Comparison table of telemetry and localization modules, expanders and converters

FEATURES / MODULE	MT-020 Telemetry Module	MT-021 Telemetry Module	MT-051 Telemetry Module	MT-100 Telemetry Module	MT-101 Telemetry Module	MT-102 Telemetry Module	MT-151 LED Telemetry Module
I/O Resources							
Binary inputs	0 – 4[1)]	0 – 4[1)]	5	8 – 16[1)]	8 – 16[1)]	0 – 8[1)]	16 – 28[1)]
Binary outputs	2	4	-	0 – 8[1)]	0 – 8[1)]	0 – 8[1)]	0 – 12[1)]
Counter inputs	0 – 4[1,4)]	0 – 4[1,4)]	5	8 – 16[1,2)]	8 – 16[1,2)]	0 – 8[1,2)]	0 – 4[1)]
Analog inputs	2	2	–	2	2	6	6
1-wire input	2	2	1[8)]	–	–	–	–
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)[8)]
Voice channel	–	–	–	–	–	–	–
Functionality							
Local configuration via RS232/USB/ETH	–/+/–	–/+/–	–/+/–	+/–/–	+/–/–	+/–/–	–/+/+
Remote configuration over GPRS	YES	YES	YES[9)]	YES	YES	YES	YES
Unsolicited messaging	YES	YES	YES	YES	YES	YES	YES
Data packet sending	YES	YES[10)]	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[5)]	YES[5)]	YES[5)]
Data packet routing	–	–	–	–	YES	YES	YES
Manual alarm setting for analog inputs	–	–	–	–	YES	YES[7)]	–
Number of analog input alarm levels	4	4	4	4	6	4/6	4
Remote read/write with SMS	YES	YES	YES[16)]	YES	YES	YES	YES
Access control[6)]	YES	YES	YES	YES	YES	YES	YES
Local mirroring of external resources	–	–	–	–	YES	YES	YES
Datalogger	YES[18)]	YES[18)]	YES	YES	YES	YES	YES
MT-DP compatibility (OPC, CSV, ODBC)	YES	YES[10)]	YES	YES	YES	YES	YES
Remote firmware upgrade over GPRS	YES	YES[10)]	YES	YES	YES	YES	YES
Other							
Integral GSM/GPRS modem	YES	YES	YES	YES	YES	YES	YES
SIM cards	SIM/MIM	SIM	SIM/μSIM/ MIM	SIM	SIM	SIM	2xSIM/MIM
3G network support	YES[8)]	–	–	–	–	–	YES[8)]
Integral GPS receiver	–	–	–	–	–	–	–
Integrated sensor T/H/P	P[8)]	–	T	–	–	–	T
DC power supply (V)/solar panel (PV)	9 – 30	9 – 30	–	9 – 30	10,8 – 36	10,8 – 36	10,8 – 36
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	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	–	–	–	–	–	–	–

FEATURES / MODULE	MT-151 HMI Telemetry Module	MT-202 Telemetry Module	MT-251 Telemetry Module	MT-331 Telemetry Module	MT-512 Telemetry Module	MT-651 Telemetry Module	MT-652 Telemetry Module
I/O Resources							
Binary inputs	16 – 28[1)]	–	0 – 2	0 – 8[1)]	8	2	2
Binary outputs	0 – 12[1)]	–	1	0 – 4[1)]	2	2[22)]	2
Counter inputs	0 – 4[1)]	–	–	0 – 6[1)]	8	–	–
Analog inputs	6	–	–	0 – 2[1)]	–	6[23)]	6[23)]
1-wire input	–	–	–	1	–	–	–
Real Time Clock (RTC)	YES	YES	YES	YES	YES	YES	YES
Ethernet Port	YES	–	YES	–	–	–	–
Serial port RS232/422/485	2(1/0/1/1)[8)]	2(2/1/1/0)	2(1/0/1/0)	–	1(1/0/1[8)]/0)	1(0/0/1/0)	1(0/0/1/0)
Voice channel	–	–	–	–	YES	–	–
Functionality							
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	1024	5000	–	–	–	–
Standard serial protocols	YES[5)]	YES[5)]	YES[5)]	–	YES[8)]	YES[5)]	YES[5)]
Data packet routing	YES	YES	YES	–	–	–	–
Manual alarm setting for analog inputs	–	–	–	–	–	YES	YES
Number of analog input alarm levels	4	–	–	4	–	6	6
Remote read/write with SMS	YES	YES	YES	YES[16)]	YES	YES	YES
Access control[6)]	YES	YES	YES	YES	YES	YES	YES
Local mirroring of external resources	YES	YES	YES	–	YES	–	–
Datalogger	YES	YES	YES	YES	YES[8)]	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	YES
Other							
Integral GSM/GPRS modem	YES	YES	YES	YES	YES	YES	YES
SIM cards	2xSIM/MIM	SIM	SIM/MIM	SIM/MIM	SIM	2xSIM	2xSIM
3G network support	YES[8)]	–	YES	YES[8)]	–	YES	YES
Integral GPS receiver	–	–	–	–	–	YES	YES
Integrated sensor T/H/P	T	–	–	T/H[8)]/P[8)]	–	T	T
DC power supply (V)/solar panel (PV)	10,8 – 36	10,8 – 36	18 – 55	9 – 30/PV	9 – 30	7 – 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/–	–	–
Rechargeable battery int./ext.	ext.	–	ext.	int.	–	–	int.[20)]
Internal battery supply	–	–	–	–	–	YES	–
Low power operation modes	–	–	–	YES	–	YES	YES
External antenna connector	YES	YES	YES	YES	YES	YES	YES[21)]
Protection class	IP40	IP40	IP40	IP40	IP40	IP65	IP65
Operating temperature range (°C)	-20...+65	-20...+65	-20...+55	0...+55[19)]	-20...+55	-20...+55	-20...+55
Removable terminal blocks	YES	YES	YES	YES	YES	YES	YES
DIN rail mounting	YES	YES	YES	YES	YES	YES[8)]	YES[8)]
Warranty	3 years	3 years	3 years	3 years[17)]	3 years	3 years	3 years
Built-in device	display	–	–	–	–	–	–

