M!DGE2 Cellular Router

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M!DGE cellular routers, specially designed for SCADA & Telemetry mission critical applications, are well suited to many different wireless applications like POS, ATM, Lottery and Security/Surveillance applications.

M!DGE is Linux OS based and has been designed with attention to detail, performance, quality and reliability. All relevant state-of-the-a concepts have been carefully implemented.

M!DGE is well proven within the market since 2012 in thousands of industrial installations in tens of countries worldwide providing 24/7 reliable service.

M!DGE2, the 2nd generation of M!DGE with 2 SIM cards and 4 Ethernet ports, introduced in 2018, is the top equipment for SCADA communication if a cellular network is required.

M!DGE together with RipEX radio modems offers an unrivalled solution for combining Cellular and UHF/VHF licensed radio in a single hybrid network.

Both provide the same customized serial SCADA protocols on COM interfaces.

- ☑ 4G / 3G / 2G
- ☑ Global connectivity
- ☑ Dual SIM

- ☑ 4× ETH, 1× COM, 1× USB
- ☑ 1× DO, 1× DI
- ☑ - 40°C to +70°C
- ☑ 12 – 24 VDC
- ☑ Expansion ready - mPCIe
- ☑ IPsec, OpenVPN, AES256
- ☑ Firewall, RADIUS

IP behaivour

- ☑ **Switch** - switched or routed Ethernet ports
- ☑ **Terminal server** - two Serial-Ethernet converters
- ☑ **Subnets** - one additional IP alias on each Ethernet

- ☑ **VLAN** - 802.1Q â€“ 5 VLANs to each Ethernet
- ☑ **NAPT** - masquerading, IP/Mask/Port translation supported
- ☑ **Tunnels** - IPsec, OpenVPN, GRE, PPTP
- ☑ **QoS** - prioritization from interfaces and/or applications
- ☑ **Static and dynamic routing** - Multipath routes, OSPF, BGP

Security

- ☑ Digitally signed FW
- ☑ Management - https, ssh
- ☑ Role-based access control
- ☑ RADIUS - authentication using remote RADIUS server
- ☑ AES256 encryption
- ☑ IPsec - encrypted end-to-end tunnel
- ☑ OpenVPN - encrypted single server to multiple clients tunnel
- ☑ Firewall - Layer 2 - MAC, Layer 3 - IP, Layer 4 - TCP/UDP

Scalability

Hardware

- ☑ mPCIe slot - for standard boards (GPS, 2nd cellular module...)
- ☑ Proprietary slot - COM/IO expansion board RS232/RS485 plus 1x DI, 1x DO

Software

- ☑ SDK - Software Development Kit
- ☑ LXC - Linux Container

Reliability

- ☑ Heavy-duty industrial components
- ☑ Industrial hardened design
- ☑ Metal case
- ☑ - 40°C to +70°C
- ☑ VRRP - Virtual Router Redundancy Protocol
- ☑ Fallback management
- ☑ Automatic connect recovery
- ☑ 3 year warranty

Diagnostics & Management

- ☑ Web interface or CLI via SSH
- ☑ Monitoring - save to file analysis of all Eth interfaces
- ☑ Graphs - Eth/WAN network traffic
- ☑ SNMP v3 including Traps and Informs
- ☑ HW Alarm input, HW Alarm output
- ☑ SMS /E-mail Event notification
- ☑ External flash disc – aut. configuration, FW upgrade

Hybrid networks

- ☑ Ready to be combined with RipEX radio modems within one hybrid network
- ☑ The same serial SCADA protocol FW drivers like in RipEX: Modbus, IEC101, DNP3, PR2000, Comli, DF1, Profibus, Async Link, C24, Cactus, RP570, Slip, Siemens 3964(R)
- ☑ TCP(UDP) protocols can be handled transparently or using Terminal server
- ☑ Embedded Modbus RTU / Modbus TCP converter

Technical parameters

Cellular interface	
Frequency bands E	4G: B20, B5, B8, B3, B1, B7 3G: B5, B8, B2, B1 2G: 850, 900, 1800, 1900 MHz
Frequency bands P	4G: B28, B5, B8, B3, B1, B7 3G: B5, B8, B2, B1 2G: 850, 900, 1800, 1900 MHz
Frequency bands A	4G: B17, B5, B4, B2, B7 3G: B5, B8, B4, B2, B1 2G: 850, 900, 1800, 1900 MHz
Data rates	up to 150 Mbps downlink / 50 Mbps uplink
SIM slot	2× Micro SIM
Electrical	
Primary power	12 – 24 VDC, +/- 20%
Power consumption	Average 7W (including max. 2.5W on USB port)
Interfaces	
Ethernet	4× Ethernet 10/100 Base-T, Auto MDX, 4× RJ45, bridged or routed
COM	1× RS232, 300 - 115 200 bps, screws, RxD, TxD, GND
USB	1× USB host USB2.0
Inputs / Outputs	1× DI, 1× DO

Antenna	2× SMA female - receive diversity
Expansion	COM / IO: RS232/RS485 pus 1× DI, 1× DO
Environmental	
IP Code (Ingress Protection)	IP40
MTBF (Mean Time Between Failure)	> 220.000 hours (> 25 years)
Operating temperature	-40°C to +70°C
Operating humidity	5 to 95% non-condensing
Storage	- 40°C to +85°C (- 40°F to +185°F) / 5 to 95 % non-condensing
Mechanical	
Casing	Metal
Dimensions	125 H × 45 W × 110 D mm (4.9 ×1.8 × 4.3 in)
Weight	450 g (1.0 lbs)
Mounting	DIN rail, flat-bracket
Security	
Management	HTTP, HTTPS, SSH
Access accounts	2 levels (User, Admin)
Encryption	Yes (AES256) with IPsec, OpenVPN
IPsec	Yes
Firewall	Layer 2 – MAC, Layer 3 – IP, Layer 4 – TCP/UDP, SMS filter
RADIUS	Yes
SW	
Fallback management	Yes
Connection supervision	Yes
Automatic connect recovery	Yes
SMS management	Yes
Software Development Kit	Full featured
Linux container	LXC
SMS / E-mail event notification	Yes / Yes
Routing	Static / Dynamic
BGP / OSPF	Yes / Yes
QoS	Yes
NAPT	Yes
User protocols on Ethernet	Yes
User protocols on COM	Modbus RTU, DNP3, IEC101, DF1, COMLI, C24, Cactus, ITT Flyght, RP570, Siemens 3964(R), UNI
Serial to IP convertors	Modbus RTU / Modbus TCP, Terminal server
VPN	OpenVPN, IPsec, PPTP, GRE
VRRP	Yes
NTP	Client / Server
SNMP	v1, v2c, v3
Type Approval	CE, FCC - pending

M!DGE2 – Cellular Router