

# Aperio™ Hub AH20/AH30 Installation Instructions

Covers AAWL-260  
3 May 2011

**ASSA ABLOY**

ASSA ABLOY, the global leader  
in door opening solutions

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**ETL marking**  
Recognized component



N 16329  
Z 1217

**Intertek**  
4002570

Conforms to ANSI/UL standard 294, ANSI/UL 60950-1  
Certified to CAN/CSA standard C22.2 No. 60950-1

## AH20/AH30 - FCC and Industry Canada Statements

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*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 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.

*This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. 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.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:*

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

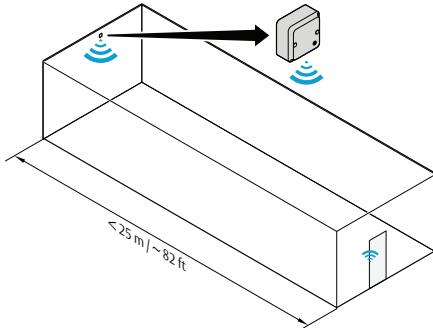
*The term "IC:" before the equipment certification number only signifies that the Industry Canada technical specifications were met.*

*Le terme "IC" devant le numéro de certification signifie seulement que les spécifications techniques Industrie Canada ont été respectées.*

*FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.*

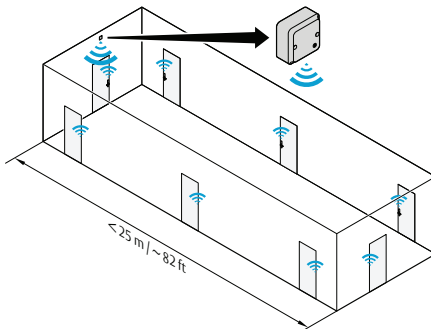
*IEEE 802.15.4 operation of this product in U.S.A. and Canada is limited to channels 11-25 by Aperio Programming Application. Outside of U.S.A. and Canada another version of the Aperio programming application allow use of channels 11-26.*

## AH20/AH30 - Placement of Communication Hub



AH20 (Wiegand Hub) - Placement of the Hub, 1 door

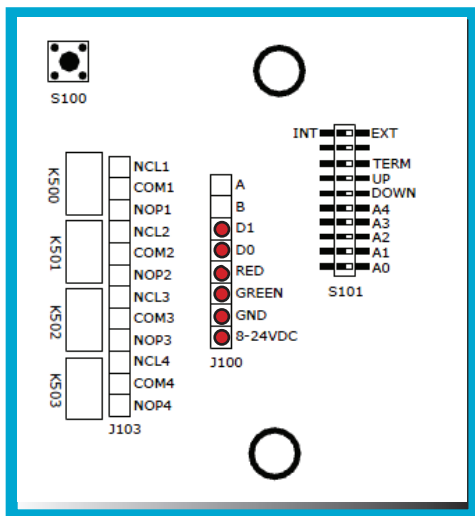
**Note:** AH20 can be installed with an Aperio bottom cover or Americas adaptor plate.



AH30 (RS485 Hub) - Placement of the Hub, 1-8 doors

**Note:** Note: AH20/AH30 must be installed into a junction box ex European 2-Gang, Aperio bottom cover or with Americas adaptor plate to junction box. AH20/AH30 shall only be installed with qualified and trained personal. Indoor installation only!

## AH20 (J100) - Connections



AH20 Connectors (J100)

**Note:** The installation shall comply with national wiring regulations.

## AH20 (J100) - Connections

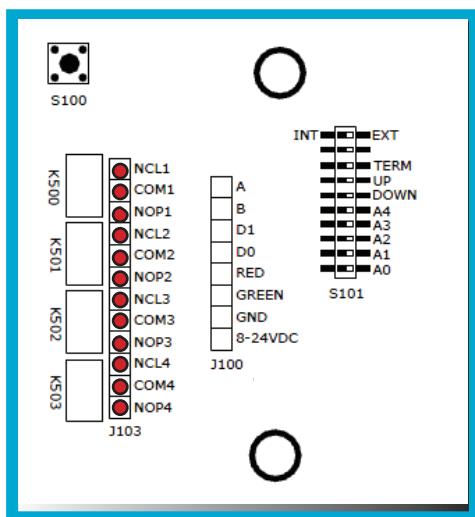
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Communication Hub hardware version AH20 has four Wiegand signals plus power supply. The purpose and connection of these signals are described in the table below.

