# Installation Instructions for 45HM IDH Max® Mortise Locks

The 45HM IDH Max® Mortise Lock provides the following features in an integrated lock, eliminating the need to install separate sensors in and around the door frame:

- electrified locking mechanism
- electronic token reader
- integrated trim
- door status detection
- latchbolt status detection
- ability to exit without triggering an alarm (RQE)
- compatibility with varied access control panels/ reader interfaces.

Note: *For a list of compatible access control panels/ reader interfaces, contact your local BEST representative.*

A panel interface module is provided with the lock. The panel interface module receives token data and lock sensor data from the lock through an RS-485 connection. It translates this data into parallel signals, which it sends to the access control panel/reader interface. The panel interface module also translates control signals received from the access control panel/reader interface and sends them to the lock. The figure below shows the relationship between the components in the IDH Max® system.
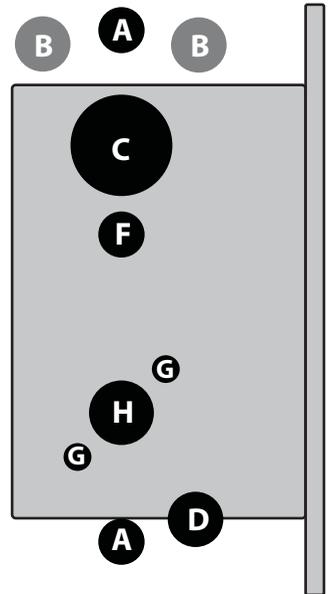
For hole sizes, see the W28 Template (T81625)

Figure 1   Identifying holes to drill

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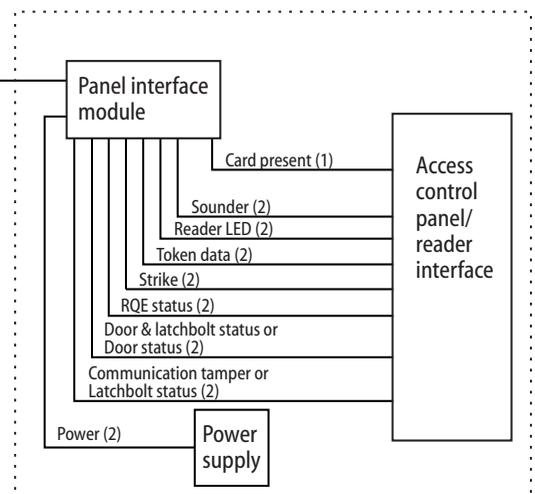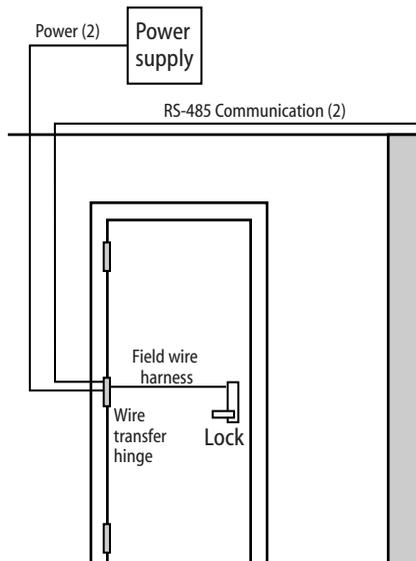
Holes by Function	Functions							
	DEU/DEL		LEU/LEL		NXEU/NXEL		TDEU/TDEL	
Holes to drill	I/S	O/S	I/S	O/S	I/S	O/S	I/S	O/S
A Forged trim (2 holes)†	Through door		Through door		Through door		Through door	
B Harness†	Through door		Through door				Through door	
C Standard cylinder		■						■
D Sensor & solenoid wire	■		■		■		■	
F Thumb turn			■				■	
G Trim mounting (2 holes)†	Through door		Through door		Through door		Through door	
H Lever†	Through door		Through door		Through door		Through door	

† Because these holes pass through the mortise pocket, it is recommended that each hole be drilled separately rather than straight through.

Figure 1   Aligning the templates

Door edge template

Centerline

Installation template

Centerline

1 Identify holes to drill

1 Determine the lock function to be installed.

2 Determine the inside and outside, hand, and bevel of the door.

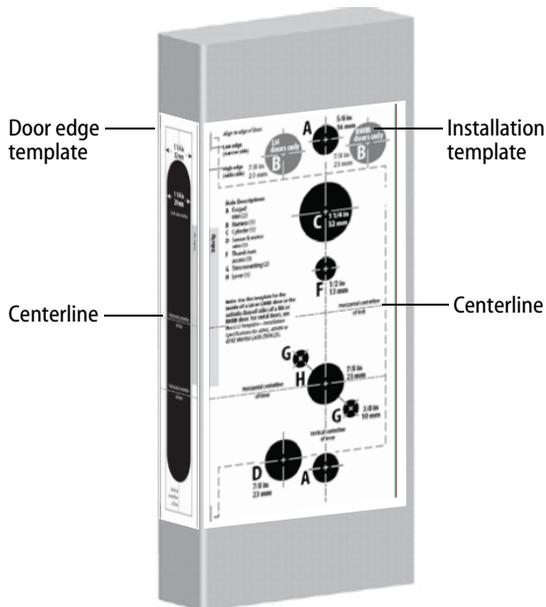3 See the *Holes by Function* table and Figure 1 to determine the holes to be drilled for the lock function.

2 Align templates

Note: *If the door is a fabricated hollow metal door, determine whether it is properly reinforced to support the lock. If door reinforcement is not adequate, consult the door manufacturer for information on proper reinforcement. For dimensions for preparing metal doors, see the* W29 Template – *Installation Specifications for 45HM IDH Max Mortise Locks* (T81630).

1 Separate the four templates provided on the *W28 Template—Installation Template for 45HM IDH Max Mortise Locks* (T81625).

2 Position one of the door edge templates on the door, making sure that the lock case mortise shown on the template aligns with the mortise pocket prepared in the door.

3 Using the centerlines on the door edge template as a guide, position the appropriate door template on each side of the door. You need to take the bevel into account. Tape the templates to the door.

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3 **Drill wire channel through door**

Caution 1: **Check with your local fire marshal before drilling a fire-rated door. Drilling through a fire-rated door may void the fire label.**

Caution 2: **Be careful to drill straight through the door, making sure the drill does not break through the face of the door.**

1 Remove the hinge nearest the mortise cavity.

2 Using a 3 to 4 foot drill bit, drill a 3/8″ diameter channel through the upper back of the mortise cavity to the center of the nearest hinge mortise. See Figure 3.

Note: *It may be easier to drill halfway from each side of the door.*

4 **Optional: Prepare door for door status switch** *(for deadbolt function locks with door sensing only)*

1 Locate the centerpoint for the door status switch 2.5″ above the top of the faceplate mortise on the edge of the door (as shown in Figure 4).

