

# Comparison table of telemetry and location modules, expanders and converters

FEATURES	MODULE	MT-020	MT-021	MT-051	MT-100	MT-101	MT-102	MT-151 LED v2
		Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module
<b>I/O Resources</b>		<b>End of Life</b>	<b>End of Life</b>		<b>End of Life</b>	<b>End of Life</b>	<b>End of Life</b>	
Binary inputs		0 – 4 <sup>1)</sup>	0 – 4 <sup>1)</sup>	5	8 – 16 <sup>1)</sup>	8 – 16 <sup>1)</sup>	0 – 8 <sup>1)</sup>	16 – 28 <sup>1)</sup>
Binary outputs		2	4	-	0 – 8 <sup>1)</sup>	0 – 8 <sup>1)</sup>	0 – 8 <sup>1)</sup>	0 – 12 <sup>1)</sup>
Counter inputs		0 – 4 <sup>1,4)</sup>	0 – 4 <sup>1,4)</sup>	5	8 – 16 <sup>1,2)</sup>	8 – 16 <sup>1,2)</sup>	0 – 8 <sup>1,2)</sup>	0 – 4 <sup>1)</sup>
Analog inputs		2	2	-	2	2	6	6
1-wire input		2	2	1 <sup>8)</sup>	-	-	-	-
Real Time Clock (RTC)		YES	YES	YES	YES	YES	YES	YES
Ethernet Port		-	-	-	-	-	-	YES
Serial port RS232/422/485		-	-	-	1(1/0/0/0)	2(2/1/1/0)	2(2/1/1/0)	2(1/0/1/1) <sup>8)</sup>
Voice channel		-	-	-	-	-	-	-
<b>Functionality</b>		<b>End of Life</b>	<b>End of Life</b>		<b>End of Life</b>	<b>End of Life</b>	<b>End of Life</b>	
Local configuration via RS232/USB/ETH		-/+/-	-/+/-	-/+/-	+/-/-	+/-/-	+/-/-	-/+/+
Remote configuration over GPRS		YES	YES	YES <sup>9)</sup>	YES	YES	YES	YES
Unsolicited messaging		YES	YES	YES	YES	YES	YES	YES
Data packet sending		YES	YES <sup>10)</sup>	YES	YES	YES	YES	YES
SMS sending		YES	YES	YES	YES	YES	YES	YES
User programming (lines of code limit)		-	-	-	100	1024	1024	5000
Standard serial protocols		-	-	-	-	YES <sup>5)</sup>	YES <sup>5)</sup>	YES <sup>5)</sup>
Data packet routing		-	-	-	-	YES	YES	YES
Manual alarm setting for analog inputs		-	-	-	-	YES	YES <sup>7)</sup>	-
Number of analog input alarm levels		4	4	4	4	6	4/6	4
Remote read/write with SMS		YES	YES	YES <sup>16)</sup>	YES	YES	YES	YES
Access control <sup>6)</sup>		YES	YES	YES	YES	YES	YES	YES
Local mirroring of external resources		-	-	-	-	YES	YES	YES
Datalogger		YES <sup>18)</sup>	YES <sup>18)</sup>	YES	YES	YES	YES	YES
MT-DP compatibility (OPC, CSV, ODBC)		YES	YES <sup>10)</sup>	YES	YES	YES	YES	YES
Remote firmware upgrade over GPRS		YES	YES <sup>10)</sup>	YES	YES	YES	YES	YES
<b>Other</b>		<b>End of Life</b>	<b>End of Life</b>		<b>End of Life</b>	<b>End of Life</b>	<b>End of Life</b>	
Integral GSM/GPRS modem		YES	YES	YES	YES	YES	YES	YES
SIM cards		SIM/MIM <sup>8)</sup>	SIM	SIM/μSIM/MIM <sup>8)</sup>	SIM	SIM	SIM	2xSIM/MIM <sup>8)</sup>
2G/3G/4G network support		+/+ <sup>8)</sup> /-	+/-/-	+/-/-	+/+/-	+/+/-	+/+/-	+/+/ <sup>8)</sup>
Integral GPS receiver		-	-	-	-	-	-	-
Integrated sensor T/H/P		P <sup>8)</sup>	-	T	-	-	-	T
DC power supply (V)/solar panel (PV)		9 – 30	9 – 30	-	9 – 30	10,8 – 36	10,8 – 36	10,8 – 30
AC power supply (Vrms)		12 – 18	-	-	-	18 – 26,4	18 – 26,4	-
Power supply for external sensors (V)		12/20	-	-	-	-	-	-
Power supply monitoring input		YES/-	YES/-	YES/-	YES/-	YES/-	YES/-	YES/-
Rechargeable battery int./ext.		ext.	-	-	-	-	-	ext.
Internal battery supply		-	-	3/6/9xR20	-	-	-	-
Low power operation modes		-	-	YES	-	-	-	-
External antenna connector/ISM		YES	YES	YES	YES	YES	YES	YES
Protection class		IP40	IP40	IP67	IP40	IP40	IP40	IP40
Operating temperature range (°C)		-20...+55	-20...+55	-20...+60	-20...+65	-20...+65	-20...+65	-20...+65
Removable terminal blocks		YES	YES	YES	YES	YES	YES	YES
DIN rail mounting		YES	YES	-	YES	YES	YES	YES
Warranty		3 years	3 years	3 years	3 years	3 years	3 years	3 years
Built-in device		-	-	-	-	-	-	-

