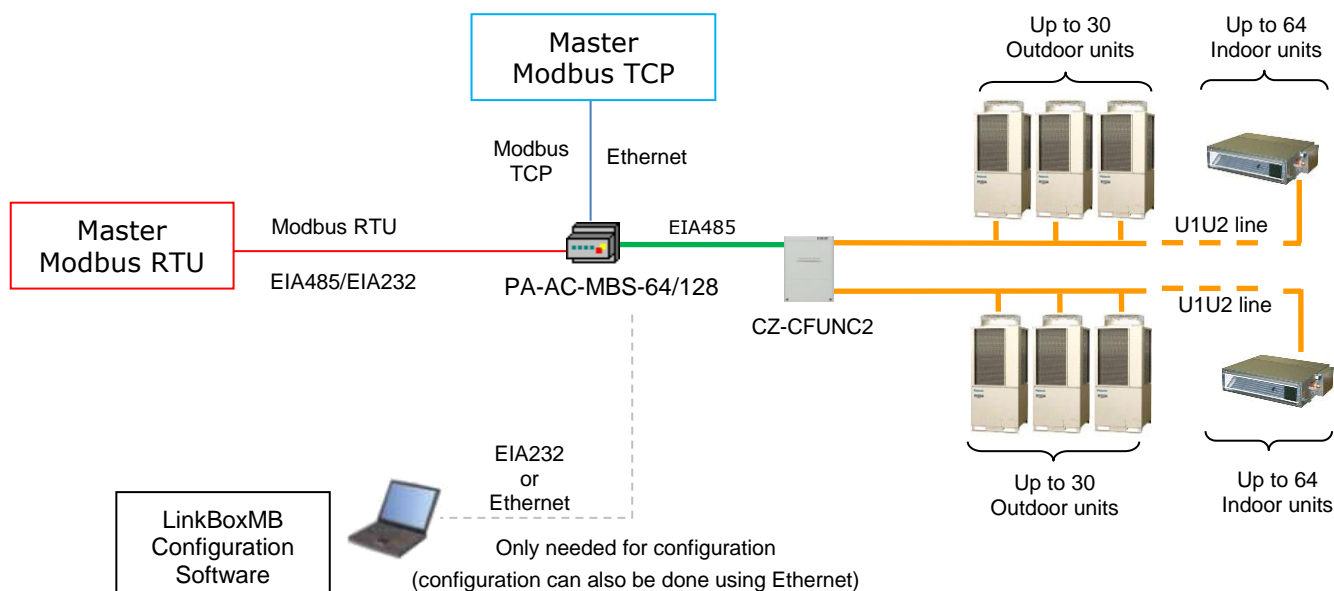




# IntesisBox® Modbus Server - Panasonic

## Gateway for Panasonic ECO-i VRF and PAC-i system integration into Modbus Systems



IntesisBox is a Modbus server device, capable of monitoring and controlling Panasonic ECO-i and PAC-i indoor units connected to a Panasonic CZ-CFUNC2 communication adaptor<sup>1</sup>. Up to 64 indoor units and 30 outdoor units can be integrated within a single channel. If you use both channels, up to 128 indoor units can be integrated.

Two Modbus mode connection types can be active in IntesisBox®: Modbus RTU or Modbus TCP, or both simultaneously.

IntesisBox Modbus Server series are configured using LinkBoxMB, a software tool for Windows™ supplied along with the purchase of IntesisBox® with no additional cost. With the standard installation of LinkBoxMB, a Demo project for integration of several Panasonic indoor units is also installed. Using this Demo project makes the engineering needed for this integration easy and quick, almost plug&play.

There are two models of IntesisBox Modbus Server – Panasonic:

- Model supporting up to 64 indoor units. Ref: PA-AC-MBS-64
- Model supporting up to 128 indoor units. Ref: PA-AC-MBS-128

<sup>1</sup> CZ-CFUNC2 is an accessory provided by Panasonic and should be acquired separately.

## 1.IntesisBox® capacity

Element	Max.	Notes
Number of indoor units	128 *	Maximum number of AC indoor units that can be controlled
Number of points per indoor unit	15	Modbus addresses per indoor unit
Maximum number of points	1935*	Valid Modbus addresses
Maximum TCP master connections	2	Maximum number of TCP simultaneous Modbus Master connections
Maximum RTU master connections	1	Maximum number of RTU simultaneous Modbus Master connections

\* There are two different models of IntesisBox® Modbus Server – Panasonic each one with different capacity. The table above shows the capacity for the top model (with maximum capacity).