2 Drill a 1″ diameter hole 1 3/4″ deep for the door status switch.

3 Position the drill so the tip of the bit is approximately 1″ into the hole and the bit is close to the top edge of the hole. Then drill a 3/8″ channel at approximately a 35° angle from the door status switch hole into the mortise cavity (as shown in Figure 4).
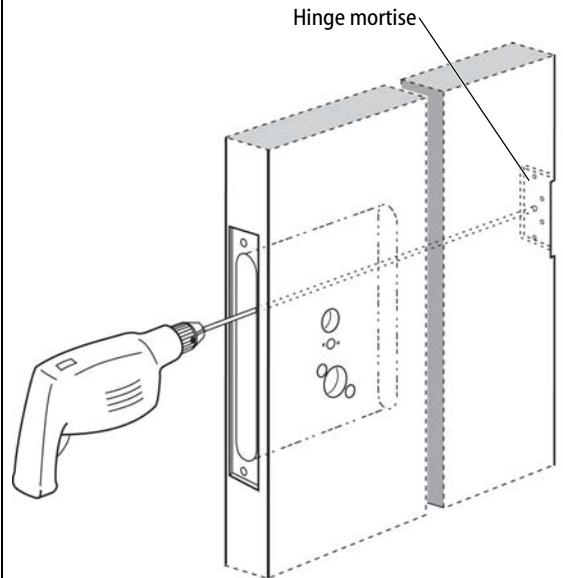

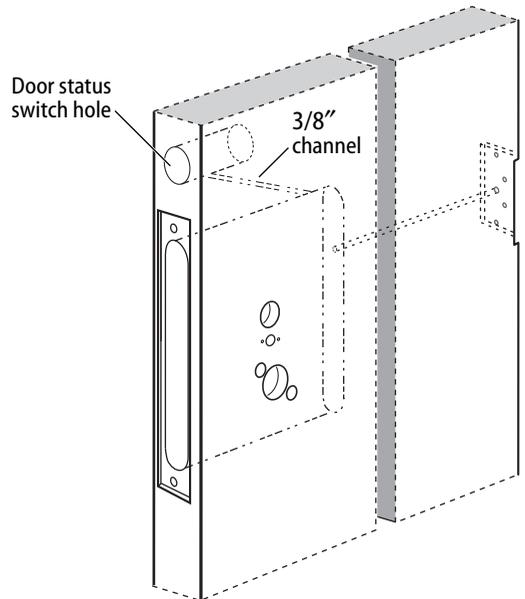*Figure 3*   *Drilling the wire channel through the door*

Figure 4   *Preparing for the door status switch*

Field wiring

Door frame   Door

Figure 6   Running field wiring

5 Determine wire gauge for power wiring

1 Calculate the total length of the power wire run by summing:
   - ■ The distance from the power supply to the first door.
   - ■ If powering more than one door daisy-chained to the same power supply, add the total distance of the power runs between the doors.

2 Refer to the table below to determine the minimum wire gauge based on the number of doors sharing the power supply and the total length of the wire run.

1 door	2 doors	3 doors	4 doors	Min. wire gauge
250 ft.	125 ft.	75 ft.	60 ft.	18 AWG
400 ft.	200 ft.	130 ft.	100 ft.	16 AWG
600 ft.	300 ft.	185 ft.	150 ft.	14 AWG

6 Prepare door for wire transfer hinge and run field wiring

1 Drill a wire access hole through the frame side of the hinge mortise where you removed the hinge in Task 3, Step 1 on page 3.

2 Drill holes (or pockets) for splice connectors in the frame and door. Refer to the hinge manufacturer's specifications for the hole location.

3 De-burr the holes to prevent damage to the hinge leads.

4 Run the power field wiring from the location for the lock's power supply to the location for the wire transfer hinge.

Note 1: *To match the lock's wire color, use yellow for 12 volts DC power.*

Note 2: *To minimize lever temperature, install an 8WTCM (temperature control module) in series with the power and ground wiring within 20 feet of the lock. Use only one 8WTCM per lock. This module is supplied with electrically locked (EL) functions and is optional with electrically unlocked (EU) functions.*
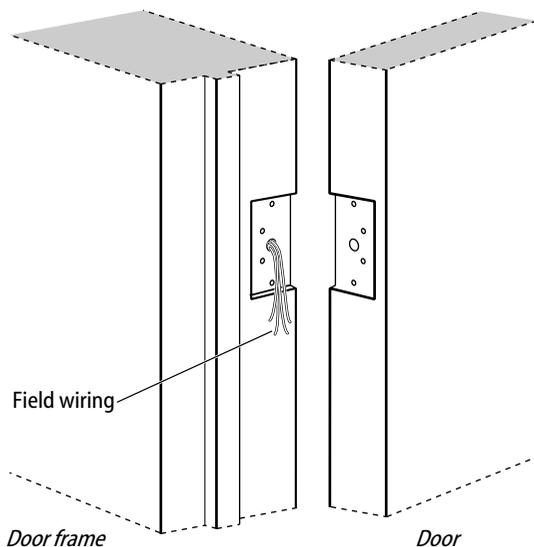
Configuring & installing the mortise case

5   Run the sensor wiring from the location of the access control panel to the location for the wire transfer hinge.

To match the sensor wire colors, refer to the table below.

Wire connection	Color	No. of wires
Door status sensor	White	2
Latchbolt status sensor	Purple	2
RQE status sensor	Brown & Orange	2

7   Pull the field wiring down the wall and through the access hole in the frame.

7 Optional: Install door status switch *(for deadbolt function locks with door sensing only)*

1   Position the shield on the door status switch with the notch facing downwards (towards the mortise pocket).

Caution: **Make sure the wires are not routed across any sharp edges or over any surface that could damage its sleeving.**

2   Feed the wires for the door status switch into the door status switch hole and through the channel into the mortise cavity.

3   Insert the door status switch assembly into the door status switch hole.

8 Rotate latchbolt *(if necessary)*

Note: *If a function specific mortise case was ordered, some steps for configuring the case have already been performed at the factory.*

1   Determine whether you need to rotate the latchbolt to match the handing of the door.

Note: *The angled surface of the latchbolt must contact the strike when the door closes.*

2   If you need to rotate the latchbolt, insert a flat blade screwdriver into the latch access point approximately
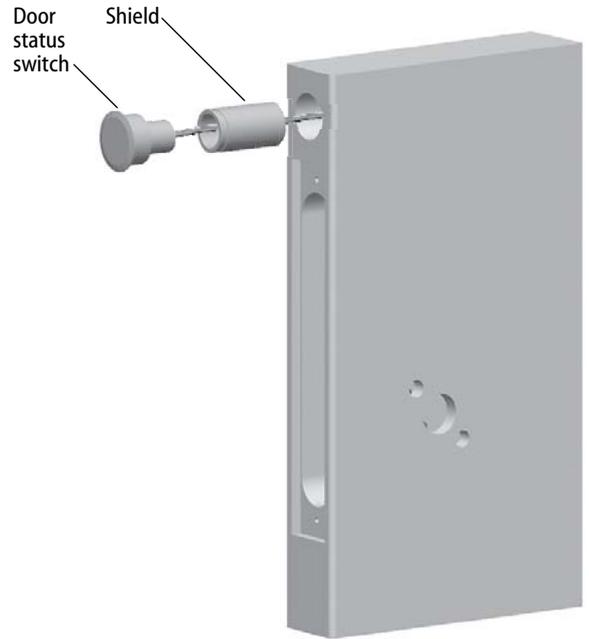

