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# IoT<sup>H</sup> Manifold Installation Guide

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## CHANGE LOG

Version	Changes	Date
1.0	First release	13 Jan 2022

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## Regulatory/Compliance Notice

### FCC Statement

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### NOTE:

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.

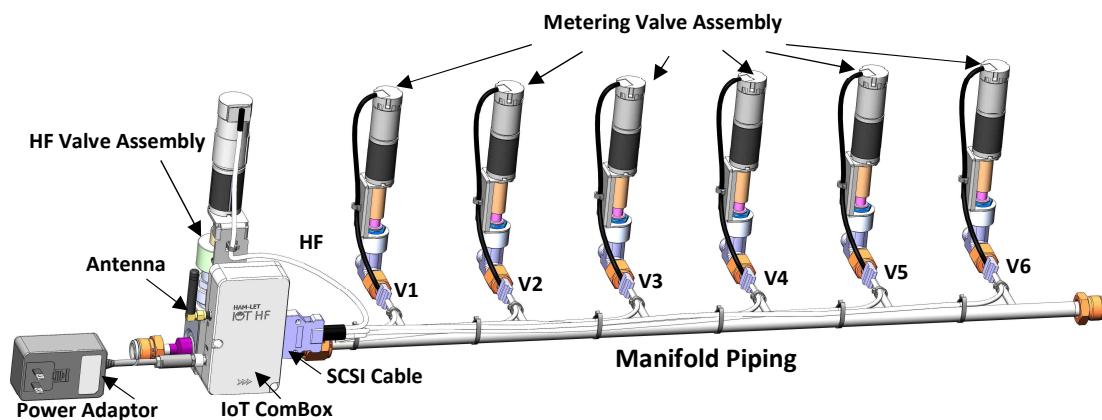
To comply with RF exposure requirements, a minimum separation distance of 20mm must be maintained between the user's body and the device, including the antenna.

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The IoT HF Manifold (Model: IoT HFEE) is used to remotely control of two different valves individually via EE motors targeted for use on the same application. One is a Metering Valve and the other is a HF (High Flow) valve. The metering valve regulates the flow control on the plumbing line. The purpose of the HF valve would be to give a master control over the manifold.

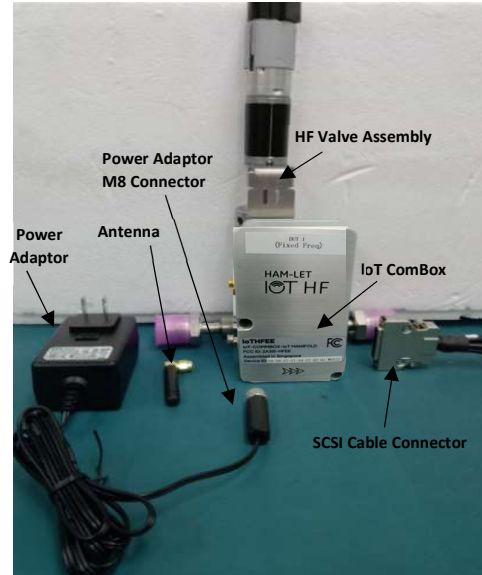
## 1. Delivery Package Items

The delivery package contains all the valves and components needed for full assembly. In this case, there are 01xHF & 06x Metering Valves in the package. The full assembly also includes an aluminium CNC-machined IOT ComBox casing (see below). Additional items include the power adaptor, SCSI cable and antenna for LoRa.

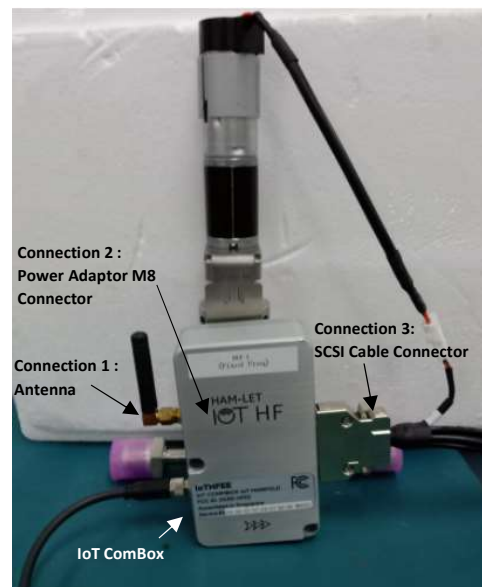


## 2. IOT ComBox Set-up & Connectivity

- a. Refer to Section 1 for a picture of a fully assembled IOTHF Manifold. The below set-up shows just the IOTHF with the IOT ComBox.

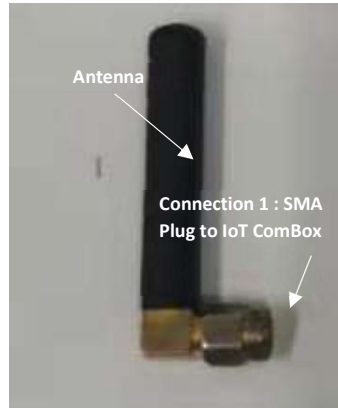


- b. Connect the Antenna, Power Adaptor M8 Connector & SCSI Cable Connector to IoT ComBox. The items are in bold in the picture.



## Connection 1 : Antenna

This is Antenna with SMA plug provided in packaging.



Connect the SMA plug of the right-angle antenna to the communication box per picture shown below.

**Warning!** After inserting the SMA plug, tighten the plug and set the antenna in the vertical direction.



## Connection 2 : Power Adaptor M8 Connector

This is a M8 Female (4-pin) Power Adapter (24V, 2A)

Note: There is no Modbus RTU support when using this power adapter.



Connect the M8 Female (4-pin) to communication box. Please refer to photo below:



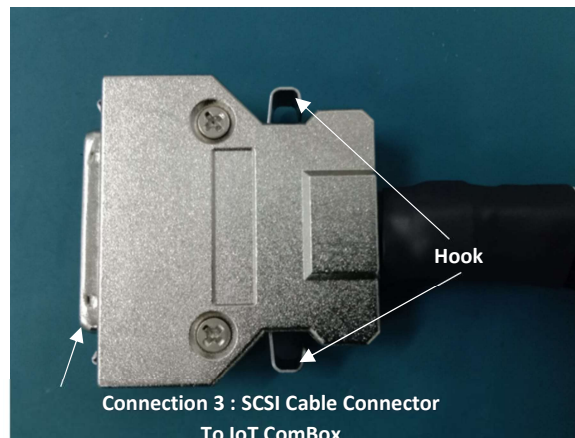
### Warning!

1. After insert the Female M8 plug, do remember to tighten it.

### Connection 3 : SCSI Cable Connector

This is a SCSI Cable Connector (37-pins) for 7 motors control.

Note: Finger press both sides hook to detach SCSI cable connector from IoT ComBox. Please ensure SCSI connector (male) orientation is correct to connect to IoT ComBox SCSI mating connector (female). SCSI connectors are D-Shape.



Connect SCSI Cable Connector to IoT ComBox. Please refer to photo below:



On the other end of the SCSI cable, it has individual labels on 7 Jacket cables to indicate the individual valve connection, i.e. HF => IOTHF Valve, V1 to V6 => IOT

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Metering Valve. You can refer to the the picture in Section 1 for the IoT Manifold overall interconnection.

### 3. Green LED Status Indication



LED Status	Function / Behaviour
Fast Blink	Power on and connecting to LoRa Gateway
Slow Blink	Provisioning to the IOT-LET Cloud
Solid ON	In Operational Mode
OFF	Power Off

#### Warning!

If the LED remains at Slow Blink continuous for ~5mins, it may have connected in Test Mode. Please power cycle the valve again for it to join correctly.

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## 4. Troubleshooting the IOTHF Manifold

This section explains the steps you can take when you receive an alarm notification from the IOT-LET Portal on the IOTHF Manifold.

### IOTHF Alarms

#### Alarm: IOTHF has reached more than X cycles

This means the IOTHF is close to the end of its lifecycle. When that happens, the following is observed:

- A) The open/close indicator on the valve is not align to the current expect valve status.
- B) There may be a leakage when the valve is CLOSE.

Please prepare to replace the IOTHF with a new valve.

#### Alarm: IOTHF is detected to be not turning properly

This means that the motor has turned the IOTHF into an incorrect position. Please try the following steps:

- A) Do a calibration on the IOTHF. The calibration will make the valve OPEN followed by CLOSE or vice versa. Please check that the open/close indicators are correctly align when the valve is OPEN/CLOSE

If the recovery steps do not help, please arrange to replace the HF valve with a new valve.

### IOT Metering Valve Alarms

#### Alarm: IOT Metering valve has reached more than X turns

This means the IOT Metering valve is close to the end of its lifecycle. When that happens, the following is observed:

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- A) There may be a leakage when the metering valve is Open Level 0%.

Please prepare to replace the IOT Metering valve with a new valve.

Alarm: IOT Metering valve is detected to be not turning properly

This means that the motor has turned the IOT Metering valve into an incorrect position.

Please try the following steps:

- A) Do a calibration on the IOT Metering Valve. The calibration will make the valve move from Open Level 0 to 100% or vice versa. Do the same move operation again to see whether the alarm is sent again.

If the recovery steps do not help, please arrange to replace the metering valve with a new valve.

Alarm: IOT Metering valve is detected to be not functional

This means that the motor is not turning at all. Please try the following steps:

- A) Check whether the motor cable is connected properly to the SCSI cable connector
- B) Power cycle the manifold, the valve will go back to it's initial state.
- C) Connect the metering valve to another metering valve's connector and see whether it can be operated at the new connection

If the recovery steps do not help, please arrange to replace the metering valve with a new valve.

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