

PSP Highly Spectrum Efficient, Adaptable Radio Modem and System for SCADA, Data, Control, Voice, Message, Alarm and Telemetry Solutions



PotomacSpectrum**Partners**

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PSP Solutions for the Most Efficient Spectrum Use

- ❖ Interface compatibility with existing sensors (and data-loggers)
- ❖ Flexible hardware, interface protocol and data transfer options
- ❖ Variable Data Rates, Bandwidth, Modulation Protocol, Truly Adaptable and Configurable to existing situations.
- ❖ Time stamped event/monitoring data transfer/scheduled or polled remote locations
- ❖ Voice, Message, Control and Data Transactions are Protected with Air Interface Encryption and Mutual Authentication
- ❖ Wireless or direct connection of control centers to the home network and remote stations/dataloggers/sensors.



General Info

Type of Device:

Radio Modem for Serial and IP Communication
Alarm Device for SDS and Status Messages
Mini RTU with digital and analog I/O

Hardware Options:

Data Modem/ Mini RTU/ IP Router
DVI-100: Digital Voice Interface

Data + Voice Option:

Via Microphone Speaker Set

Field Strength Display:

LED bar graph on the front panel

Operating Voltage:

12-24 Volt DC +/- 20%

Average Power Consumption:

P <= 3 Watt

Operating Temperature:

-20 deg C to +70 deg C

Enclosure:

Anodized aluminum with plastic ends according to DIN 43880

Mounting:

35 mm DIN rail

Dimensions:

80mm x 162mm x 62mm

Sustainability:

Waste Electrical and Electronic Equipment (WEEE) and
Restriction of Hazardous Substances (RoHS) compliant

Technical Info

Interfaces:

COM: RS-232 or RS-485/422, SubMin-D AUX: RS-232 or RS-485, RJ12
Ethernet: Ethernet interface 10/100 Mbit I/O: Embedded 16DI, 8DO, 4AI (Option)

Operating Modes:

Status Messages send (Alarm) and receive (Control)
SDS-based data Communication
Packet Data based data Communication
Multi Slot Packet Data Communication
Text Messages send via digital or analog
Alarm Inputs

Protocols:

Modbus-RTU, Modbus/IP,
IEC-60870-5-101, IEC-60870-5-104
DNP3, DNP3/IP, PakBus, ROC, BSAP
Siemens Sinaut ST1, ST7, and more
Customer Specific Protocols

Features:

SDS, Status, SCCH, PD, MSPD
SDS size up to 2047 Bit, Multi SDS transmission
Encryption, Authentication
Auto PPP-Link set up after Power on
Class 3 (3 Watts) Output Power (350 - 470 MHz)
Class 1 (1 Watt) Output Power (800 MHz)
Static RX Sensitivity: min -112 dBm (Typ -115 dBm)
Dynamic RX Sensitivity: min -103 dBm (Typ -107 dBm)

Special Device Features:

Embedded Web Server for Configuration
Embedded User Application Interface
PicoLogo™ Embedded MySCADA micro SCADA
Embedded Data Logger Embedded IP Router
Remote I/O Control by SDS and Status
AUX-Port can interface to GPS Receiver



RadioModem Gateway Packet Data and SDS Gateway



- 19" Rack Version with four Gateways
- Two serial Ports, two Ethernet Ports each
- Redundant Power Supply
- Redundant switch over on IP Link (to SwMi) fail



RadioModem Related Features

- SDS can be up to 255 bytes (2047 Bit) long. Type TL and TL 4
- Packet Switched Data (IP) supported
- Single and Multi Slot Packet Data supported
- Secondary Control Channel supported
- Automatic PPP Link set up to the TETRA Switch
- Router Function with Port Forwarding and NAT
- Up to 3 Watt RF Output Power (or interface into Higher power fixed mobile radios)
- Several Encryption levels available plus Authentication
- Configurations support simultaneous voice and data and full duplex voice even with active Packet Data Link
- Built-in Radio Monitor (local and remote) via embedded Web Server
- Field Strength Indicator on the Front Panel
- Short Data or SDS can be used to send alarms (low field strength ...)
- 450 MHz and 800 MHz available, 150 MHz in near future



RadioModem – Voice Option

- Standard 8 Pin Connector for Mic. Speaker handset
- One Group Number (GISSI) to be programmed
- Eight individual Numbers (ISSI) to be programmed
- ISSI and GISSI to be programmed locally or remotely using the embedded Web Server
- Select ISSI / GISSI by Voice Handset
- Automatic PPP disconnect when pressing PTT
- Automatic PPP re connect after Voice timeout or reject



RadioModem – Protocol and I/O related Features

- All digital and analogue I/O isolated
- Serial Port COM / AUX available as RS-232 or RS-485/(422)
- Level 1 Protocol: Timeout or 3964R
- Device Protocol to access internal Registers: Modbus RTU, Modbus IP, IEC60870-5-101
- Serial Protocols to be forwarded:
Modbus RTU, DNP3, IEC 60870-5-101, PakBus, BSAP, ROC, ... user Defined ... such as SDI-12
- Ethernet 10/100 MBit IP-Port for Local Network
- UDP and TCP supported
- Embedded Web Server as Configuration Tool
- Modbus/IP, IEC 60870-5-104 (!), DNP3/IP, ... others ...
- Low Power Consumption: <3 Watt



RadioModem – User Application Interface

- Easy to use graphical user interface
- Optimized for Radio Infrastructure Protocol
- Basic Logic Functions (and, or, exor, ...)
- Complex Logic Functions (delay on, delay off, flip flop, ...)
- Analogue Functions (analogue compare, ...)
- Timer and Clock Functions (time, date,
- Dynamic Text Message generation for Alarms and Status
- GPS Functions (position, ...)
- Modbus RTU Slave (set and read register, coil, ...)
- Modbus RTU Master (set and read register, coil, ...)
- E-Mail send (sending text and alarm messages by e-mail)
- SNMP Trap (automated machine messaging)
- ... more ...



