CYBOX ED-S

Ethernet Data Concentrator

- ↪ Freescale i.MX6 Processor
- ↪ Gigabit Ethernet
- ↪ Opto-coupled Local Interfaces
- ↪ Wi-Fi/LTE Module

Main Features

- NXP/Freescale i.MX6 on-board CPU
- Data concentration and transmission over Gigabit Ethernet
- Rich and modular interface concept for local data
- Designed for harsh industrial and mobile applications
- -40 to +70 °C operating temperature
- Wide-range power supply 24-110 VDC
- Embedded Linux

Description

The CyBox ED-S is a network-based mobile computing platform, which can be used to acquire local data, process it, and transfer it to a host computer.

Its i.MX6 Dual Lite CPU provides scalable computing power, using dual core devices with core frequencies of 1.0 GHz. The CyBox ED-S has one soldered DDR3 memory bank with 512 MB (memory-down). For program storage the data concentrator provides a flash storage module with 16 MB capacity. A MicroSD card slot can be used either for non-volatile local data storage or for Linux-based application programs.

Its main communication uplink interface is Ethernet for receiving and retransmitting data; it has one Ethernet interface, able to auto-negotiate 10/100/1000 Mbps connections. The Ethernet MACs are internal to the SoC. The robust M12 Ethernet connectors are widely used and follow industry standards.

Beside its main communication path the CyBox ED-S is also able to communicate with other systems. Surveillance systems usually require a fairly large number of trigger inputs. The CyBox ED-S therefore provides four isolated digital inputs and four outputs, tolerating up to 110 VDC nominal input voltages. One relay output is also available, which may be used to drive an alarm circuit. They can drive an electrical power up to 25 W at voltages up to 110 VDC.

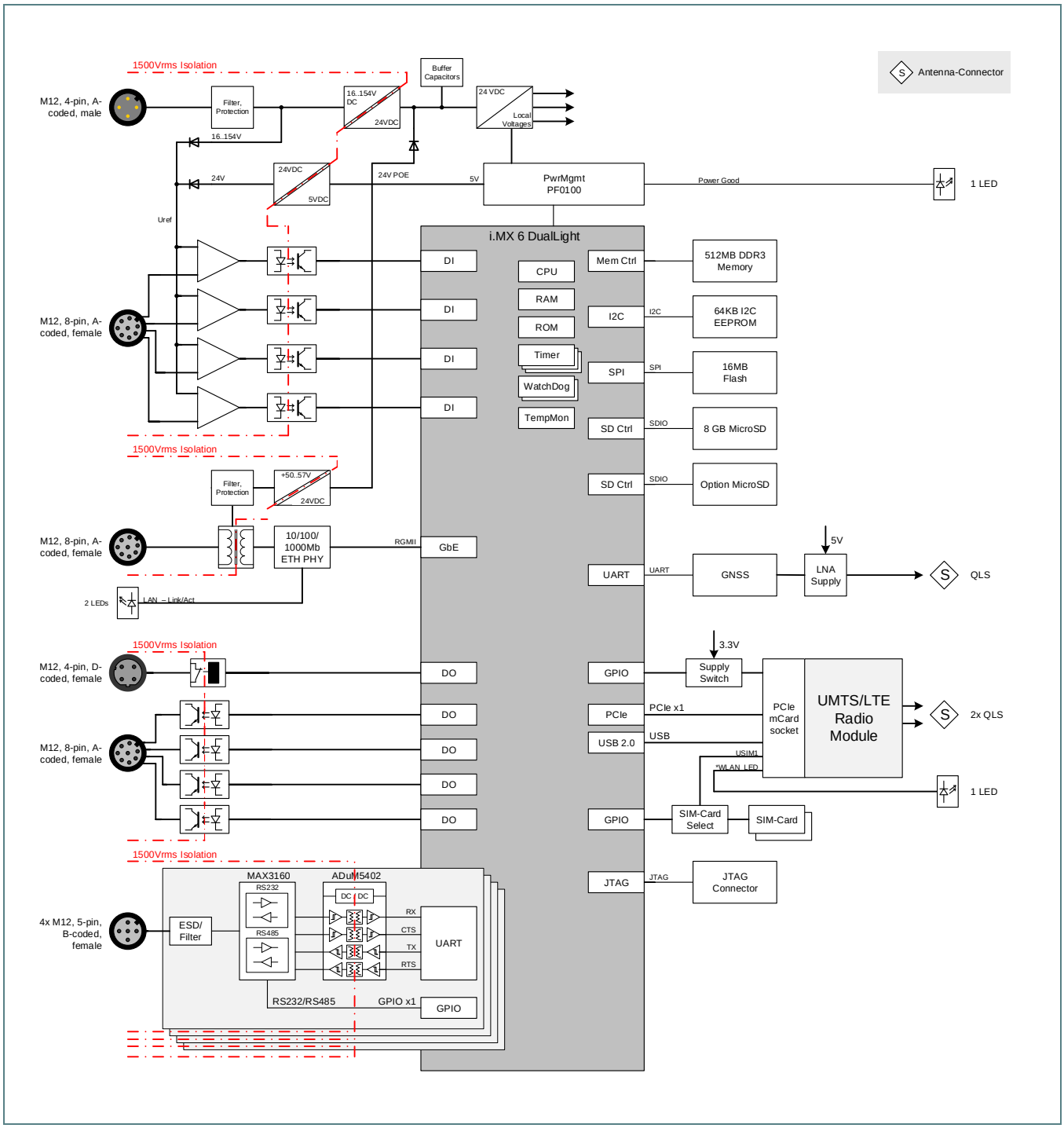
The CyBox ED-S provides four isolated serial interfaces to connect to project specific I/O modules or devices. The serial interfaces are either RS232, or RS485. The CyBox ED-S offers an LTE radio module for fast wireless WAN communication, a SIM card socket is provided.
The CyBox ED-S is equipped with a GNSS interface supporting GPS, GLONASS and Galileo positioning systems, as well as a 3-axis accelerometer.
The CyBox ED-S can be powered by a local 24 to 110 VDC power source; the power input supply is fully compliant to EN 50155, Class S2 and tolerates an input voltage range from 16.8 to 154 V as well as power interruptions up to 10 ms. The power input has been designed to also meet the requirements of automotive 24 V systems. As an option, Power-over-Ethernet (PoE) can be used to power the unit.

