Optical anti-tailgating
- Additional options available upon request

Warranty:

Units are warranted against defects in materials and workmanship for a period of one year from date of delivery. See warranty information for specific details.





Dimensions are approximate.

Electrical Specifications:

Input Voltage: 100-240 VAC Input Current: 1.3 - .55 A Frequency: 50/60 Hz

Storage Temperature: -4 to 158 °F Operating Temperature: 32 to 122 °F Operating Voltage: 24VDC Operating Current: 1.2 A (typical)



Controlled Access, Inc. is
 a registered ISO 9001:2008
 company

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RD-70 Theory of Operation

The RD-70 security revolving door allows for an aesthetically pleasing solution to facility security. Unlike a traditional revolving door, the RD-70 remains locked until access control is presented. After one user passes through, the RD-70 will relock until another request to pass is presented. Traffic passes through on one side of the RD-70 from both directions much like a traditional turnstile. However, an ultrasonic sensor exists within the canopy to act as a digital barrier to allow a full revolving door feel.

The RD-70 can be configured for a multitude of functions. Upon loss of power, the door can be preconfigured in our factory to lock or unlock. One shot timers (which can be disabled if desired) come programmed directly into the control board. These one shot timers act as a buffer to prevent long signal lengths from card readers from allowing more than one person through on a single card swipe. An adjustable number of card swipes can be processed at a time, allowing for a quick flow of traffic through the unit. There is also an integrated fire alarm input which will unlock the RD-70 in both directions until the alarm condition is finished. The previously mentioned digital barrier can be configured to back the turnstile up in either direction upon sensing, forcing the person in the wrong area of the turnstile back out into the unsecure side of the RD-70. This sensor also has an adjustable sensing height as well as a time delay filter to ensure minimal false alarms.

INSTALLATION INSTRUCTIONS FOR RD 70 CARD ACCESS REVOLVING DOOR

1. PREPARATION

- 1.1 Put canopy plate on the ground where the turnstile will be installed.
- 1.2 Trace holes in canopy for cage rods as shown below.



- 1.3 Remove canopy and place aside for now
- 1.4 Drill twelve (12) ⁷/₈" holes to a depth of 4" for the cage panel anchors
- 1.5 Clean holes and remove all debris (use nylon brush if necessary)

2. CAGE PANELS INSTALLATION

2.1 Place two (2) ¾" X 90" rods (threaded on both ends) through the hole in the cage extrusions. One (1) panel for each turnstile will be dedicated as a service panel that will be able to swing out. Therefore the service panel will only have one rod because the other side already has ¾" pins in the top and bottom. Each cage panel has two (2) extrusions, one on each end as shown below:



CAUTION: DO NOT FILL THE ⁷/₈" ANCHOR HOLE THAT IS FOR THE SERVICE PANEL WITH EPOXY ANCHORING GEL. ONE (1) PANEL WILL BE ABLE TO SWING OUT TO ALLOW THE ROTOR TO BE PLACED LATER

2.2 Fill 11 of 12 7/8" anchor holes with Epoxy $\frac{1}{3}$ full (not the service panel hole shown below (follow directions provided with epoxy anchoring gel)

2.3 There are six (6) cage panels for each turnstile, three (3) on each side as shown below. Each cage panel is made of two (2) extrusions. Two (2) extrusions total should be installed with hollow rods for card reader wiring access (if desired).



CAUTION: BE SURE THAT THE HOLLOW RODS ARE USED IN THE CORRECT EXTRUSIONS

- 2.4 Move cage panels in place and allow the ³/₄" cage panel support rods to drop into the anchor hole
- 2.5 Be sure to wipe up any epoxy that over flows as a result of the rod being placed in the hole

3. CANOPY INSTALLATION

3.1 Raise canopy plate above the cage panels

CAUTION: BE SURE THAT THE CANOPY IS PLACED IN THE CORRECT ROTATION SO THAT THE HOLE FOR THE WRONG WAY SENSOR IS ABOVE THE CORRECT AREA. SEE BELOW FOR CANOPY ORIENTATION





- 3.3 Allow canopy plate to come to rest on top of the cage panels with the support rods extending up through the holes
- 3.4 Place ³/₄" nut on the rod tops (do not tighten)
- 3.5 If necessary, shim cage panels in order to make turnstile level and square
- 3.6 Let the cage panels and the canopy set overnight so the epoxy anchor can cure

4. ROTOR INSTALLATION

4.1 After ensuring canopy is level (shimming as needed) drop a plumb bob from rotor hole in canopy to mark rotor location onto concrete floor.

4.2 Using the bearing flange as a template, mark three holes for 3/8" concrete anchors on center of plumb bob markings.

- 4.3 Drill 3/8" holes into concrete for anchors and clean them (with a brush if necessary)
- 4.4 Position rotor bottom flange and bearing on floor above holes
- 4.5 Insert three (3) ³/₈" X 5" anchors into holes through bearing flange and tighten
- 4.6 Open the service panel by loosening the screws that are holding the pins at the top and bottom
- 4.7 Slide ³/₄" bottom pin up then tighten screw and slide the top pin down and tighten screw
- 4.8 Swing service panel open
- 4.9 Place the bottom of the rotor into the bottom flange and lift the canopy plate if necessary
- 4.10 Tighten the set screw at the bottom of the rotor, just above the 1" flange
- 4.11 Position the rotor so that the 1" protruding rods that are 120° apart are lined up as shown below:



Note: It is important that the rotor is aligned so that the rotor bars are not lined up underneith the ultrasonic wrong way sensor.



