

M2M Control C650

Advanced Telematics and Telemetry Platform

The perfect balance of quality, performance, flexibility and affordability

For Professional Telematics and Telemetry Applications

The M2M Control C650 has been designed for the most demanding M2M and Internet of Things applications, which cannot be solved with simpler non-programmable devices.

The C650 rests on the **NX32 architecture**, that brings all the necessary tools together to develop, implement and maintain today's sophisticated M2M / IoT applications.

The **development task** is supported by the *M2M Control IDE* development environment (IEC 61131-3) complemented by a large and comprehensive documentation and application example library.

The C650 is fully supported by the *M2M Control GPRS Gateway*. The corner-stone of the **communication infrastructure** ensuring reliable two-way device communication in any network environment. **Deploying and maintaining** new application and firmware versions for devices in the field are handled by the powerful *Upgrade & Deployment Server* (FOTA).

10 years of experience and know-how in one product!

Experience and Know-how

For 10 years Infranet Technologies has been committed to offer the most sophisticated platform for advanced and highly demanding M2M / IoT applications. We supply our products under the brand "**M2M Control**".

The M2M Control C650 is the result of this accumulated experience combined with valuable feedback from hundreds of professional and mission critical applications by major organizations around the world.

M2M Control products are deployed all over the world: underground, stationary, on the road, at sea, on the rail and in the skies! - In any imaginable application and environment.



Device Advantages

- High Speed 3G/HSDPA GSM engine
- Multi-GNSS positioning engine.
- 3-axis accelerometer.
- Digital and analog I/O.
- RS232 and RS485 channels.
- Full CAN 2.0B (FMI, J1939) support.
- 1-Wire bus.
- Support the Garmin Fleet Management
- Large memory capacity.
- Internal data logger
- FAT32 file-system.
- Digitized voice playback.
- Hands-free interface.
- DTMF decoding/transmission.
- Internal and external SIM reader.
- High-capacity battery.
- State of the art power-management.

Platform Advantages

- NX32 execution architecture.
- Free RTCU IDE development tool.
- Programmable in IEC61131-3 (ST)
- Huge standard API.
- Comprehensive protocol support.
- Full featured Device Simulator.
- Sophisticated deployment tools.
- Fast and free email support.
- Backward and forward compatible.

M2M Control C650 Specifications

Processor and Main-memory

- Powerful 32-bit ST ARM processor.
- 2112 KB fast execution RAM.
- 4532 KB Flash for firmware/application.

Storage

- 7.5 MB persistent data flash.
- 8 MB internal FAT32 flash drive.
- 1 MB circular automatic datalogger.
- 20 KB FRAM with fast access / unlimited write endurance.
- SD-CARD reader with up to 32 GB.

GSM

- 3G HSDPA engine
- UMTS / EDGE / GPRS support
- CSD with up to 64 Kbps.
- SMS / PDU.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- eCall Accident / Emergency services.
- Micro-SIM 1.8/3 volt.
- External and internal SIM card-reader. Switchable from the application.

GNSS / GPS

- Mediatek MT3333 Multi-GNSS chip.
- GPS, GLONASS and QZSS.
- 99 acquisition / 33 tracking channels.
- SBAS (WAAS,EGNOS,MSAS,GAGAN).
- Position update with up to 4 Hz.
- A-GPS capable.
- Sensitivity.
Tracking: -165 dBm
Reacquisition: -160 dBm
Cold start: -148 dBm.
- Accuracy: < 2.5m CEP.
- Anti-jamming, Noise cancellation.
- Active 3 volt GNSS antenna.

Electrical Specification.

- Operating voltage is 8 to 36 VDC.
- Short and reverse power protected.

Battery and Charger

- On-board 2Ah (nominal) Li-Ion battery.
- Intelligent charger with temperature throttle and sub-zero degrees support.
- On-board temperature sensor.

Digital/Analog Interface

- 4 x digital solid-state digital output. Max. 36 volt / 1.5 A per. channel. Short-circuit, ESD, Inductive kick-back protected up to 20 mH.
- 5 x digital inputs. Logic high: 8 to 40 VDC. Logic low: -5 to 3 VDC.
- Digital input #5 can be used as ignition.
- 2 x analog inputs. Range is 0..10V. Resolution: 12 bit Precision: $\pm 1.5\%$ FSR @ 25°C
- Protected against transients and low-pass filtered.
- Expandable I/O with MODBUS.

Communication

- Full CAN2.0B with hardware filtering and multi-speed support.
- 1 x RS232 with control signals.
- 1 x RS232 with RX/TX. Alternatively used as service port.
- 1 x RS485 with MODBUS support.
- 1-Wire bus.

Power Management

- 5 execution speeds.
- Wait for Event: Timer, Digital input, RS232, CAN, GSM, Accelerometer and power change state.
- Wait for event, from: 300 uA@12V.
- Supervision of supply voltage.
- Disable external power.

Accelerometer

- 3-axis digital accelerometer.
- Resolution: 12 bit @ $\pm 16g$.
- Low-power mode.

External Interfaces.

- SIM-card slot for micro-SIM with lock and presence detection.
- SD-CARD slot with presence and write protect detection.
- Micro-jack 2.5" connector for hands-free.
- Audio out for digitized voice playback.
- 4 x LED indicators and 2 x DIP switches.
- Reset/recovery switch,
- TE-Connectivity "Mate'n'Lock": RS232, I/O, Power, Communication.
- RJ45 for RS232 with full control signals.
- SMA Female connector for GSM.
- SMB Female connector for GNSS/GPS.

Physical Characteristics

- Encapsulation: Aluminum/plastic.
- Optional mounting bracket.
- Approx. 300 gram without accessories.
- W 97 x H 35 x D 132 mm. (without antenna connectors).

Environmental Specification

- Operating temperature: -35 to 60°C.
- Battery charge temperature: -10 to 45 °C
- Recommended storage temperature: 0 to 45°C.
- Humidity: 5..90% (non condensing).

Approvals

- E1 type approval: 2004/104/EC UN ECE R10 - ed 3.
- CE mark / Applied R&TTE directive.
- GSM engine: CE/GCF/FCC/PTCRB.

Warranty

- Two-years return to factory parts and labor.
- Optional warranty up to 5 years. (restrictions apply).

Note: Some features are currently under development.

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