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
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

Comparison table of telemetry and localization modules, expanders and converters

FEATURES / MODULE	MT-713 Telemetry Module	MT-713 v.2 Telemetry Module	MT-723 Telemetry Module	MT-723 PT Telemetry Module	ML-231 Localization Module	ML-931 Localization Module	EX-101 Expander
I/O Resources							
Binary inputs	5	5	6	6	5	–	8 – 16[1]
Binary outputs	2	2	2	2	2	1	0 – 8[1]
Counter inputs	5[3]	5[3]	5[3]	5[3]	2[1,2]	–	8 – 16[1,2]
Analog inputs	3	3	3	3[14]	2[15]	–	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)[8]	1(0/0/0/1)[8]	2(2/1/1/0)
Voice channel	–	–	–	–	YES[8]	–	–
Functionality							
Local configuration via RS232/USB/ETH	–/+/–	–/+/–	–/+/–	–/+/–	–/+[24]/–	–/–/–	+/–/–
Remote configuration over GPRS	YES[9]	YES[9]	YES[9]	YES[9]	YES	YES[9]	–
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[8]	YES[8]	–	–	YES	YES[8]	YES[11]
Data packet routing	–	–	–	–	–	–	–
Manual alarm setting for analog inputs	–	–	–	–	–	–	YES
Number of analog input alarm levels	4	4	4	4	4	–	6
Remote read/write with SMS	YES[16]	YES[16]	YES[16]	YES[16]	YES	YES[16]	–
Access control[6]	YES	YES	YES	YES	YES	YES	YES
Local mirroring of external resources	YES	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	–
Other							
Integral GSM/GPRS modem	YES	YES	YES	YES	YES	YES	–
SIM cards	SIM/MIM	SIM/MIM	SIM	SIM	SIM/MIM	SIM	–
3G network support	–	–	–	–	–	–	–
Integral GPS receiver	YES[8]	YES[8]	YES[8]	YES[8]	YES	YES	–
Integrated sensor T/H/P	T	T	T	T	T	T	–
DC power supply (V)/solar panel (PV)	9 – 30[8]	9 – 30[8]	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[8]/24[8]	0–5/15[8]/24[8]	0 – 5	0 – 5	–	–	–
Power supply monitoring input	YES/–	YES/–	YES/YES	YES/YES	YES/–	YES/YES	YES/–
Rechargeable battery int./ext.	–	–	–	–	ext.	–	–
Internal battery supply	3/6xR20	3/6xR20	1xR14[13]	1xR14[13]	–	YES[8]	–
Low power operation modes	YES	YES	YES	YES	YES	YES	–
External antenna connector	YES	YES	YES	YES	YES	–	–
Protection class	IP67	IP67	IP68	IP68	IP40	IP54	IP40
Operating temperature range (°C)	-20...+55	-20...+55	-20...+55	-20...+55	-20...+55	-20...+55	-20...+65
Removable terminal blocks	YES	YES	–	–	–	–	YES
DIN rail mounting	–	–	–	–	–	–	YES
Warranty	3 years	3 years	3 years	3 years	3 years	3 years[8]	3 years
Built-in device	–	–	–	–	accelerometer	accelerometer	–

FEATURES / 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
I/O Resources							
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[12]	–	–	–	1(1/0/0/0)	1(0/0/1/0)	–
Voice channel	–	–	–	–	–	–	–
Functionality							
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[6]	–	–	–	–	–	–	–
Local mirroring of external resources	–	–	–	–	–	–	–
Datalogger	–	–	–	–	–	–	–
MT-DP compatibility (OPC, CSV, ODBC)	–	–	–	–	–	–	–
Remote firmware upgrade over GPRS	–	–	–	–	–	–	–
Other							
Integral GSM/GPRS modem	–	–	–	–	–	–	–
SIM cards	–	–	–	–	–	–	–
3G 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.[20]
Internal battery supply	–	–	YES	YES	–	–	–
Low power operation modes	–	YES	YES	YES	–	–	–
External antenna connector	–	–	–	–	YES	YES	–
Protection class	IP40	IP40	IP30	IP30	IP30	IP30	IP30
Operating temperature range (°C)	-20...+55	-20...+55	-20...+60	20...+60	20...+60	20...+60	20...+60
Removable terminal blocks	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	–	–	–	–	–	–	–

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