CAMLEX2 - RADIO MODEM

- **Audio Over IP**
- **1.1 Mbps / 200 kHz / 256QAM**
- **4× ETH, 1× SFP, 1× COM, 1× USB**
- **6.25 - 200 κHz channel size**
- **ACM, Adaptive FEC**
- **RADIUS**
- **HW tamper proof**
- **Expansion ready- mPCIe**
- **Full Duplex ready**

PRODUCT APPLICATION:

CAMLEX2 is a radio modem platform renowned for overall data throughput in any real-time environment. CAMLEX2 radio modems are native IP devices, Software Defined with Linux OS that have been designed with attention to detail, performance and quality. All relevant state-of-the-art concepts have been carefully implemented.

CAMLEX2, 2nd generation, was introduced in 2018. This more powerful standard radio modem provides significant improvements, especially in terms of data speed, security and number of interfaces.

CAMLEX2, a fully redundant 19' hot-standby master station with two radios and two power supplies. Any IP network can interconnect the unit.

CAMLEX2 Radio Modem

Radio Parameters

Frequency bands	135-175; 200-240; 335-400; 400-470 MHz
Channel Spacing	6.25 / 12.5 / 25 / 50 / 100 / 150 / 200 kHz
Frequency Stability	+/- 1.0 ppm
Modulation	QAM (Linear): 256QAM, 64QAM, 16DEQAM, D8PSK, π/4DQPSK, DPSK FSK (Exponential): 4CPFSK, 2CPFSK
FEC (Forward Error Correction)	On/Off, 2/3, 3/4, 5/6
Gross data rate	up to 1.1 Mbps
RF Output power	0.1 to 10 W programmable
Duty cycle	Continuous
Sensitivity	- 93 dBm / 256QAM / 25 kHz -115 dBm / 2CPFSK / 25 kHz

Electrical

Primary power	10 to 30 VDC, negative GND
Rx	8 W
Tx (dependent on RF power and modulation)	13 - 55 W
Sleep mode	0.01 W
Save mode	5 W

Interfaces

Ethernet	4x 10/100/1000 Base-T Auto MDI/MDIX / RJ45
SFP	1×10/100/1000 Base-T/1000Base-SX/1000Base-LX
COM 1	RS232/RS485 / DB9F 300 bps − 1 Mbps
COM 2	mPCIe expansion board 2x RS232
USB	USB 3.0 / Host A
Antenna	2x TNC female / 50 ohms SW configurable: 1x Rx/Tx or 1x Rx + 1x Tx
Inputs/Outputs	1x HW alarm input, 1x HW alarm output, 1x Sleep input, plus 2x DI, 2x DO, 1x difDI (when mPCIe-COMS is not used)

Indication LEDs

LED Panel	SYS, AUX, RX, TX, COM
ETH	4x RJ45 - 2x LED, 1x SFP - 1x LED

Enviromental

IP Code (Ingress Protection)	IP40, IP51
MTBF (Mean Time Between Failure)	> 900.000 hours (> 100 years)
Operating temperature	- 40 to +70 °C (- 40 to +158 °F)
Operating humidity	5 to 95% non-condensing

Product Specification

CAMLEX2 Radio Modem

Mechanical	
Casing	Rugged die-cast aluminium
Dimensions	60 H x 185 W x 125 D x mm (2.34 x 7.2 x 4.9 in)
Weight	1.55 kg (3.4 lbs)
Mounting	DIN rail, L-bracket, Flat-bracket, 19" Rack shelf

SW	
Operating modes	Bridge / Router (+Switch)
User protocols on COM	Modbus, IEC101, DNP3, PR2000, Comli, DF1, Profibus, Async Link, C24, Cactus, RP570, Slip, Siemens 3964(R)…
User protocols on Ethernet	Modbus TCP, IEC104, DNP3 TCP, Comli TCP…
Serial to IP convertors	Modbus RTU / Modbus TCP, DNP3 / DNP3 TCP, Terminal server
Radio protocols	Transparent, Flexible, Base driven
Multi master applications	Yes
Report by exception	Yes
Collision Avoidance Capability	Yes
Remote to Remote communication	Yes
Repeaters	Store-and-forward; Every unit; Unlimited number
Optimization	Payload data and Ethernet / IP / TCP / UDP header compression, Packet flow on Radio channel optimization
NTP (Network Time Protocol)	Client, Server (synchronized from internal GPS)

Security	
Management	HTTP, HTTPS (own certificate), SSH
Access accounts	4 levels (Guest, Tech, SecTech, Admin) x 3 users
Encryption	AES256
IPsec	Yes
RADIUS	Yes
Firewall	Layer 2 - MAC, Layer 3 - IP, Layer 4 - TCP/UDP
HW tamper proof	Yes

Diagnostics and Management	
Radio link testing	Yes (ping with RSS, Data Quality, Homogenity)
Watched values	Device – Ucc, Temp, PWR, VSWR, HW Alarm Input Radio channel – RSScom, DQcom, TXLost [%] User interfaces – ETH [Rx/Tx], COM1 [Rx/Tx], COM2 [Rx/Tx]
Statistics	For Rx/Tx Packets on User interfaces (ETH, COM1, COM2) User data and Radio protocol (Repeates, Lost, ACK etc.) on Radio channel
Graphs	For Watched values and Statistics
History (Statistics, Neighbours, Graphs)	20 periods (configurable, e.g. days)
SNMP	SNMPv1, SNMPv2c, SNMPv3, SNMP Traps SNMP for Watched values