HUB CONNECTOR	DESCRIPTION
DATA 1	Wiegand Data 1 signal. Output from Communication Hub. Used to transmit credentials.
DATA 0	Wiegand Data 0 signal. Output from Communication Hub. Used to transmit credentials.
RED	Wiegand RED LED signal. Input to Communication Hub. Used for access decision. Leave unconnected if DIP switch 1 is selected "OFF". Signal is active low.
GREEN	Wiegand Green LED signal. Input to communication Hub. Used for access decision. Signal is active low. See DIP 1 for alternate instructions.
GND	GND = Signal ground. Should be connected to EAC system GND and power supply GND.
8-24 VDC	Power supply input, 8-24 V DC. The power supply shall be a Limited Power Source (LPS) according to EN 60950-1. The power supply shall be 3A over current protected. Wire requirements 16-22 AWG.

### AH20 Connectors (J100)

## AH20 (J103) - Connections



AH20 Connectors (J103)

RELAYS	DESCRIPTION
Relay 1	DPS
Relay 2	RX
Relay 3	Battery Alarm Output
Relay 4	Tamper Alarm Output/ Lock Jammed
RELAY CONTACTS	DESCRIPTION
NCL	Normal Closed
COM	Common
NOP	Normal Open

**Relay max voltage:** 30 VDC  
**Relay max current:** 1 A  
 resistive load

On the AH20 four form C relays are available. The purpose of the four relays is to provide door status information to the EAC system.

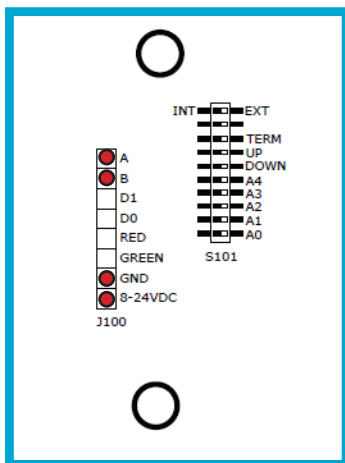
## AH20 - DIP Switch Configuration Table

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DIP SWITCH NUMBER	LABEL	DESCRIPTION
1	A0	Controls use of LED Red signal for access decision. ON => LED Red is used. OFF => LED Red is ignored.
2	A1	Set to OFF by default. Reserved for future use.
3	A2	Controls addition of parity bits if required. ON => Addition of parity bits is enabled. OFF => Addition of parity is disabled. Credentials are transmitted as received.
4	A3	Controls byte order of transmitted credentials. ON => The byte order is reversed compared to what is received as input to the Hub Wiegand EAC interface component. OFF => The byte order is left as is.
5	A4	Used in "Pairing Mode". ON => Starts in pairing mode. OFF => Normal use.
6-8		Not applicable (only used for AH30).
9		Not used.
10	INT/ EXT	Internal/External Antenna Use, ON = Internal



## AH30 (J100) - Connections



AH30 (J100) Connectors

HUB CONNECTOR	DESCRIPTION
A	RS485 Data A.
B	RS485 Data B.
GND	GND = Signal ground. Should be connected to EAC system GND and power supply GND.
8-24 VDC	Power supply input, 8-24 V DC. The power supply shall be a Limited Power Source (LPS) according to EN 60950-1. The power supply shall be 3A over current protected. Wire requirements 16-22 AWG.

**Note:** The installation shall comply with national wiring regulations.

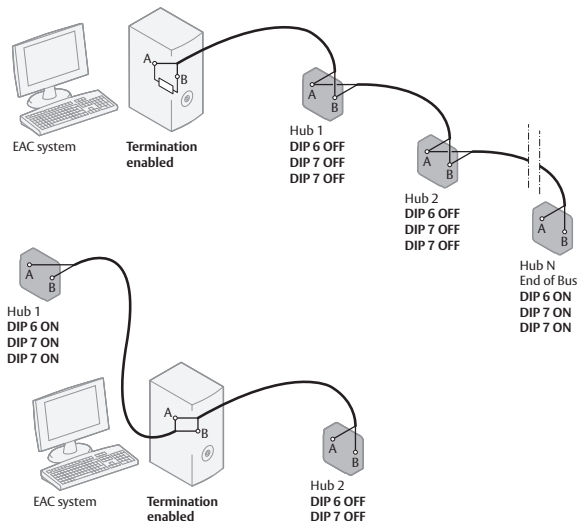
## AH30 - DIP Switch Configuration Table

