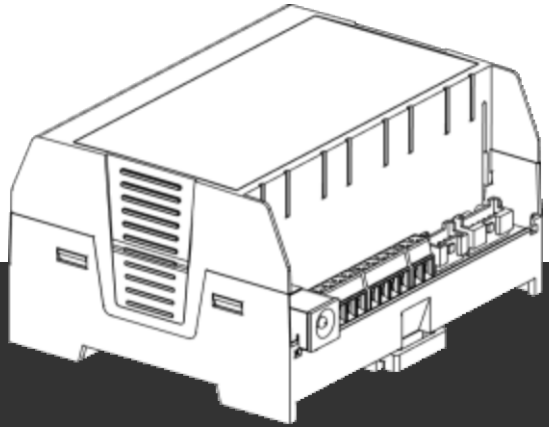# INSTALLATION & OPERATION MANUAL

PRIMAIRY
H-LINK ADAPTER
HCAA03NEWI

air

Cooling & Heating

ENGLISH

Specifications in this manual are subject to change without notice in order that Johnson Controls-Hitachi Air Conditioning may bring the la test innovations to their customers. Whilst every effort is made to ensure that all specifications are correct, printing errors are beyond control and responsibility of Johnson Controls-Hitachi Air Conditioning.

Always refer to the latest product literature available on Hitachi Product Library or contact local service team for installation, operation and troubleshooting of connected devices to the PRIMAIRY H-Link Adapter.

Scan the below QR Code by your smartphone camera to download the latest available product literature for this product.

⚠ **WARNING**

Hazards or unsafe practices which COULD result in severe personal injuries or death.

⚠ **CAUTION**

Hazards or unsafe practices which COULD result in minor personal injur y or product or property damage.

NOTICE

Indic ates information considered important, but not hazard-related (for example, messages relating to property damage).

⚠ **CAUTION**

This pr oduct shall not be mixed with general house waste at the end of its life and shall be r etired according to the appropriated local or national regulations in an environmentally correct way. Contact to the corresponding authorities for more information.
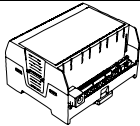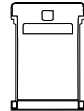
Table of Contents

HITACHI

1. PRODUCT DESCRIPTION

The PRIMAIRY H-Link Adapter is used as a gateway which enables the PRIMAIRY air conditioners to communicate and operate with the PRIMAIRY wired controller, VRF H-Link Central Controllers, airCloud Pro, airCloud Home and Hitachi Wired Controllers.

CONTENT OF THE PRODUCT

Gateway device	Simplified Manual	Wall Mounting Clip	Communication Cable for PRIMAIRY Indoor Unit to H-Link adapter
1 x	1 x	2 x	Length 5meter Refer Page-7 for connection detail 1 x

2. HARDWARE SPECIFICATION

Power Supply	12VDC ± 10% (Factory recommendation use Indoor Unit connections, if external supply required use field supplied 12VDC power adapter)
Outer Dimensions	90 mm x 78 mm x 50 mm [3.54" x 3.07" x 1.96"]
Weight	110 g [0.24 lb]
Installaon c ondions	Indoors (Installaon with r estricted access by unauthorized person or tool)
Ambient temperature	0°C to 50°C [32°F to 122°F]
Humidity	20~90% RH (Without condensation)

3. COMMUNICATIONS

3.1 PRIMAIRY Indoor Unit

Device Type	PRIMAIRY Air Condioner Indoor unit
Connector Type	4 pin screw terminal connector (GND, Supply, TXD, RXD)
Communicaon Line	4 Wire shielded Cable, 26~18 AWG
Length	Use the connecon c able delivered with the PRIMAIRY Wired Controller or H-Link Adapter

3.2 PRIMAIRY Wired Controller (Applicable for models with Wired Controller only)

Device Type	PRIMAIRY Wired Controller
Connector Type	4 pin screw terminal connector (GND, Supply, RXD, TXD)
Communicaon Line	4 Wire shielded Cable, 26~18 AWG
Length	Use the connecon c able delivered with the PRIMAIRY Wired Controller

3.3 H-Link Central Controller / airCloud Pro Gateway

Device Type	H-Link Central Controllers
Connector Type	2 pin screw terminal connector (Pin 1, Pin2)
Communicaon Line	2 wire twisted pair shielded cable, 26~18 AWG
Length	1000m [3280'] Max. (As men oned in H-Link Central Controller instruction manual)

