with Aperio™ Technology
Cylindrical Lock
Installation Instructions
# Table of Contents

1. Warning ........................................................................................................... 3
2. General Description ....................................................................................... 4
3. Hardware Specifications .................................................................................. 4
4. Electronic Specifications .................................................................................. 4
5. Parts Breakdown .............................................................................................. 5
6. Lock Installation ............................................................................................... 7
7. Operational Check ............................................................................................ 19
8. Lock LED Indications ....................................................................................... 20

## Warning

Changes or modifications to this device not expressly approved by ASSA ABLOY could void the user’s authority to operate the equipment.

### FCC:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### Industry Canada:

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Conformément à la réglementation d’Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d’un type et d’un gain maximal (ou inférieur) approuvé pour l’émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l’intention des autres utilisateurs, il faut choisir le type d’antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l’intensité nécessaire à l’établissement d’une communication satisfaisante.

Any retrofit or other field modification to a fire rated opening can potentially impact the fire rating of the opening, and SARGENT Manufacturing makes no representations or warranties concerning what such impact may be in any specific situation. When retrofitting any portion of an existing fire rated opening, or specifying and installing a new fire-rated opening, please consult with a code specialist or local code official (Authority Having Jurisdiction) to ensure compliance with all applicable codes and ratings.

To avoid possible damage from electrostatic discharge (ESD), some basic precautions should be used when handling electronic components:

- Minimize build-up of static by touching and/or maintaining contact with unpainted metal surfaces such as door hinges, latches, and mounting plates especially when mounting electronic components such as readers and controllers onto the door.
- Leave components (reader and controller) protected in their respective anti-static bags until ready for installation
- Do not touch pins, leads or solder connections on the circuit boards
IN100 Cylindrical Lock

2 General Description

The SARGENT® IN100 mortise lock with Aperio™ Technology makes it easy and cost-effective to bring access control to more doors. It uses local wireless communication between the lock and an Aperio hub to connect to an access control system, eliminating the greatest cost and inconvenience of traditional access control – the wiring at the door. The IN100 utilizes HID® multiCLASS SE® technology, it supports heightened identity security and multiple credentials, including mobile access.

All technology features are supported by the physical security of SARGENT ANSI/BHMA Grade 1 hardware - quality components that provide high security, performance and durability.

3 Hardware Specifications

- Complete lockset with on-board memory
- ADA compliant
- Easily retrofits existing (cylindrical lock) door preps
- Latch - 1/2” standard 3/4” throw fire-rated double doors (optional) (41- prefix)
- Deadlocking latch - Stainless steel, non handed
- Lock furnished for 1-3/4” doors. For other thicknesses, consult factory.
- ANSI/BHMA A156.25 Listed Grade 1 Compliant
- Outside lever controlled by contactless reader or mechanical cylinder
- May be used for indoor and exterior applications

4 Electronic Specifications

- Input Power: DC 9V, 1.5A (6 AA alkaline batteries)
- Optional hard-power 12VDC to 24VDC
- HID® multiCLASS SE™ technology offers support for the following credentials:
  - High Frequency (13.56 MHz):
    - HID iCLASS®
    - HID iCLASS SE® (SIO-enabled)
    - HID iCLASS® Seos™
    - HID MIFARE® SE
    - HID DESefire® EV1 SE
    - MIFARE Classic
    - DESefire EV1
  - Low Frequency (125 kHz):
    - HID Prox®
    - NFC-enabled Mobile Phones
- Uses low-rate wireless personal area networks (IEEE 802.15.4)
- Multiple time zone and holiday access scheduling
- First-in unlock or automatic unlock configuration, based on specified time schedule
- Uses AES 128-bit wireless encryption*
- Privacy button

*For specific security information, please contact your local ASSA ABLOY Door Security Solutions sales consultant or call 800-810-WIRE.

To comply with “Fire Listed” doors, the batteries must be replaced with alkaline batteries only.