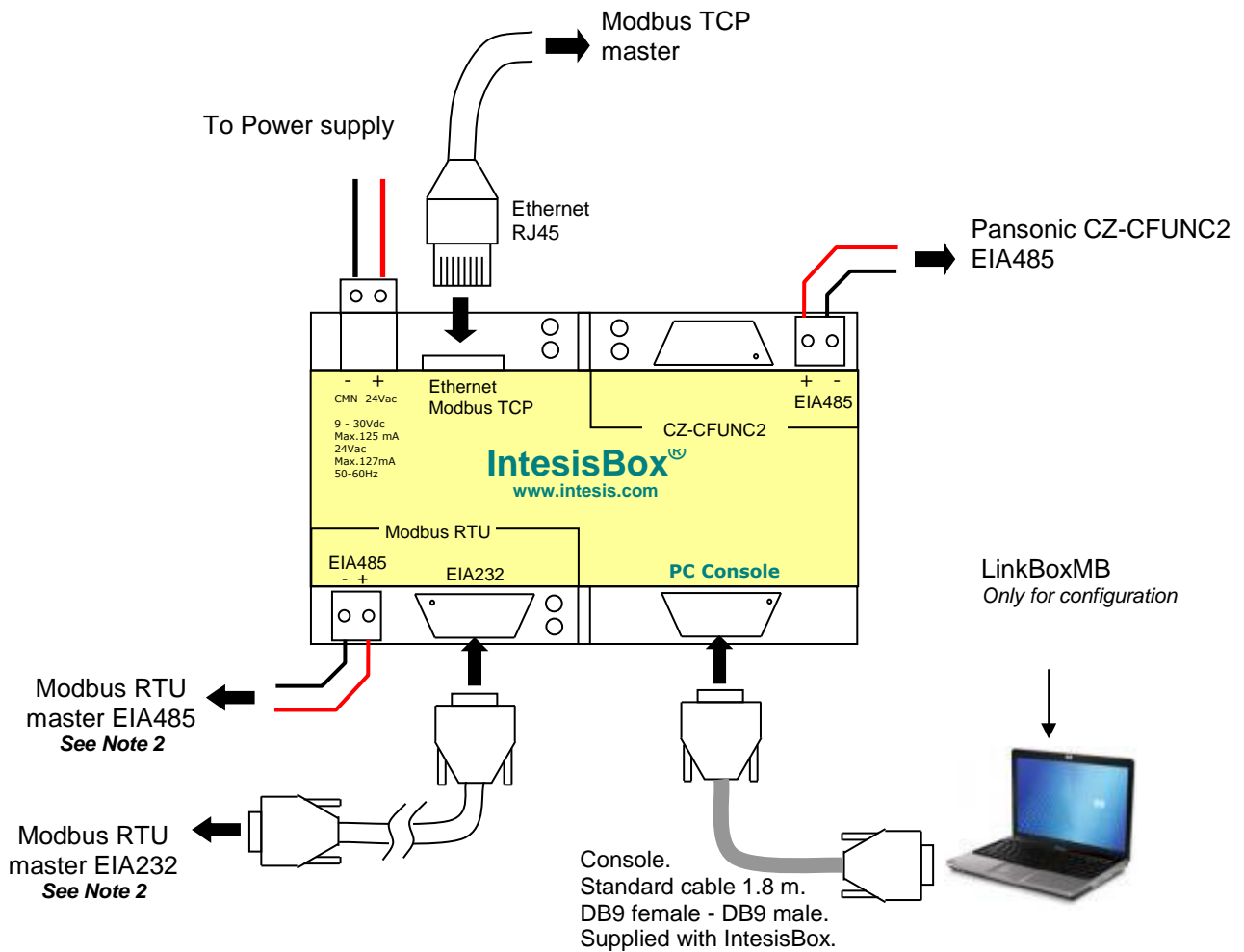
## 2.Modbus interface of IntesisBox®

<b>General</b>	
Max. Number of Panasonic indoor units	Two different versions of IntesisBox® available, supporting a maximum of 128 and 64 indoor units respectively.
Virtual signals	One communication error virtual signal per every indoor unit. All these virtual signals are available from Modbus.
<b>Modbus interface</b>	
Device type	Slave.
Modbus modes supported	TCP, RTU EIA232 or EIA485.
Modbus TCP configuration parameters	<ul style="list-style-type: none"> <li>• IP address.</li> <li>• Subnet mask.</li> <li>• Default gateway address.</li> <li>• TCP port.</li> </ul>
Modbus RTU configuration parameters	<ul style="list-style-type: none"> <li>• EIA232/EIA485.</li> <li>• Baud rate.</li> <li>• Parity.</li> <li>• Slave number.</li> </ul>
<b>Points</b>	
Configuration	AC system related fields. <ul style="list-style-type: none"> <li>• Indoor unit main address: Main Address of the AC indoor unit each modbus memory block relates to.</li> </ul>
Supported Modbus function codes	<ul style="list-style-type: none"> <li>• 3- Read holding registers.</li> <li>• 4- Read input registers.</li> <li>• 6- Write single register.</li> <li>• 16- Write multiple registers.</li> </ul> <p><i>If poll records are used to read/write multiple records, the range of addresses requested must contain valid addresses, otherwise the corresponding Modbus error code will be responded.</i></p>
Modbus data coding	All the point's values are coded in 2 byte or 4 byte registers (even if their possible values are 0 and 1). They are expressed in MSB..LSB and LSB...MSB format (big endian), modifiable using the configuration software.

