# ROUTEURS CELLULAIRES INDUSTRIELS

# M!DGE

5G 4G LTE 450 LTE-M NB-IoT

Les routeurs cellulaires MIDGE sont principalement destinés aux applications de SCADA, de télémétrie et aux infrastructures critiques comme les réseaux d'énergie, les réseaux d'eau ou les sites d'exploitation de gaz et de pétrole. Il existe bien entendu de très nombreux autres usages, là ou la très haute fiabilité est requise comme les points de vente, la sécurité ou les bornes interactives.

## LEADER DU MARCHÉ

- 5G, 4G, 3G, LTE 450, NB-IoT
- 2x Micro SIM, eSIM ready
- Interface SFP
- Extension mPCIe - 2nd Cellulaire, Wi-Fi, GPS...

## PERFORMANCE

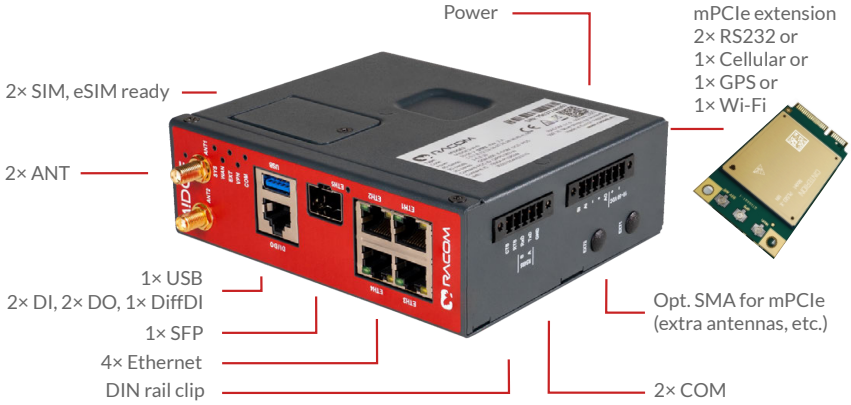
- Protocoles SCADA en série
- Routage statique et dynamique
- Diagnostics avancés, API
- Réseaux hybrides

## FIABILITÉ

- Conception industrielle renforcée
- Approuvé pour les sous-stations électriques
- -40 à +70 °C
- MTBF > 100 ans, fabriqué en Rép. Tchèque, UE

## SÉCURITÉ

- IPsec, OpenVPN
- RADIUS, Firewall, VLAN
- FW à signature digit., Secure Boot
- HW tamper, IEC 62443-4-2




RACOM

www.racom.eu

# SPÉCIFICATIONS TECHNIQUES

| | M!DGE3 | M!DGE3e |
|---|---|---|
| mPCIe | Yes | No |
| Interfaces | 4× ETH, 1× SFP, 2× COM, 1× USB | 2× ETH, 1× COM, 1× USB |
| Inputs / Outputs | 2× DI, 2× DO, 1× DiffDI | No |
| HW tamper | Yes | No |
| Dynamic routing | BGP / OSPF / Babel | No |
| Link management | Yes | No |

| Model | Order Code | Frequency bands | Data rates |
|---|---|---|---|
| **5G**<br>M!DGE3 | 'Q'<br>Telit FN990A28-HP<br>Worldwide | 5G Rel.16: n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n71, n75, n76, n77, n78, n79 | NSA: 3.4 Gb/s DL / 0.55 Gb/s UL<br>SA: 2.5 Gb/s DL / 0.90 Gb/s UL |
| | | 4G Rel.16: B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71 | Cat.19: 1.6 Gb/s DL / Cat.18: 211 Mb/s UL |
| | | 3G HSPA+ Rel.9: B1, B2, B4, B5, B6, B8, B19 | HSPA+: 42 Mb/s DL / 5.7 Mb/s UL |
| **4G**<br>M!DGE3, M!DGE3e<br>mPCIe ext. board | 'W'<br>Cinterion PLS83-W<br>Worldwide | 4G LTE (also 5G NSA), 3GPP Rel.10: B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B38, B40, B66, B71, B106 | Cat.4: DL 150 Mb/s, UL 50 Mb/s |
| | | 3G UMTS/HSDPA/HSUPA, 3GPP Rel.7: B1, B2, B3, B4, B5, B6, B8, B19 | Cat.14: HSPA+ DL 21 Mb/s<br>HSUPA UL 5.7 Mb/s |
| | | 2G GSM/GPRS/EDGE, 3GPP Rel.4: GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz | Class 12: DL 237 kb/s, UL 237kb/s |
| **LTE - M**<br>**NB - IoT**<br>M!DGE3, M!DGE3e<br>mPCIe ext. Board | 'R'<br>Telit ME310G1-W2<br>EU (RED), UK (UKCA),<br>interoperable (GCF) | 4G LTE Cat M1, NB2 3GPP Rel.14: B1, B3, B5, B8, B20, B28, B31, B72, B87, B88 | Cat. M1: DL 588 kb/s, UL 1 Mb/s<br>Cat. NB2: DL 120 kb/s, UL 160 kb/s |
| | 'S'<br>Telit ME310G1-WW<br>Worldwide | 4G LTE Cat M1, NB2 3GPP Rel.14: B1, B2, B3, B4, B5,B8, B8_39d, B12, B13, B18, B19, B20, B25, B26, B27, B28, B66, B71, B85 | |