1) number of binary inputs/outputs and counter inputs is configurable  
 2) fmax = 100Hz  
 3) fmax = 250Hz  
 4) fmax = 1kHz

5) Modbus RTU Master/Slave, transparent mode, other...  
 6) password + internal list of authorized IP and telephone numbers  
 7) for 2 inputs  
 8) option

9) requires MTSpooler  
 10) in new version since Q3 2012  
 11) if connected to MT-101/102/202  
 12) RS-232 to M-Bus converter  
 13) external battery pack required

FEATURES	MODULE	MT-151 HMI v2	MT-156 HMI	MT-202	MT-251	MT-331	MT-512	MT-651
		Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module	Telemetry Module
<b>I/O Resources</b>				<b>End of Life</b>	<b>End of Life</b>			
Binary inputs		16 – 28 <sup>1)</sup>	0 – 12 <sup>1)</sup>	-	0 – 2	0 – 8 <sup>1)</sup>	8	2
Binary outputs		0 – 12 <sup>1)</sup>	0 – 12 <sup>1)</sup>	-	1	0 – 4 <sup>1)</sup>	2	2 <sup>22)</sup>
Counter inputs		0 – 4 <sup>1)</sup>	-	-	-	0 – 6 <sup>1)</sup>	8	-
Analog inputs		6	10	-	-	0 – 2 <sup>1)</sup>	-	6 <sup>23)</sup>
1-wire input		-	1	-	-	1	-	-
Real Time Clock (RTC)		YES	YES	YES	YES	YES	YES	YES
Ethernet Port		YES	YES	-	YES	-	-	-
Serial port RS232/422/485		2(1/0/1/1) <sup>8)</sup>	3(2/0/1/0/1 <sup>25)</sup> )	2(2/1/1/0)	2(1/0/1/0)	-	1(1/0/1 <sup>8)</sup> /0)	1(0/0/1/0)
Voice channel		-	-	-	-	-	YES	-
<b>Functionality</b>				<b>End of Life</b>	<b>End of Life</b>			
Local configuration via RS232/USB/ETH		-/+/+	-/+/+	+/-/-	-/+/+	-/+/-	-/+/-	-/+/-
Remote configuration over GPRS		YES	YES	YES	YES	YES	YES	YES
Unsolicited messaging		YES	YES	YES	YES	YES	YES	YES
Data packet sending		YES	YES	YES	YES	YES	YES	YES
SMS sending		YES	YES	YES	YES	YES	YES	YES
User programming (lines of code limit)		5000	5000	1024	5000	-	-	-
Standard serial protocols		YES <sup>5)</sup>	YES <sup>5)</sup>	YES <sup>5)</sup>	YES <sup>5)</sup>	-	YES <sup>8)</sup>	YES <sup>5)</sup>
Data packet routing		YES	YES	YES	YES	-	-	-
Manual alarm setting for analog inputs		-	-	-	-	-	-	YES
Number of analog input alarm levels		4	4	-	-	4	-	6
Remote read/write with SMS		YES	YES	YES	YES	YES <sup>16)</sup>	YES	YES
Access control <sup>6)</sup>		YES	YES	YES	YES	YES	YES	YES
