

# Industrial Cellular routers

## M!DGE

M!DGE cellular routers are primarily 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

- 4G/LTE, 3G/UMTS, 2G/EDGE
- 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



# Technical parameters

|                                  | MIDGE3                  | MIDGE2                       |
|----------------------------------|-------------------------|------------------------------|
| Frequency bands                  | One world wide model    | 3 models: EU, Asia, Americas |
| CPU                              | 800 MHz Dual Core       | 600 MHz Single Core          |
| Ethernet                         | 4x 1 Gb/s               | 4x 100 Mb/s                  |
| SFP                              | Yes                     | No                           |
| Inputs / Outputs                 | 3x DI, 3x DO, 1x DiffDI | 1x DI, 1x DO                 |
| Responsive web / Wifi management | Yes / Yes               | No / No                      |

|                                  |   |  |   |
|----------------------------------|---|--|---|
| <b>Cellular interface</b>        | <b>MIDGE3</b>   |  |   |
| Frequency bands W                | 4G LTE - 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)<br>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)<br>2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz |  |   |
| <b>Cellular interface</b>        | <b>MIDGE2</b>   |  |   |
| Frequency bands E                | 4G LTE - Band 20 (800 MHz), Band 5 (850 MHz), Band 8 (900 MHz), Band 3 (1800 MHz), Band 1 (2100 MHz), Band 7 (2600 MHz)<br>3G UMTS/HSDPA/HSUPA - Band 5 (850 MHz), Band 8 (900 MHz), Band 2 (1900 MHz), Band 1 (2100 MHz)<br>2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz  |  |   |
| Frequency bands P                | 4G LTE - Band 28 (750 MHz), Band 5 (850 MHz), Band 8 (900 MHz), Band 3 (1800 MHz), Band 1 (2100 MHz), Band 7 (2600 MHz)<br>3G UMTS/HSDPA/HSUPA - Band 5 (850 MHz), Band 8 (900 MHz), Band 2 (1900 MHz), Band 1 (2100 MHz)<br>2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz  |  |   |
| Frequency bands A                | 4G LTE - Band 17 (700 MHz), Band 5 (850 MHz), Band 4 (1700 MHz), Band 2 (1900 MHz), Band 7 (2600 MHz)<br>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)<br>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)<br>2G GSM/GPRS/EDGE - GSM 850 MHz, E-GSM 900 MHz, DCS 1800 MHz, PCS 1900 MHz   |  |   |
| <b>Cellular interface</b>        | <b>MIDGE3</b>   |  | <b>MIDGE2</b>   |
| Data rates                       | Up to 150 Mb/s downlink; 50 Mb/s uplink   |  |   |
| SIM slot                         | 2x Micro SIM  |  |   |
| <b>Electrical</b>                |   |  |   |
| Primary power                    | 10 – 50 VDC   | 12 – 24 VDC, +/- 20%                         |   |
| Power consumption                | Average 7W  |  |   |
| <b>Interfaces</b>                |   |  |   |
| Ethernet                         | 4x Ethernet 10/100/1000 Base-T, Auto MDX bridged or routed  | 4x RJ45                                      | 4x Ethernet 10/100 Base-T, Auto MDX bridged or routed |
| SFP                              | 1x 10/100/1000 Base or T/1000Base-SX or 1000Base-LX   | 1x SFP                                       | No  |
| Serial                           | 1x RS232/RS485 SW configurable 600 b/s – 1 Mb/s   | Terminals (5 pins)                           | 1x RS232 300 b/s – 115 kb/s<br>Terminals (3 pins)     |
| USB                              | 1x USB 3.0 / Host A   |  | 1x USB 2.0 / Host A                                   |
| Inputs/Outputs                   | 1x HW alarm input, 1x HW alarm output, 1x Sleep input   | Power connector                              | 1x DI, 1x DO  |
| Antenna                          | 2x SMA female – receiver diversity  |  |   |
| <b>Optional Expansions</b>       |   |  |   |
| mPCI slot                        | Cellular module or GPS or 2x RS232 + 2x DI, 2x DO, 1x difDI   | Cellular module or GPS                       |   |
| Proprietary extension slot       | No  | COMIO: RS232/RS485 + 1x DI, 1x DO            |   |
| <b>Environmental</b>             |   |  |   |
| 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   |  |   |
| <b>Mechanical</b>                |   |  |   |
| Casing                           | Metal   |  |   |
| Dimensions                       | 132 H x 43 W x 110 D mm (5.20 x 1.69 x 4.33 in)   | 125 H x 45 W x 110 D mm (4.9 x 1.8 x 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   |  |   |
| <b>Security</b>                  |   |  |   |
| 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   |  |   |
| <b>SW</b>                        |   |  |   |
| 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  |   |
| <b>Approvals</b>                 | CE, FCC, ... Ask for others   |  |   |

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

