



## MSC MASIBUS SMART CONVERTER

**MSC-PS-MS** : Profibus DP Slave to Modbus RTU Master

**MSC-ME-MS** : Modbus Serial to Modbus Ethernet

**MSC-ME-ZB** : Modbus ZigBee to Modbus Ethernet

**MSC-ZB-RS** : ZigBee Wireless to RS485 Serial (ZigBee Adapter)

The Masibus Smart Converter series addresses a market segment that sets the focus on cost savings & space saving compact design. The economic design combined with its Master-Slave conversions makes MSC an attractive gateway/converters in terms of price, universality and flexibility.

This MSC family converts two industrial protocols simply and efficiently into each other. Be it a simple serial RS485 bus, Ethernet, classic Profibus or Wireless-ZigBee, MSC provides a common platform for a transparent conversion of automation protocols. It smoothly integrates into the existing field networks in Plant with both wired and wireless network standards.

MSC is configured and diagnosed by a dedicated configuration tool (MSC Studio)

MSC Converter design combines the two network interfaces on a DIN-rail & Wall mount housing. LED indicators reveal the status information for Power & Bus Communication. The protocol conversions are pre-programmed and loaded as dedicated firmware into the device.

Masibus ZigBee adapter delivers wireless connectivity to electronic devices through advanced mesh network. It provides wireless connectivity to replacing existing wired RS485 network of the sensors, controllers and other Serial devices. It works both as a Router and a Co-ordinator/Aggregator/Master.

### Features

#### MSC-PS-MS

- Integrates multiple Modbus RTU slaves into Single Profibus Network
- Fast cyclic data communication between Master and Slave
- Supports up to 100 commands or 512 Read & Write Registers on MODBUS
- Diagnostic and configuration via RS232
- Maximum of 244 bytes cyclic input and output data on Profibus DP Slave

#### MSC-ME-MS

- Supports max upto 64 Modbus RTU Slave devices on RS485
- No of RS485 Ports (Modbus RTU Master): 2 (Only one active at a time)
- Modbus TCP/IP (ModNet) - 10/100Mbps- auto-detecting
- No. of Client supports on Modbus TCP/IP (ModNet) - Up to 15
- Supports upto 192 commands or 2048 Read/1024 Write Registers on MODBUS

#### MSC-ME-ZB

- Supports upto 64 Modbus RTU Slave devices on RS485 & ZigBee
- Number of Master Ports (Modbus RTU): 1 RS485 (Wired) & 1 ZigBee (Wireless) - Only one active at a time
- ZigBee Topology: Point-Point/Point-Multipoint/Mesh
- Modbus TCP/IP (ModNet) - 10/100Mbps- auto-detecting
- No. of Client supports on Modbus TCP/IP (ModNet) - Up to 15
- Supports up to 192 commands or 2048 Read/1024 Write Registers on MODBUS

#### MSC-ZB-RS

- Number of Ports: 1 RS485 (Wired) & 1 ZigBee (Wireless)
- ZigBee Topology: Point-Point/Point-Multipoint/Mesh
- Router/Co-ordinator/Aggregator/Master/Slave configuration through MSC studio
- MSC-ZB-RS (Router/Slave) can connect to MSC-ME-ZB or MSC-ZB-RS (Co-ordinator/Master)
- Wireless range extension possible through router

### Applications

- Data sharing between PLC, DCS, Controllers, Inverters and other network devices
- Operator Interfaces
- Industrial / Factory / Process/Building Automation
- Intelligent Field Sensors and Actuators Communication
- Solar String / Environmental Monitoring

# TECHNICAL SPECIFICATIONS FOR MSC-PS-MS

General		Indication	
Communication controller Type	ARM 926EJ-S / 200 MHz / MMU	Status LEDs	2 LEDs, (System Status + Communication Status) & Power Status
Configuration Port	RS232 For Diagnostic and Configuration	<b>Power Supply and Isolation</b>	
Master Communication	RS485 (optically isolated) Modbus RTU	Power Supply	24V DC $\pm 10\%$ @ 130 mA Current (200mA Max)
Configuration Software	mPC Tool (Supports Windows OS)	Power consumption	3 Watt (max.)
<b>PROFIBUS DP Slave Value</b>		Isolation (Between Supply and Communication ports)	1000VAC RMS
I/O	Maximum of 244 bytes cyclic input and 244 bytes output data	<b>Physical</b>	
Transmission Rate	9.6 to 12 Mbps	Mounting	DIN Rail (35mm) EN 60715
Connector	D-Sub female connector, 9 pin	Enclosure material	ABS
Functions	DP V0 (cyclic communication)	Dimension (in mm)	75 (H) X 22.5 (W) X 110 (D)
Data Transport Layer	DP V0 (cyclic communication)	Color	Light Grey
<b>Modbus RTU Master Value</b>		Weight	150 g
I/O	Max. No. of I/O data 512 Read/512 Write registers or 100 commands	<b>Environmental</b>	
Function Codes	01 - Read Coil Status	Operating temperature	0 to 55 °C
	02 - Read Input Status	Storage temperature	-10 to 70 °C
	03 - Read Holding Register	Humidity	30 to 95 % non-condensing
	04 - Read Input Register		
	05 - Force Single Coil		
	06 - Preset Single Register		
15 - Force Multiple Coils			
16 - Preset Multiple Register			
Serial Communication Parameters	Data bits - 8 bits Stop bits - 1, 2 Parity Bits - None, even, odd		
Maximum Units	31 unit per host(Node Number: 1 to 126)		