Local mirroring of external resources		YES	YES	YES	YES	-	YES	-
Datalogger		YES	YES	YES	YES	YES	YES <sup>8)</sup>	YES
MT-DP compatibility (OPC, CSV, ODBC)		YES	YES	YES	YES	YES	YES	YES
Remote firmware upgrade over GPRS		YES	YES	YES	YES	YES	YES	YES
<b>Other</b>				<b>End of Life</b>	<b>End of Life</b>			
Integral GSM/GPRS modem		YES	YES	YES	YES	YES	YES	YES
SIM cards		2xSIM/MIM <sup>8)</sup>	2xSIM/MIM <sup>8)</sup>	SIM	SIM/MIM <sup>8)</sup>	SIM/MIM <sup>8)</sup>	SIM	2xSIM
2G/3G/4G network support		+/+/ <sup>8)</sup>	+/+/ <sup>8)</sup>	+/+/-	+/+/-	+/+/ <sup>8)</sup>	+/-	+/+/-
Integral GPS receiver		-	-	-	-	-	-	YES
Integrated sensor T/H/P		T	T	-	-	T/H <sup>8)</sup> /P <sup>8)</sup>	-	T
DC power supply (V)/solar panel (PV)		10,8 – 30	10,8 – 30	10,8 – 36	18 – 55	9 – 30/PV	9 – 30	7 – 30
AC power supply (Vrms)		-	-	18 – 26,4	-	-	-	-
Power supply for external sensors (V)		-	-	-	-	7 – 24	-	-
Power supply monitoring input		YES/-	YES/-	YES/-	YES/-	YES/-	YES/-	-
Rechargeable battery int./ext.		ext.	ext.	-	ext.	int.	-	-
Internal battery supply		-	-	-	-	-	-	YES
Low power operation modes		-	-	-	-	YES	-	YES
External antenna connector/ISM		YES	YES	YES	YES	YES	YES	YES
Protection class		IP40	IP40	IP40	IP40	IP40	IP40	IP65
Operating temperature range (°C)		-20...+65	-20...+65	-20...+65	-20...+60	0...+55 <sup>19)</sup>	-20...+55	-20...+55
Removable terminal blocks		YES	YES	YES	YES	YES	YES	YES
DIN rail mounting		YES	YES	YES	YES	YES	YES	YES <sup>8)</sup>
Warranty		3 years	3 years	3 years	3 years	3 years <sup>17)</sup>	3 years	3 years
Built-in device		display	display	-	-	-	-	accelerometer

14) one dedicated input for pressure measurement  
 15) voltage measurement, peak detector, differential measurement  
 16) module is not receiving SMS asleep  
 17) battery 1 year

18) device status recorder  
 19) or -20...+55°C - depending on the version of the internal battery  
 20) Li-Ion  
 21) GSM i GPS

22) Output 1 for control external bistable relay  
 23) 2 optoisolated groups of analog inputs: 2x10/100 V and 200 mV input with 1 μV resolution  
 24) dedicated cable needed  
 25) M-BUS