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DIP SWITCH NUMBER	LABEL	DESCRIPTION
1-5	A0-A4	Controls RS485 addressing BIT 0-BIT 4. ON => Address bit set. OFF => Address bit NOT set. See AH30 - RS485 Addressing Reference on page 13.
6	DOWN	Controls use of RS485 pull down resistor. ON => 620 Ohm pull down connected/enabled. OFF => 620 Ohm pull down disconnected/disabled.
7	UP	Controls use of RS485 and pull up resistor. ON =>620 Ohm pull up connected/enabled. OFF => 620 Ohm pull up disconnected/disabled.
8	TERM	Controls use of termination resistor between RS485 A and RS485 B. ON =>100 Ohm termination resistor connected/enabled. OFF => 100 Ohm termination resistor disconnected/disabled.
9		Not used.
10	INT/EXT	Controls use of external antenna if required. ON =>Selects use of internal antenna. OFF => Selects use of external antenna.

## AH30 - RS485 Bus Connection

Examples of connection of multiple Communication Hubs to a single RS-485 bus of an EAC system:



*Communication Hub Connections, examples*

**Note:** The RS485 bus cable should be of type twisted pair. The maximum cable length of 1000 meters should not be exceeded.

## AH30 - RS485 Addressing

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ADDRESS	A0	A1	A2	A3	A4*
0	Pairing Active				
1	ON				
2		ON			
3	ON	ON			
4			ON		
5	ON		ON		
6		ON	ON		
7	ON	ON	ON		
8				ON	
9	ON			ON	
10		ON		ON	
11	ON	ON		ON	
12			ON	ON	
13	ON		ON	ON	
14		ON	ON	ON	
15	ON	ON	ON	ON	

*Address examples*

## AH30 - RS485 Addressing

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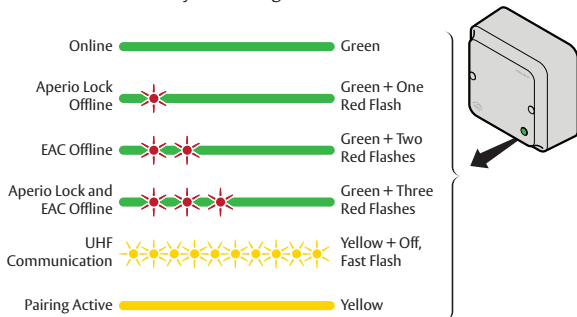
ADDRESS	A0	A1	A2	A3	A4*
16					ON
17	ON				ON
18		ON			ON
19	ON	ON			ON
20			ON		ON
21	ON		ON		ON
22		ON	ON		ON
23	ON	ON	ON		ON
24				ON	ON
25	ON			ON	ON
26		ON		ON	ON
27	ON	ON		ON	ON
28			ON	ON	ON
29	ON		ON	ON	ON
30		ON	ON	ON	ON
31	ON	ON	ON	ON	ON

### *Address examples*

\* = A4 is only supported on AH30 in 1 - 1 mode.

## AH20/AH30 - Communication Hub LED Indication

The Communication Hub has a single LED that supports an optical scheme with red, green and yellow. The indication scheme is described by the two figures below:



**Note:** With the software tool Aperio™ Programming Application and an USB radio dongle, further system installation parameters can be set.

## AH20/AH30 - Technical Data

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Physical Dimensions	82 mm x 82 mm x 37 mm (H x W x T)
Power Supply	8-24 VDC
Current	250 mA. Minimum 80 mA at 12 VDC.
Radio Standard	IEEE 802.15.4 (2400 – 2483,5MHz) 16 channels (11-26) 15 channels in USA and Canada (11-25) AES 128 bit encryption
Receiver Sensitivity	-100 dBm 20%PER
Wireless Transmit Power	10 dBm/MHz. Peak value from average detector according to EN ETSI 300 328 Maximum spectral density.
Wireless Operating Range	Indoors 15-25 meters depending upon installed environment.
Internal Antenna	Two cross polarized dipoles.
External Antenna	One reverse polarity SMA external antenna connector. AH20/30 is certified to be used with Assa Abloy external antenna AH-ANTENNA-1. If other external antenna is used it must be of same type (dipole) and not have larger antenna gain than 3,9dBi.
Operating Temperature	5°C to 35°C.
Humidity	< 95% non-condensing.
IP Classification	IP20
Safety and Emissions	FCC 47CFR Part 15 subpart B and subpart C IC RSS-210 EN ETSI 301 489-17 v2.1.1 EN ETSI 300 328 v1.7.1 EN 60950-1 ed.2 2007 UL 294-2010 C22.2

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