Door status switch   Shield

Figure 7   Installing the door status switch
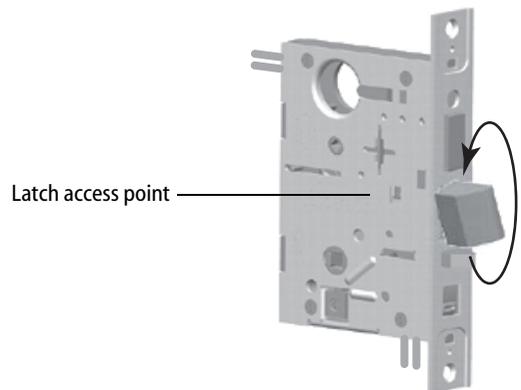

Latch access point

Figure 8   Rotating the latchbolt

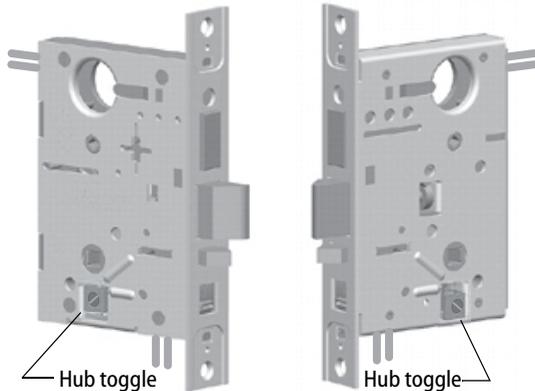# Configuring & installing the mortise case
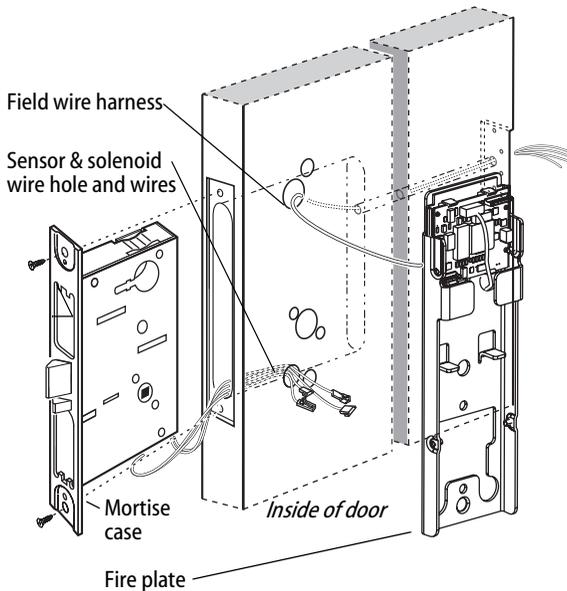

Figure 9   Positioning hub toggles

Figure 10   Installing the mortise case (inside of door)

1/2" into the case and press to extend the latch out of the case. See Figure 8.

3   Rotate the latchbolt 180 degrees and allow it to retract into the case.

9   Position hub toggles *(if necessary)*

1   Check whether the hub toggles are in the proper position for the lock. See the table below and Figure 9.

Hub toggle positions

Function	Hub toggle positions
DEU/DEL, LEU/LEL, NXEU/NXEL, TDEU/TDEL	Inside down (always unlocked) & outside up (lockable)

Note 1: *For LH & LHRB doors, the inside is the back side of the case and the outside is the cover side of the case.*
For RH & RHRB doors, the inside is the cover side of the case and the outside is the back side of the case. The cover is mounted to the case with four screws.

Note 2: *If the lock has an optional RQE status sensor, two RQE status switches are installed in the mortise case. However, only the switch for the inside of the lock needs to be connected. Before you install the mortise case in the door, determine whether you need to connect the 'Case Side' pair of RQE wires or the 'Cover Side' pair of RQE wires, based on the handing of the door.*

2   To change the position of a hub toggle, remove the toggle screw, move the toggle into the desired position, and re-tighten the screw.

10   Install mortise case

1   Remove the faceplate from the mortise case, if necessary.

2   Insert the mortise case into the mortise cavity, while feeding the sensor and solenoid wires into the mortise cavity and out the sensor & solenoid wire hole to the inside of the door.

Installing the trim

Note 1: *The armored front of the mortise case self-adjusts to the door bevel.*

Note 2: *The field wire harness should be routed above and behind the mortise case (depending on where the hole through the door meets the mortise cavity).*

3   Make sure there are 3″ to 4″ of slack in the field wire harness to allow access to the control electronics circuit board located in the fire plate.

3   Secure the mortise case with the case mounting screws.

11 Install trim mounting plates

1   Insert the outside trim mounting plate through the door and mortise case.

2   Position the inside trim mounting plate opposite the outside trim mounting plate and screw them securely in place.

   Caution: **Do not overtighten the trim mounting plate screws. Overtightening may damage the locking mechanism.**
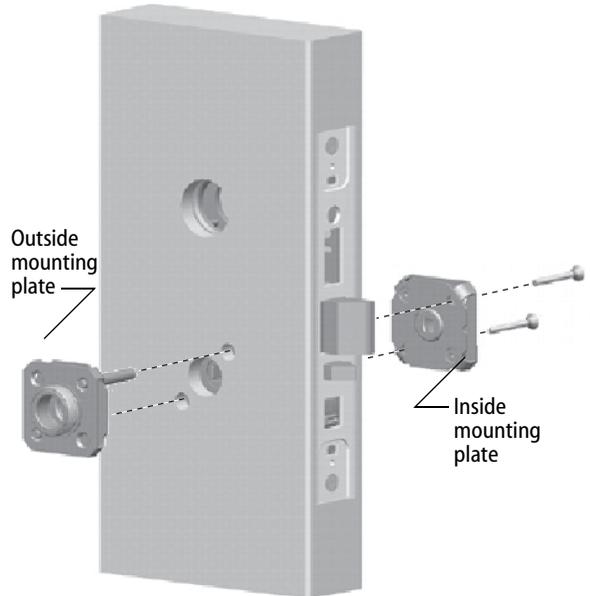

Figure 11   Installing the trim mounting plates

12 Install concealed cylinder & core (DEU/DEL and TDEU/TDEL functions only)

1   Use a cylinder wrench to thread the cylinder into the mortise case so that the groove around the cylinder is even with the door surface as shown in Figure 12.