Warning: SARGENT Mfg. Co. IN100 locksets utilizing a door position switch (DPS) are not rated for, or intended for use in life safety applications.
## Parts Breakdown

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART NUMBER/ORDER STRING</th>
<th>DESCRIPTION</th>
<th>COLOR/TRIM</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN-100-EM0110G77-IP-B</td>
<td>HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESFire® EV1 SE, HID Prox®, NFC-enabled mobile phones</td>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IP-W</td>
<td>HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESFire® EV1 SE, HID Prox®, NFC-enabled mobile phones</td>
<td>White</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IP-MB-[xxx]*</td>
<td>HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESFire® EV1 SE, HID Prox®, NFC-enabled mobile phones</td>
<td>Black with metal trim</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IP-MW-[xxx]*</td>
<td>HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESFire® EV1 SE, HID Prox®, NFC-enabled mobile phones</td>
<td>White with metal trim</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IPS-B</td>
<td>All credentials supported by the IP option plus MIFARE Classic and DESFire EV1</td>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IPS-W</td>
<td>All credentials supported by the IP option plus MIFARE Classic and DESFire EV1</td>
<td>White</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IPS-MB-[xxx]*</td>
<td>All credentials supported by the IP option plus MIFARE Classic and DESFire EV1</td>
<td>Black with metal trim</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-100-EM0110G77-IPS-MW-[xxx]*</td>
<td>All credentials supported by the IP option plus MIFARE Classic and DESFire EV1</td>
<td>White with metal trim</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>IN-EM04</td>
<td>Mounting plate assembly</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>AA battery (alkaline only)</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>IN-EM02-B</td>
<td>Inside Escutcheon Assembly with Privacy Button - Black Plastic</td>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-EM02-W</td>
<td>Inside Escutcheon Assembly with Privacy Button - White Plastic</td>
<td>White</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-EM02-MB-[xxx]*</td>
<td>Inside Escutcheon Assembly with Privacy Button - Black Plastic &amp; Metal Trim</td>
<td>Black with metal trim</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IN-EM02-MW-[xxx]*</td>
<td>Inside Escutcheon Assembly with Privacy Button - White Plastic &amp; Metal Trim</td>
<td>White with metal trim</td>
<td>1</td>
</tr>
</tbody>
</table>

* Specify finish
## Parts Breakdown (Continued)

### Tools Required:
- #2 Phillips screwdriver
- Flat head screwdriver
- Security allen wrench

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### Adapter Plate/Spacer (10-0847)
*Adapter Plate/Spacer (10-0847) is only shipped with orders that specify 1-3/8” doors.*

### Lockbody Assembly 10G77 (Standard Cylinder) (10-3452)
- 10-3453: Lockbody - LFIC (Removable Core)
- 10-3454: Lockbody - SFIC
- 10-3455: Lockbody - Keso
- 10-3456: Lockbody - Medeco Keymark LFIC & Schlage Full Size Interchangeable Core

**The IN100 10G77 cylindrical lock supports Escape Return functionality.**

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### Inside Lever (Reference Catalog for Available Styles) (10-0043)

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**The IN100 10G77 cylindrical lock supports Escape Return functionality.**

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**The IN100 10G77 cylindrical lock supports Escape Return functionality.**

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**The IN100 10G77 cylindrical lock supports Escape Return functionality.**

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**The IN100 10G77 cylindrical lock supports Escape Return functionality.**
Lock Installation

1 Prepare Door

A. Verify Hand and Bevel of Door
Stand on outside of locked door when determining door hand.

Fig. 1A

LH
Left Hand
Hinges Left
Open Inward

LHRB
Left Hand
Reverse Bevel
Hinges Left
Open Outward

RH
Right Hand
Hinges Right
Open Inward

RHRB
Right Hand
Reverse Bevel
Hinges Right
Open Outward

B. Prepare Door
Prior to installation, all holes must be free of burrs, debris and sharp edges.
Prepare door according to appropriate template (see website www.intelligentopenings.com).

