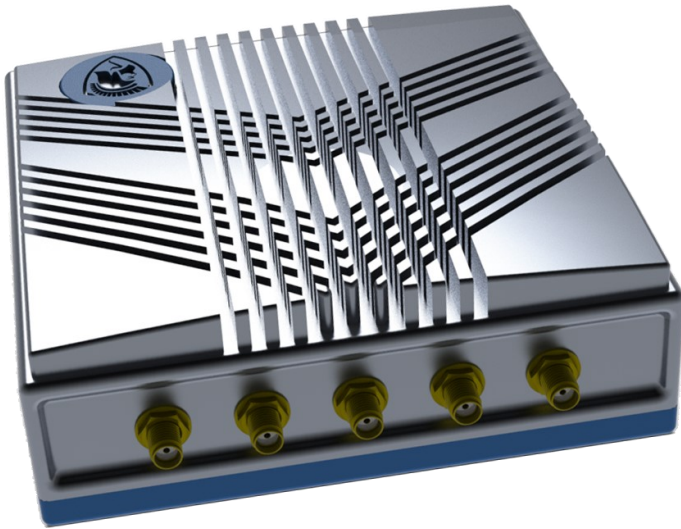


# Tir 105 – Engineered to a new level

Industries highest throughput – 64 QAM



Knightsbridge  
Wireless Communications



*Tir-105 is the Industry's most advanced, long-range, high-speed, ruggedized, wireless IP/Ethernet software defined radio modem.*

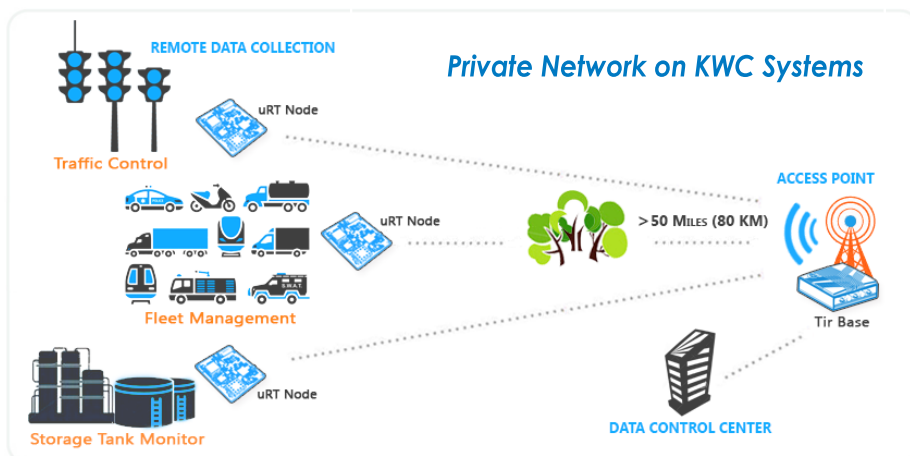
The proprietary design offers extremely long range and high throughput wireless communications in a Point-to-Point, Point-to-Multipoint, Client-Server, or Peer-to-Peer architecture; providing maximum network flexibility. The radio design offers high flexibility and with user-friendly networking software, the OEMs can easily integrate the unit into their own existing systems.

## FEATURES

- VHF Radio Transceiver with RF Output Power – 500mW to 5 W
- Long range – Up to 50 miles
- Software selectable modulation: GMSK, 4FSK, 8FSK, QPSK, 16QAM and 64QAM
- Up to 115.2 kbps over-the-air data rate
- Point-to-Multipoint, Non-line-of-sight, long range Bi-directional communication
- Software selectable Channel Spacing
- 50, 25, 12.5, and 6.25 kHz – FCC & Canada Compliant
- 25 and 12.5 kHz – ETSI/NZ/AS Compliant
- USB and RS232 Serial port or optional RS485/RS422 port
- Embedded Encryption (TRANSEC)
- Software-defined capability for up-gradeability and interoperability

## TYPICAL APPLICATIONS

- Industrial IoT
- Oil & Gas Field Monitoring
- Smart Grid & Utilities
- Traffic Monitoring & Control
- GPS Tracking and Monitoring
- Water & Wastewater Management
- Automatic Vehicle Location (AVL)
- Military & Defense (Unmanned-Aerial-Vehicle)



# Tir 105 Specifications



## Narrowband Modem

Modulation Techniques	GMSK ~ 4FSK ~ 8FSK ~ QPSK ~ 16QAM ~ 64QAM
Radio Link Data Rate	115.2 kbps (50 kHz Channel Spacing)
Media Access Multiplexing Method	Time Division Duplex (TDD) ~ Time Division Multiple Access (TDMA)
Data Link Protocols	Transparent Simplex ~ Trimble® ~ SATEL® ~ OEM-specific
Forward Error Correction	Trellis Code ~ Reed-Solomon ~ OEM-specific

## Narrowband Radio

Frequency Band	130 MHz – 170 MHz (VHF Band)
Frequency Control	Synthesized with 6.25 kHz Tuning Resolution
Transmitter Output	27 to 37 dBm (GMSK, 4FSK & 8FSK)
	23 to 33 dBm (QPSK, 16QAM & 64QAM) w/2 dB setting step
Receiver Sensitivity	-118 dBm @BER 10 <sup>-3</sup> (for QPSK)
Blocking Ratio	70 dB @±1 MHz
	75 dB @±2 MHz
	85 dB @±10 MHz

## Mechanical and Power Specs

Dimensions	12.0 cm x 12.0 cm x 4.0 cm (4.7" x 4.7" x 1.6")
Weight	max 450 g (15.8 oz)
Input Voltage	9 – 48 Vdc
Power Consumption	16 W for 4x 1 W(30dBm) Tx RF Output
	1.8 W for Rx mode
Power Connector	RJ45 (Water & Dustproof)
Antenna Connectors	50 Ω, SMA Female (Water & Dustproof)

## Environmentals

- -40° to +60° C (-40° to +140° F) for Rx mode and Tx mode with Duty Cycle <30%
- -55° to +85° C (-67° to +185° F) Storage Temperature Range
- Operating Humidity: MIL-STD-810F Method 507.4-1
- Vibration Specification: MIL-STD-810F
- 12 – 28 Vdc Input Voltage
- Power Consumption: 18 W for 5 W (37dBm) Tx RF Output 2 W for Rx mode

## Features and Benefits

- 2048-bit Key Security
- Loadable On-The-Field over USB Interface
- Software configurable Link optimization settings:
  - Modulation type
  - Forward Error Correction scheme
  - Channel Spacing

## User Interfaces

- UART Interface: RS232 with Flow Control
- USB Device Interface: Compatible with USB 2.0 Specification
- LAN Interface: Ethernet 10/100 Base-T
- User Interface Connectors:
  - DB9 (Water & Dustproof)
  - RJ45 (Water & Dustproof)
- Proprietary Command Line Interface
- Three tricolor LEDs on front panel to indicate alarms/status