   Caution: **A malfunction can occur if the cylinder is threaded in too far.**

2   Secure the cylinder in the mortise case with the cylinder retainer screw.

3   Insert the control key into the core and rotate the key 15 degrees to the right.

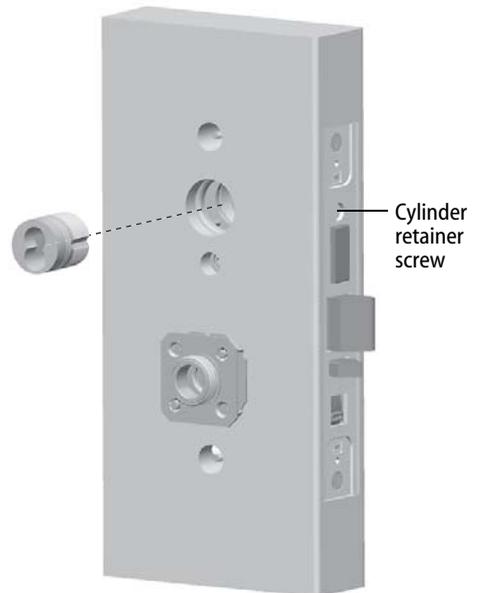4   With the control key in the core, insert the core into the cylinder.

Figure 12   Installing the concealed cylinder

Installing the trim

5 Rotate the control key 15 degrees to the left and withdraw the key.

6 The control key can be used to remove cores and to access doors. Provide adequate security for the control key.

13 Install trim hole insert and bushing

1 Insert the trim hole insert into the upper trim hole on the outside of the door, as shown in Figure 13.

2 Insert the bushing into the field harness & reader wire hole on the outside of the door, as shown in Figure 13.

Note: *You do not need to change the positions of the DIP switches on the control electronics circuit board located in the inside escutcheon.*

- By default, switches 1 through 5 are set to ON. These switches are for possible future applications.

- By default, switches 6 and 7 are set to ON for automatic baud rate detection. This setting lets you determine the baud rate for communication between the lock's control electronics circuit board and the panel interface module by setting DIP switches on the panel interface circuit board. (See page 19.)

- Switch 8 is set to OFF for locks with a swipe-type magnetic stripe card reader, a proximity reader, or a keypad reader; it is set to ON only for locks with an insertion-type magnetic stripe card reader.
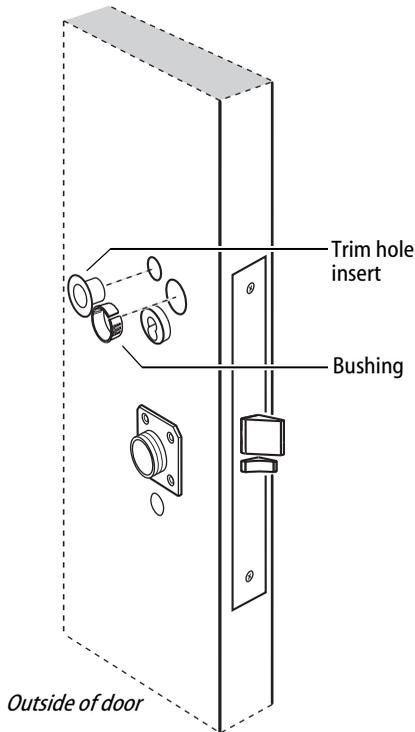
Trim hole insert

Bushing

Outside of door

Figure 13   Installing the trim hole insert and bushing

Installing the trim

14 Connect reader wire harness

1 From the outside of the door, feed the reader wire harness connector through the field harness & reader wire hole.

2 Temporarily rest the outside trim on the door by inserting the trim studs into the stud holes.

15 Install fire plate

1 From the inside of the door, feed the wiring through the fire plate harness hole.

2 Position the fire plate on the door so that the inside mounting plate fits through the square opening in the fire plate.

3 Insert the two counter sunk mounting screws into the holes at the top and bottom of the fire plate.

Note: *You may have to push the PCB board up out of the way of the mounting holes to access them.*

4 Tighten the mounting screws until the fire plate is securely mounted to the door.

Caution 1: **When routing the reader wire harness, make sure the reader wire harness is not routed across any sharp edges or over any surface that could damage its sleeving or wire insulation.**
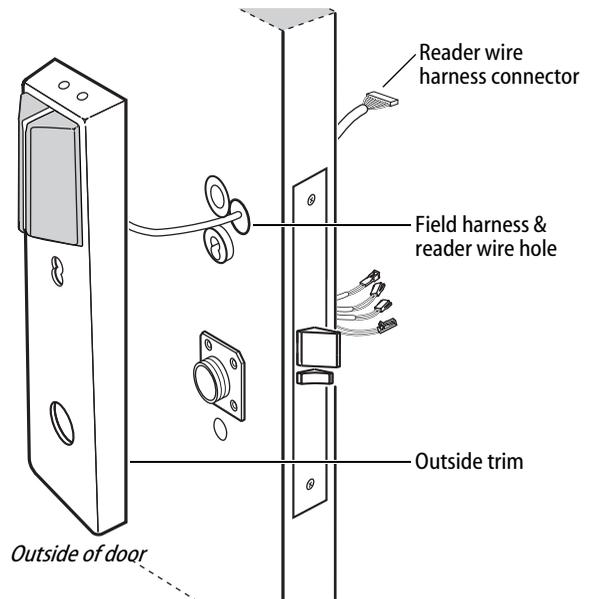

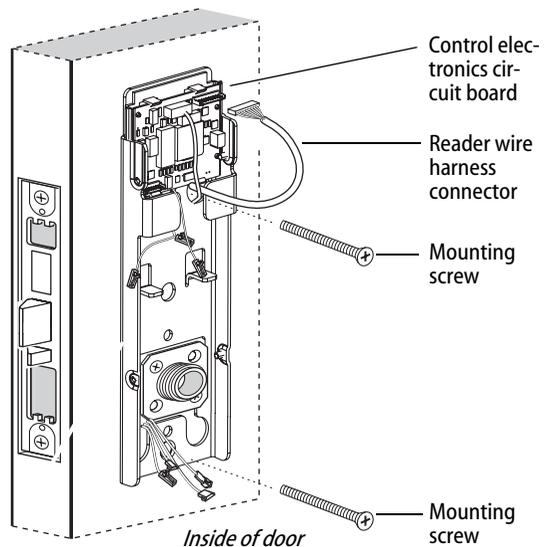*Figure 14a Feeding the reader wire harness connector from the outside trim through the door*

Figure 15 Installing the fire plate and connecting the reader wire harness

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Completing the installation at the door

16 Secure through-bolt trim and complete connections

Caution: **When routing the solenoid and sensor wire harness, the sensor wires, and the solenoid wires, make sure the wires are not routed across any sharp edges or over any surface that could damage their sleeving or wire insulation.**

1 Make the solenoid connection and three sensor connections, and place the wires into the inside trim.

Wire connection	Color	No. of wires	No. of pins
Solenoid	Yellow	2	3
RQE	Brn/Org	2	3
Shorting connection	Purple	2	2
Door status sensor	White	2	2

Caution: **When making the sensor connections and solenoid connection, make sure:**

■ **there are no loose wire connections where the wires are inserted into the connectors**

■ **the connectors are firmly mated.**

17 Install bottom cover (inside escutcheon)

1 Position the battery wires above the side tabs and against the side of the fire plate, as shown in Figure 16.

2 **Optional for Thumb Turn option only:** Make sure that the Thumb Turn is in the upright position, as shown in Figure 16.