The hardware is designed to be deployed in industrial and mobile environments in temperature ranges between -40 and +70 °C and has no maintainable parts inside such as fans or batteries. The unit is completely conduction-cooled to the case; the CPU and the wireless module are connected to the case with a massive aluminum cooling block. An ambient temperature of +85 °C is tolerated for up to 10 minutes, so the product is compliant to EN 50155, temperature class TX. A watchdog device can be used to feature continuous service even when a program crashed.

A basic software package allows for script-based filtering of events observed on the external interfaces. A whole set of parallel scripts written in Python can be implemented by users, reacting to state changes of external devices.

The CyBox ED-S is particularly suited for use in rugged environments with regard to shock and vibration according to applicable DIN, EN or IEC industry standards.

Block Diagram



Technical Data

Physical Interfaces

Power Input	24 to 110 VDC local power supply on M12 4-pin A-connector
LAN	10/100/1000 BaseT(X), M12 A-coded
WLAN/LTE	2x QLS
GNSS	QLS
UART	4x M12, 5-pin, B (RS232/RS485)
Relay Output	M12, 4-pin, D
Digital Input	4 opto-isolated inputs, available on M12 terminal state "0": 0 V ≤ V_{IN} ≤ +8 V (±5 %) State "1": +12 V ≤ V_{IN} ≤ +110 V (±5 %) maximum input current: 2 mA
Digital Output	4 opto-isolated outputs, 25 W @ 110 V, available on M12 terminal
LEDs	2x user programmable

Specification

Mechanical Specifications

Dimensions: 150 mm (w) x 180 mm (l) x 65 mm (h), measured without connectors
Mass: 1250 g typ.
Aluminum IP54 housing, die cast, prepared for wall-mounting

Electrical Specifications

Supply voltage for local supply: 24 to 110 VDC nominal (16.8 to 154 V max.), compliant to EN 50155, Class S2
Power consumption: typ. 10W @ 110 VDC, typ. 10W @ 24 VDC, max. 20 W with RF module
Relay output contacts: 220VDC/AC max. 2 A max, 30 W max, >100,000 cycles.

Environmental Conditions

Temperature range (operation): -40..+70 °C, +85 °C for 10 min. according to EN 50155, class TX (Electronics only)
Temperature range (storage): -40..+85 °C
Relative humidity (operation): max. 95 % non-condensing
Relative humidity (storage): max. 85 % non-condensing
Altitude: -300 m to + 2000 m
Climatic tests according to EN 60068-2
Shock and vibration tested according to EN 61373, Category 1, Class B
Conformal coating

Safety

Flammability: compliant to
↘ EN 45545 (HL 1 to HL 3)

Standard Configurations

Article No.	Modules	CPU	Interfaces
CYEDS-1000V0	1 x LTE	i.MX6-DL	4 x serial
CYEDS-1002V0	-	i.MX6-DL	4 x serial
CYEDS-1003V0	1 x Wi-Fi 11ac	i.MX6-DL	4 x serial

ELTEC Elektronik AG

Galileo-Galilei-Straße 11
55129 Mainz

PO Box 10 03 64
55134 Mainz

Germany

Fon +49 6131 918 100
Fax +49 6131 918 195

Email info@eltec.com
www eltec.com

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