Top View Cage Panel & Rotor Layout

- 4.11 Move turnstile rotor and bars to make sure that the vanes come to rest in the position shown above.
- 4.12 Fit the cam shaft of the control head down into the rotor with ³/₈" studs protruding up through the control head on the four corners
- 4.13 Place ³/₈" washer and ³/₈" lock washer and ³/₈" nut on studs
- 4.14 Tighten down $\frac{3}{8}$ " nuts to hold control head in place
- 4.15 Add additional springs to index pin and studs near existing index pin springs
- 4.16 Slide door vanes on to the 1" top and bottom bar with the tall metal extrusion kick plate toward the bottom.
- 4.17 To secure door vanes to rotor, screw flat head 5/16" screws in two (2) pre-drilled places along the top metal extrusion and into two (2) pre-drilled places along the bottom metal extrusion
- 4.18 Place rotor cover panels between the door vanes as shown below and secure with twelve (12) 10–24 flat head machine screws into pre-drilled holes



4.18 Close the service panel and re-secure the pins to hold the panel in place

5. INSTALLATION OF THE CANOPY WRAP

5.1 There are four (4) canopy wraps to a canopy, two for each side. If installing into a wall, trim the canopy wrap to around the wall.

Fit canopy wrap as shown below:



5.2 Secure canopy wrap to the base of the canopy plate using 10-24 flat head machine screws in the existing holes on the canopy edges.

5.3 The shorter canopy wraps can be easily removed in the future for easier access to the control head.

6. ELECTRICAL INSTALLATION

6.1 Mount ultrasonic sensor (wrong way sensor) on it's aluminum bracket to the canopy plate using the 10/24 studs welded into the canopy. Utilize the provided 3/8" long nylon spacers for proper height and secure using 10/24 nuts.

6.2 Mount three (3) canopy lights using 10/24 studs and secure with 10/24 nuts.



6.3 Wire access control, fire alarm, ultrasonic sensor, control head, and lights per wiring diagram

6500 Series Control Head Information

All of our turnstiles and ADA gates operate with a mechanism called the 6500 series control head. This sturdy and easy to maintain drive for the turnstile has replaced all previous model control heads. It is adaptable to any existing turnstile and comes with each new turnstile purchase. This control head can be configured in multiple ways to accommodate the security requirements of each individual job site.



An internal view of an electronically controlled two-way 6500 series control head.

While the head can be configured for mechanical (no electronics) operation, the turnstile's security potential is reached in the case of an electronic two way control head. In this instance, each rotational direction is independently unlocked. Configured properly, this control head will allow for one rotation per valid entry request. Our anti-backup cams are designed so that it is impossible to become trapped within the turnstile when properly installed.

Each control head comes pre-configured to your specific needs based off of a directional sheet that is filled out before shipment. The heads are delivered pre-wired, tested, and adjusted to our factory recommendations. Installation is simple: connect inputs from access control devices into the logic controller and plug the unit's power supply into a 110-240VAC receptacle. The power supply will automatically set itself to function on your local voltage and convert it to 24VDC.

Note: Proper turnstile operation requires a dry, normally open momentary contact closure (of one second or less).

6500 Series Control Head Configuration Information

The 6500 series can be configured in a number of different ways. All turnstiles operating with the 6500 series control head self center and hydraulically shock to the home position to prevent damage or injury.

Manual both ways: Turnstile rotates freely in both directions. This unsecure configuration is used as a means to direct traffic through one area. Full height turnstiles can be purchased with a lockout bar which would allow end user to lock the turnstile with a standard pad lock.

Manual one way: Turnstile rotates in one direction but not the other. This configuration is great for an exit way.

Electronic one way with free exit: Turnstile rotates freely in one direction and requires access credentials for the other. This configuration is suitable for secure entry and unsecure exit.

Electronic one way with no exit: Turnstile requires access credentials for one direction and allows no passage in the other. This configuration is suitable for a secured entryway with an alternate means of exit.

Electronic two way: Turnstile requires access credentials for both directions. This configuration is perfect for locations requiring secured entry and exit passage.

Fail lock: Upon power failure, turnstile will remain locked in one or both directions. This is convertible to fail open by ordering an alternate linkage. This can also be known as fail secure.

Fail open: Upon power failure, turnstile will remain unlocked in one or both directions. This is convertible to fail lock by ordering an alternate linkage. This can also be known as fail safe.

Key override: This option is for a location that the security requirements may change. The key override option is not intended for everyday use.

Controlled Controlled Controlled Controll 1636 W Brunswi WWW.con sales@ct	ed Access, Inc. 330-273- . 130th Street 330-273- ck, Ohio 44212 800-942- htrolledaccess.com 800-942- ontrolledaccess.com	6185 PhoneComplete control heads4468 Faxare available. Contact us0829 USA Toll Freefor pricing details.0828 USA Toll Free Fax			
Index Pin Assembly	Index Pin Tubing All Models 6520 \$2	Index Spring WH Models: 1106 \$5.31 FH Models: 1108 \$5.31 ADA Gates: 1107 \$5.31			
Control Head Casting Control Head Casting Control Head Casting Control Head Casting Control Head Casting Control Head Casting Subset of the subset of	Top Casting Bearing All Models 1641 (1641-2RSNR) \$2	24.81 Bottom Casting Bearing All Models 7208 (6007RSNR) \$23.22			
Hydraulic Shock Absorber 6547 (MA 4525 S) \$530.00	Shock Housing 6546 \$162.0	00 WH Arm Adapter Proximity Sensor Cam 2030 \$57.74			
Solenoid All Models 6051 \$59.59 (Deltrol D4A53717–83)	• • • [Locking Bar Linkage Fail Lock: 6518 \$1 • • [Fail Open: 6519 \$1	0.00 Locking Bar All Models 0.00 0381 \$34.23			
Solenoid Springs Fail Open: 6510 \$7.35 Fail Lock: 6016 \$7.35	Limit Switch Cam Standard: 2267 \$2 ADA Gate: 2268 \$2 One-Way: 2269 \$5	Limit Switch Standard: 2180 \$24.72 OMRON Z-15GW2-B7-K 0Ne-Way: 1700 \$58.92 OMRON BZ2RW825-A2			
Logic Controller 6789 \$210.00 (KEYENCE KV16DR)	Cam Assembly (specify limit/prox) 427/430/T80/WH: 0401 7/8" \$21 Hex	5.77 Power Supply100-240VAC 24VDC 2.1 AMP 0781 (KEYENCE M52-H50) \$150.00			
Proximity Sensor(PNP)	439/448/P60: 0407 1-1/4" \$23 Hex ADA Gate (specify model): \$19 0402 7/8" Hex	10.75 Proximity Sensor Bracket 6589 \$10.00			
All pricing subject to change without notice. All parts orders are shipped via UPS. Expedited shipping available upon request. The above prices do not include shipping. All parts orders under \$500.00 require credit card payment before shipment.					