# Comparison table of telemetry and location modules, expanders and converters

MODULE	MT-652 Telemetry Module	MT-713 v.2 Telemetry Module	MT-723 Telemetry Module	MT-723 PT Telemetry Module	ML-231 Location Module	ML-941 Location Module	EX-101 Expander
<b>FEATURES</b>							
<b>I/O Resources</b>		<b>End of Life</b>					<b>End of Life</b>
Binary inputs	2	5	6	6	5	–	8 – 16 <sup>1)</sup>
Binary outputs	2	2	2	2	2	1	0 – 8 <sup>1)</sup>
Counter inputs	–	5 <sup>3)</sup>	5 <sup>3)</sup>	5 <sup>3)</sup>	2 <sup>1,2)</sup>	–	8 – 16 <sup>1,2)</sup>
Analog inputs	6 <sup>23)</sup>	3	3	3 <sup>14)</sup>	2 <sup>15)</sup>	–	2
1-wire input	–	–	–	–	YES	–	–
Real Time Clock (RTC)	YES	YES	YES	YES	YES	YES	–
Ethernet Port	–	–	–	–	–	–	–
Serial port RS232/422/485	1(0/0/1/0)	1(0/0/1/0)	–	–	1(0/0/0/1) <sup>8)</sup>	1(0/0/0/1) <sup>8)</sup>	2(2/1/1/0)
Voice channel	–	–	–	–	YES <sup>8)</sup>	–	–
<b>Functionality</b>		<b>End of Life</b>					<b>End of Life</b>
Local configuration via RS232/USB/ETH	-/+/-	-/+/-	-/+/-	-/+/-	-/+ <sup>24)</sup> /-	-/+ <sup>24)</sup> /-	+/-/-
Remote configuration over GPRS	YES	YES <sup>9)</sup>	YES <sup>9)</sup>	YES <sup>9)</sup>	YES	YES <sup>9)</sup>	–
Unsolicited messaging	YES	YES	YES	YES	YES	YES	YES
Data packet sending	YES	YES	YES	YES	YES	YES	YES
SMS sending	YES	YES	YES	YES	YES	YES	–
User programming (lines of code limit)	–	–	–	–	–	–	1000
Standard serial protocols	YES <sup>5)</sup>	YES <sup>8)</sup>	–	–	YES	YES <sup>8)</sup>	YES <sup>11)</sup>
Data packet routing	–	–	–	–	–	–	–
Manual alarm setting for analog inputs	YES	–	–	–	–	–	YES
Number of analog input alarm levels	6	4	4	4	4	–	6
Remote read/write with SMS	YES	YES <sup>16)</sup>	YES <sup>16)</sup>	YES <sup>16)</sup>	YES	YES <sup>16)</sup>	–
Access control <sup>6)</sup>	YES	YES	YES	YES	YES	YES	YES
Local mirroring of external resources	–	YES	–	–	–	–	–
Datalogger	YES	YES	YES	YES	YES	YES	YES
MT-DP compatibility (OPC, CSV, ODBC)	YES	YES	YES	YES	YES	YES	YES
Remote firmware upgrade over GPRS	YES	YES	YES	YES	YES	YES	–
<b>Other</b>		<b>End of Life</b>					<b>End of Life</b>
Integral GSM/GPRS modem	YES	YES	YES	YES	YES	YES	–
SIM cards	2xSIM	SIM/MIM <sup>8)</sup>	SIM	SIM	SIM/MIM <sup>8)</sup>	SIM	–
2G/3G/4G network support	+/-/-	+/-/-	+/-/-	+/-/-	+/-/-	+/-/-	-/-/-
Integral GPS receiver	YES	YES <sup>8)</sup>	YES <sup>8)</sup>	YES <sup>8)</sup>	YES	YES	–
Integrated sensor T/H/P	T	T	T	T	T	T	–
DC power supply (V)/solar panel (PV)	7 – 30	9 – 30 <sup>8)</sup>	7 – 30	7 – 30	9 – 30	2 – 5	10,8 – 36
AC power supply (Vrms)	–	–	–	–	–	–	18 – 26,4
Power supply for external sensors (V)	–	0–5/15 <sup>8)</sup> /24 <sup>8)</sup>	0 – 5	0 – 5	–	–	–
Power supply monitoring input	–	YES/–	YES/YES	YES/YES	YES/–	YES/YES	YES/–
Rechargeable battery int./ext.	int. <sup>20)</sup>	–	–	–	ext.	–	–
Internal battery supply	–	3/6xR20	1xR14 <sup>13)</sup>	1xR14 <sup>13)</sup>	–	YES <sup>8)</sup>	–
Low power operation modes	YES	YES	YES	YES	YES	YES	–
External antenna connector/ISM	YES <sup>21)</sup>	YES	YES	YES	YES	–	–
Protection class	IP65	IP67	IP68	IP68	IP40	IP54	IP40
Operating temperature range (°C)	-20...+55	-20...+55	-20...+60	-20...+60	-20...+55	-20...+55	-20...+65
Removable terminal blocks	YES	YES	–	–	–	–	YES
DIN rail mounting	YES <sup>8)</sup>	–	–	–	–	–	YES
Warranty	3 years	3 years	3 years	3 years	3 years	3 years <sup>8)</sup>	3 years
Built-in device	accelerometer	–	–	–	accelerometer	accelerometer	–