3 Use two cover screws to secure the cover to the side of the fire plate.

Note: *Phillips Type 2 and T20 Torx options are available for the cover mounting screws.*

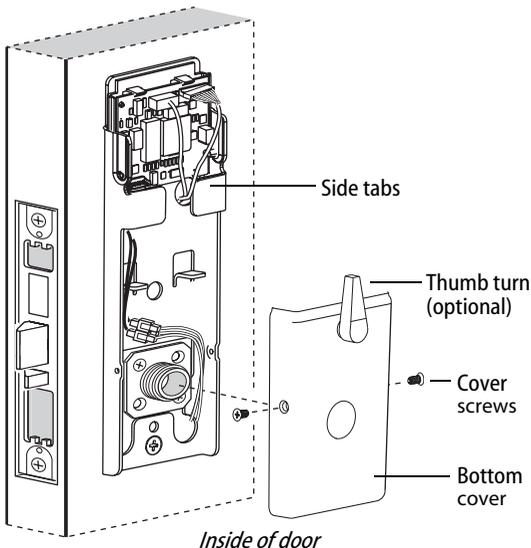*Caution:* **Dress all wires away from possible pinch points before the bottom cover is put in place.**

Side tabs

Thumb turn (optional)

Cover screws

Bottom cover

Inside of door

Figure 16   Installing the bottom cover

Completing the installation at the door

18 Install top cover (inside escutcheon)

1 Position the top cover above the fire plate and slide it down over the guide notches on the fire plate.

Caution: **Make sure that the top cover does not pinch any wires as you slide it over the fire plate.**

2 Use two cover screws to secure the cover to the side of the fire plate, as shown in Figure 17.

Note: *Phillips Type 2 and T20 Torx options are available for the cover mounting screws.*

Cover screws — Top cover

Inside of door
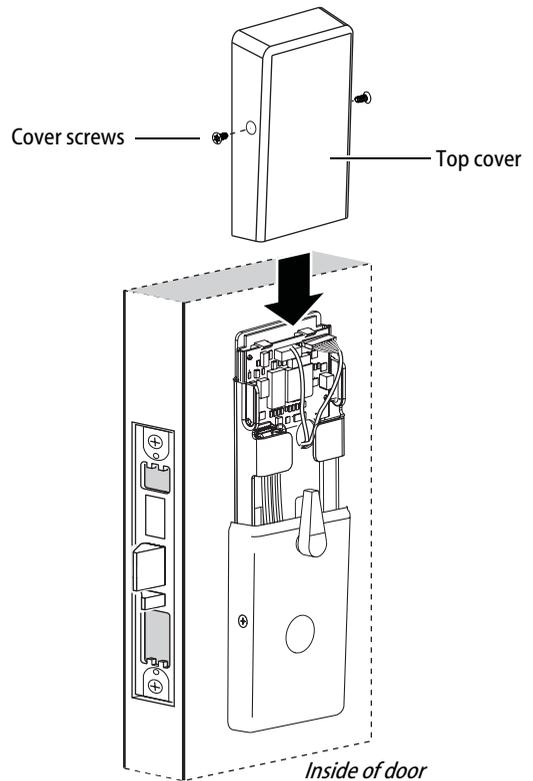
Figure 17   Installing the top cover

Completing the installation at the door

19 Install inside and outside knobs/levers

For both knobs and levers

Unscrew the inside spindle one full turn to allow the spindles to turn freely.

For knobs

1 From the outside of the door, insert the outside knob and spindles assembly into the lockset.
2 Slide the inside knob onto the inside spindle and secure it with the set screw.
3 Push the set screw cap into the set screw hole.
4 Tighten the trim mounting screws.
5 Turn the knobs to check that they operate smoothly.

For levers

1 With the handle pointing toward the door hinges, insert the outside lever and spindles assembly into the lock from the outside of the door.
2 Slide the inside lever onto the inside spindle and secure it with the set screw.
3 Tighten the trim mounting screws.
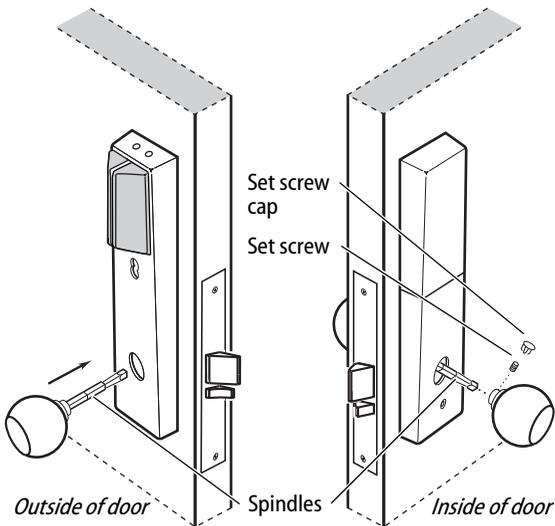4 Turn the levers to check that they operate smoothly.

Set screw cap

Set screw

Outside of door

Spindles

Inside of door

Figure 18a Installing the knobs

Set screw
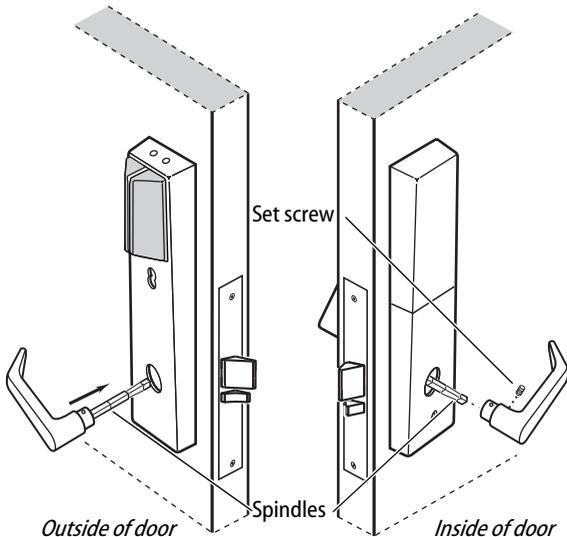
Outside of door

Spindles

Inside of door

Figure 18b Installing the levers

Completing the installation at the door

20 Install core (DEU/DEL and TDEU/TDEL only)

1 Insert the control key into the core and rotate the key 15 degrees to the right.

2 With the control key in the core, insert the core into the cylinder.

3 Rotate the control key 15 degrees to the left and withdraw the key.

   Caution: **The control key can be used to remove cores and to access doors. Provide adequate security for the control key.**
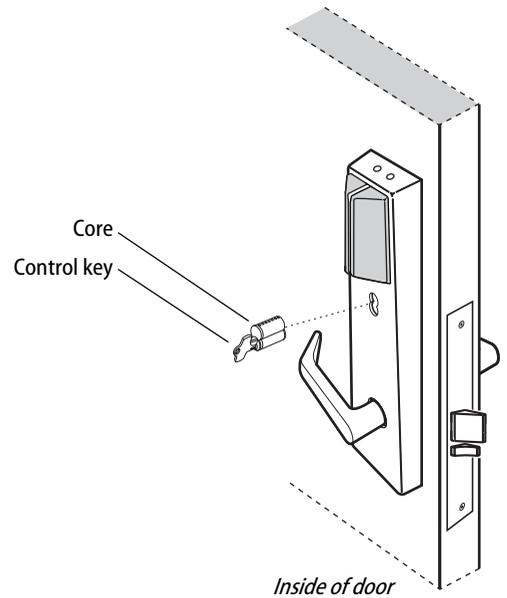
Core