Date: 10/19/12

6500 Series Control Head Locking Bar Information

Any number of configurations is possible on the 6500 series control head. In the case of an electronic two way head, two independent locking mechanisms are in place. The following diagram indicates which direction unlocks from which locking mechanism. A logic controller or key override is needed to unlock the control head in each direction it is configured to lock in.

If removing the locking bar becomes necessary for any reason, two methods can be used. The easiest method is to punch the $\frac{1}{2}$ " dowel pin out from the bottom side of the control head. This releases the locking bar from the casting. An alternate approach would be to remove the (4) $\frac{1}{4}$ -20 socket head cap screws from the casting and remove the lid.

When installing or replacing the locking bars into the control head, be sure to take special care to align the solenoid spring (shown below) or it will not pivot properly.

Power Failure State Configuration (Fail Lock / Fail Open)

Each direction on a control head can be independently configured to open or lock upon power failure. The fail status configuration is based on the pivot point used on the locking bar as well as the linkage and solenoid spring used. Control heads are preconfigured in our factory before shipment based on a direction sheet filled out by the end user. In the event a fail status field change is needed, a different linkage and spring will be required (the part numbers are noted in a table below). Control heads can also be returned to the factory for reconfiguration for a fee of parts plus approximately 1 hour of labor if desired.

Description	Part Number
Fail lock linkage	6518
Fail open linkage	6519
Fail open solenoid spring	6510
Fail lock solenoid spring	6016

Note: As a reference, it may be important to know that some vendors use different terms for fail status. Fail open is also known as fail safe, while fail lock is also known as fail secure.

6500 Series Control Head Shock Adjustment

Our turnstiles come with hydraulic shocks in order to alleviate wear on the control head. These shocks allow the turnstile to return to the center position without slamming into place. Although we adjust these in the factory, different environments may require additional field adjustment.

The shock is located adjacent to the index pin. The RD-70 uses a different shock than all of our other models due to the weight of the door panels. Instead of a threaded shock, the RD-70 uses an external mounted to a plate. This shock is adjusted with an allen key to turn a set screw. Although you should never need to replace it, the part number is 6547.

6500 Series Control Head Electrical Information

Each RD-70 control head comes with a power supply, a programmable logic controller (PLC), limit switches and solenoids. For safety purposes, it is recommended that you read all literature on the electrical components before attempting to install the control head into a turnstile.

-<u>`</u>@:-

Note: Access control devices need to provide a momentary, normally open dry contact of one second or less. A longer signal can cause more than one person to be able to pass through the turnstile. If you are unable to provide a contact of one second or less, an onboard signal converter will automatically change the signal length to .1 seconds. However, the ability to hold the relay open is lost while that feature is active.

6500 Series Control Head Wiring Legend

Since each control head comes pre-wired, only the ultrasonic sensor, access control and fire alarm should need to be connected to the board. If you are unable to fit wires for access control on the 24VDC+ input on the board, the voltage can be picked up directly from the power supply or from the relay commons (C3 & C4) on the board (C4 may not have voltage depending on options purchased. There will be a red jumper to C4 if there is). You may also run a jumper from 24VDC+ to any unused input to give additional contacts if needed.

<u>RD-70 Wiring Legend</u>

Definitions:

-Direction 1: Clockwise Rotation

-Direction 2: Counter Clockwise Rotation

-Limit 1: Triggers to relock Direction 1 Rotation

-Limit 2: Triggers to relock Direction 2 Rotation

-Fire Alarm: Unlocks both directions while active

-Ultrasonic Sensor: Digital barrier which forces rotation to unsecure direction upon sensing of obstruction

All inputs are triggered with 24VDC+ signals (PNP) Use dry momentary relay outputs with common connected to 24VDC+ and normally open going to the desired input.

Note: Directional status outputs are unaffected by optional key overrides as the override occurs outside of the logic controller.

Y4 - Shared Terminal w/ Y3

The canopy lights require 24VDC voltage to light up and may be wired into the power supply or off of the board if desired.

Overview of the Access Window

On the logic controller, an access window is available to change and adjust many different values. Each value is referred to as a "device". The window comprises of 3 primary areas: The device selector window, operation keys, and the main display window.

Although the logic controller is capable of many functions, all of the devices that the control head operates from are accessed in "Device Mode". When device mode is active, the display screen will show DM in the top left corner.

That being said, it is possible to stray from the device mode settings. In the selected device type section of the access window, DM, TM, T/C, CTC, TRM, and RLY are all possible selections to load. Again, we are only using DM (device mode) with the 6500 series control head.

In addition to the device mode window, system mode can be accessed as well.

Although under normal circumstances you should never encounter this window, if by accident you should happen to come across it, simply press the up or down arrow until the window reads "run". Press and hold the C button for 3 seconds, and the display will return to device mode.

Additionally, should for any reason the display lettering become red instead of green, you will need to access system mode to run the program in this fashion. Holding the \Leftrightarrow key while pressing up and down allows you to change between system mode and device mode. A third mode, which will display TRM on the left side of the screen, can also be accessed. Cycle through until the appropriate mode is displayed.

Finally, it is possible to lock the keypad. Should you inadvertently do so, press and hold the \clubsuit button and an arrow key together for 3 seconds to unlock the keypad again.

Device Settings of the RD-70

While working within device mode, two primary values should be considered. On the top of the display, the selected device is shown. The RD-70 control head settings can be adjusted with devices 0 - 9.

