Industrial Cellular routers

M!DGE

M!DGE cellular routers are primary designed for SCADA & Telemetry applications at critical infrastructure like Power and Water Utilities and Oil & Gas. They are also well suited to many other applications where high reliability is required, such as POS, ATM and Security.

Market leader

- Serial SCADA protocols
- SFP Interface
- Expansion ready – mPCIe
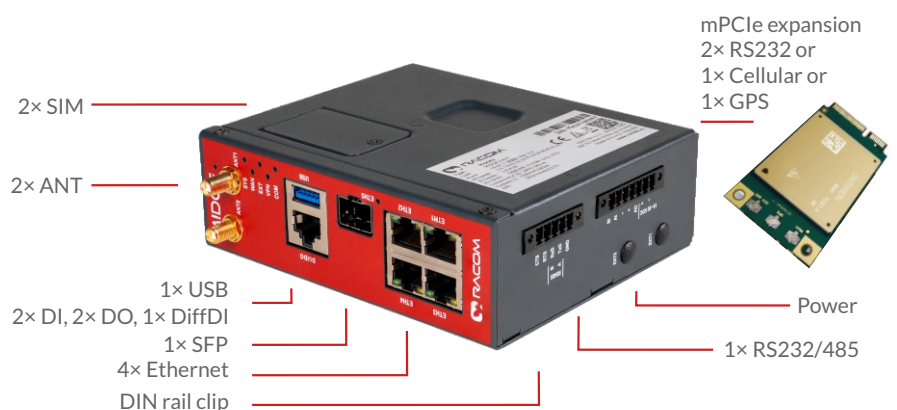- Hybrid networks

Performance

- 5G, 4G, 3G, 2G
- 2× SIM
- Static & Dynamic routing
- QoS

Security

- IPsec, OpenVPN
- RADIUS, SNMPv3
- Firewall, VLAN
- Digitally signed FW

Reliability

- Industrial hardened design
- Approved for Power substations
- −40 to +70 °C
- MTBF > 100 years

mPCIe expansion
2× RS232 or
1× Cellular or
1× GPS

2× SIM

2× ANT

1× USB
2× DI, 2× DO, 1× DiffDI
1× SFP
4× Ethernet
DIN rail clip

Power

1× RS232/485

Technical parameters

	M!DGE3	M!DGE2
Frequency bands	One world wide model	3 models: EU, Asia, Americas
CPU	800 MHz Dual Core	600 MHz Single Core
Ethernet	4× 1 Gb/s	4× 100 Mb/s
SFP	Yes	No
Inputs / Outputs	2× DI, 2× DO, 1× DiffDI	1× DI, 1× DO
Responsive web / Wifi management	Yes / Yes	No / No

Cellular interface	M!DGE3
Frequency bands W	4G LTE (also 5G NSA) - Band 1 (2100 MHz), Band 2 (1900 MHz), Band 3 (1800 MHz), Band 4 (2100 MHz), Band 5 (850 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 12 (700 MHz), Band 13 (700 MHz), Band 18 (850 MHz), Band 19 (850 MHz), Band 20 (800 MHz), Band 26 (850 MHz), Band 28 (700 MHz), Band 38 (2600 MHz), Band 40 (2300 MHz), Band 41 (2500 MHz), Band 66 (2100 MHz)
	3G UMTS/HSDPA/HSUPA - Band 1 (2100 MHz), Band 2 (1900 MHz), Band 3 (1800 MHz), Band 4 (2100 MHz), Band 5 (850 MHz), Band 6 (850 MHz), Band 8 (900 MHz), Band 19 (850 MHz)
	2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz

Cellular interface	M!DGE2
Frequency bands E	4G LTE (also 5G NSA) - Band 20 (800 MHz), Band 5 (850 MHz), Band 8 (900 MHz), Band 3 (1800 MHz), Band 1 (2100 MHz), Band 7 (2600 MHz)
	3G UMTS/HSDPA/HSUPA - Band 5 (850 MHz), Band 8 (900 MHz), Band 2 (1900 MHz), Band 1 (2100 MHz)
	2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz
Frequency bands P	4G LTE (also 5G NSA) - Band 28 (750 MHz), Band 5 (850 MHz), Band 8 (900 MHz), Band 3 (1800 MHz), Band 1 (2100 MHz), Band 7 (2600 MHz)
	3G UMTS/HSDPA/HSUPA - Band 5 (850 MHz), Band 8 (900 MHz), Band 2 (1900 MHz), Band 1 (2100 MHz)
	2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz
Frequency bands A	4G LTE (also 5G NSA) - Band 17 (700 MHz), Band 5 (850 MHz), Band 4 (1700 MHz), Band 2 (1900 MHz), Band 7 (2600 MHz)
	3G UMTS/HSDPA/HSUPA - Band 5 (850 MHz), Band 8 (900 MHz), Band 4 (AWS, i.e. 1700 MHz), Band 2 (1900 MHz), Band 1 (2100 MHz)
	2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz
Frequency bands U	3G UMTS/HSDPA/HSUPA - Band 5 (850 MHz), Band 8 (900 MHz), Band 2 (1900 MHz), Band 1 (2+B1:B21)
	2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz

	M!DGE3	M!DGE2
Data rates	Up to 150 Mb/s downlink; 50 Mb/s uplink	
SIM slot	2× Micro SIM	

Electrical		
Primary power	10 – 50 VDC	12 – 24 VDC, +/- 20%
Power consumption	Average 7W	

Interfaces		
Ethernet	4× Ethernet 10/100/1000 Base-T, Auto MDX, bridged or routed — 4× RJ45	4× Ethernet 10/100 Base-T, Auto MDX, bridged or routed — 4× RJ45
SFP	1× 10/100/1000 Base or T/1000Base-SX or 1000Base-LX — 1× SFP	No
Serial	1× RS232/RS485 SW configurable, 600 b/s – 1 Mb/s — Terminals (5 pins)	1× RS232, 300 b/s – 115 kb/s — Terminals (3 pins)
USB	1× USB 3.0 / Host A	1× USB 2.0 / Host A
Inputs/Outputs	1× HW alarm input, 1× HW alarm output, 1× Sleep input, 2× DI, 2× DO, 1× DiffDI (when mPCIe-COMS is not used) — Power connector RJ45	1× DI, 1× DO — Terminals
Antenna	2× SMA female – receiver diversity	

Optional Expansions		
mPCIe slot	Cellular module or GPS or 2× RS232	Cellular module or GPS
Proprietary extension slot	No	COM/IO: RS232/RS485 + 1× DI, 1× DO

Environmental		
IP Code (Ingress Protection)	IP40	
MTBF (Mean Time Between Failure)	> 900 000 hours (> 100 years)	> 220.000 hours (> 25 years)
Operating temperature	−40 to +70 °C (−40 to +158 °F)	
Operating humidity	5 to 95% non-condensing	

Mechanical		
Casing	Metal	
Dimensions	132 H × 43 W × 110 D mm (5.20 × 1.69 × 4.33 in)	125 H × 45 W × 110 D mm (4.9 × 1.8 × 4.3 in)
Weight	0.50 kg (1.1 lbs)	0.45 kg (1.0 lbs)
Mounting	DIN rail, optionally: Flat-bracket or L-bracket	DIN rail, optionally: Flat-bracket

Security		
Management	HTTPS (Web)	HTTPS (Web), SSH (CLI)
Role-based access control (RBAC)	4 levels (Guest, Tech, SecTech, Admin)	2 levels (User, Admin)
IPsec	Yes	Yes
Firewall	Layer 2 – MAC, Layer 3 – IP, Layer 4 – TCP/UDP, SMS filter	
AAA protocol	RADIUS	
FW	Digitally signed	
HW tamper	Case opening evidence	

SW		
Fallback management	Yes	
Connection supervision	Yes	
Automatic connect recovery	Yes	
SMS management	Yes	
Routing	Static / Dynamic	
BGP/OSPF/BABEL	Yes/Yes/Yes	Yes/Yes/No
QoS	Yes	
NAPT	Yes	
User protocols on Ethernet	Yes	
Serial SCADA protocols	DNP3, DF1, IEC101, Modbus RTU, PR2000, RDS, Siemens 3964(R), COMLI, SAIA S-bus, Mars-A, UNI, Async Link	
Serial to IP convertors	DNP3 / DNP3 TCP, Modbus RTU / Modbus TCP, Terminal servers	
VPN	IPsec, GRE	OpenVPN, IPsec, PPTP, GRE
VRRP	No	Yes
NTP	Client, Server	
SNMP	v1, v2c, v3	
Software Development Kit	No	Full featured
Linux container	No	LXC

Approvals	
	CE, FCC, … Ask for others

All information provided is preliminary and may change after the product is launched.

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