• Field Template: A8149 (ships with product)
• Door Manufacturer's Template: 4712

Fig. 1B Wood Door Preparation
2 Install Strike

Install strike in the door frame (Fig. 2).

3 Install Latchbolt

1. Install latch with beveled bolt facing the strike.
2. Attach with two screws but DO NOT tighten completely at this time.
   See section 8 - Secure Lock to the Door.

   IMPORTANT: Latch bevel must match door bevel and
   deadlocking latch must stop on strike when door is closed.

4 Install Door Position Switch (DPS)

1. Push wires through raceway toward lock prep.
2. Push DPS firmly into place by hand.
   Note: DO NOT TAP SWITCH WITH ANY TOOL.
3. Install magnet into door frame. Push firmly into place by hand.
   See A7983.
4. To connect DPS to lock controller per diagram, refer to the wiring in
   Step #10 (Page 15).

CAUTION: if DPS is not installed or is installed improperly, door status monitoring features will
not function.
5 Lock Adjustments

A. Lock Preset:

- Lockbody holes: 12 and 6 o’clock (Fig. 5).

The lock is shipped “preset” and does not require adjustment for 1-3/4” thick doors.

NOTE: Adjusting for a thicker door requires removal of the outside lever, scalp and spacer bushing; see the following sections.

If preset lock does not require adjustment, proceed to Section 7 - Install Lock.
6 Through-Bolt and Door Thickness Adjustment (If Required)

A. Remove Outside Lever
   1. Insert key, rotate 45° clockwise and hold.
   2. Depress lever retainer with push pin tool (provided).
   3. Pull lever outward.

B. How To Change Cylinder (If Necessary)
   1. With outside lever in hand, use standard pliers to pull out cylinder retainer.
   2. Remove key and cylinder from lever.
   3. Insert new cylinder.
   4. Secure by pressing cylinder retainer flush with the lever.
C. Through-Bolt and Door Thickness Adjustment

1. (If necessary) remove outside lever, scalp and spacer bushing (Fig. 6C).

2. Rotate mounting plate to either align with through-bolt holes in door, or adjust for proper door thickness (Fig. 6D). Refer to markings on through-bolt post (Fig. 6C Detail).

3. Re-install spacer bushing to align with back of lever, scalp, and lever (Fig. 6D).
7 Install Lock

1. From outside of door feed lockbody harness into the lockbody hole (Fig. 7A).
   **For metal door:** Feed harness through inside of door (not shown).
2. Continue to feed harness into raceway (towards top of door), exiting raceway hole on inside of door (Fig. 7B).
3. Slide lockbody into cross-bore hole from outside of door.
4. Lockbody must engage both the latch unit prongs and tail piece (Fig. 7C).

**IMPORTANT:**
- Door must remain open during installation (use door stop)
- Lockbody must be centered in the door
- Tuck excess wires into raceway to avoid pinching or damaging wires

**NOTE:** Cable lengths exaggerated for illustrative purposes.
8 Secure Lock to the Door

1. Slide inside rose assembly and spacer bushing over lockbody.
2. Position ground lug between (top) #10-32x1-1/4” through-bolt and rose assembly (Fig. 8A).
   **NOTE:** Proper placement of ground wire (Fig. 8B) will prevent pinching/damage to the ground wire.
3. Secure rose assembly with (2) #10-32x1-1/4” through-bolts.
4. Secure latch by fully tightening (2) #6 x 3/4” self-tapping screws (refer to previous section 3 - Install Latchbolt).
   **NOTE:** Cable lengths exaggerated for illustrative purposes.

9 Assemble Inside Trim

1. Verify spacer bushing is inserted horizontally and aligned with lever (Fig. 9).
2. Place rose over shaft of lockbody against the surface of the door; hand-tighten, turning **clockwise**.
3. Attach lever. Push until engaged.
10 Outside Reader Installation

1. Orient the reader so the LED lens is at the top (Fig. 10A).
2. Feed the cable/connector through the door (from outside to inside).
3. Install the reader to the outside of door by aligning the mounting posts with the door preparation holes. Hold the reader flush against door while ensuring proper alignment.