Pressing the up or down arrows allow you to select which device you wish to modify. Pressing and holding the C key for 3 seconds loads the modification window. While modifying, the digits on the window begin to flash. Pressing \clubsuit will move the cursor in a digit. Select the correct digit to modify, then use the arrows to change the value. Once finished, hold the C button for 3 seconds and your adjustment will save.

Should a value inputted not fall within the specified range of the device being modified, the value will automatically adjust to the highest possible value. A description of each device setting is:

- **DM0:** Timer value for Direction 1. The range of this setting is 1 60 seconds. This is how long the direction will remain open for if a user does not pass through the direction. The default setting is 7 seconds.
- **DM1:** Timer value for Direction 2. The range of this setting is 1 60 seconds. This is how long the direction will remain open for if a user does not pass through the direction. The default setting is 7 seconds.
- **DM2:** Direction 1 fail status. This determines when the solenoid receives power and is preconfigured based on each individual order. 0 means the direction is fail lock & 1 means the direction is fail open. This setting is not affected by factory reset.
- **DM3:** Direction 2 fail status. This determines when the solenoid receives power and is preconfigured based on each individual order. 0 means the direction is fail lock & 1 means the direction is fail open. This setting is not affected by factory reset.
- **DM4:** Direction 1 one-shot timer: This setting determines whether or not the access control input length is ignored and converted to a .1 second pulse internally. Enabling this allows the turnstile to ignore access control from allowing too many users pass through the turnstile. Disabling it allows access control to hold the direction open. 0 means the one-shot timer is inactive & 1 means the one-shot timer is active.
- **DM5:** Direction 2 one-shot timer: This setting determines whether or not the access control input length is ignored and converted to a .1 second pulse internally. Enabling this allows the turnstile to ignore access control from allowing too many users pass through the turnstile. Disabling it allows access control to hold the direction open. 0 means the one-shot timer is inactive & 1 means the one-shot timer is active.
- **DM6:** Direction 1 multi-swipe: This setting allows more than one access control request to be processed at a time to allow a faster flow of traffic. The range is 1-3. As each access control request is processed, each rotation subtracts from the total, allowing a constant flow of traffic. Most installations would benefit from a value of 2, which is the default setting.
- **DM7:** Direction 2 multi-swipe: This setting allows more than one access control request to be processed at a time to allow a faster flow of traffic. The range is 1-3. As each access control request is processed, each rotation subtracts from the total, allowing a constant flow of traffic. Most installations would benefit from a value of 2, which is the default setting.

- **DM8:** Ultrasonic Delay: This setting allows for a time delay filter on the ultrasonic sensor which detects a presence in the section of the revolving door that should not be occupied. This filter acts as an additional fail safe towards the sensor's sensing distance to ensure it is not triggered under false circumstances. The default setting is .5 seconds, with a maximum of 3 seconds.
- **DM9:** Ultrasonic Reverse Direction: This sets the direction in which the ultrasonic sensor forces the unit to be rotated backwards to the unsecure side. 0 for clockwise, 1 for counter clockwise.
- **DM10:** Direction 1 Count: Displays how many valid rotations were made in direction 1. This has a max value of 60,000 and will reset to 0 once that number is reached. This will not count fire alarm, hold open or key override rotations. This count is for maintenance and repair logging purposes.
- **DM11:** Direction 2 Count: Displays how many valid rotations were made in direction 2. This has a max value of 60,000 and will reset to 0 once that number is reached. This will not count fire alarm, hold open or key override rotations. This count is for maintenance and repair logging purposes.

Additionally, scrolling downward past DM0 will allow you access to **DM1999**, which resets all settings to factory defaults (except for solenoid fail status settings and ultrasonic reverse direction). Choose any value greater than 0 to perform the factory reset.

6500 Series Full Height Control Head Limit Switches

Limit Switch Information

Note: When replacing a switch, be sure to utilize the normally open and common screw terminals. Normally open should go into the PLC's Limit Inputs and Common should go to 24VDC+

Direction 1 is canceled by limit switch 1 and direction 2 is canceled by limit switch 2. As the unit rotates, both limit switches are triggered. However, only the limit switch designated for that direction is utilized to relock the unit. The switch is triggered towards the end of the rotation. Once it is triggered, the locking mechanism returns to the locked position, but users may still proceed until the home position is reached.

A minor exception to this is in the case of an ADA swing gate. The limit switch is triggered towards the beginning of the swing, which allows the locking bar to prevent the gate from over swinging. In this instance, the limit switches are designated backwards from those on a standard turnstile. Refer to the above diagram to illustrate which is which.

Note: The control head will not operate properly if the limit switches and top cam are not adjusted properly or altered from factory shipment.

6500 Series Control Head & Turnstile Maintenance & <u>Cleaning</u>

To ensure long life on any turnstile, the following maintenance is recommended.

- Annual
 - If you have a full height turnstile: On the bottom of each rotor, you should find a grease fitting. Utilize this fitting to re-grease the bearing that the rotor rests on.
 - Make sure all nuts are securely fastened on all parts of the turnstile.
 - On the control head, remove the index pin and apply white lithium grease. Use 3 in 1 oil on the index pin roller. The index pin is easily removed from the control head by disconnecting the springs from it.
 - Remove the lid from the control head. Clean any debris and apply grease to the shock roller assembly. Use 3 in 1 oil on the shock piston roller.
 - Apply 3 in 1 oil to the bronze bushing on the locking bars.
 - Inspect control head parts for wear and tear, replace parts as needed.
 - Reassemble control head. Using a removable strength (blue) thread sealer (such as Loctite) on the head bolts will help the control head remain sturdy.
- Cleaning
 - Galvanized turnstiles can be cleaned with soap and water. Galvanized finish may fade in color over time, but this is normal.
 - Powder coated turnstiles should be cleaned with a non-abrasive cleanser such as Formula 409. Be sure to inspect for chips on the powder coating and touch them up, or the exposed steel may rust.
 - Stainless steel turnstiles should be polished with a stainless steel wax or polish. In harsh environments, such as facilities near the ocean or within a chemical plant, stainless steel turnstiles should be waxed with a simple car wax to prevent surface discoloration on an annual basis. Discoloration and surface rust can be easily removed with a rust penetrating product, such as P.B. Blaster, along with non-scratching scouring pads.

