IntesisBox®

SM-ACN-MBS-4/8/16/64
Samsung NASA to Modbus Server gateway

Document revision r1.2

Order Codes:
IBMBSSAM004O000 (4 indoor units)
IBMBSSAM008O000 (8 indoor units)
IBMBSSAM016O000 (16 indoor units)
IBMBSSAM064O000 (64 indoor units)

HOW IT WORKS

The IntesisBox **SM-ACN-MBS** Gateway has been specially designed to work as a Modbus RTU & TCP interface for Samsung NASA Air conditioning systems.

IntesisBox acts as a Modbus Server (slave) device in the Modbus side, allowing Modbus Master (client) devices to access the datapoints of the Samsung installation (read and write).

Up to 64 indoor units in the Samsung installation are supported. Their status will be continuously monitored and kept in its modbus memory map, accessible for reading as modbus registers. Writes on write-enabled registers will trigger commands on Samsung installation.
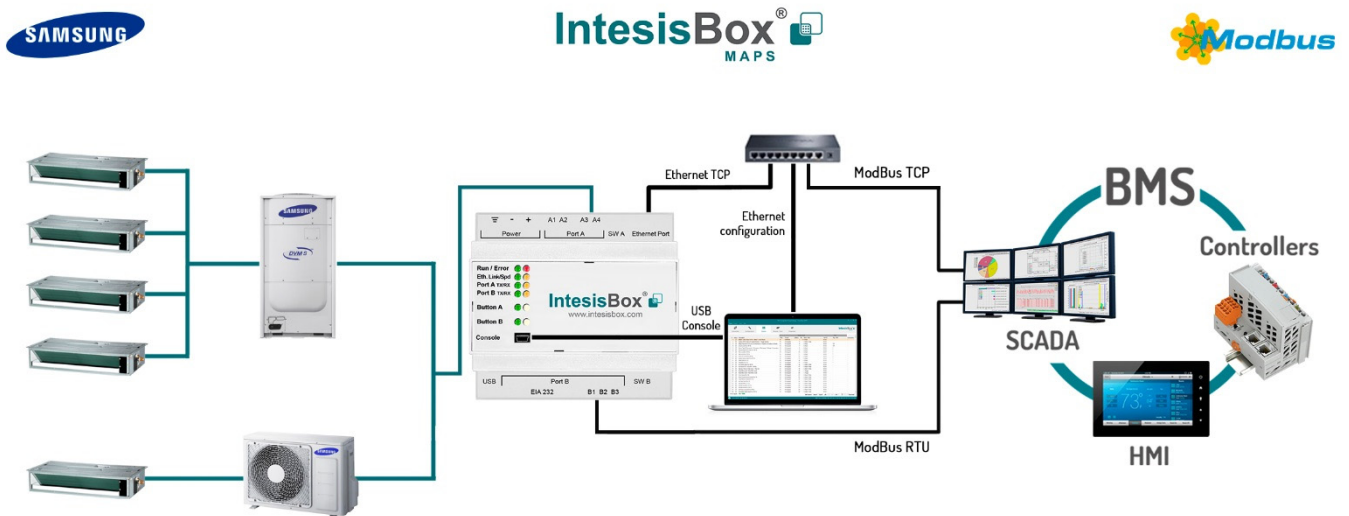
Configuration of the interface is needed using IntesisBox MAPS software, which also allows for diagnostics.
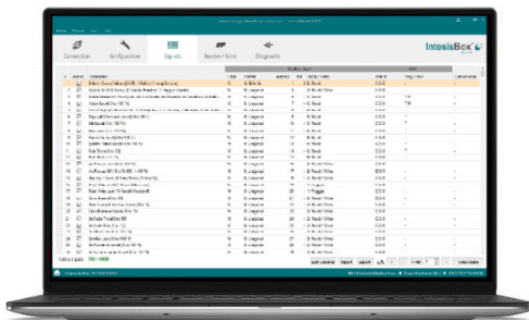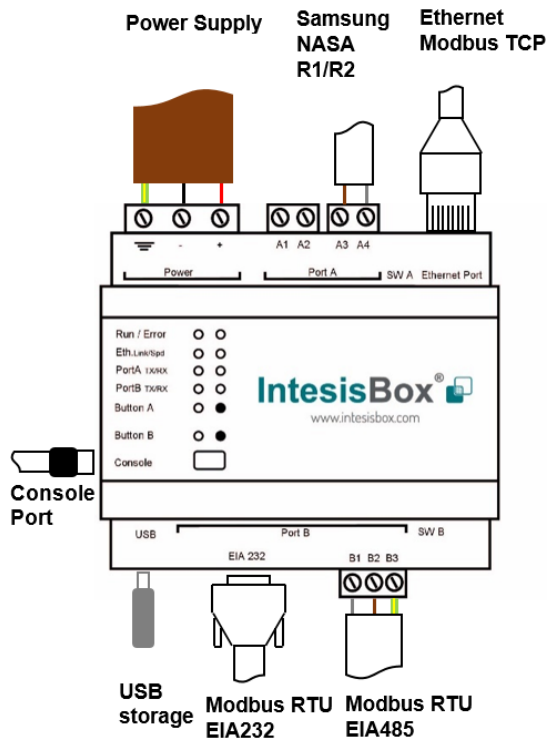

