

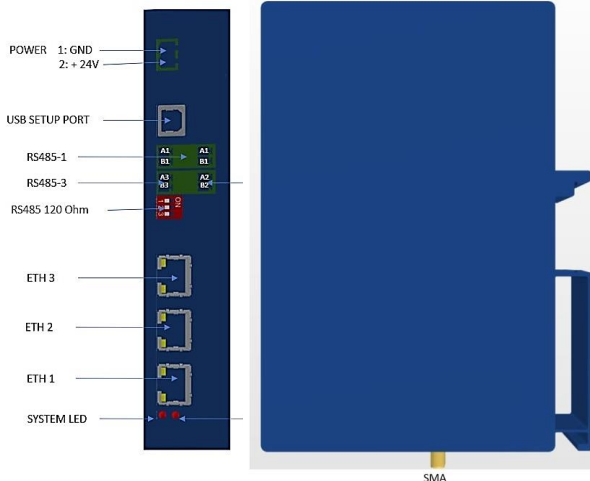
DinBox RTU Q7

Distribution Automation 4G RTU

Designed by Bausch Datacom!

4G GPRS Distribution Automation RTU

The DinBox RTU Q7 has a WAN communication module for LTE Cat.1, GPRS integrated (other communication possible by changing modules) or can use its Ethernet port as WAN port. The DB_RTU_Q7_HL7692 comprises the embedded system containing the application SW including e.g. communication protocols, libraries, and lifecycle management logic as well as its bootloader and tools for development, debugging and deployment.



Product Highlights

- 4G LTE Cat-1/2G GPRS fallback
- IEC 60870-5-104/Modbus mapping
- MQTT/Modbus mapping
- IEC 61850 (non-GOOSE)
- I/O extensions possible
- Ethernet Routing
- TLS Security & VPN IPsec IKE v1
- Supercap 'Last gasp'

Typical Applications

- Substation IP communication with SCADA systems or central dispatch
- IEC-60870-5-104 / IEC 61850 protocol
- between substation and control station,
- SCADA installations in industries such as power and distribution, water and gas applications, oil and gas production
- IoT applications with MQTT/Modbus mapping
- Distributed Control Systems (DCS), PLC...
- Alarm management through SMS with ACK

Ordering Codes

- DB_RTU_Q7_HL7692

BAUSCH DATACOM

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DinBox RTU Q7 specification

The DinBox RTU Q7 uses IEC 60870-5-104 to communicate as a slave with the SCADA system (master). Other protocols such as IEC 61850, MQTT, Modbus are also implemented. The DinBox can be extended by remote I/O through Modbus TCP and/or Modbus RTU. Thanks to the Modbus master implementation and the modbus-to-IEC104 mapping the DinBox RTU Q7 can be used as a gateway to connect other Modbus slave IEDs. The DinBox RTU Q7 can be mass managed by DMSW (Data Management Software) back office tool.

Housing

- Type: Phoenix Dinrail enclosure
- Housing material: Reinforced polyamide fiber
- Housing type: DINrail housing side element, two pieces necessary to close base element, 1,5mm thick.
- DINrail snapslot for easy DINrail mounting
- Color: green
- Dimensions housing: : 172 mm x 35 mm x 135 mm
- Ambient temperature (operation) -40°C +105°C
- Inflammability class acc. to UL 94: HB
- Power dissipation at 20°C in horizontal mounting position: 8.9W 18.3W
- IP51
- RAL 5004

Power Supply

- DC 24/48 V
- AC 100-240V 50/60Hz optional
- Supercap optional

Communication Engine

- Sierra Wireless CF3 HL footprint
- 3GPP
 - HL6528 – quad band GSM/GPRS & GSM Data
 - HL6528RD – quad band GSM/GPRS
 - HL8518 – dual band HSPA, GSM/GPRS/EDGE
 - HL8548 – quad band HSPA, GSM/GPRS/EDGE
 - HL7690 – FDE band LTE Cat-1
 - HL7692 – FDE band LTE Cat-1 with dual band GSM/GPRS/EDGE fallback
- LPWA
 - HL7800 – LTE Cat-M1, Cat-NB1
 - HL7802 – LTE Cat-M1, Cat-NB1 with dual band GSM/GPRS fallback
- SIM card and/or eSIM
- eUICC possibilities
- 50 ohm SMA antenna connector

Environment

- Operating Temperature: -20 C +60 C
- Operating Humidity 95% non-condensing

Processors

- iMX6S 800MHz 512MB RAM
- Linux operating system

Certification

- CE

Interface & Connectors

- 3 x separated Ethernet 10/100 - RJ45
- 3 x RS-485 Isolated
- 1 x LTE CAT M1 / GPRS / EDGE - SMA
- Mini SIM (2FF), eSIM MFF2 Optional

Firmware

- Software Packages
 - Container technology (docker)
 - Kernel (Linux 5.4 Mainline kernel)
 - DNS
 - NTP Server and Client
 - TCP/IP IPv4 (IPv6 in future possible)
 - DHCP
 - IPsec
 - PPP (Point to Point Protocol)
 - Telegraf Agent (Server for collecting and reporting of metrics)
 - Nftables (Firewall)
 - OpenSSH
 - OpenSSL
 - Hardware Watchdog
- Container
 - Open PLC
 - Protocol Converter
 - Modbus RTU Master
 - Modbus TCP Master
 - IEC 60870-5-104 Server (Client Optional)
 - IEC 61850 Client Ed2
 - MQTT v5 Client

Security

- Dual Boot for fallback on Firmware update failure
- The Firmware is a FIT Image and hashed using SHA-256, encrypted using AES-256-CBC and signed with a X.509 Cert, using a 4096 bit RSA key.
- The cert check and decryption is done by U-Boot, which has the needed AES and Cert Info embedded.
- U-Boot is on the internal EMMC, so there is no way to easily extract it. Without a proper HAB4 signature you cannot boot another Bootloader from Micro-SD
- The FIT Image further has a HAB4 signature, which is tested by the CPU (HAB4 is unknown, closed source by NXP)
- The NXP i.MX6 CPU features the HAB4 secure boot. The Cert is programmed into OTP (one time programmable) fuses and then the CPU is closed to boot only Bootloaders signed with the correct Cert.
- The fuse burning process is irreversible. On Reset the CPU starts its Bootloader in ROM and loads/verifies the Bootloader U-Boot. U-Boot loads/verifies the Firmware, which is a signed, hashed and encrypted FIT image.

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