Control key

Inside of door

Figure 19 Installing the core

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Completing the installation at the door
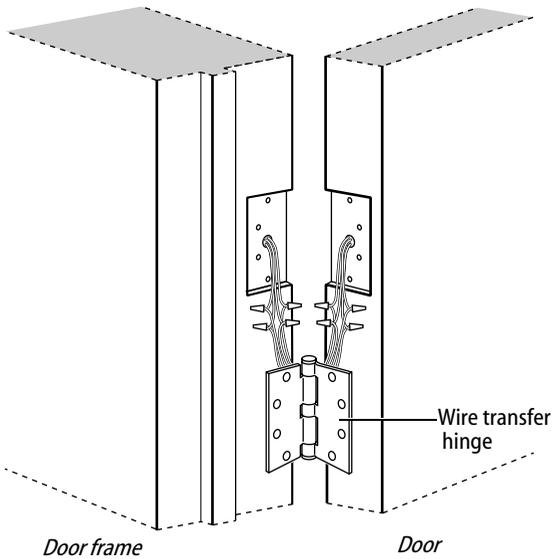
Figure 20   Installing the wire transfer hinge

21 Install wire transfer hinge

Note: *BEST recommends one of the following concealed electric hinges from Stanley Security Solutions. For more information, contact your BEST representative.*

Hinge	Description†
CECB 179-66	Standard weight; steel
CECB 168-66	Heavy weight; steel
CECB 191-66	Standard weight; brass

† All hinges measure 4.5″ × 4.5″ and have a 26D finish. All hinges have two 24 AWG wires rated for 2 A at 12 or 24 volts (AC or DC) and four 28 AWG wires rated for 1 A at 12 or 24 volts (AC or DC).

1 Trim the power and sensor wires that you pulled through the hinge edge of the door. Leave sufficient length to connect to the wire transfer hinge and to allow for future splices.

2 Splice the field wires to the leads on the frame side of the hinge, following the hinge manufacturer's instructions.

3 Splice the power and sensor wires from the lock to the leads on the door side of the hinge, matching each lead to its corresponding wire.

   Note: *If the lock has an optional RQE status sensor, splice only the pair of RQE wires for the switch on the inside of the door, which you identified in Task 9 on page 6. Put the unused pair of RQE wires in the door.*

4 Insert the wires and splice connectors into the holes or pockets in the door and frame, being careful not to pinch the wires. Install the wire transfer hinge.

Completing the installation at the door

22 Install strike box and strike plate

1 Insert the strike box into the mortise in the door jamb. Place the strike plate over the strike box and secure the strike with the screws provided.

2 Check the position of the auxiliary bolt against the strike plate.

   Caution: **The auxiliary bolt must make contact with the strike plate. The auxiliary bolt deadlocks the latchbolt and prevents someone from forcing the latch open when the door is closed. If the incorrect strike is installed, a lock-in can occur.**

   Note: *The recommended gap between the door and jamb is 1/8″ .*
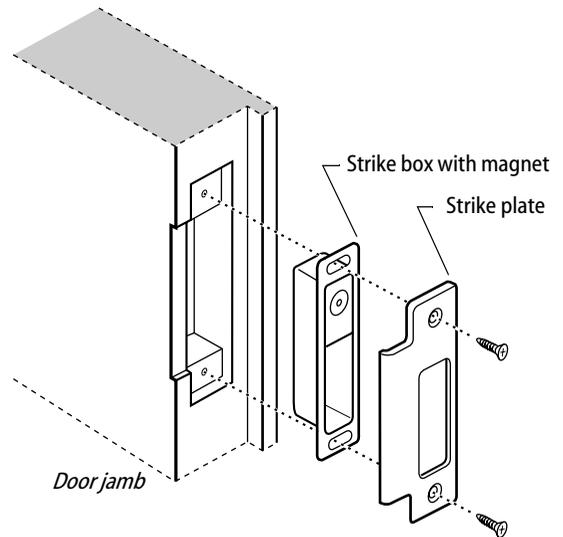
Figure 21a Installing the strike box and strike plate

23 Optional: Install lock power supply

If you are providing a separate power supply for the lock, instead of providing power via the panel interface module, connect the two power field wires (run from the wire transfer hinge) to the power supply. Make sure power (12 volts DC) and ground are connected properly.

Follow the instructions provided by the power supply manufacturer. Do not plug in the power supply yet.
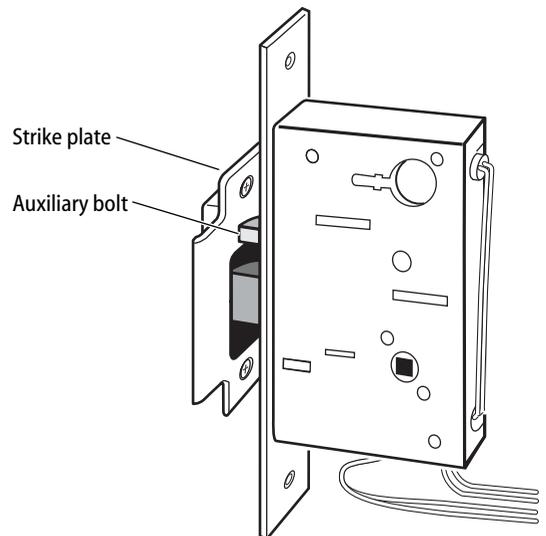

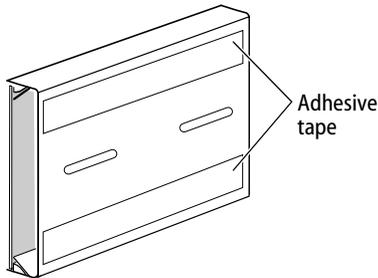*Figure 21b Positioning the strike*

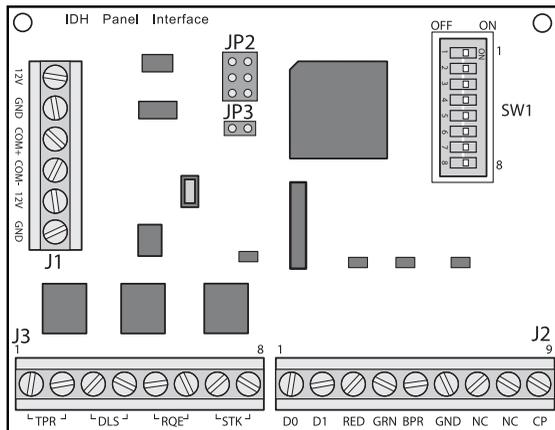T81624_B

Figure 22   Mounting the panel interface module

Figure 23a Panel interface circuit board
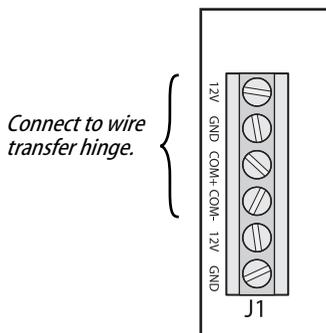
Figure 23b Connecting field wiring from the
wire transfer hinge

Installing the panel interface module

24 Mount panel interface module

Peel the paper off the adhesive tape affixed to the back of the panel rail and press the panel rail into position.

Note: *Mount the panel interface module in the enclosure with the access control panel/reader interface, if possible.*

25 Connect field wiring from wire transfer hinge to panel interface module

1 Connect the two communication field wires (run from the wire transfer hinge) to the COM+ and COM− terminals on the panel interface circuit board.

Note: *The field wire harness leads, connected to the door side of the wire transfer hinge, are described in the table below.*

Wire	Color
Ground	Black
12 VDC	Red
Com+	Orange
Com−	Green

2 If you are providing power to the lock through the panel interface module, connect the two power field wires (run from the wire transfer hinge) to the 12V and GND terminals on the panel interface circuit board.

Note: *JP2 and JP3, shown in Figure 23a, are used for manufacturing purposes only.*

3 Connect the RS-485 shield wire to one of the GND terminals on J1.

Installing the panel interface module

26 Connect panel interface module to access control panel/reader interface

With power removed from the panel interface circuit board and the access control panel/reader interface, connect the wiring between the panel interface circuit board and the access control panel. Refer to the table below.
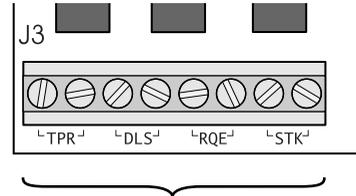
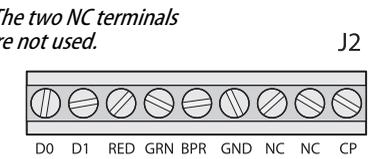Connect to access control panel/reader interface.

Figure 24a Connecting to the access control panel/ reader interface

| Terminals	Description	Related DIP switches
TPR (on J3) Communication tamper output *or* Latchbolt status output	Switch-like output to the access control panel/reader interface that is configured using DIP switch 8 to serve one of two possible functions: **Option 1—Communication tamper output:** Indicates the status of the communication connection between the panel interface circuit board and the lock's control electronics circuit board. By default, the output is closed to indicate communication is OK and open to indicate communication has been interrupted. **Option 2—Latchbolt status output:** Indicates the state of the lock's latchbolt status switch. By default, the output is closed to indicate the latchbolt status switch is closed. **Note:** *The lock's latchbolt status switch is closed when the latchbolt is extended.*	**DIP switch 8** configures the function of this output. **DIP switch 6** provides the ability to invert the signal.
DLS (on J3) Door status & latchbolt status output *or* Door status output	Switch-like output to the access control panel/reader interface that is configured using DIP switch 8 to serve one of two possible functions: **Option 1—Door status & latchbolt status output:** Indicates whether the door is secure (both the door status and latchbolt status switches are closed) or unsecure (one or both of these switches are open). By default, the output is closed to indicate the door is secure. **Option 2—Door status output:** Indicates the state of the lock's door status switch. By default, the output is closed to indicate the door status switch is closed. **Note:** *The lock's door status switch is closed when the door is closed.*	**DIP switch 8** configures the function of this output. **DIP switch 5** provides the ability to invert the signal.
RQE (on J3) Request-to-exit status output	Switch-like output to the access control panel/reader interface that indicates the status of the lock's RQE switch. By default, the output is closed to indicate the RQE switch is closed. **Note:** *The lock's RQE switch is closed when the door knob/lever is turned, activating the switch.*	**DIP switch 4** provides the ability to invert the signal.
STK (on J3) Strike input	Input from the access control panel's/reader interface's strike relay, which provides the solenoid control signal. The access control panel/reader interface output usually has normally open (NO) and normally closed (NC) terminals, as well as a common terminal. The common and NO terminals should be connected to the two STK terminals on J3. To invert the operation, use the access control panel's/reader interface's common and NC terminals. The operation of the solenoid varies by lock function. See the *IDH Max Lock Service Manual* (T60775).	None

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Installing the panel interface module

Terminals	Description	Related DIP switches
D0, D1, & CP (on J2) Token data output	D0 is the Data 0 (Wiegand) or Strobe (ABA) token data output to the access control panel/reader interface. D1 is the Data 1 (Wiegand) or Data (ABA) output. D0 and D1 are capable of transmitting up to 250 feet. **Note:** *The strobe signal is sometimes called 'clock'.* CP is the Card Present (ABA) output. The card present signal is low (0 volts DC) during output of ABA token data.	None
RED & GRN (on J2) Reader LED input	Input for the red and green LED control signal(s) from the access control panel/reader interface. This input is configured using DIP switch 1 for either one-wire LED operation or two-wire LED operation. **Two-wire LED operation:** Connect the access control panel's/reader interface's red LED output to the RED terminal and the access control panel's/reader interface's green LED output to the GRN terminal. The reader's red LED turns on when the access control panel/reader interface provides 0 volts DC to the input for the red LED. The reader's green LED turns on when the access control panel/reader interface provides 0 volts DC for the green LED. **One-wire LED operation:** Connect the access control panel's/reader interface's LED output to the RED terminal. The reader's LEDs are controlled as shown below. | Input signal	LED response
---	---
0 volts DC	Green LED ON
5 volts DC	Red LED ON
Not driven	Both LEDs OFF | **Note:** *The signals provided to the Reader LED input and the Sounder input must be greater than 3.5 volts DC to be interpreted as a 5 volts DC signal. Signals with voltage less than .8 volts DC are interpreted as 0 volts DC (connection to ground (GND).*	**DIP switch 1** configures this input for one-wire or two-wire operation.
BPR & GND (on J2) Sounder input	Input for the sounder control signal from the access control panel/reader interface. By default, the lock's sounder turns on when the access control panel/reader interface closes the contact for the sounder, connecting the panel interface circuit board's BPR terminal to ground (GND).	**DIP switch 7** provides the ability to invert the interpretation of the sounder input signal.
12V & GND (on J1) Power input	Input for 12 volts DC at .1 amp power supply. *Caution:* **To prevent damage and injury, connect the power supply after all other connections have been made.**	None

Note: *The two NC terminals on J2 are not used.*

J2

D0 D1 RED GRN BPR GND NC NC CP

Connect to access control panel/reader inter-

Figure 24b Connecting to the access control panel/ reader interface

V GND COM+ COM− 12V GND
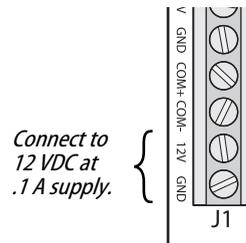
Connect to 12 VDC at .1 A supply.