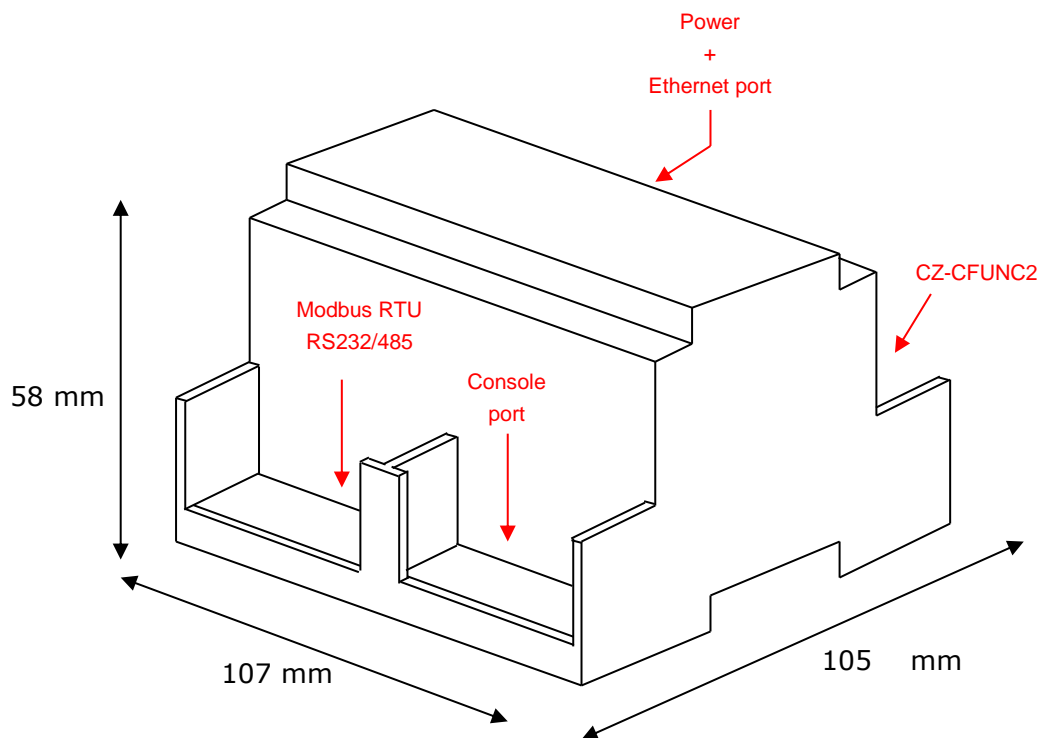
## 4. Mechanical & Electrical characteristics

Enclosure	Plastic, type PC (UL 94 V-0). Dimensions: 107mm x 105mm x 58mm.
Colour	Light Grey. RAL 7035.
Power	9 to 30Vdc +/-10%, Max.: 125mA. 24Vac +/-10% 50-60Hz, Max.: 127mA Must use a NEC Class 2 or Limited Power Source (LPS) and SELV rated power supply. Plug-in terminal block for power connection (2 poles).
Terminal wiring (for power supply and low-voltage signals)	Per terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5mm <sup>2</sup> ... 2.5mm <sup>2</sup> 2 cores: 0.5mm <sup>2</sup> ... 1.5mm <sup>2</sup> 3 cores: not permitted
Mounting	Wall. DIN rail EN60715 TH35.
Modbus TCP port	1 x Ethernet 10Base-T (RJ45).
Modbus RTU ports	1 x Serial EIA232 (DB9 male DTE). SELV 1 x Serial EIA485 (Plug-in screw terminal block 2 poles). SELV
CZ-CFUNC2 (PANASONIC) port	1 x EIA485. Plug-in screw terminal block (2 poles). SELV
LED indicators	1 x Power. 2 x Serial port Modbus RTU activity (Tx, Rx). 2 x Serial port CZ-CFUNC2 activity (Tx, Rx). 2 x Ethernet port Modbus TCP link and activity (LNK, ACT).
Console port	EIA232. DB9 female connector (DCE). SELV
Configuration	Via console port.
Firmware	Allows upgrades via console port.
Operational temperature	0°C to +70°C
Operational humidity	5% to 95%, non condensing
Protection	IP20 (IEC60529).
RoHS conformity	Compliant with RoHS directive (2002/95/CE).
Norms and standards	CE conformity to EMC directive (2004/108/EC) and Low-voltage directive (2006/95/EC) EN 61000-6-2 EN 61000-6-3 EN 60950-1 EN 50491-3

## 5.Connections



## 6. Dimensions



Recommended available space for its installation into a cabinet (wall or DIN rail mounting), with space enough for external connections:

