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FREESPACE CONTACTLESS DATA

Product Manual

™

Plot no. 845, DSIIDC Industrial Area KHASRA NO. 33/23 (0-7) & 37/4 (0-10)Gali no. 6, near Harnandi dharam kanta Mundka Industrial Area, New Delhi, Delhi, 110041

CO60ETH KIT | 60 GHZ ETHERNET CONTACTLESS CONNECTIVITY

OVERVIEW

This document guides users how to use the Co60ETH kit. The Co60ETH Kit includes a pair of RF millimeter-wave transceivers. Modules (A) and module (B) operating at 60 GHz with Radiall H/V horn antennas. The Modules are plug and play contactless connectors providing high-speed data transfer for short range up to 1 Gbps. The input of Co60ETH is an RJ45 Gigabit Ethernet connector supporting 10/100/1000Base-T. The Kit allows you to test the benefits of a Gigabit Ethernet signals connection without the limitations of physical cables and design barriers for point-to-point communications by eliminating the physical link.

APPLICATIONS

Co60ETH opens a new scene for network connectivity applications. By Eliminating the need for physical cables or connectors, the connection for applications in constrained and/or moving environments becomes easier. The system can be fully waterproof, resisting dust and other dirt. This new technology finds applications in various industrial and consumer applications as well as in the medical field.

For example:

- Board-to-board contactless connectivity: To provide flexibility to industrial electronic devices by eliminating physical cables in systems subject to mechanical stress or movement such as the display-to-display link
- Industrial contactless connectivity: To simplify connectivity of electronic devices by eliminating the physical connection

FEATURES

- RF 60GHz V-Band transceiver
- Short range contactless connectivity
- Radiall H/V horn antennas
- RJ45 interface Ethernet Input
- Low power consumption
- Full duplex data transmission in real time
- Controlled Auto negotiation
- Used in pairs (modules A and B)

BENEFITS

- Enhance data transmission speeds
- Simplify communication
- No wifi or Bluetooth interface
- Providing immunity to vibration
- Providing immunity contaminants, moistures, dust
- No limited by mating cycle

KIT CONTENT [1]

Module (A)	MU230341011101	Freespace Contactless Data Transceiver Ethernet 30mm 12 VDC Self-Adhesive Rect. 01 (A)	1
Module (B)	MU230341011102	Freespace Contactless Data Transceiver Ethernet 30mm 12 VDC Self-Adhesive Rect. 02 (B)	1
Fixation	50209240	Self-Adhesive	2

(A) With a vertical polarized horn antenna for transmitting and horizontal horn antenna for receiving.
(B) With a horizontal polarized horn antenna for transmitting and vertical polarized horn antenna for receiving.

REFERENCES

[1]	Datasheet, MU230341011400	Revision 1
[2]	Handout, MU230341011400	Revision 1
[3]	Product Presentation, MU230341011400	Revision 1
[4]	Horn Antenna - Commercial Range H/V (R380845002/R380845102) and Industrial Range H/V (R380846002/R380846102)	