| **Electrical** | **M!DGE3** | **M!DGE3e** |
|---|---|---|
| Primary power | 10 – 50 VDC | |
| Power consumption | Average 7W | |
| **Interfaces** | | |
| SIM slot | 2× Micro SIM, eSIM ready | |
| Ethernet | 4× Ethernet 10/100/1000 Base-T, Auto MDX, bridged or routed 4× RJ45 | 2× Ethernet 10/100/1000 Base-T, Auto MDX, bridged or routed 2× RJ45 |
| SFP | 1× 10/100/1000 Base or T/1000Base-SX or 1000Base-LX 1× SFP | No |
| COM1 | RS232 / RS485 SW configurable Terminals | |
| COM2 (Var. 'D', no Ext. 'C') | RS232 (only when COM1 is RS232) (COM1, COM2 shared) | No |
| COM2, COM3 (Ext. module 'C') | 2× RS232 RJ45 | No |
| USB | 1× USB 3.0 / Host A | |
| Inputs/Outputs | 1× HW alarm input, 1× HW alarm output, 1× Sleep input Power connector<br>2× DI, 2× DO, 1× difDI (when mPCIe-COMS is not used) RJ45 | 1× HW alarm input, 1× HW alarm output,<br>1× Sleep input Power connector |
| Antenna | 1× SMA female - LTE Cat M1, Cat NB2<br>2× SMA female - receiver diversity (2×2 MIMO) - LTE Cat 4<br>4× SMA female - optional extension board - 5G (+ 1× SMA for GPS) | 1× SMA female - LTE Cat M1, Cat NB2<br>2× SMA female - receiver diversity (2x2 MIMO) - LTE Cat 4 |
| **Optional Extensions** | 1× mPCIe: Cellular module ('W', 'R', 'S', 'Q') or 2× RS232[1)] or GPS or Wi-Fi | No |
| **Environmental** | | |
| IP Code (Ingress Protection) | IP40 | |
| MTBF (Mean Time Between Failure) | > 100 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) | |
| Weight | 0.50 kg (1.1 lbs) | |
| Mounting | DIN rail, optionally: Flat-bracket or L-bracket | |
| **Security** | | |
| Management | HTTPS (Web or API) | |
| Role-based access control (RBAC) | 4 levels (Guest, Tech, SecTech, Admin) | |
| IPsec, OpenVPN | Yes | |
| Firewall | Layer 2 – MAC, Layer 3 – IP, Layer 4 – TCP/UDP, SMS filter | |
| AAA protocol | RADIUS | |
| FW | Digitally signed, Secure boot | |
| HW tamper | Case opening evidence | No |
| Cyber resilience | IEC 62443-4-2 | |
| **SW** | | |
| Fallback management | Yes | |
| Connection supervision | Yes | |
| Automatic connect recovery | Yes | |
| SMS management | Yes | |
| Routing | Static / Dynamic - BGP / OSPF / Babel | Static |
| Link management | 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, PPP, Transparent | |
| Serial to IP convertors | DNP3 / DNP3 TCP, Modbus RTU / Modbus TCP, Terminal servers | |
| VPN | IPsec, OpenVPN, GRE | |
| NTP | Client, Server | |
| SNMP | v1, v2c, v3 | |
| **Approvals** | CE, FCC, ANATEL, … Ask for others | |

Technical parameters are subject to change without prior notification. For more details see User manuals.