FEATURES

- Manages Modbus TCP and Modbus RTU simultaneously
- Up to 6 Modbus TCP clients (incoming sockets) are supported
- Complete range of Samsung indoor unit types supported (AC Indoor unit, HE, HT, EHS, AHU, ERV, ERV+, Chillers)
- Wide range of monitoring & control datapoints available, according to unit type
- Each single parameter is available on a single modbus register/address.
- Compatible with Samsung's centralized controller systems connected to NASA's R1/R2 bus (e.g. MCM300N)
- Datalogging through external USB port
- Configuration through IP or USB (Console) port
- Front cover LED indicators to provide easy to check communication status on both the Ethernet and serial ports
- Includes IntesisBox MAPS with automatic updates for both IntesisBox MAPS and Gateway's firmware

INTEGRATION EXAMPLE

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CONNECTIONS

Power Supply   **Samsung NASA R1/R2**   **Ethernet Modbus TCP**

Console Port

USB storage   **Modbus RTU EIA232**   **Modbus RTU EIA485**

PROTOCOLS

Modbus Protocol is a de facto standard, truly open and the most widely used network protocol in the industrial manufacturing environment. Modbus is used in multiple applications to monitor and program devices; to communicate between intelligent devices and sensors and instruments; to monitor field devices using PCs and HMIs.

But Modbus is not only an industrial protocol. Building, infrastructure, transportation and energy applications also make use of its benefits.

For further information visit www.modbus.org

Samsung NASA (Network Architecture for System Air conditioner) is Samsung's standard bus for interconnection of its air conditioning systems of arbitrary size, since 2013.

Access to NASA is based upon a two-wire connection, R1/R2, usually accessible at each outdoor unit of Samsung.

Bus is used not only for communication of AC Indoor Units, but also all other Samsung's cooling/heating products (EHS, AHU, ...).

Compatibility with Samsung's previous generation products is possible, using Samsung's MIM-N01 interface.

COMMUNICATION

	Modbus		Samsung NASA
	RTU	**TCP**	
Connection	EIA485 (3 wire isolated) EIA232 (DB9 connector)	10BASE-T 100BASE-TX	R1/R2 (2-wire, isolated)
Data rate	2.4, 4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbps	10 Mbps 100 Mbps	non-standard
Data Types & Functions supported	3-Read Holding Registers 4-Read Analog Registers 6-Write Single Analog Register 16-Write Multiple Holding Registers		Supported unit types: • Indoor Unit • HE • HT • EHS • AHU • ERV • ERV+ • CHILLER

ELECTRICAL & MECHANICAL FEATURES

Enclosure	Plastic, type PC (UL 94 V-0) Net dimensions (dxwxh): 90x88x56 mm Recommended space for installation (dxwxh): 130x100x100mm Color: Light Grey. RAL 7035
Mounting	Wall. DIN rail EN60715 TH35.

Terminal Wiring (for power supply and low-voltage signals)	Per terminal: solid wires or stranded wires (twisted or with ferrule)
	   1 core: 0.5mm^2… 2.5mm^2
	   2 cores: 0.5mm^2… 1.5mm^2
	   3 cores: not permitted
	If cables are more than 3.05 meters long, Class 2 cable is required.

Power	1 x Plug-in screw terminal block (3 poles)
	   9 to 36VDC +/-10%, Max.: 140mA.
	   24VAC +/-10% 50-60Hz, Max.: 127mA
	   Recommended: 24VDC

Ethernet	1 x Ethernet 10/100 Mbps RJ45 2 x Ethernet LED: port link and activity

Port A	1 x Samsung NASA port Plug-in screw terminal block orange (2 poles)
	   R1 R2 (Samsung Nasa)
	   1500VDC isolation from other ports
	1 x Plug-in screw terminal block green (2 poles)
	   Reserved for future use

Switch A (SWA)	1 x DIP-Switch for PORTA configuration: Reserved for future use (leave OFF, default)

PORT B	1 x Serial EIA232 (SUB-D9 male connector)
	   Pinout from a DTE device
	   1500VDC isolation from other ports
	   (except PORT B: EIA485)
	1 x Serial EIA485 Plug-in screw terminal block (3 poles)
	   A, B, SGND (Reference ground or shield)
	   1500VDC isolation from other ports
	   (except PORT B: EIA232)

Switch B (SWB)	1 x DIP-Switch for serial EIA485 configuration:
	   Position 1:
	     ON: 120 Ω termination active
	     Off: 120 Ω termination inactive (default)
	   Position 2-3:
	     ON: Polarization active
	     Off: Polarization inactive (default)

Battery	Size: Coin 20mm x 3.2mm Capacity: 3V / 225mAh Type: Manganese Dioxide Lithium
Console Port	Mini Type-B USB 2.0 compliant 1500VDC isolation
USB port	Type-A USB 2.0 compliant Only for USB flash storage device *(USB pen drive)* Power consumption limited to 150mA *(HDD connection not allowed)*
Push Button	Button A: Not used Button B: Not used
Operation Temperature	0°C to +60°C
Operational Humidity	5 to 95%, no condensation
Protection	IP20 (IEC60529)

LED Indicators	10 x Onboard LED indicators
	   2 x Run (Power)/Error
	   2 x Ethernet Link/Speed
	   2 x Port A TX/RX
	   2 x Port B TX/RX
	   1 x Button A indicator
	   1 x Button B indicator

100 mm (h)   100 mm   130 mm

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