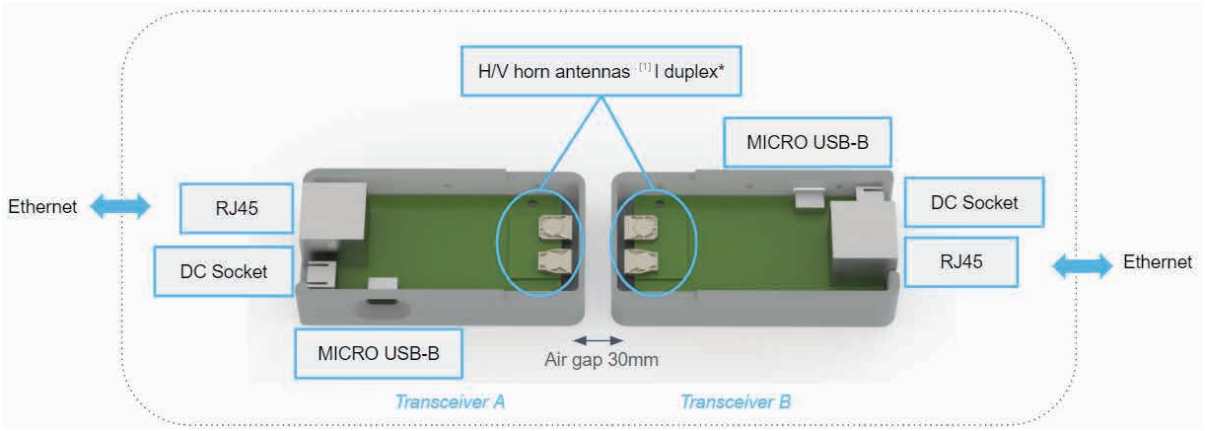
Notes
1. Available in sample volumes only

SPECIFICATIONS

SYNOPTIC

The synoptic schema below shows transceivers Module (A) and Module (B).

60GHz, contactless data transmission - RF transceiver



RADIALL'S H/V HORN ANTENNA

As a contactless device, Co60ETH embedded horn antennas in order to transmit and receive the 60 GHz signal wave [4]. It is necessary to use antennas with bandwidths compatible with the modulated 60 GHz signal. These H/V Horn antennas are a Radiall product. For more information, contact us.

CHARACTERISTICS

SPECIFICATIONS

Recommended operating conditions and electrical characteristics.

GENERAL

Technology	RF Millimeter Wave Band
Data	Gigabit Ethernet
Data Interface	RJ45
LED RJ45 Indicator	Status Indication via Multi-Coloured LED
Air Gap	0...30 mm
Max. Misalignment (x)	± 2 mm

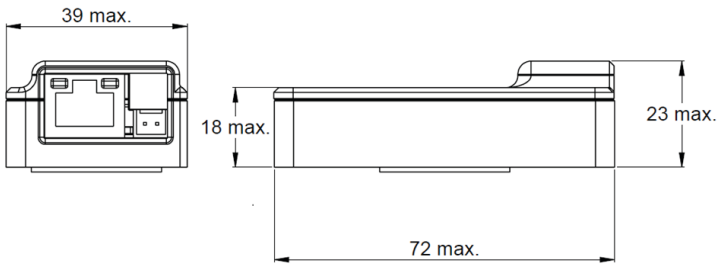
ELECTRICAL SPECIFICATIONS

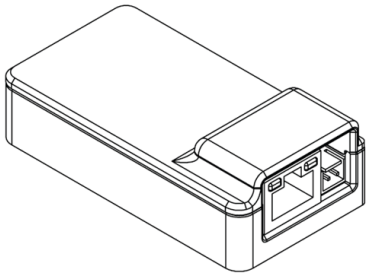
Power Supply	5 to 12 VDC	
Input Current [2]	50 mA	
Max. Power	1.3 W @ 16 V	
Carrier Frequency	60 GHz	
Power Interface	USB MICRO-B, 5 to 12V Connector	1JST KLS1-2.50L-02-H

Notes

1. Horn H/V antennas design by Radiall for multi-link - Improves distance and tolerance to misalignment
2. Power supply is 12V and Ethernet is active

MECHANICAL SPECIFICATIONS [1]





Dimensions Max.	23 x 72 x 39 mm
Weight Max.	45 g
Housing Materials	Similar ABS Grey

ENVIRONMENTAL SPECIFICATIONS

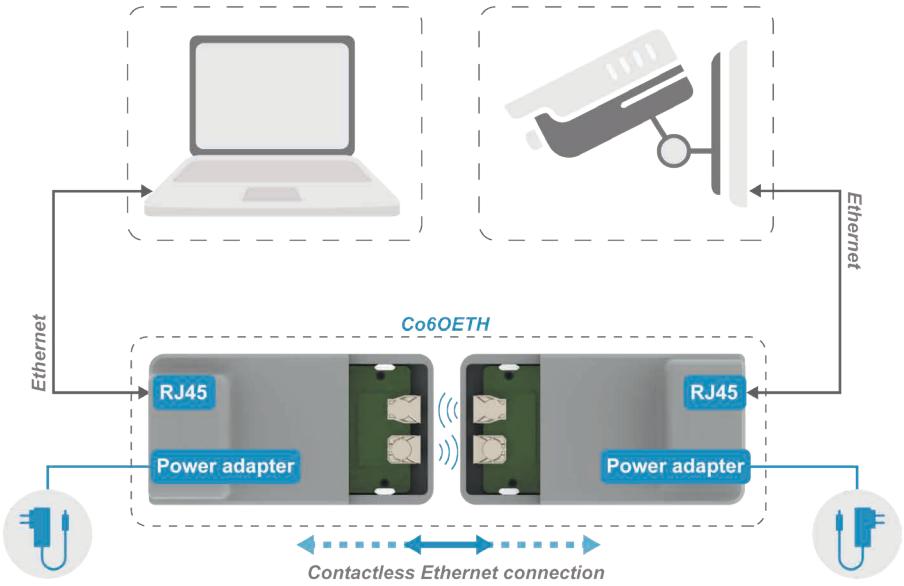
Ambient Operating Temperature	0 to +60 °C
Storage Temperature	0 to +60 °C
Protection Degree	IP20

APPROVALS

CE
FCC

Notes

1. Module (A) & Module (B) have same dimensions



GUIDE

QUICK START

1. POWER SUPPLY

To power modules A and B, connect the power source. Two power supply connections are possible:

- The micro USB B connector with a standard USB-A/USB-µB cable connected to a computer or any other USB power source
- The DC socket connected to a 5 to 12V DC power supply.

Please do not use both power supply input at the same time. It could damage the moduleand/or the device which it is attached to.

2. NETWORK

Connect module A to a device/network with a RJ45 standard cable and repeat the same operation for the module B.

3. CHECK THE OPERATION

Check if the speed detected on each module by checking the LEDs indication. The status indications of the RJ45 LEDs must be the same.

4. INITIATE CONTACTLESS CONNECTIVITY

Align the Module A and the Module B with a maximum air gap of 30mm and a max. misalignment of 2mm.

The Co60ETH kit contains adhesives to fix the modules in the required positions

5. LEDS STATUS

LEDs status indicate the achieved data transmission speed:

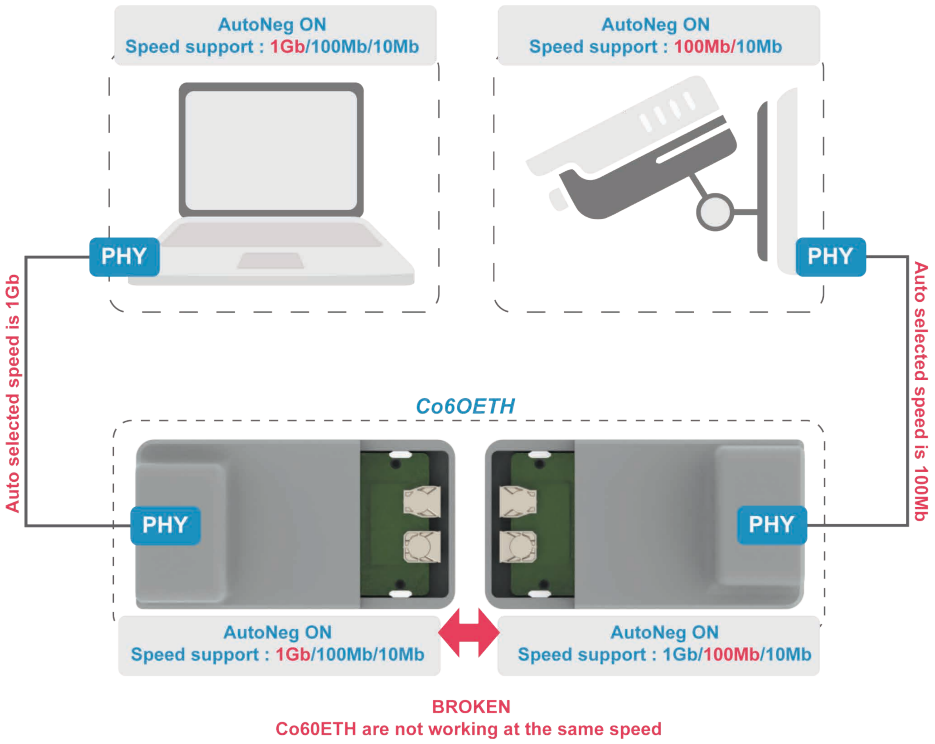
- If the LEDs are green and orange, the data transmission reaches 10Mbps
- If the LEDs are green, the data transmission reaches 100Mbps
- If the LEDs are orange, the data transmission reaches 1000Mbps

To communicate correctly, module A and module B must operate at the same speed. See 3.2 Auto-Negociation

AUTO NEGOCIATION

To communicate correctly, Modules (A) and Modules (B) must operate at the same speed. The Ethernet PHY supports 10Mbps, 100Mbps and 1Gbps speeds - See 3.1 LEDs status. Modules have a network termination. It works independently and negotiates the speed automatically with the device it is connected to.

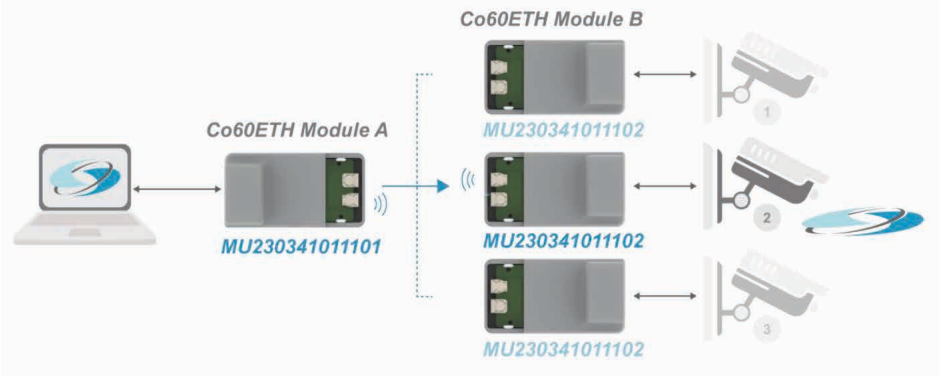
For example, if the device, such as a laptop and a camera advertise different maximum speeds, the two auto-negotiation results will differ. The links will be broken, and the devices could not establish communication.
The figure below illustrates this configuration.



Such a case, to make the link functional, you must disable the auto-negotiation on the computer and manually set the speed, or add a 100Mb switch in the network, which automatically reduces the speed to 100Mb.

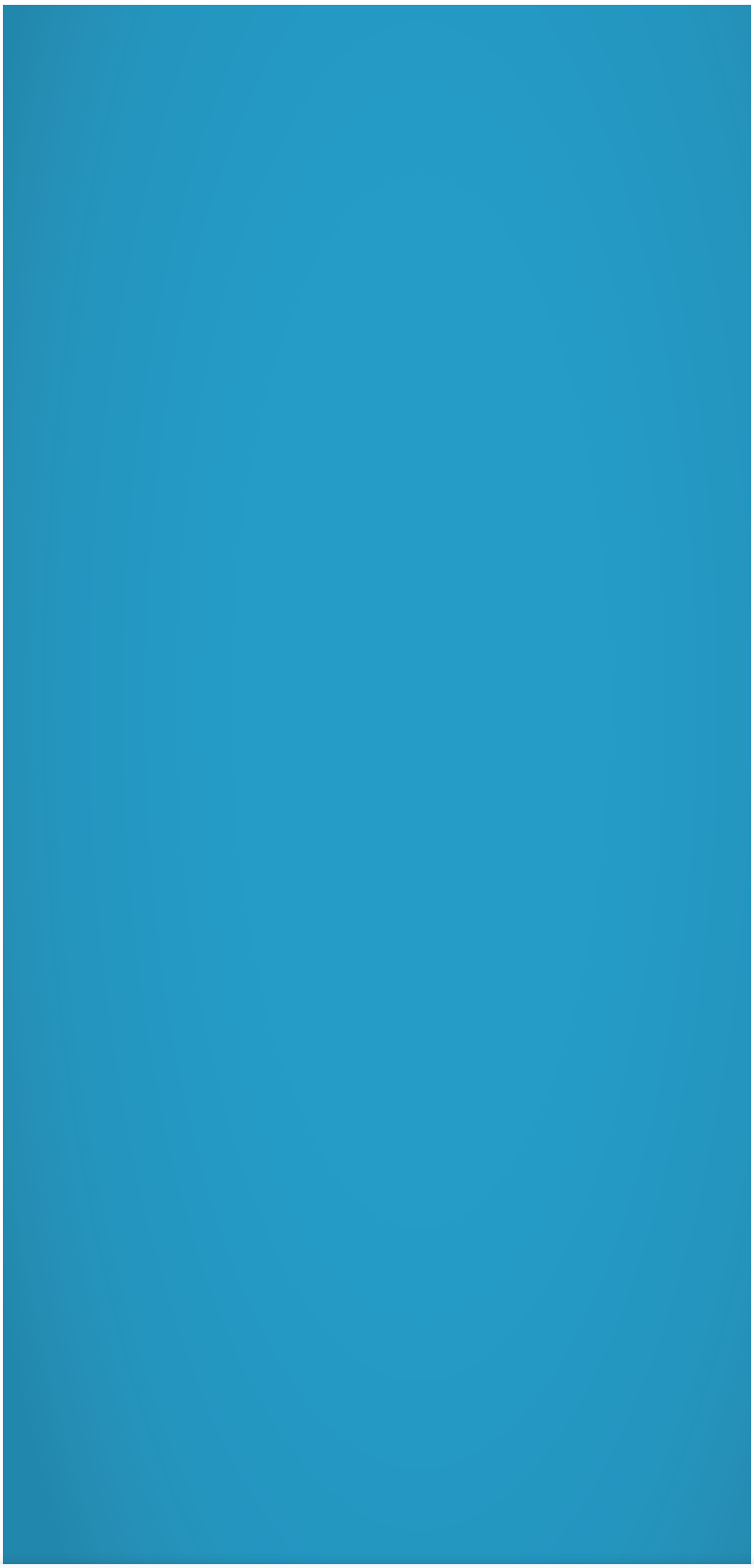
INSTRUCTIONS

This product may not be collocated or operated in conjunction with any other antenna or transmitter.
This equipment must be installed and operated in accordance with provided instructions.
This product must be used in pair A/B. Module A can be connected to different module B (vice versa). - see diagram below



REVISION HISTORY

DATE	REVISION	CHANGES
22/05/23	1.0	Initial Version



Freespace Contactless Data Transceiver Ethernet 30mm 12 VDC Self-adhesive Rect. Kit 1

Version	60 GHz Ethernet Contactless Data
Part Number	MU230341011402
Type	MUCDMXETH8/16MM12D
Qty.	1

This user manual is valid for Co60ETH kit version 0.1 - MU230341011402. It provides guidelines to quickly understand the system. It allows recommendations for users to achieve optimal performance for testing contactless data transmission.

2022 EDITION