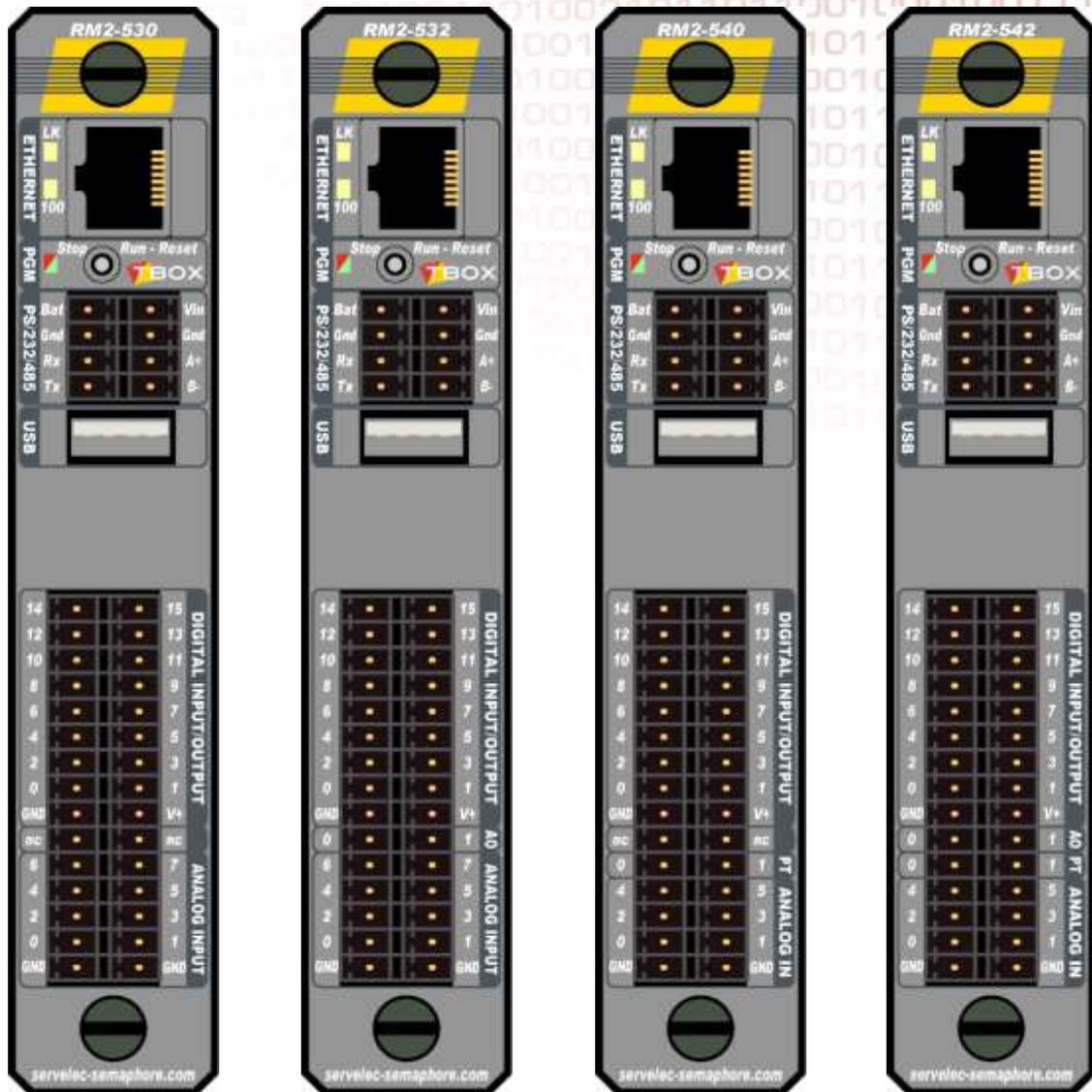




RM2



Servelec-Technologies offers a new range of *Remote Modules* of compact size and monoblock that can be fixed easily on DIN RAIL.

The RM2 modules connect a wide variety of electrical, electronic, and mechanical devices and sensors — such as pumps, temperature and pressure transmitters, power meters, motors and more — to computers and applications over standard Ethernet networks (Modbus/TCP), RS232 or RS485 (Modbus RTU) or even to other controllers and PLC's.