## Ordering code

Model					
MSC	XX		XX		
	PS	Profibus DP	MS	Modbus RTU	

## Accessories

Configuration and Diagnosis RS232 Cable (1 meter)

(Note: Latest Software can be downloaded from Our Website)

# TECHNICAL SPECIFICATIONS FOR MSC-ME-MS and MSC-ME-ZB

Performance		ZigBee Wireless(applyable for MSC-ME-ZB model only)	
Processor	32-bit CPU ARM Core	Frequency Band	ISM 2.4 GHz
Maximum No. of Read Registers	2048	Communication Port	ZigBee (IEEE 802.15.4 standard)
Maximum No. of Write Registers	1024	Protocol	Modbus RTU Master or Modbus RTU Slave
Maximum No. of Modbus commands supported	192	Transmit Power	63 mW (+18 dBm)
No. Of Modbus Devices Supports on serial Port	64	Receiver Sensitivity	-101 dBm
No. of Clients supported on TCP/IP	15	Distance (max)	3000 meter typically (Line of sight) without Any Obstacles
<b>Configuration Software</b>		Indoor Range	20 to 100 meter typically
MSC Studio	Configuration and Diagnostics	Connectivity	Connect to Masibus ZigBee Adapter MSC-ZB-RS (For data collection over Wireless communication)
<b>Communication Output</b>		Antenna	Dipole pluggable 2.1 dBi (3 meter Extension Cable can be provided optionally)
<b>RS485 Serial port</b>		Operating Channels	11 to 26
Protocol	Modbus-RTU Master	<b>Power Supply</b>	
No of Ports	2 (MSC-ME-MS) 1 (MSC-ME-ZB)	Voltage	18-32 V DC ±10%
Communication Speed (Baud rate)	9600, 19200, 38400, 57600, 115200 bps	Power consumption	<5W
Parity	ODD, EVEN, NONE	<b>Isolation</b>	
Data bits	8	Supply to RS485:	1500VAC RMS
Stop bit	1, 2	Supply to Ethernet:	1000VAC RMS
Default Settings	9600, 8 Data bits, 1 Stop bit, No Parity	<b>Physical</b>	
Connector	Plug-in screw terminals, 1.5mm <sup>2</sup> Cable Size	Dimension (in mm)	101(H) x 22.5(W) x 120(D)
Recommended Cable	Shielded, twisted pair, size: 0.14mm <sup>2</sup>	Mounting	Din Rail (35 mm)
<b>Ethernet port</b>		Weight Approx.	<160 grams
Protocol	Modbus Over Ethernet(TCPIP-ModNet)	Enclosure material	Molded ABS
No of Port	1	Enclosure Protection	IP20
Speed	10/100 Mbps (auto-detecting)	Color	Black
Connector	RJ45 (auto-crossover)	<b>Environmental</b>	
		Ambient temperature	0 to 55°C
		Storage temperature	-10 to 70°C
		Humidity	30% to 95% RH (Non-Condensing)

# TECHNICAL SPECIFICATIONS FOR MSC-ZB-RS

Performance		ZigBee Wireless	
RF Data Rate	250 kbps	Network Topologies	Point-to-point, Point-to-multipoint, Mesh
Indoor Range	20 to 100 meter typically	Protocol supported	DigiMesh
Outdoor Range	3000 meter typically (Line of sight) without Obstacles	Operating Channels	11 to 26
Transmit Power	63 mW (+18 dBm)	Spread Spectrum	TYPE Direct Sequence
Receiver Sensitivity	-101 dBm	Filtration Options	PAN ID, 64-bit MAC
<b>Features</b>		<b>Power Supply</b>	
Antenna	Dipole pluggable 2.1 dBi (3 meter Extension Cable can be provided optionally)	Voltage	24 V DC (Externally) Or optionally using 12VDC Adaptor
Frequency Band	ISM 2.4 GHz	Power consumption	3W
Working Mode	Can work as Router and Coordinator	<b>Physical</b>	
Serial Data Interface	RS485 (can connect to Masibus or any third Party RS485 Network)	Dimension (in mm)	75(H) x 75(W) x 35(D)
		Enclosure material	ABS
		Enclosure protection	IP20
		Mounting	Wall mount (alongwith mounting clamps/screws)
		Weight	110 grams approx
		<b>Environmental</b>	
		Ambient temperature	0 to 55°C
		Storage temperature	-10 to 70°C
		Humidity	30% to 95% RH (Non-Condensing)