3.4 Hitachi RAC Wired Controller*

Device Type	Hitachi RAC Wired Controller [SPX-WKT3, SPXWKT4]
Connector Type	4 pin connector type
Communicaon Line	4 core cable type
Length	15m [49.21'] Max. (Use the connector on cable delivered with the RAC Wired Controller)

* Not applicable for North America region

3.5 airCloud Home Gateway

|	
Device Type	airCloud Home Wi-Fi Adapter
Connector Type	6 pin connector type
Communicaon Line	6 core cable type
Length	1m [3.28'] Max. (Use the connection cable delivered with the Wi-Fi Adapter)

4. INSTALLATION PROCEDURE

⚠ WARNING

1. **Read this manual carefully before performing the installation work.**
2. **Do not install this device in places accessible to the general public. Install the device in an electrical closet or room that is accessible only with a lock and key, and provides protection from electromagnetic disturbance.**
3. **Do not connect power supply before the device installation is correctly done. Always disconnect power supply from the device before any maintenance or servicing action.**

⚠ CAUTION

1. This appliance must be used only by trained or certified persons, having received the technical information or instructions to handle properly and safely this appliance.
2. This is a Class A product. In a domes c environment this product may cause radio interference in which case the user may be required to take adequate measures.
3. Children should be supervised to ensure that they do not play with the device.
4. Check to ensure that the field supplied electrical components (power supply switches, circuit breakers, wires, connectors and wire terminals) have been properly selected according to the electrical data indicated on this document and they comply with national and local building codes. If it is necessary, contact with your local authority in regard to standards, rules, regulations, etc.
5. Do not install H-Link Adapter in places:
   - Where any vapor, oil or other dispersed liquids could affect the device.
   - Where accumulation, genera on or leaks of inflammable gases has been detected.
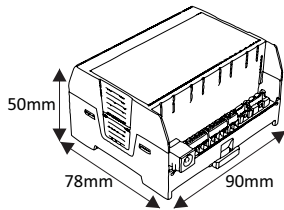   - That are near to the sea, in saline, acid or alkaline surroundings.

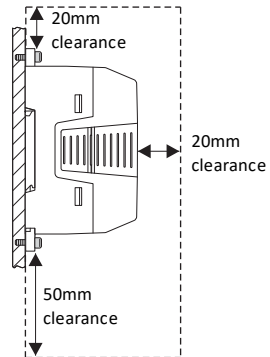### 4.1 INSTALLATION OF THE DEVICE

4.1.1 Housing fitment

Releasing the housing c over		Snapping on the housing c over	
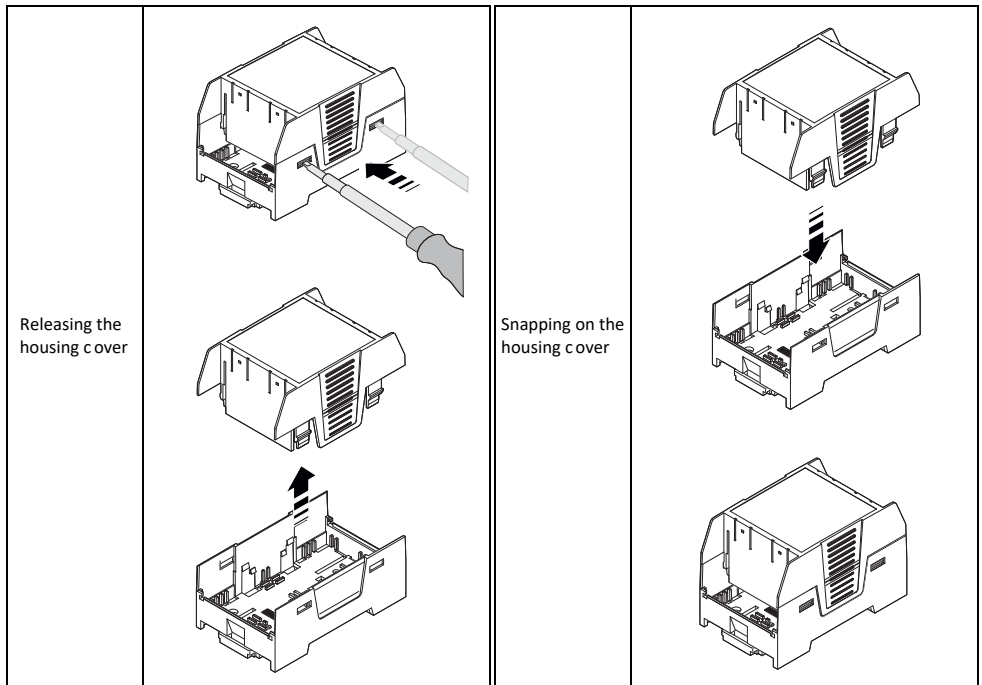
4.1.2 Mounting the device
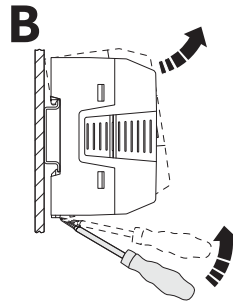
4.1.2.1 Mounting space requirement
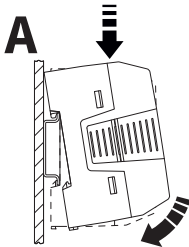