Control heads can be removed from the turnstile and shipped to the factory at any time for repairs and maintenance. Please include contact information so we can call to discuss any issues your control head may have. Please note that any repairs that cost under \$500.00 will require a credit card payment.

Note: The recommended time frames are assuming a maximum of 75000 passages per year. Turnstiles with heavier traffic should be maintained more frequently.

6500 Series Control Head Testing

6500 Series Testing Procedures

Fire Alarm Direction 1Direction 2 Input Input Input/ 0ch 0 0 1 2 3 4 5 6 7 8 9 KEYENCE 1636 W. 130th St. Brunswick, OH 44212 0 (800)942-0829 0 1 2 3 4 5 5ch KV-16DR 00 501 502 504 C3 C4 503 505 OUT 240-1 24VDC+

To test whether or not your control head is functioning properly...

-Unplug power supply from outlet -Disconnect access control and fire alarm system from inputs 000, 002, and 009 (if applicable) -Plug the power supply back into the outlet

-Using a length of 18 gauge wire, momentarily touch the the 24VDC+ screw terminal with one end, and input 000 with the other. The solenoid should engage

- Trigger limit switch 1 and the unit should relock. It will also relock when the timer expires

- Repeat this step with 24VDC+ and input 002. The alternate solenoid should engage

- Trigger limit switch 2 and the unit should relock

 If desired, test the fire alarm by jumping and holding input 009 to 24VDC+ and both directions should unlock

6500 Series Control Head Troubleshooting

Symptom	Cause	Solution	
Turnstile does not unlock.	Power supply is not receiving input voltage.	Verify outlet receptacle installed in mainframe is operating correctly and that the power supply is plugged in.	
	Loose wiring from power supply to logic controller.	Refer to pages 23-25 for wiring information.	
	Power supply is not producing voltage.	Check output voltage from power supply. It should be 24VDC.	
	Logic controller program is not running. This can be determined by the color of the lettering on the logic controller display screen. If it is red, it is not running.	Refer to the "Overview of the Access Window" section on pages 26-27 and "run" the program.	
	Access control device malfunction.	Disconnect access control from circuit board. Momentarily jump directional inputs. If the turnstile works properly, contact manufacturer of access control device.	
	Control head requiring maintenance.	Refer to page 31.	
More than one person can get through turnstile.	Access control device output set too long.	This can be avoided by enabling the one-shot timers built into the logic controller program. If this is undesirable, ensure the output from the access control system is 1 second or less. Refer to pages 28-29.	
	Loose wiring to the logic controller from limit switches.	Refer to pages 23-25 for wiring information.	
	Limit switches are broken.	Inspect limit switches for breakage, replace as needed.	

Security Begins With Controlled Access 1636 W. 130th Street, Brunswick, OH 44212 Toll Free Phone: (800) 942-0829 | Fax: (800) 942-0828 / Phone: (330) 273-6185 | Fax: (330) 273-4468

Web: $\underline{http://www.controlledaccess.com} \mid E\text{-mail:} \\ \underline{sales@controlledaccess.com}$

	Limit switches are missing the triangular top cam.	Adjust the top cam to the proper height and or tweak the triggers on the limit switch. Refer to page 30 for parts locations.
Unable to hold direction open to allow multiple people to pass through the turnstile.	One-shot timers are enabled.	Disable the one shot timer settings on the logic controller. Be sure that your access control output is one second or less during regular secure operation or extra people may be able to pass through. Refer to pages 28-29.
People are becoming trapped inside of the turnstile (Full Height).	Rotor was installed backwards.	Refer to page 12 installation for visual diagram on how to install rotor properly.
Turnstile only rotates 30 degrees.	Limit switches wired incorrectly.	Refer to pages 23-25 for wiring information and page 30 for limit switch placement.
	Top cam is misaligned.	The top cam should have one point facing the control board. If this is not the case, readjust the top cam. Refer to page 30 for top cam information.
	Fail open / fail lock configuration is wrong.	Change fail open / fail lock mode on each direction as appropriate.
Turnstile is slamming into the closed position.	Shock either needs adjusted or replaced.	Refer to page 22 for more information.
Turnstile is not centering properly.	Shock needs adjusted.	Refer to page 22 for more information.
	Binding in control head.	See next troubleshooting hint.
Turnstile seems to be binding mechanically.	Rotor is not plumb / turnstile body is not level.	Refer to the installation instructions for more information.

	Control head requires	Refer to page 31 for
	maintenance.	more mormation.
Turnstile rotating the wrong	Improperly filled out direction	In some cases, the control head
direction.	sheet.	can be reconfigured in the field to
		operate as needed. Refer to pages
		16-20 for information about how
		the control head operates. If
		needed, control heads can be
		returned to the factory for
		reconfiguration for a fee of labor
		plus parts (if required). Please
		contact us before returning a
		control head in this instance.
	Directional inputs wired	Refer to wiring legend for
	incorrectly.	direction port explanations
Turnstile fails lock when needed	Improperly filled out direction	Refer to page 21 for more
to fail open or vice versa.	sheet.	information. Additional parts will
		be required to convert operation.
		The control head can be returned
		for reconfiguration for a fee of
		labor plus parts (if required).
		Please contact us before returning
		a control head in this instance.
Other problems.		Please contact us for any other
		issues.