Each remote I/O module has its own Ethernet Modbus TPC/IP port making it easy to connect the modules to each other with up to 100 meters of CAT5 cable, or even longer distances using fiber optic switches.

RS485 can also be used to communicate on long distances on 2 wires.

1. Summary of Hardware Features

Inputs/Outputs	
RM2-530	16 x DI/O Each channel can be used as input or output. The 3 first DI can be used as fast counter(>10Khz) 8 x AI (0..10V ,1..5V and 4..20mA) Individual selection of signal per channel. With validity bit when working with 4..20mA signal.
RM2-532	16 x DI/O Each channel can be used as input or output. The 3 first DI can be used as fast counter(>10Khz) 8 x AI (0..10V ,1..5V and 4..20mA) Individual selection of signal per channel. With validity bit when working with 4..20mA signal 2 x AO (4..20mA)
RM2-540	16 x DI/O Each channel can be used as input or output. The 3 first DI can be used as fast counter(>10Khz) 6 x AI (0..10V ,1..5V and 4..20mA) Individual selection of signal per channel. With validity bit when working with 4..20mA signal 2 x Pt1000
RM2-542	16 x DI/O Each channel can be used as input or output. The 3 first DI can be used as fast counter(>10Khz) 6 x AI (0..10V ,1..5V and 4..20mA) Individual selection of signal per channel. With validity bit when working with 4..20mA signal 2 x Pt1000 2 x AO (4..20mA)

Common specifications for all RM2 modules	
Communication ports	RS232 RS485 Ethernet USB
Power Supply	Power supply 20..30VDC
Terminal blocks	Spring loaded terminal blocks (supplied with the unit)
LED's	LED for Ethernet, power and RUN. No LED's for Inputs/Outputs
Protection	Protection of I/O according to IEC-61131 norm
Configuration	Through Web Browser
External housing	Aluminum – Anodized
Fixing	Din Rail Fixing
Dimensions	152mm x 115mm x 40mm
Working Temperature	-40°C...+70°C
Humidity	Humidity: 0 to 95% non-condensed
Weight	300 g



2. General Technical Specifications

General		
Processor		32 bits, ARM based, 400 Mhz
Clock Clock Drift		Realtime Clock, backed up Typical: 1.7 sec. @ 25°C
Toggle Switch		STOP - RUN - RESET
LED	Green 2 Hz Green 0.5/Hz Green ON Red 8 Hz	Normal operation Application stopped OS stopped Presence of Alarm(s)
Power Supply		
Voltage	With backup battery	8..30 VDC 20..30 VDC
Protection		Reverse polarity Internal soldered fuse
Battery Charger		
Power supply Vin required		20...30 VDC
Mode		Constant current / limited voltage
Voltage		Maximum: 13.8 V @ 25°C
Current		Maximum: 250 mA
Internal Battery		
Voltage		3 V, lithium battery (CR2450)
Use		Backup of Clock and RAM
Lifetime		Battery consuming only when TBOX RM2 is out of power and plastic strip has been removed. - Typical 4 years @ 25°C WARNING: We advise to consider replacing the 3V lithium battery when it has been used during 2 years.
Memory		
Flash		32 MB (Uboot, LINUX, OS, Application, Web & Reports)
SDRAM		64 MB (Running part of LINUX, OS, Application)
SRAM		1 MB, backed up with Lithium battery
Approvals		
		CE, FCC, CSA for US and Canada, C-Tick, A-Tick, RoHS Harzardous Area Class I, Division 2

Communication ports	
Built-in Communication ports	- 1 x RS232 - 1 x RS485 - 1 x Ethernet - 1 x USB
RS232 (Built-in)	
Connector	Spring-cage terminal block
Cabling	2 Wires: TxD, RxD
RS485 (Built-in)	
Connector	Spring-cage terminal block
Cabling	2 Wires: A+, B-
Isolation	No isolation between signals A - B and Power Supply
Termination	Terminations of 120Ω (between A-B at both ends) are in most cases not necessary. They increase the quality of the signals for long distance cabling. <i>Failsafe bias</i> resistors included: pullup and pulldown resistors which assures a logical level TRUE when A and B are opened or in short-circuit.
Ethernet (Built-in)	
Model	100 BASE-TX (4 wires) Full Duplex / Auto-negotiation
Connector	RJ-45
Cabling	Straight pinned CAT5 shielded cable or Crossover CAT5 shielded cable
Speed	10/100 Mbits
LEDs	100: ON when connected at 100 MHz – OFF when connected at 10 MHz Lk: ON when linked – FLASH when communicating
USB (Built-in)	
Model	USB 2.0
Connector	USB type A female (socket)
Cabling	USB A/A male cable (host to host)
Speed	High Speed (480Mbits / sec.)
Current	Max 500mA at ambient temperature
Temperature	
Storage	-40°C...+85°C
Working	-40°C...+70°C
Humidity	0 to 95 % without condensation
Altitude	Max. 4000 m
Dimensions	
Without connector	Height x Depth x Width: 150x83x29 mm (5.906x3.27x1.142 inches)
With rack, without connector	Height x Depth x Width: 152x115x40 mm (5.984x4.428x1.575 inches)
Weight	300 g