J1

Figure 24c Connecting to the power supply

Installing the panel interface module

27 Set panel interface module DIP switches

Set the DIP switches on the panel interface circuit board. Refer to the table below. Default settings are shown in boldface.

28 Set and connect power supply

1 Make sure that the output voltage of the power supply for the panel interface module and lock is set to 15 volts DC or lower.

2 Make the final power supply connections.
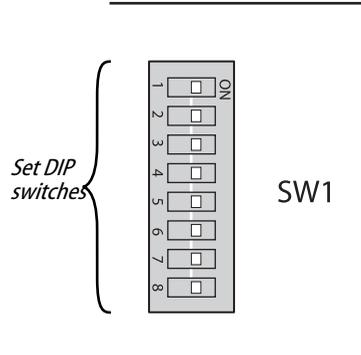
3 Adjust the power supply output voltage to 13.8 volts DC.

Figure 25 Setting DIP switches

Feature	Option	DIP Switch Setting
Reader LED input configuration Provides the ability to select between one-wire and two-wire LED operation for the reader LED input.	Two-wire operation	Switch 1–ON
	One-wire operation	**Switch 1–OFF**
Baud rate selection Provides the ability to select the baud rate for communication between the panel interface circuit board and the lock's control electronics circuit board. **Note:** *To control the baud rate using DIP switches 2 and 3 on the panel interface circuit board, DIP switches 6 and 7 on the control electronics circuit board both must be set to ON (automatic baud rate detection).*	38400 bps	Switch 2–OFF Switch 3–OFF
	19200 bps	Switch 2–ON Switch 3–OFF
	9600 bps	**Switch 2–OFF Switch 3–ON**
	2400 bps	Switch 2–ON Switch 3–ON
Request-to-exit (RQE) status output configuration Provides the ability to invert the request-to-exit (RQE) status signal. If DIP switch 4 is ON, the contact is closed when the door knob/lever is turned, activating the RQE switch.	**Normally-open (NO)**	**Switch 4–ON**
	Normally-closed (NC)	Switch 4–OFF
Door status & latchbolt status / Door status output configuration Provides the ability to invert the signal for this output. If DIP switch 8 is ON and DIP switch 5 is ON, the contact is closed when the door is secure (the door status switch & latchbolt status switch are closed). If DIP switch 8 is OFF and DIP switch 5 is ON, the contact is closed when the door is unsecured (the door status switch is closed).	**Normally-closed (NC)**	**Switch 5–ON**
	Normally-open (NO)	Switch 5–OFF
Communication tamper / Latchbolt status output configuration Provides the ability to invert the signal for this output. If DIP switch 8 is ON and DIP switch 6 is ON, the contact is closed when the communication connection between the panel interface circuit board and the lock's control electronics circuit board is OK. If DIP switch 8 is OFF and DIP switch 6 is ON, the contact is closed when the latchbolt is extended (the latchbolt status switch is closed).	**Normally-closed (NC)**	**Switch 6–ON**
	Normally-open (NO)	Switch 6–OFF

Testing the installation

Feature	Option	DIP Switch Setting
Sounder input configuration Provides the ability to invert the interpretation of the sounder input signal. The normal input configuration interprets a closed contact as sounder ON.	**Normal input**	**Switch 7–ON**
	Inverted input	Switch 7–OFF
Function of TPR terminals and DLS terminals Provides the ability to determine the function of the TPR terminals and DLS terminals, as shown below.	**Option 1**	**Switch 8–ON**
	Option 2	Switch 8–OFF

Configuration option	Function of TPR terminals	Function of DLS terminals
Option 1 (Switch 8–ON)	Communications tamper	Door status & latch status
Option 2 (Switch 8–OFF)	Latch status	Door status

29 Test installation

Perform the following steps to test the installation. Also, perform any standard testing recommended by the manufacturer of the access control panel. If you encounter problems, see *Troubleshooting the installation,* on page 21.

1 Check the control electronics' green status LED and the panel interface module's green status LED.

Both LEDs should be blinking, indicating that the communication connection between the panel interface circuit board and the lock's control electronics circuit board is OK.

2 After performing any necessary programming for the lock and putting the door in a locked mode, use a valid token to access the lock.

Confirm that the red reader LED, green reader LED, and sounder respond as expected.

The lock should allow access, verifying that the solenoid is working.

To check that the reader is working, view the lock's event history and verify that the information recorded for the token is correct.

3 Use an invalid token to attempt to access the lock.

Confirm that the red reader LED, green reader LED, and sounder respond as expected.

The lock should deny access.

Troubleshooting the installation

4   With the door armed, attempt to exit through the door.

   The request-to-exit (RQE) feature should let you exit without triggering an alarm by the access control panel.

5   Remove power from the lock and check whether the door remains locked or is unlocked.

   Verify that the lock fails safe or secure, according to its function.

6   With the door armed, hold the door open. Hold a magnet against the edge of the door, over the door status sensor, until the access control panel sees the door as closed. Then remove the magnet.

   Verify that the appropriate alarm response is triggered by the access control panel, indicating that the door status sensor is working.

7   With the door armed, hold the door open. Hold a magnet against the edge of the door, over the door status sensor, until the access control panel sees the door as closed. With the magnet in place, push in the latchbolt.

   Verify that the appropriate alarm response is triggered by the access control panel, indicating that the latchbolt status sensor is working.

Troubleshooting

To troubleshoot installation problems, refer to the table below. For more information, refer to the *IDH Max Lock Service Manual* (T60775) and to the documentation provided by the manufacturer of the access control panel/reader interface.

You notice . . .	Possible causes include . . .	You should . . .
Control electronics' green status LED and panel interface module's green status LED are steadily on. **Note:** *You can check the control electronic's green status LED by removing the access door from the inside trim. You can see the reflection of the LED inside the upper-left corner of the trim.*	Communication between the lock's control electronics circuit board and the panel interface circuit board has been interrupted.	Make sure DIP switches 6 and 7 on the lock's control electronics circuit board are both set to ON (automatic baud rate detection) or to the same positions as DIP switches 2 and 3 on the panel interface circuit board. Check the connections for all communication field wiring. Check the communication connections between the field wire harness and the wire transfer hinge.

– Continued on the next page

Troubleshooting the installation

You notice . . .	Possible causes include . . .	You should . . .
Control electronics' green status LED is off.	Power is not being supplied to the lock.	Make sure that the lock's power supply is connected to electrical service. Check the connections for all power field wiring to the lock. Check the power connections between the field wire harness and the wire transfer hinge.
Panel interface module's green status LED is off.	Power is not being supplied to the panel interface module.	Check the connections for power wiring between the panel interface module and the access control panel (or other power source).
A 'door forced' alarm occurs when someone exits through the door.	RQE wiring, and door status and/or latchbolt status wiring, is reversed between the panel interface module and the access control panel/reader interface.	Refer to *Connect panel interface module to access control panel/reader interface*, on page 17, and correct the wiring problem.

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