U-GAGE® T30UX Series with Discrete Output

more sensors, more solutions

Ultrasonic Sensor with TEACH-Mode Configuration

- 1, 2 and 3 m (3.28, 6.56, and 9.84 ft) versions with short dead zones (10% of max range)
- Built-in temperature compensation
- Fast, easy-to-use TEACH-Mode programming; no potentiometer adjustments
- Remote TEACH for security and convenience
- Wide operating temperature range of –40° to +70° C (–40° to +158° F)
- Outputs can be set for either NPN (sinking) or PNP (sourcing), Normally Open (N.O.) or Normally Closed (N.C.)
- Compact, self-contained, right-angle sensor package with fully encapsulated electronics

Models

Models	Range and Frequency	Cable ¹		Discrete Output	Response Time
T30UXDA	100 mm to 1 m (3.9 in to 39 in) 224 kHz				45 ms
T30UXDB	200 mm to 2 m (7.8 in to 78 in) 174 kHz	Standard 2 m (6.5 ft) cable	10 to 30V dc	NPN, PNP, NO, NC, Selectable	92 ms
T30UXDC	300 mm to 3 m (11.8 in to 118 in) 114 kHz				135 ms

WARNING: Not To Be Used for Personnel Protection

Never use this product as a sensing device for personnel protection. Doing so could lead to serious injury or death. This product does NOT include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

¹ Only standard 2 m (6.5 ft) cable models are listed. For 4-Pin Euro-Style integral QD, add suffix "Q8" to the model number (for example, T30UXDAQ8). For 150 mm (6 in) PUR pigtail cable with 4-Pin threaded Euro-Style QD, add suffix "QPMA" to the model number (for example, T30UXDAQPMA). For 9 m (30 ft) cable, add suffix "W/30" to the model number (for example, T30UXDA W/30). A model with a QD connector requires a mating cable; see *Quick-Disconnect Cables* on page 11.

Overview

The U-GAGE® T30UX is an easy-to-use ultrasonic sensor with extended range and built-in temperature compensation. Simple push button configuration provides flexibility for a variety of applications.

Easy-to-see indicator LEDs communicate the status of the sensor. The Green "Power" LED ON indicates that the sensor is in Run Mode (the sensor's normal operating condition). The Red "Signal" LED indicates the target signal strength. The Amber "Output" LED indicates that the output is enabled and the sensor is receiving a signal within the window limits (depending on NO or NC). The Amber "Mode" LED indicates the currently selected mode.

Figure 1. Features

10 100 · T

Principles of Operation

Ultrasonic sensors emit one or multiple pulses of ultrasonic energy, which travel through the air at the speed of sound. A portion of this energy reflects off the target and travels back to the sensor. The sensor measures the total time required for the energy to reach the target and return to the sensor. The distance to the object is then calculated using the following formula:

$$D = \frac{ct}{2}$$

D = distance from the sensor to the target

c = speed of sound in air

t = transit time for the ultrasonic pulse

To improve accuracy, an ultrasonic sensor may average the results of several pulses before outputting a new value.

Temperature Effects

In motrie unite:

The speed of sound is dependent upon the composition, pressure and temperature of the gas in which it is traveling. For most ultrasonic applications, the composition and pressure of the gas are relatively fixed, while the temperature may fluctuate.

In English unite:

~

In air, the speed of sound varies with temperature according to the following approximation:

00 070 · T

$C_{m/s} = 20 \sqrt{2/3} + 1_{C}$	$C_{\rm ft/s} = 49 \sqrt{460 + 1}_{\rm F}$
$C_{m/s}$ = speed of sound in meters per second	$C_{ft/s}$ = speed of sound in feet per second
T _c = temperature in °C	T_F = temperature in °F

Temperature Compensation

~

Changes in air temperature affect the speed of sound, which in turn affects the total time for the echo measured by the sensor. An increase in air temperature shifts both sensing window limits closer to the sensor. Conversely, a decrease in air temperature shifts both limits farther away from the sensor. This shift is approximately 3.5% of the limit distance for a 20° C change in temperature.

The T30UX series ultrasonic sensors are temperature compensated. This reduces the error due to temperature by about 90%. The sensor will maintain its window limits to within 2.2% over the -40° to +70° C (-40° to +158° F) operating range of the sensor.

NOTE:

- Exposure to direct sunlight can affect the sensor's ability to accurately compensate for changes in temperature.
- If the sensor is measuring across a temperature gradient, the compensation will be less effective.

Sensor Configuration

Two TEACH methods may be used to configure the sensor:

- · Teach individual minimum and maximum limits, or
- Use Auto-Window feature to center a sensing window around the taught position.

The sensor may be configured either via its push button, or via a remote switch. Remote configuration also may be used to disable the push button, preventing unauthorized personnel from adjusting the configuration settings. To access this feature, connect the white wire of the sensor to 0V dc, with a remote configuration switch between the sensor and the voltage.

Configuration is accomplished by following the sequence of input pulses. The duration of each pulse (corresponding to a push button "click"), and the period between multiple pulses, are as "T": 0.04 seconds < T < 0.8 seconds

Remote line configuration requires a greater than 1 second pause between pulse sequences.

Mode Setup - Output Configuration

Sensors can be set up for either NPN (sinking) or PNP (sourcing). In addition, the user can select between Normally Open (N.O.) and Normally Closed (N.C.) operation. Normally Open is defined as the output energizing when the target is present. Normally Closed is defined as the output energizing when the target is absent (see *Figure 2. Teaching independent minimum and maximum limits* on page 4).