3. I/O Specifications

Digital Inputs - Counters	
V+	
External voltage to V+	With cabling only to DI: 8 → 30 VDC With cabling to DI and DO: 11 → 30 VDC
Voltage at input	
Typical	12 VDC
Maximum for a LOW level	2.0 VDC
Minimum for a HIGH level	7.4 VDC
Maximum	30 VDC
Resistance at input	
Resistance	> 39 kΩ
Sampling	
Minimum period LOW – HIGH	15 msec – 15 msec.
Protection	
Voltage inversion	No protection
Protection EMC	RC
Isolation	
Between inputs	No isolation
To the power supply	No isolation

Counter inputs	
Input channels	DI 0, DI 1, DI 2
Maximum frequency	10 kHz with duty cycle 45 .. 55 %

Digital Outputs	
V+	
With external voltage to V+	11 → 30 VDC
Output	
Type	Current Sourcing
Voltage per output	Maximum: 30 VDC (depending on V+)
Current for 16 outputs at a time	Maximum: 3.2 A, protected by a fuse (SMD)
Current per output	Maximum: 625 mA up to 60°C (with a total for all output of 3.2 A) Maximum: 200 mA between 60°C .. 70°C
Short-Circuit current at 1 output	Typical: 1.4 A Maximum: 1.9 A
Protection	
Protection diode	Protection against inverted voltage when working with inductive load WARNING: when the output is connected to a DC relay driving an AC relay, the AC relay must be protected with a RC circuit
Over load	Maximum: 35 VDC
Short-Circuit + Overload	Thermal protection
Isolation	
Between outputs	No isolation
To the power supply	No isolation

Analog Inputs– Validity bits

4..20mA	
Resolution	16 bits
Mode	Unipolar
Model	Passive input: sensor and input stage powered by an ext. power supply
Precision	0.1% full scale @ 25°C 0.2% full scale over the temperature range
Input Impedance	Typical: 249 Ω
DI: Validity input associated to each analog input 4..20mA	Returns '0' when signal < 2.4mA and > 21.6mA Returns '1' when the signal is valid.

0..1.5V	
Resolution	16 bits
Mode	Unipolar
Model	Passive input: sensor and input stage powered by an ext. power supply
Precision	0.1% full scale @ 25°C 0.2% full scale over the temperature range
Input Impedance	Typical: 60 kΩ

0..10V	
Resolution	16 bits
Mode	Unipolar
Model	Passive input: sensor and input stage powered by an ext. power supply
Precision	0.1% full scale @ 25°C 0.2% full scale over the temperature range
Input Impedance	Typical: 60 kΩ

Pt1000	
Mode	2 wires
Resolution	16 bits
Range	Typical: -40°C .. +85°C
Precision	± 0.5 °C

Protection	
4..20mA	Max : 28 mA /7 V
0..10V	Max : 13.6V w/o influence on other AI.
	Absolute Max : 30 VDC
Pt1000	Max input voltage : 10 V

Isolation	
Between inputs	No isolation
To the power supply	No isolation

Analog Outputs	
4..20mA	
Resolution	16 bits
Mode	Unipolar
Model	Active output (Sourcing)
Precision	0.1% full scale @ 25°C 0.2% full scale over the temperature range
Voltage at Output	Input power supply (Vin or Vbat) - 5 V
Current at Output	Maximum: 22mA
Outside Impedance limit	$\leq \frac{V_{in} - 5V}{22mA}$
Protection	
	Short-circuit protection
Isolation	
Between outputs	No isolation
To the power supply	No isolation