## Ordering Code

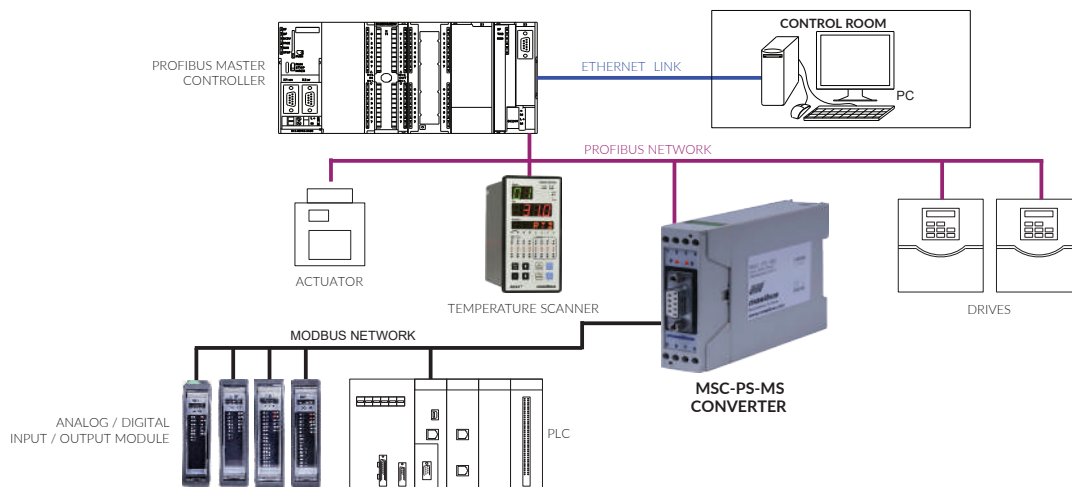
<b>Model</b>	
MSC-ME-MS	Modbus Serial to Modbus Ethernet
<b>Model</b>	
MSC-ME-ZB	Modbus ZigBee to Modbus Ethernet
<b>Model</b>	
MSC-ZB-RS	ZigBee Wireless to RS485 Serial (ZigBee Adapter)

### Optional Accessory (extra cost) for Zigbee model

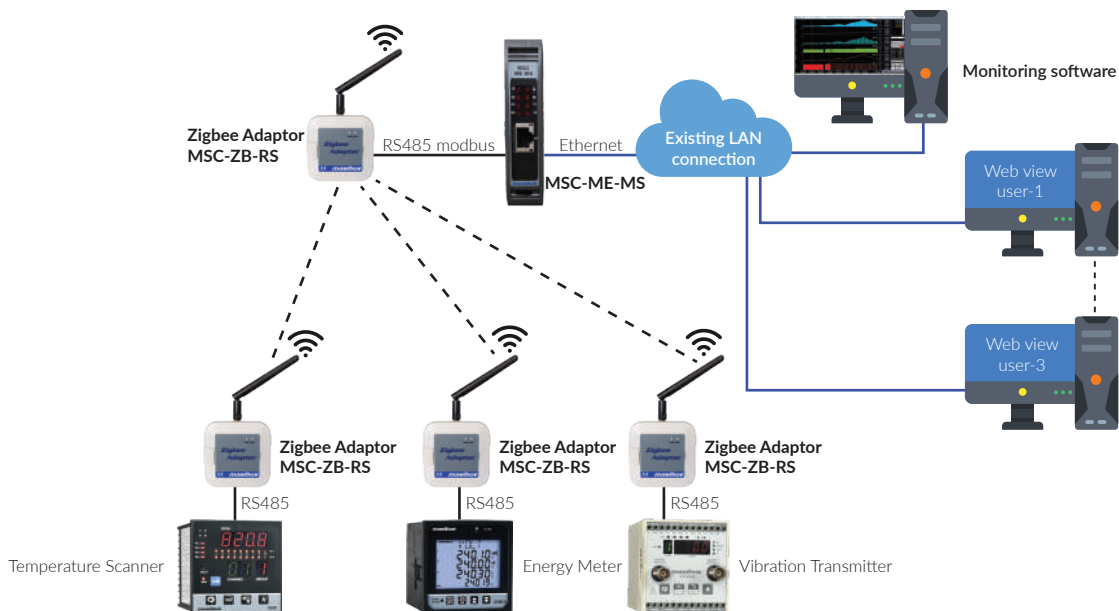
CBL-ZB-ANT-03: 3 meter Extension Cable for antenna

# APPLICATION DIAGRAM

## DATA ACQUISITION SYSTEM OVER PROFIBUS NETWORK



## PROTECTION MONITORING SYSTEM USING ZIGBEE MESH NETWORK



## WIRELESS DATA ACQUISITION SYSTEM USING ZIGBEE MESH NETWORK