	Push Button 0.04 sec. < "click" < 0.8 sec.		Remote Line 0.04 sec. < T < 0.8 sec.	
	Procedure	Result	Procedure	Result
Output Con- figuration Mode	Push and hold MODE push button for > 2 seconds	Power LED: OFF Mode LED: Flashing Amber shows previ- ously selected mode	Double-pulse the remote line	Power LED: OFF Mode LED: Flashing Amber shows previously selected mode
Select Out- put	 "Click" the MODE push button to cycle to correct selection: NPN - Normally Open NPN - Normally Closed PNP - Normally Open PNP - Normally Closed 	Power LED: OFF Mode LED: Flashes to indicate currently se- lected mode (120 sec- ond time out ²)	 Single-pulse for NPN - Normally Open Double-pulse for NPN - Normally Closed Triple-pulse for PNP - Normally Open Quad-pulse for PNP - Normally Closed 	Power LED: ON Green Mode LED: ON to indi- cate currently selected mode (Sensor returns to RUN mode)
Save and Activate Mode	Push and hold MODE push button for > 2 seconds	Power LED: ON Green Mode LED: ON Amber for selected mode	No action required; sensor will re- turn to Run Mode	None

Teaching Minimum and Maximum Limits

General Notes on Teaching

- The sensor will return to RUN mode if the first TEACH condition is not registered within 120 seconds after the initial 2 second hold on the Discrete push button.
- To exit TEACH mode without saving any changes, press and hold the Discrete push button or remote line longer than 2 seconds (before teaching the second limit). The sensor will revert to the last saved limits.

² The sensor will revert to previously saved configuration and return to RUN mode if TEACH is inactive for 120 seconds after the initial 2 second hold on push button

• After the first limit is taught, the sensor will remain in TEACH mode until the TEACH sequence is finished or exited by a 2 second hold on the Discrete push button or remote line.

	Push Button		Remote Line	
	0.04 sec. < "click" < 0.8 sec.		0.04 sec. < T < 0.8 sec.	
	Procedure	Result	Procedure	Result
TEACH Mode	Push and hold the Discrete push button longer than 2 sec- onds	Power LED: OFF Output LED: ON	No action required; sensor is ready for first limit teach	None
	Position the target for the first limit (120 second time out)	Signal LED: Must be ON Red or Flashing Red ³	Position the target for the first limit	Signal LED: Must be ON Red or Flashing Red ³
Teach First Limit	"Click" the Discrete push button	Teach Accepted Power LED: OFF Output LED: Flashing Teach Not Accepted Output LED: ON	Single-pulse the remote line	Teach Accepted Power LED: OFF Output LED: Flashing Teach Not Accepted Power LED: ON
	Position the target for the sec- ond limit (no time out)	Signal LED: Must be ON Red or Flashing Red	Position the target for the second limit (no time out)	Signal LED: Must be ON Red or Flashing Red
Teach Sec- ond Limit	"Click" the Discrete push button	Teach Accepted Output LED: ON or OFF, depending on NO or NC Mode Power LED: ON Teach Not Accepted Output LED: Flashing Power LED: OFF	Single-pulse the remote line	Teach Accepted Output LED: ON or OFF, depending on NO or NC Mode Power LED: ON Teach Not Accepted Output LED: Flashing Power LED: OFF

³ Sensor will not Teach or indicate "Teach Not Accepted" when there is no signal present (Signal LED Red or Flashing Red)

Teaching Limits Using the Auto-Window Feature

Teaching the same limit twice automatically centers a window on the taught position (see *Figure 4. Window Size* on page 5 for window sizes).

General Notes on Teaching

- The sensor will return to RUN mode if the TEACH condition is not registered within 120 seconds after the initial 2 second hold on the Discrete push button.
- To exit TEACH mode without saving any changes, press and hold the Discrete push button or remote line longer than 2 seconds (before teaching the second limit). The sensor will revert to the last saved limits.
- After the first limit is taught, the sensor will remain in TEACH mode until the TEACH sequence is finished or exited by a 2 second hold on the Discrete push button or remote line.

Normally Closed Operation

Models Window "A" suffix ± 10 mm (0.4 in) "B" suffix ± 20 mm (0.8 in) "A" suffix ± 30 mm (1.2 in)

Figure 4. Window Size

Figure 3. Using the Auto-Window feature for teaching each output

	Push Button		Remote Line	
	0.04 sec. < "click" < 0.8 sec.		0.04 sec. < T < 0.8 sec.	
	Procedure	Result	Procedure	Result
TEACH Mode	Push and hold the Discrete push button longer than 2 sec- onds	Power LED: OFF Output LED: ON	No action required; sensor is ready for first limit teach	None
	Position the target for the cen- ter of window (120 second time out)	Signal LED: Must be ON Red or Flashing Red ⁴	Position the target for the center of window	Signal LED: Must be ON Red or Flashing Red ⁴
Teach First Limit	"Click" the Discrete push button	Teach Accepted Power LED: OFF Output LED: Flashing Teach Not Accepted Output LED: ON	Single-pulse the remote line	Teach Accepted Power LED: OFF Output LED: Flashing Teach Not Accepted Output LED: ON
Re-Teach Limit	Without moving the target, "click" the Discrete push button again	Teach Accepted Output LED: ON or OFF, depending on NO or NC Mode	Without moving the target, single- pulse the remote line again	Teach Accepted Output LED: ON or OFF, depending on NO or NC Mode

⁴ Sensor will not Teach or indicate "Teach Not Accepted" when there is no signal present (Signal LED Red or Flashing Red)

U-GAGE® T30UX Series with Discrete Output

Push Butt	on	Remote Line	
0.04 sec. < "click" < 0.8 sec.		0.04 sec. < T < 0.8 sec.	
Procedure	Result	Procedure	Result
	Power LED: ON	T	Power LED: ON
	Teach Not Accepted		Teach Not Accepted
	Output LED: Flashing		Output LED: Flashing
	Power LED: OFF		Power LED: OFF

Figure 5. An application for the Auto-Window feature (retroreflective mode)

Remote Line TEACH

General Notes

- Run Mode is the sensor's normal operating condition
- The duration of each Pulse is defined as "T": 0.04 < T < 0.8 s
- A Hold will exit TEACH MODE and return to Run Mode with previously saved changes. The duration of a Hold is: T > 2 s
- A Timeout will occur if a condition is not registered within 120 seconds, causing the sensor to return to Run Mode (during sensor configuration only)
- · Sensor configuration user feedback shown on Green LED. See flowchart.
- · The Red Signal LED will be ON whenever the target is in view.