1) number of binary inputs/outputs and counter inputs is configurable  
 2) fmax = 100Hz  
 3) fmax = 250Hz  
 4) fmax = 1kHz

5) Modbus RTU Master/Slave, transparent mode, other...  
 6) password + internal list of authorized IP and telephone numbers  
 7) for 2 inputs  
 8) option

9) requires MTSpooler  
 10) in new version since Q3 2012  
 11) if connected to MT-101/102/202  
 12) RS-232 to M-Bus converter  
 13) external battery pack required

MODULE	RM-120 RS232/M-Bus Converter	MT-UPS-1 Telemetry Module	IOT-RT-01 IOT Sensor	IOT-RTH-01 IOT Sensor	IOT-RG-01 IOT Gateway	IOT-RG-02 IOT Gateway	IOT-TST-01 IOT Tester
<b>FEATURES</b>							
<b>I/O Resources</b>							
Binary inputs	–	–	–	–	–	–	–
Binary outputs	–	–	–	–	–	–	–
Counter inputs	–	–	–	–	–	–	–
Analog inputs	–	–	–	–	–	–	–
1-wire input	–	–	–	–	–	–	–
Real Time Clock (RTC)	–	–	YES	YES	–	–	YES
Ethernet Port	–	–	–	–	–	–	–
Serial port RS232/422/485	1 <sup>12)</sup>	–	–	–	1(1/0/0/0)	1(0/0/1/0)	–
Voice channel	–	–	–	–	–	–	–
<b>Functionality</b>							
Local configuration via RS232/USB/ETH	-/-/-	-/-/-	-/-/-	-/-/-	-/-/-	-/-/-	-/-/-
Remote configuration over GPRS	–	–	–	–	–	–	–
Unsolicited messaging	–	–	–	–	–	–	–
Data packet sending	–	–	–	–	–	–	–
SMS sending	–	–	–	–	–	–	–
User programming (lines of code limit)	–	–	–	–	–	–	–
Standard serial protocols	–	–	–	–	–	–	–
Data packet routing	–	–	–	–	–	–	–
Manual alarm setting for analog inputs	–	–	–	–	–	–	–
Number of analog input alarm levels	–	–	–	–	–	–	–
Remote read/write with SMS	–	–	–	–	–	–	–
Access control <sup>6)</sup>	–	–	–	–	–	–	–
Local mirroring of external resources	–	–	–	–	–	–	–
Datalogger	–	–	–	–	–	–	–
MT-DP compatibility (OPC, CSV, ODBC)	–	–	–	–	–	–	–
Remote firmware upgrade over GPRS	–	–	–	–	–	–	–
<b>Other</b>							
Integral GSM/GPRS modem	–	–	–	–	–	–	–
SIM cards	–	–	–	–	–	–	–
2G/3G/4G network support	-/-/-	-/-/-	-/-/-	-/-/-	-/-/-	-/-/-	-/-/-
Integral GPS receiver	–	–	–	–	–	–	–
Integrated sensor T/H/P	–	–	T	T/H	–	–	–
DC power supply (V)/solar panel (PV)	21,6 – 42	21,6 – 42/PV	–	–	5 – 30	5 – 30	–
AC power supply (Vrms)	–	–	–	–	–	–	–
Power supply for external sensors (V)	–	–	–	–	–	–	–
Power supply monitoring input	–	–	–	–	–	–	–
Rechargeable battery int./ext.	–	ext.	–	–	–	–	int. <sup>20)</sup>
Internal battery supply	–	–	YES	YES	–	–	–
Low power operation modes	–	YES	YES	YES	–	–	–
External antenna connector/ISM	–	–	–	–	YES	YES	–
Protection class	IP40	IP40	IP30	IP30	IP40	IP40	IP30
Operating temperature range (°C)	-20...+55	-20...+55	-20...+60	-20...+60	-20...+60	-20...+60	-20...+60
Removable terminal blocks	YES	YES	–	–	YES	YES	–
DIN rail mounting	YES	YES	–	–	–	–	–
Warranty	2 years	3 years	3 years	3 years	3 years	3 years	3 years
Built-in device	–	–	–	–	–	–	display

14) one dedicated input for pressure measurement  
 15) voltage measurement, peak detector, differential measurement  
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