M110 SERIES

maestro)))
empowering wireless

Intelligent industrial modem

Maestro M110 modems are designed to provide connectivity across a broad range of M2M and IoT applications. They allow Internet connectivity via serial port to PLCs, Meters, Vending Machines. They help transporting data from any industrial device to data control servers, allowing businesses to benefit from real-time data monitoring, management and control.

AVAILABLE IN 2G, 3G, NB-IoT, LTE-M1, LTE CAT. 1

TWO VERSATILE I/Os

LAST GASP
(factory option)

MPACK SOFTWARE SUITE
with Workbench configuration tool

| Smart Metering | Oil & Gas Monitoring | Industrial Automation | POS & Kiosk | Vending Machine |

SNAP CAP™

Snappily converts M110 series' RS-232 port on a 9-pin sub-D connector into an *isolated* *, half- or full-duplex (user-selectable via a slide switch) RS-485 port on a 5-pin, 3.5 mm pitch, COMBICON connector.

* i.e with integrated transformer, thus allowing for 1.5 km-long cabling

D2SPHERE™

D2SPHERE™ device management services let you monitor, diagnose, control and update your Maestro and FALCOM devices. Information such as signal strength, geographic location, battery state, temperature, device firmware and software versions can be remotely monitored, stored and presented to help you to manage quality of service and prevent downtime.

M110 SERIES SPECIFICATIONS

HARDWARE

MATERIAL	Brushed aluminium alloy
DIMENSIONS	60 x 66 x 21.7 mm without connectors
WEIGHT	Approx. 95 g
OPERATING TEMPERATURE RANGE	✓ -30 °C ~ +70 °C, class A ✓ -40 °C ~ +85 °C, class B
MCU	STMicroelectronics' STM32F446 ✓ 32-bit ARM® Cortex™-M4 architecture; running at 168 MHz ✓ Built-in 256 KB *Flash memory* and 128 KB RAM
SPI FLASH MEMORY	2 MB
POWER-OFF TIMEKEEPING	RTC with an approx. 100-day data retention period; courtesy of a 15 mWh lithium manganese battery (not functional below -20 °C)
POWER CONSUMPTION (W)	All figures worst-case (70 °C, 32 V, all subsystems fired on, etc.) ✓ Idle: 0.96 (M111); 1.10 (M113); 1.10 (M114) ✓ Standby: 2.31 (M111); 2.63 (M113); 2.63 (M114) ✓ Communication (Tx max.): 5.54 (M111); 6.18 (M113); 6.18 (M114)

mPack SOFTWARE SUITE

CONNECTIVITY	✓ Dial-up ✓ TCP / UDP permanent client / server or on-demand client with two TCP / UDP sockets for failover ✓ Network connectivity watchdog
MISCELLANEOUS FEATURES	✓ Support for concatenated SMS ✓ Conversion between Modbus RTU and Modbus TCP ✓ Configurable text and recipient(s) upon Last Gasp
DoTA	via user's HTTP server or D2SPHERE™
CONFIGURATION	via Workbench through RS-232 or USB; also via SMS, Telnet or D2SPHERE™

OPERATION AND CONTROLS

POWER	8 V dc ~ 32 V dc with SLOW START; via the upper row of a dual row, 4-pin, Micro-Fit™ 3.0 header
I/Os	Two 2-way versatile I/Os, i.e. user-configurable, each one independently from the other, as either (i) analogue input or (ii) digital output; via the lower row of the same header ✓ ANALOGUE INPUT: 0 V dc ~ 48 V dc range; 12-bit resolution ✓ DIGITAL OUTPUT: open collector; 200 mA max.; 50 V dc max.
RESET BUTTON	Short / Long press for Reset / Reset to factory settings
RS-232	Full implementation; via a 9-pin sub-D connector
USB 2.0	via a Type-C connector
CELLULAR (details in the table below)	One- or two-antenna models as: ✓ 2G M111; or NB-IoT M112; or dual mode LTE-M1 / NB-IoT M113[G]; or 3G M115; via an SMA antenna connector; or ✓ LTE cat. 1 M114; via two SMA antenna connectors (main and diversity)
SIM	mini-SIM held in a tray
OPERATING STATUS LEDs	Two as Power / Cellular signal

FACTORY OPTIONS (subject to MOQ and other considerations)

LAST GASP	Allows for sending at least five 30-character SMS at one-second intervals; courtesy of two industrial-grade super caps
FLASH MEMORY	Doubled to 512 KB
3-WAY I/Os	Third possible configuration as (iii) analogue input suited to current loop sensors (aka 4 mA ~ 20 mA sensors)
MFF SIM	In lieu of the mini-SIM tray

ACCESSORIES (besides power adapters, antennas, etc.)