Specifications

Sensing Range "A" suffix models: 100 mm to 1 m (3.9 in to 39 in) "B" suffix models: 200 mm to 2 m (7.8 in to 78 in) "C" suffix models: 300 mm to 3 m (11.8 in to 118 in) **Ultrasonic Frequency** "A" suffix models: 224 kHz "B" suffix models: 174 kHz "C" suffix models: 114 kHz Supply Voltage 10 to 30V dc (10% max. ripple) at 40 mA, exclusive of load Supply Protection Circuitry Protected against reverse polarity and transient voltages **Output Configuration** Discrete (switched) output models: SPST solid-state switch. Configurable as NPN (sinking) or PNP (sourcing) via Mode push button. Normally Open (NO) or Normally Closed (NC) operation is also selectable via Mode push button (see Mode Setup - Output Configuration on page 3). The default setting is PNP/NO **Output Rating** Discrete output models: 100 mA max. OFF-state leakage current: NPN: < 200 µA at 30V dc (see NOTE 1); **PNP:** < 10 µA at 30V dc **ON-state saturation voltage: NPN:** < 1.6V at 100 mA; PNP: < 3V at 100 mA **Output Protection Circuitry** Protected against short circuit conditions **Output Response Time** "A" suffix models: 45 ms "B" suffix models: 92 ms "C" suffix models: 135 ms Delay at Power-up 500 ms **Temperature Effect** 0.02% of distance/°C Repeatability "A" suffix models: 0.1% of distance (0.5 mm min.) "B" suffix models: 0.1% of distance (1.0 mm min.) "C" suffix models: 0.1% of distance (1.5 mm min.)

Sensing Hysteresis "A" suffix models: 2 mm "B" suffix models: 3 mm "C" suffix models: 4 mm **Minimum Window Size** 10 mm (0.4 in) Adjustments Sensing window limits: TEACH-Mode of near and far window limits may be set using the push button or remotely via TEACH input. Output Configuration: NPN, PNP, Normally Open (NO), Normally Closed (NC) select (see Mode Setup -Output Configuration on page 3 or Remote Line TEACH on page 6). Advanced configuration options: Push button enabled/disabled, temperature compensation enabled/ disabled (see *Remote Line TEACH* on page 6) Indicators See Figure 1. Features on page 2 Construction Housing: PBT polyester Push buttons: polyester Transducer: epoxy /ceramic composite **Environmental Rating** Leakproof design, ratedIP67 (NEMA 6) Connections 2 m (6.5 ft) or 9 m (30 ft) shielded 4-conductor (with drain) PVC cable, 150 mm (6 in) PUR Euro-style pigtail (QPMA), or 4-pin integral Euro-style connector (Q8) **Operating Conditions** Temperature: -40° to +70° C (-40° to +158° F) Humidity: 95% at +50° C (non-condensing) Vibration and Mechanical Shock All models meet Mil. Std. 202F requirements method 201A (vibration: 10 to 60 Hz max., double amplitude 0.06 in, max acceleration 10G). Also meets IEC 947-5-2; 30G 11 ms duration, half sine wave **Application Note** The temperature warmup drift upon power-up is less than 1% of the sensing distance.

Certifications

CE Pending

NOTE 1: NPN < 200 μA for load impedance > 3 kΩ; for load current of 100 mA, leakage < 1% of load current

Performance Curves

With Plate Target (Typical)

With Rod Target (Typical)

Maximum Target Rotation Angle

Hookups

NPN (Sinking) Output Selected

* It is recommended that the shield wire be connected to either earth ground or DC common.

PNP (Sourcing) Output Selected

It is recommended that the shield wire be connected to either earth ground or DC common.

Cable and QD hookups are functionally identical.

It is recommended that the shield wire be connected to earth ground. Shielded cordsets are recommended for all QD models.

Dimensions

Locknut (included with all models)

Quick-Disconnect Cables

4-Pin Threaded M12/Euro-Style Cordsets with Shield							
Model	Length	Style	Dimensions	Pinout			
MQDEC2-406	1.83 m (6 ft)	Straight	0 15 mm				
MQDEC2-415	4.57 m (15 ft)						
MQDEC2-430	9.14 m (30 ft)		(1.7") (1.7")				
MQDEC2-406RA	1.83 m (6 ft)	Right-Angle	, 32 Typ.				
MQDEC2-415RA 4.57 m (15 ft)				1 = Brown 2 = White 3 = Blue 4 = Black			
MQDEC2-430RA	9.14 m (30 ft)	M12 x 1 Ø 14.5 [0.57"]					

Brackets

SMB30A

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in)
 hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel

Hole center spacing: A to B=40 Hole size: A=ø 6.3, B= 27.1 x 6.3, C=ø 30.5

SMB30FA

- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available

Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50

36 3

Hole size: B= ø 30.1

83.2

C

68.9

SMB1815SF

- Swivel with set screws for mounting sensors by the cable hub
- Black reinforced thermoplastic polyester
- Stainless steel swivel locking hardware and hex wrench included

Hole center spacing: A = 36.0

Hole size: A = ø 5.0, B = ø 15.0

SMB30SC

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

Hole center spacing: A=ø 50.8 Hole size: A=ø 7.0, B=ø 30.0

Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (IN-CLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPEN-SES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WAR-RANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp.

Controlled A c c e s s

The Leader in Pedestrian Control Systems Waist & Full Height Turnstiles and Matching Gates

Warranty Information

Seller warrants the goods against defective workmanship and materials provided that Buyer notify Seller within one (1) year after receipt by Buyer of the goods of any claim under this Warranty. The liability of Seller shall be limited to replacing or repairing defective goods returned by Buyer and delivered to the factory of the Seller, transportation charges prepaid.

Replaced or repaired goods will be redelivered freight repaid to the address of Buyer shown hereon. Except for the Warranty contained herein, there shall be no other warranties, such as warranties of fitness and merchantability or otherwise express or implied, written or verbal, and Seller shall not be liable for consequential damages in any event.