

Aperio® Hub AH20/AH30 Installation Instructions

Covers AAWL-260
April 2016

ASSA ABLOY

ASSA ABLOY, the global leader
in door opening solutions

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ETL marking
Recognized component



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

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.

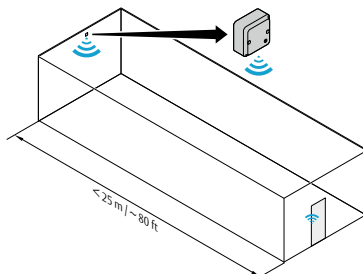
The term "IC:" before the equipment certification number only signifies that the Industry Canada technical specifications were met.

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.

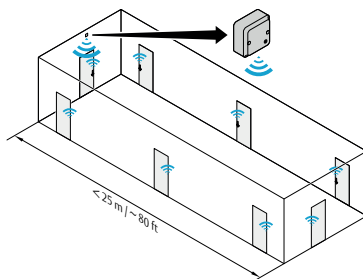
IEEE 802.15.4 operation of this product in U.S.A. and Canada is limited to channels 11-25 by Aperio® Programming Application. Outside of U.S.A. and Canada another version of the Aperio programming application allow use of channels 11-26.

AH20/AH30 - Placement of Communication Hub



AH20/30 - Placement of the Hub, 1 door

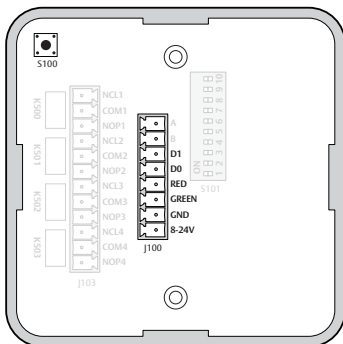
Note: AH20/AH30 can be installed with an Aperio bottom cover or Americas adaptor plate.



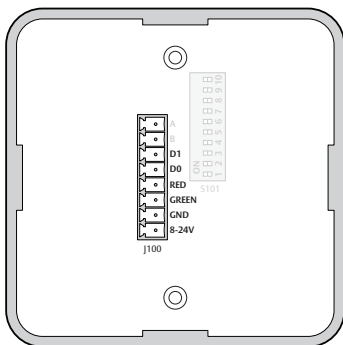
AH30 (RS485 Hub) - Placement of the Hub, 1-8 doors

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 must be installed by qualified and trained personal. Indoor installation only!

AH20 (J100) - Connections



AH20 Advanced Wiegand Connectors (J100)



AH20 Standard Wiegand Connectors (J100)

Note: The installation must comply with national wiring regulations.

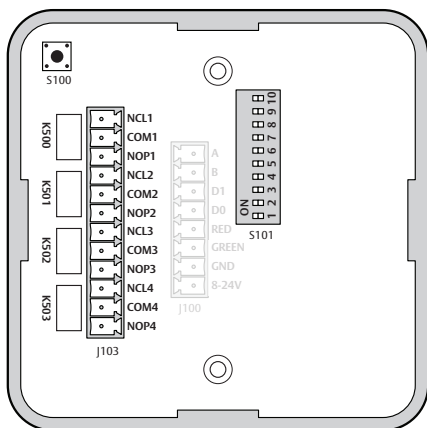
AH20 (J100) - Connections

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 VDC, 2 W.