NOTE: Cable lengths exaggerated for illustrative purposes.
10 Outside Reader Installation (Continued)

4. Feed the reader harness and DPS connectors through the inside mounting assembly (and gasket if required*). See Figure 11B.

IMPORTANT: Do not run wires through bottom flange hole in plate (Fig. 11B, C) - it will damage wires and the controller connector. Route wires around flange, do not route wires through the flange hole (Fig. 11C).

5. Tuck excess cable into wire hole on inside of door.

6. Begin to secure the mounting assembly by partially tightening the (2) through-bolts on the inside of the door while ensuring proper alignment as you secure the reader (Fig. 11B).

6. Secure ground lug with #6-32 machine screw (Fig. 10C).

*Gasket is required for outdoor installations. Do not use gasket for fire-rated openings.

If installing with gasket; separate gasket from mounting plate to feed cables/connectors through holes as indicated (Fig. 10B).

Once cables/connectors are fed through, reattach gasket to mounting plate.
10 Outside Reader Installation (Continued)

Installation of Connectors

**CAUTION - Do not touch or allow debris to enter connector contacts.**

Secure the following connectors to their respective terminals (Fig. 11D):

A. Secure the 4-pin DPS connector.
B. Secure the 10-pin lock body assembly connector.

*NOTE: Optional 2-pin external 9-24VDC power connector.

**IMPORTANT:** Do not run wires through bottom hole in plate - it will damage wires and the controller connector. Route wires around flange, do not route wires through the flange hole (Fig. 11B, D).

C. When all connections have been made, tuck excess cable into wire hole on inside of door.

Secure Mounting Plate

D. Secure the mounting assembly while ensuring proper alignment of outside reader and tighten the (2) through-bolts on the inside of the door to secure the reader (Fig. 11E).

E. Secure the 24-pin card reader connector (Fig. 11F).
11 Installation of Inside Component Assembly (Controller)

1. Insert top tabs of controller into slots on mounting plate (Fig. 12).
2. Ensure proper alignment of board-to-board connectors while pivoting bottom of controller toward door until tab on bottom snaps securely into place on mounting plate.

CAUTION: To avoid possible damage to board-to-board connectors, care should be taken when securing controller to mounting plate. If there is resistance when securing, detach controller to determine cause before re-attaching controller.
13 Battery Installation

1. Place (6) “AA” alkaline batteries in the compartment, being careful to align polarity properly (Fig. 12).
2. After batteries are installed, there is a slight delay; then red and green flash*, audible “beep” and lock motor will cycle.
   *See Section 8 - LED Indications for more information

14 Inside Cover Installation

1. Assemble cover by hooking top edge on inside mounting plate.
2. Carefully press bottom of cover toward door without pinching or damaging wires.
3. Secure cover utilizing security allen wrench (provided).
7 Operational Check

1. Insert key into cylinder and rotate (Fig. 14A).
   There should be no friction against lock case, wire harness or any other obstructions.
2. Check that the key retracts the latch.
   The key should rotate freely.
3. Try the inside lever; ensure it retracts latch.
4. Present a valid credential* (Fig. 14B) to unlock outside lever; turn lever handle to ensure latch retracts.

Note: The credential should approach the inscription on the reader as indicated (Fig. 14B) to ensure the credential is read properly.
Do not wave credential.
LED Indications

The communication hub has a single LED. It supports an optical scheme of red, green and yellow.

The indication scheme is described by the figures below:

Communication Hub LED indications

2 sec.

Online  Green
Aperio® lock offline  Green + one red flash
EAC offline  Green + two red flashes
Aperio® lock and EAC offline  Green + three red flashes

UHF communication  Yellow + off, fast flash

Some special LED indication schemes are used during lock maintenance actions:

2 sec.

Pairing active  Yellow + green

Ethernet LED indication

The LED on the AH40 communication hub indicates both the status of the Ethernet link level and ethernet communication:

2 sec.

Ethernet link connected  Green
Ethernet communication  Green + off fast flash

*For more information, refer to Aperio Online Quick Installation Guide Document No: ST-001322-PF Date: 2015-12-23
Lock LED indications

The lock has three LEDs. They support an optical scheme with red, yellow and green. The indication scheme is described by the figures below:

Figure 4. Lock normal operation LED indication

<table>
<thead>
<tr>
<th>Indication</th>
<th>LED Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card + PIN access (configurable)</td>
<td>One yellow flash after card, two flashes before PIN (.125 second)</td>
</tr>
<tr>
<td>Card access (configurable)</td>
<td>One yellow flash (.25 second)</td>
</tr>
<tr>
<td>Access granted, EAC offline or online</td>
<td>One green flash (1 sec.)</td>
</tr>
<tr>
<td>Access denied, EAC online</td>
<td>One red flash (1 sec.)</td>
</tr>
<tr>
<td>Force closed in remote open/office mode</td>
<td>Five yellow flashes and one red flash (.25 second)</td>
</tr>
<tr>
<td>Busy blink, com hub busy with other locks</td>
<td>Continuous yellow flashes (.25 seconds every second)</td>
</tr>
<tr>
<td>Access denied, EAC offline</td>
<td>Three red flashes (.5 second each)</td>
</tr>
<tr>
<td>Lock mechanism is blocked when closing</td>
<td>Continuous red flashes (.125 seconds every 1 sec.)</td>
</tr>
<tr>
<td>Error in lock, maintenance required</td>
<td>Ten red flashes (.125 sec. each) (Repeated every 10 sec. if lock can’t close)</td>
</tr>
<tr>
<td>Tamper</td>
<td>Ten red flashes (.125 sec. each) repeated every 10 sec.</td>
</tr>
<tr>
<td>Time to replace the battery</td>
<td>Continuous yellow flashes (.25 seconds every 5 sec.)</td>
</tr>
<tr>
<td>Battery reached end of life, lock disabled</td>
<td>Continuous red flashes (.25 seconds every 5 sec.)</td>
</tr>
<tr>
<td>V3 USB cable detection action occurred</td>
<td>Five yellow flashes (.25 second each)</td>
</tr>
</tbody>
</table>

1) When the lock mechanism is blocked (lock jammed) the lever must be turned to release the lock mechanism.

Some special LED indication schemes are used during lock maintenance actions:

Figure 5. Lock hub normal operation LED indication

<table>
<thead>
<tr>
<th>Indication</th>
<th>LED Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter configuration mode</td>
<td>Five yellow flashes (.125 second each)</td>
</tr>
</tbody>
</table>
Lock Self-Test LED indication

After replacing batteries, a Power on Self Test (POST) is performed. The result is indicated using a series of red and green LED flashes as described by the figures below.

LED indication after power up/replacement of the battery

8.3.1 Battery not fully charged

Error in lock is an indication -10 quick (125ms) red blinks, that either new batteries are not at the right voltage or a backward battery has been installed; battery not fully charged; energy counter not reset or no Power on self-test done.

Error in lock, maintenance required

Ten red flashes (.125 sec. each)
(Repeated every 10 sec. if lock can’t close)

8.3.2 Test pass

1 red (1s) + 1 green (1s), Power on self-test passed, see table below.

Figure 6. Lock POST LED indication

POST Successful One red, one green flash (1 second)

8.3.3 Test fail

1 red (1s) + 3 blinks (500ms, green or red), at least one test failed (red), see table below.

If a fatal error is detected the lock will enter an Error state and continuously indicating fatal error and will not read cards nor unlock.

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sec</td>
<td>FATAL ERROR</td>
</tr>
<tr>
<td>0.5 sec</td>
<td>CABLE ERROR</td>
</tr>
<tr>
<td>0.5 sec</td>
<td>MECHANICAL ERROR</td>
</tr>
</tbody>
</table>

Tests core functionality. MCUs, memory and internal communication, etc.

Tests communication between the different parts in the system, i.e. different boards connected with a wire.

Test related to moving parts of the lock.