SNAP CAP™	A 'magic' 5-pin, 3.5 mm pitch, COMBICON plug that converts M110 series' RS-232 operation to isolated, half- or full-duplex (user-selectable via a slide switch), RS-485 operation

MODEL NAME	TERRITORIES OR OPERATOR(S)	CELLULAR TYPE [1]	BANDS [2]	FALLBACK MODE(S) [1]	BANDS [2]	LOCATION SERVICES	PLANNED / OBTAINED CERTIFICATIONS [3]	FCS [4]	ORDER CODE
M111	World excl. Japan, Koreas	2G [λ1]	5/8/3/2	✕	N/A	✕	CE [5]	Jun. '18	M111
M112	China	NB-IoT	5/8/3				CCC, SRRC, CTA	Mar. '19	M112#358
M112	World	NB-IoT	28/20/5/8/3				TBD	Jun. '19	M112
M113	North America; Australia; Japan (SoftBank Mobile); South Korea (SK telecom); China; Taiwan	Dual mode LTE-M1 / NB-IoT	12[a]/28/13/20/26[b]/8/3[c]/4/25[d]/1/ TDD 39 (LTE-M1 only)	✕	N/A	✕	ISED; FCC [6], PTCRB, Verizon Wireless, AT&T Wireless; IFT; RCM; JPA, JRF; KCC; CCC, SRRC, CTA; NCC	Jun. '18	M113#NFB
M113	World	Dual mode LTE-M1 / NB-IoT		2G [λ3]	5/8/3/2		CE [5]	Dec. '18	M113
M113G	TBD			✕	N/A	GPS [7]	TBD	Jun. '19	M113G#NFB
M114	EMEA	LTE cat. 1	20/3/7	2G [λ3]	8/3	✕	CE [5]	Jun. '18	M114#37K##38
M114	Verizon Wireless	LTE cat. 1	13/4	✕	N/A		FCC [6], Verizon Wireless		M114#4D
M114	AT&T Wireless, T-Mobile USA, Sprint	LTE cat. 1	12[a]/5/4/2	3G	5/2		ISED; FCC [6], PTCRB, AT&T Wireless		M114#245C#25
M114	Asia Pacific	LTE cat. 1	28/8/3	3G	1		RCM; NCC		M114#38S#1
M114	NTT docomo	LTE cat. 1	19/1	✕	N/A		JPA, JRF		M114#1J
M115	EMEA; S. Asia; S.-E. Asia	3G	8/1	2G [λ2]	8/3		TBD	Jun. '18	M115#02
M115	Japan	3G	5/8/3/1	2G [λ2]	5/8/3/2		JPA, JRF		M115#05
M115	World	3G	5/8/3/1	2G [λ2]	5/8/3/2		TBD		M115

Please consult us regarding the models or features shown in grey, which are subject to MOQ and other considerations

[1] Uplink / Downlink maximum data rates
- 2G: [λ1] 42.8 / 85.6; or [λ2] 236.8 / [λ2] 236.8; or [λ3] 296 kbps
- NB-IoT: 62.5 / 27.2 kbps
- LTE-M1: 375 / 375 kbps
- LTE cat. 1: 5.2 / 10.3 Mbps
- 3G: 5.76 / 7.2 Mbps

[2] Ranked by increasing frequencies
[a] Containing ("c'ing") North America's B17
[b] C'ing KDDI's B18 and North America's B5, the latter c'ing NTT docomo's B19, itself c'ing Japan's B6 (3G)
[c] C'ing Japan's B9
[d] C'ing North America's B2

[3] Besides MIL-STD-810G
[4] First customer shipment [date of]
[5] Based on compliance with RED; EN 60950-1; etc.
[6] Also Class I Division 2 for use in explosive atmospheres as a factory option subject to MOQ and other considerations
[7] Concurrent GPS, Galileo and either GLONASS or Beidou

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