AH20 Connectors (J100)

AH20 Advanced Wiegand (J103) - Connections



AH20 Advanced Wiegand Connectors (J103)

RELAYS	DESCRIPTION
Relay 1/K500	DPS (Door Position)
Relay 2/K501	RX (Request to exit)
Relay 3/K502	Battery Alarm Output
Relay 4/K503	Tamper Alarm Output/ Lock Jammed
RELAY CONTACTS	DESCRIPTION
NCL	Normally Closed
COM	Common
NOP	Normally Open

Relay max voltage: 30 VDC

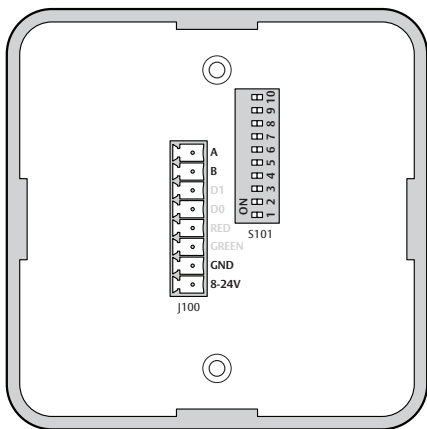
Relay max current: 1 A
resistive load

On the AH20 advanced wiegand communication hub, 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 (S101)

DIP SWITCH NUMBER	LABEL	DESCRIPTION
1	A0	Controls use of Red LED signal for access decision. ON => Red LED is used. OFF => Red LED 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 bits is disabled. Credentials are transmitted as received.
4	A3	Controls byte order of transmitted credentials. ON => The byte order is reversed on the Wiegand interface compared to what is received from the Aperio® lock. 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 VDC, 1.1 W.

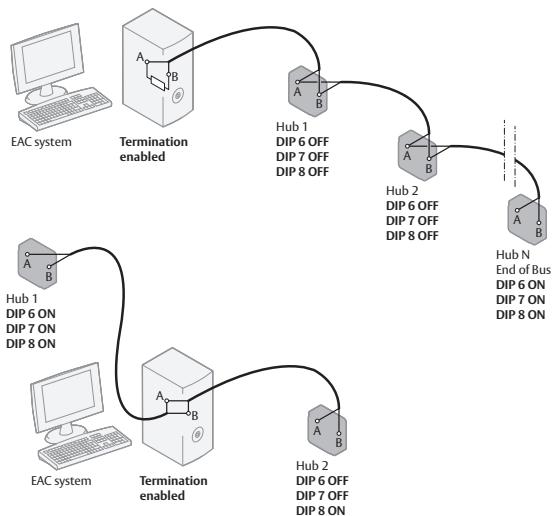
Note: The installation must comply with national wiring regulations.

AH30 - DIP Switch Configuration Table (S101)

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

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

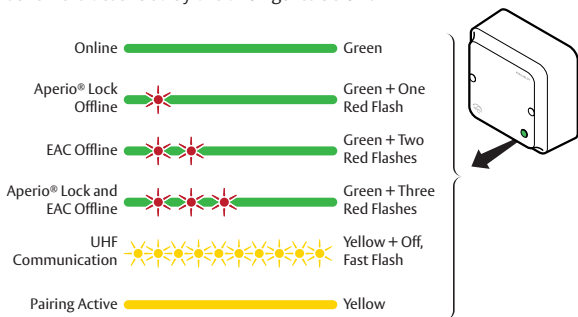
ADDRESS	A0	A1	A2	A3	A4*
16					ON
17	ON				ON
18		ON			ON
19	ON	ON			ON
20			ON		ON
21	ON		ON		ON
22		ON	ON		ON
23	ON	ON	ON		ON
24				ON	ON
25	ON			ON	ON
26		ON		ON	ON
27	ON	ON		ON	ON
28			ON	ON	ON
29	ON		ON	ON	ON
30		ON	ON	ON	ON
31	ON	ON	ON	ON	ON

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 a USB radio dongle, further system installation parameters can be set.

AH20/AH30 - Technical Data

Physical Dimensions	82 mm x 82 mm x 37 mm (H x W x T)
Power Supply	8-24 VDC
Power Rating	2 W (AH20 Advanced) 1.1 W (AH30 and AH20 Standard)
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 up to 25 m 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 3,9 dBi.
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 v2.2.1 EN ETSI 300 328 v1.8.1 EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 UL 294-2010 C22.2

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