Device Dimensions

4.1.2.2 Din Rail Mounting

The housing is supplied with a base latch for DIN rail mounting as standard.

Mounting

- Place the device onto a grounded 35mm (1.37 Inch) DIN rail from edge of the DIN rail (A).
- Press the device carefully at the top of the housing towards the mounting surface.
- Once the snap-on foot has audibly snapped on to the DIN rail, check whether it is securely attached.

Removal

- Use a suitable screwdriver to release the locking mechanism on the snap-on foot of the device (B).
- Hold the device at the housing cover and carefully tilt it upwards.
- Carefully lift the device off the DIN rail.

4.1.2.3 Wall Mounting

The housing is supplied with a base latch for wall mounting with device unit.
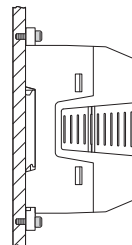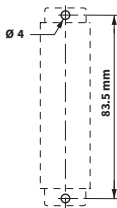
Wall mounting

4.2 ELECTRICAL WIRING

⚠ WARNING

1. **Do not install this device in places accessible to the general public. Install it in enclosures or other places which are accessible only by the authorized person or tool.**
2. **Do not connect power supply before the device installation is correctly done. Always disconnect power supply from the device before any maintenance or servicing action.**

⚠ CAUTION

1. Make sure that the electrical components of the installation (power switches, circuit breakers, wires, connectors and wire terminals) have been properly selected according to the electrical data indicated on this document and they comply with national and local building codes.
2. Before power supply and turning on the PRIMAIRY H-Link Adapter, you must ensure that:
   - All circuits to be connected are correctly applied.
   - All H-Link connections have been set up.
3. The cables for communication signals should be as short as possible. Keep a distance of more than 150mm (6 Inch) from other power cables. Do not wire them together (although they may intersect). If they must be installed together, take the following measures to avoid noise disturbances:
   - For communications, use shielded wire which is grounded at one side.

### 4.2.1 H-Link Adapter Terminal Connections
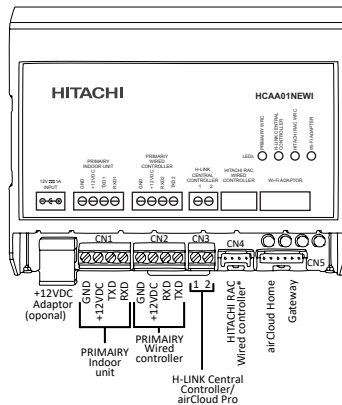
ⓘ **NOTE**

It is recommended to use Shielded Twist Pair Cables for all types of connections to H-LINK Adaptor. Shield of the cable must be connected to earth from both ends as shown below :
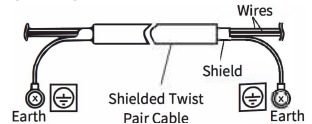
* Not applicable for North America region

Name	Connection Type	Cable specification
12VDC 1A Input ⊖─ⓒ─⊕	Power Supply	For external field supplied 12VDC, 1A Power Adapter (Power supply can be taken from the Hitachi PRIMAIRY Indoor unit terminal board. Refer H-Link Adapter use cases for wiring details on Page-7)
PRIMAIRY Indoor Unit	PRIMAIRY Indoor unit PCBA	Connect communicaon c able provided with PRIMAIRY Wired Controller or H-Link Adapter at PRIMAIRY Indoor unit terminal connector (CN6 or CN19).
PRIMAIRY Wired Controller	PRIMAIRY Wired Controller	Connect 4 Core 20 AWG cable provided with PRIMAIRY Wired Controller unit.
H-Link Central Controller / airCloud Pro	H-Link	2 wire twisted pair shielded cable 26~18 AWG. Shield must be grounded in one side only.
HITACHI RAC Wired Controller*	4-Pin Connector	Connect with 4-Core cable provided with SPX-WKT3/4* HITACHI Wired Controller
airCloud Home Gateway	6-Pin Connector	Connect with 6-Core cable provided with airCloud Home Gateway device

HITACHI

4.3 UNIT ID & REFRIGERANT ID SETTINGS

DIP SWITCH PCBA

DSW2 · RSW2 · RSW1

DSW3 · DSW6 · DSW5
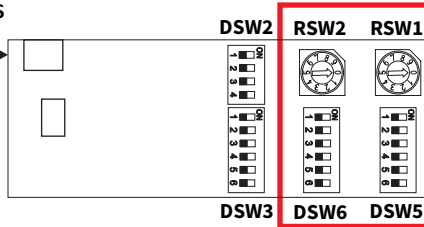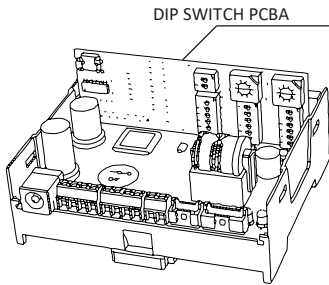
⚠ CAUTION

Before setting the dip switches, firstly turn OFF power source and set the position of the dip switches. If dip switches are set without turning OFF the power source, the settings will no t be applied to the units.
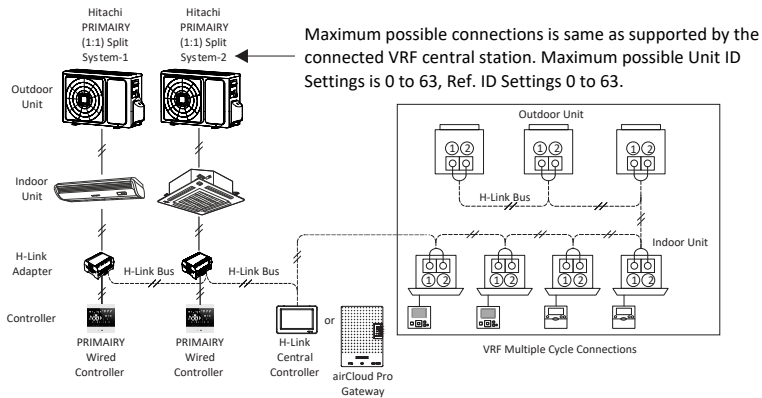
1. Turn OFF all the power supply to the indoor and outdoor units, PRIMAIRY H-Link Adapter before Dip Switch setting. If not, the setting will be invalid.
2. The settings available for the PRIMAIRY H-Link Adapter are shown below. Settings on DSW5 and DSW6, RSW1 and RSW2 are required when an VRF Central Controller or airCloud Pro is connected to the H-Link port (CN3) of the Adapter.
3. The PCBA in the H-Link Adapter is equipped with 6 types of dip and rotary switch. Before running unit, set these dip switches according to the following instructions.
4. When using with VRF System or multiple PRIMAIRY Units along with VRF Central station, Unit ID & Refrigerant Cycle settings are required on H-Link Adapter.
5. The H-Link terminal resistance must be set on any native H-Link device. If a H-Link VRF system is connected to the H-Link line, it is recommended to set the terminal resistance on one outdoor unit. It can also be set on the HLINK central controller, if no native HLINK outdoor units are used. In case the HLINK central controller is not allowing to set this terminal resistance, a manual installation of a 75 Ohm resistor should be done on the HLINK communication bus. The HLINK terminal resistance cannot be set on this PRIMAIRY HLINK adapter.

Factory Setting	Use Case	Description
DSW3 — All DIP switches are OFF (1 2 3 4 5 6, ON/OFF)		Use Factory Settings only.
DSW2 — All DIP switches are OFF (1 2 3 4, ON/OFF)		Use Factory Settings only.
Unit ID Setting — DSW6 All DIP switches are OFF (1 2 3 4 5 6). RSW2 Posion, Turn by using screw driver	E.g. Seng in Unit No. 15 — DSW6, No. 1 pin is ON. RSW2 The posion is Set 5	Maximum possible connections for H-Link Adapters on single H-Link line is 16. Maximum possible Unit ID Settings is 0 to 63, Ref. ID Settings 0 to 63.

When connected to VRF System, the PRIMAIRY system Unit ID must be set to a non-used VRF Ref. ID. Do not use a Unit ID address already used by a VRF system. The Unit ID & Ref. ID must be set same on H-Link Adapter.

It is recommended that each PRIMAIRY system is set with a unique indoor unit address(A) + refrigerant system(B): A/B: 0/0, 1/1, 2/2 etc... up to 63/63.

If required PRIMAIRY systems can also be set with a single Ref. Cycle ID for multiple H-Link Adapters with multiple Unit ID setting. Example - 0/1, 1/1, 2/1, 3/1 etc... up to 63/1. |
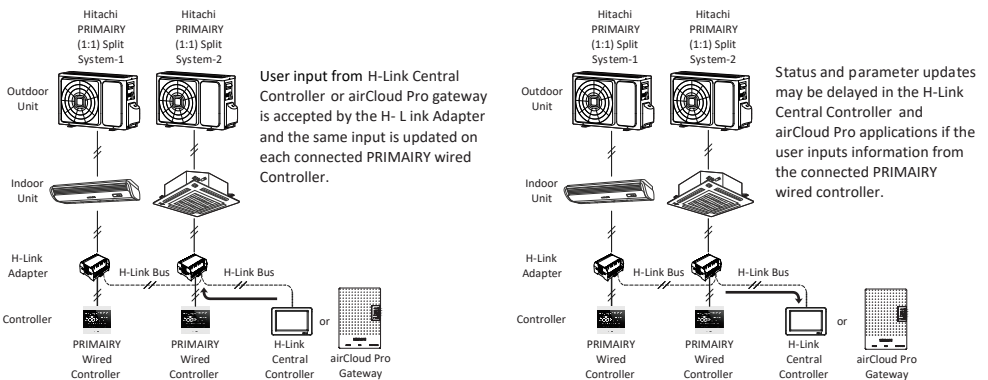| **Refrigerant Cycle number Setting** — DSW5 All DIP switches are OFF (1 2 3 4 5 6). RSW1 Posion, Turn by using screw driver | E.g. Seng in R ef No. 5 — DSW5, No. 1 pin is OFF. RSW1 The posion is Set 5 | **NOTICE** — When Unit ID or Ref. Cycle ID set greater than 63 on PRIMAIRY H-Link adapter, the setting will be accepted as 63 only. Same setting of Unit ID & Ref. ID on multiple units on same network must be avoided. Example - 1/1 and 1/1 should not be done for 2 different units. |

4.4 PRIMAIRY H-Link ADAPTER FIELD CONNECTION WITH CENTRAL CONTROLLERS, airCloud Pro GATEWAY AND VRF UNITS

Maximum possible connections is same as supported by the connected VRF central station. Maximum possible Unit ID Settings is 0 to 63, Ref. ID Settings 0 to 63.

VRF Multiple Cycle Connections


NOTICE

1. In case the H-Link port is used on the PRIMAIRY adapter, make sure to use only one additional individual controller/device with the H-Link adapter (PRIMAIRY Wired Controller or Hitachi RAC Wired Controller or airCloud Home).

2. When using the airCloud Pro Gateway and its applications, some features like Energy Cost Estimation, Eco Genius will not be available for users as these features are exclusively supported for Hitachi VRF units only and should not be used on PRIMAIRY Units.

3. If VRF Units are on the same H-Link Bus as PRIMAIRY Units, some of the airCloud Pro features and functions mentioned above like Energy Cost estimation, Eco Genius should not be used for the VRF units connected also, this will ensure the basic operations on all the devices on H-Link do not get affected.

4. If several PRIMAIRY H-Link Adapters are connected to one H-Link Central Controller or airCloud Pro gateway, any command input by user on the central controller or airCloud Pro will be accepted by the PRIMAIRY H-Link Adapter and applied to the PRIMAIRY Wired Controller connected to the PRIMAIRY H-Link Adapter. In case settings are done by user from individual controller, the application of this setting to the respective connected PRIMAIRY Indoor unit and the status update on the H-Link Central Controller or airCloud Pro may be slightly delayed.

5. When operating the devices connected on H-Link bus, there may be instances of delay in execution and update of parameters set by user. These delays are expected due to the data being handled by multiple devices and network issues.

User input from H-Link Central Controller or airCloud Pro gateway is accepted by the H- L ink Adapter and the same input is updated on each connected PRIMAIRY wired Controller.

Status and parameter updates may be delayed in the H-Link Central Controller and airCloud Pro applications if the user inputs information from the connected PRIMAIRY wired controller.

6. airCloud Pro will operate and display only for the range of 19°C~30°C, any setting outside this range i.e. < 16°C or 30°C > when applied by any other device connected on H-Link Adapter will be reverted to 19°C and 30°C respectively.

7. As part of continuous performance improvements and addition of new devices and features, the IoT Gateway's i.e. airCloud Pro and airCloud Home will have regular OTA updates for firmware and Android and iOS application updates. The release for such updates must be monitored by user or service teams for each regions for these products.

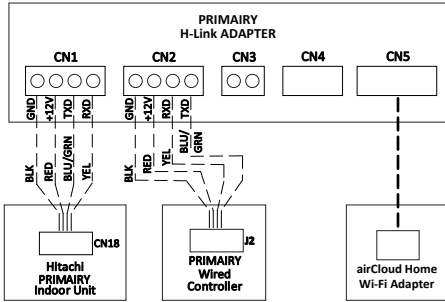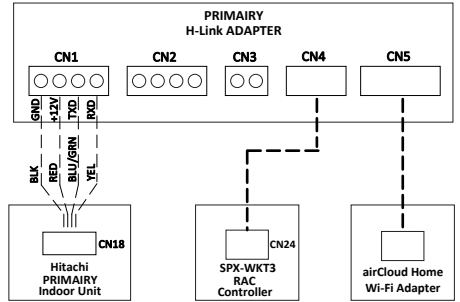## 4.5 PRIMAIRY H-Link ADAPTER USE CASES
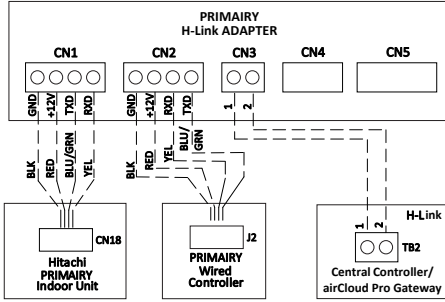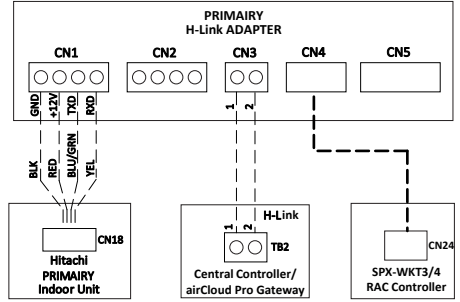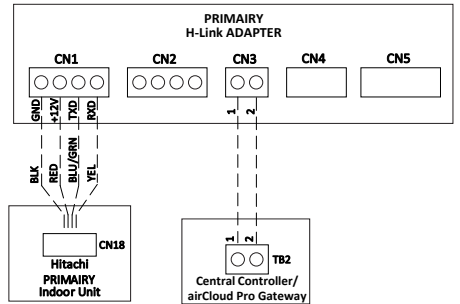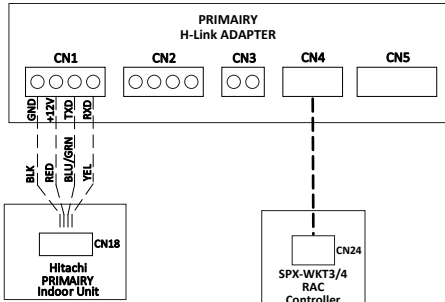
5. OPERATION PROCEDURE
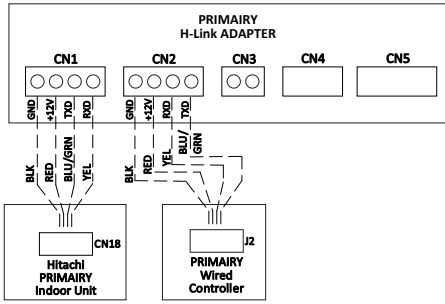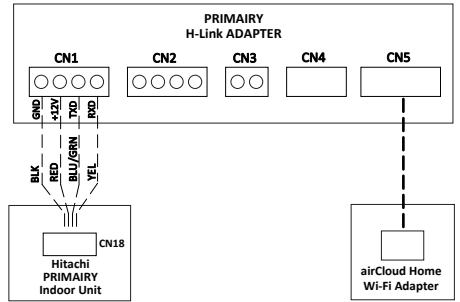
No.	Funcons	Range
1	MODES	Auto / Cool / Heat* / Dry / Fan
2	TEMPERATURE RANGE	Same as available in PRIMAIRY Air Conditioners
3	FAN SPEED	Same as available in PRIMAIRY Air Conditioners
4	AIR LOUVER CONTROL	Auto Swing Operation ON / OFF

* Available in PRIMAIRY Heat type models only

5.1 DESCRIPTION OF MODES

5.1.1 Auto Mode:

- The Set Temperature setting range in Auto Mode depends on input to the PRIMAIRY Indoor Unit connected to PRIMAIRY H-Link.
- Auto Mode can be selected and applied to the PRIMAIRY indoor unit from the PRIMAIRY Wired Controller or VRF Central Station.
- You can select the Fan Speed with the PRIMAIRY Wired Controller. The same input is applied to the PRIMAIRY Indoor Unit by the PRIMAIRY H-Link Adapter.

5.1.2 Heat / Cool Mode:

- The default Set Temperature setting range in Cool Mode depends on the PRIMAIRY Indoor Unit type connected to the PRIMAIRY H-Link Adapter.
- Heat/Cool Mode can be selected and applied to the PRIMAIRY indoor unit from the PRIMAIRY Wired Controller or VRF Central Controller.
- Select the Fan Speed with the PRIMAIRY wired controller. The same input is applied to the PRIMAIRY indoor unit by the PRIMAIRY H-Link Adapter. PRIMAIRY H-Link Adapter.

5.1.3 Dry Mode:

- The default Set Temperature setting range in Dry Mode depends on the PRIMAIRY indoor unit type connected to the PRIMAIRY H-Link Adapter.
- Dry Mode can be selected and applied to the PRIMAIRY indoor unit from the PRIMAIRY wired controller or VRF central controller.
- Only the Auto Fan speed option is available to both PRIMAIRY indoor units and PRIMAIRY wired controllers. When High, Medium, or Low Fan speed is selected from the central controller, the PRIMAIRY H-Link Adapter applies the Auto Fan speed to the PRIMAIRY indoor unit that is connected. In Hitachi RAC wired controllers the display will be Low.

5.1.4 Fan Mode:

- When Fan mode is selected, only Indoor unit Fan will operate. For Fan mode, speed settings are described in Fan Speed Description section.

5.2 TEMPERATURE RANGE DESCRIPTION

- User can select and apply Temperature settings from any of the connected devices. The PRIMAIRY H-Link Adapter applies the settings to the PRIMAIRY Indoor units. The Set Temperature range that is available for the user to select will depend on the PRIMAIRY Indoor units type.
- The temperature settings are supported in both °C or °F unit based on the PRIMAIRY Unit model type. The unit of temperature will be auto detected by H-Link Adapter during power on and H-Link devices connected must be registered with °C or °F unit matching the PRIMAIRY Unit model type.

5.3 FAN SPEED DESCRIPTON

- User can select and apply Fan speed settings from any of the connected devices. The PRIMAIRY H-Link Adapter applies the settings to the connected devices. The settings that are available for the user to select are the same as those settings available on the device connected to the PRIMAIRY H-Link Adapter.
- When Super High speed is selected on VRF Central Controller or airCloud Pro or air Cloud Home the selection will revert back to High speed within few seconds of user input.

5.4 AIR LOUVER CONTROL

- Louver control is only available on PRIMAIRY indoor units that have this function. Auto Swing Operation of louver can be switched ON/OFF from PRIMAIRY Wired Controller as well as VRF Central Controller, airCloud Pro, airCloud Home and Hitachi RAC Wired Remote Controller.

6. LED INDICATIONS

Conditions	Descripon of LEDs
Power On	All the status LEDs will remain ON for 2 seconds after Power ON. See Example 1 as all LEDs ON for 2 seconds.
Device Connected	The respective communication indication LED will get ON once the Indoor Unit is connected to the device on H-Link Adapter. See Example 2 for Hitachi RAC Wired controller connected to PRIMAIRY H-Link Adapter.
Device Disconnected	The respective communication indication LED will get OFF once the Indoor Unit is disconnected from the device on H-Link Adapter. See Example 3 as PRIMAIRY Wired Controller disconnected from PRIMAIRY H-Link Adapter.
Faulty Condition	If there is a communication error between the Indoor unit and individual wired remote controller, Status for that respective communica on indication, LED will be changed to 0.5 second OFF continuously. See Example 4 as PRIMAIRY wired controller LED blinking communication error between device and PRIMAIRY H-Link Adapter.
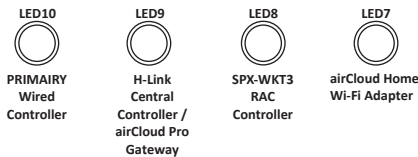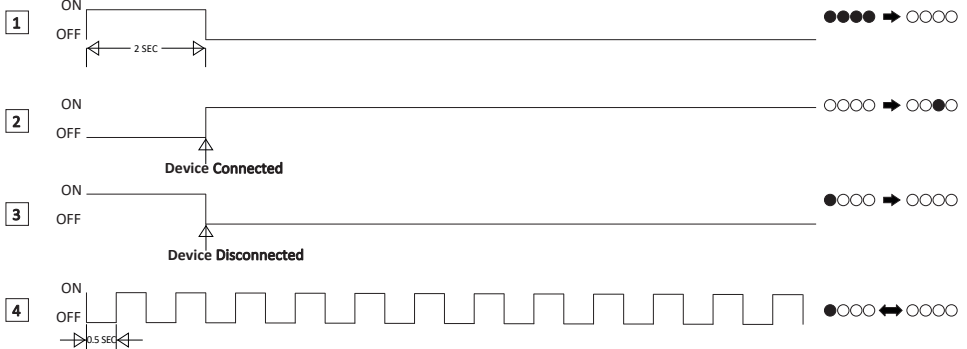
NOTICE

- Error code will be different as per the PRIMAIRY Wired Controller or H-Link Central Controller/airCloud Pro Gateway or airCloud Home Wi-Fi Adapter unit in each.
- If we change more than one parameter in less than 5 seconds, H-Link Central Controller/airCloud Pro Gateway will get error and did not get change for 5-6 minutes.
- There should be delay of more than 5 second between every successive key interrupt/input from any connected device.

7. ALARM CODE MAPPING

In case of any alarm code generated on the PRIMAIRY Unit, the error status and related error code will be transmitted to all devices connected on the H-Link Adapter and the connected devices will dispaly the respective error code as mentioned in below table.

Each error code of PRIMAIRY Unit is mapped against the respective code on the connected devices, there are some Alarm codes that are displayed only on Outdoor Unit and not available on Indoor Unit, such codes will not be displayed on connected devices but can be viewed directly on Outdoor Unit.

Indoor Fault Codes	PRIMAIRY Unit	VRF Central Controller / airCloud Pro	Hitachi RAC WRC	airCloud Home
Drainage protection	51	14	6	6
Communication between Indoor & Outdoor unit Fault	64	3	3	3
Indoor fan motor fault	72	18	10	10
Indoor EEPROM Data 1 fault	73	12	13	13
Indoor EEPROM Data 2 error	74	12	13	13
Indoor ambient Temperature Sensor Fault	81	11	9	9
Evaporator Middle Temperature Sensor Fault	83	13	9	9
Communication between main control board & Wiring remote controller Fault (display on wiring remote controller)	FE (254)	Not Transmitted	Not Transmitted	Not Transmitted
Communication between main control board &display board Fault（displays on display board）	ER	Not Transmitted	Not Transmitted	Not Transmitted

Outdoor Alarm Codes	PRIMAIRY Unit	VRF Central Controller / airCloud Pro	Hitachi RAC WRC	airCloud Home
Outdoor ambient temperature sensor fault	1	22	7	7
Outdoor coil temperature sensor fault	2	24	7	7
The unit over-current turn off fault	3	48	2	2
EEPROM Data error	4	0	13	13
Cooling freezing protection (the indoor coil temperature is too low) or heating overload (indoor coil temperature is too high)	5	11	9	9
The communication fault between the indoor unit and outdoor unit	7	3	3	3
voltage absent phase	12	5	2	2
Compressor overheat protector device	13	23	6	6
the high pressure switch operate or the unit turn off for high pressure protection	14	21	Not Transmitted	Not Transmitted
the low pressure switch protection or the unit turn off for low pressure protection	15	29	Not Transmitted	Not Transmitted
Overload protection in cooling mode	16	48	5	5
Discharge temperature sensor fault	17	23	7	7
AC voltage is abnormal	18	6	10	10
Suction temperature sensor fault	19	24	7	7
The defrosting sensor fault	22	24	7	7
IPM fault	45	55	14	14
IPM and control board communication fault	46	4	14	14
Discharge temperature too high fault	47	23	7	7
the outdoor DC fan motor fault (upper fan motor)	48	19	12	12
the outdoor DC fan motor fault (down fan motor)	49	19	12	12
The unit turn off due to the IPM board over heating fault	91	54	14	14
The refrigerant of the unit is not enough fault	96	44	Not Transmitted	Not Transmitted
4-way valve commutation failure fault	97	Not Transmitted	Not Transmitted	Not Transmitted

Any fault not listed above	XX	Not Transmitted	Not Transmitted	Not Transmitted

NOTICE

- The PRIMAIRY H-Link Adapter handles critical Error codes generated on PRIMAIRY Units, but there will be instances of error codes that can only be available on PRIMAIRY Units or PRIMARIY Wired Controller connected on adapter but not on other devices connected on the adapter.
- The error code listed and mapped in above table is subject to regular product updates and must be checked against respective devices connected to the PRIMAIRY H-Link Adapter.