RadioModem – Embedded Web Server

- Web Server to be used as ...
 - Configuration Tool for the Device, Protocols and IP Parameter,
 - Configuration Tool for Radio Network Parameter,
 - Configuration for the Voice Option
 - Radio Monitor
 - Device Monitor
 - Error Log
 - Alarms
 - Status
- Web Server can be accessed locally using the IP Port and remotely over the Radio Infrastructure
- Easy to be used with any Web Browser (Firefox, Internet Explorer, ...)



RadioModem SDS and Packet Data Gateway

Features



RadioModem Gateway - Features

- Gateway for Serial Communication over Radio Infrastructure
- Two Serial Ports, Two Ethernet Ports (Mini Switch)
- Secondary Control Channel for SDS communication supported
- Packet Switched Data (IP) and MSPD supported
- Automatic Data Compression/Decompression
- Switch over to second Radio Network SwMi on communication fail
- Router Function with Port Forwarding and NAT
- Embedded Web Server for (Remote) Configuration, Control and Monitoring
- LED Error and Function Indicators on the Front Panel
- SNMP/Trap Messages
- Field tested on Customer Site
- Redundant Power Supply
- 19 inch Rack mounted with up to four Gateways



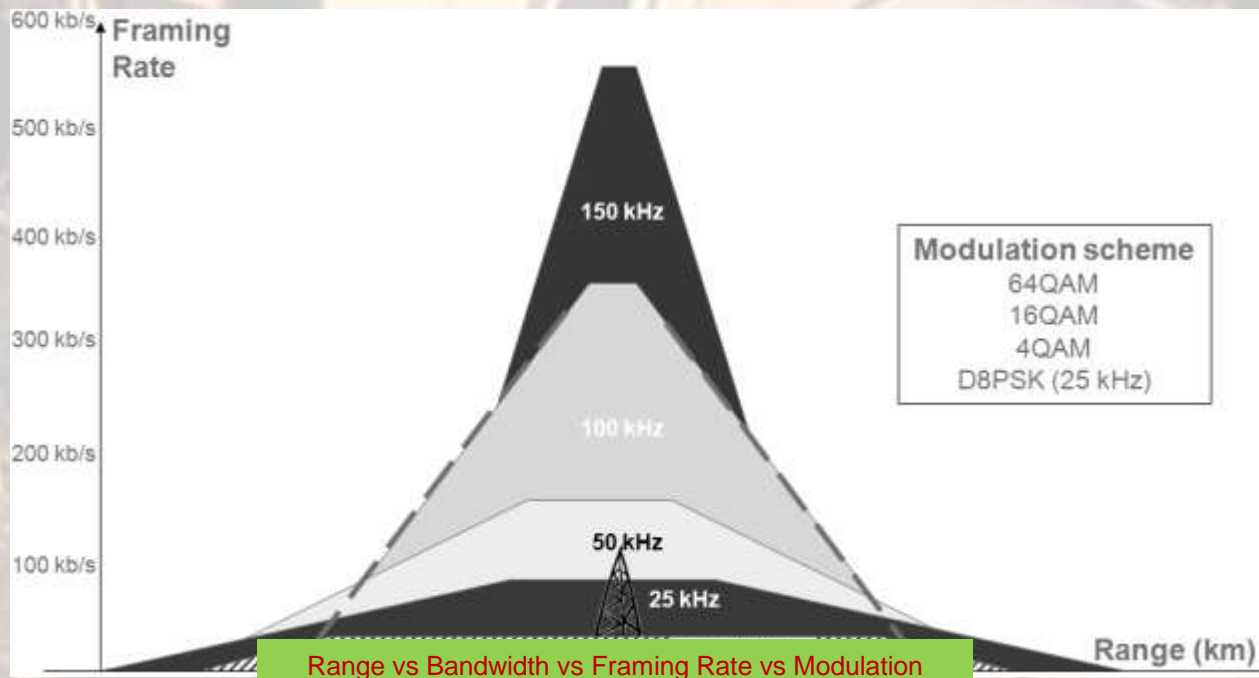
Adaptable Data Transport Rate

Highly Spectrum Efficient

- Based on International ETSI Standards (2006) digital trunked radio systems
- TEDS – Enhanced Data Service;
- Adaptive selection: channel: 25, 50, 75, 100, 150 KHz; Data rate 500-600 kbps;

Modulation scheme: $\pi/4$ -DQPSK, $\pi/8$ -DQPSK, 4-QAM, 16-QAM, 64-QAM;

Channel coding Range up to 83 km (for 25KHz)



Most Highly Spectrum Efficient Radio System Available

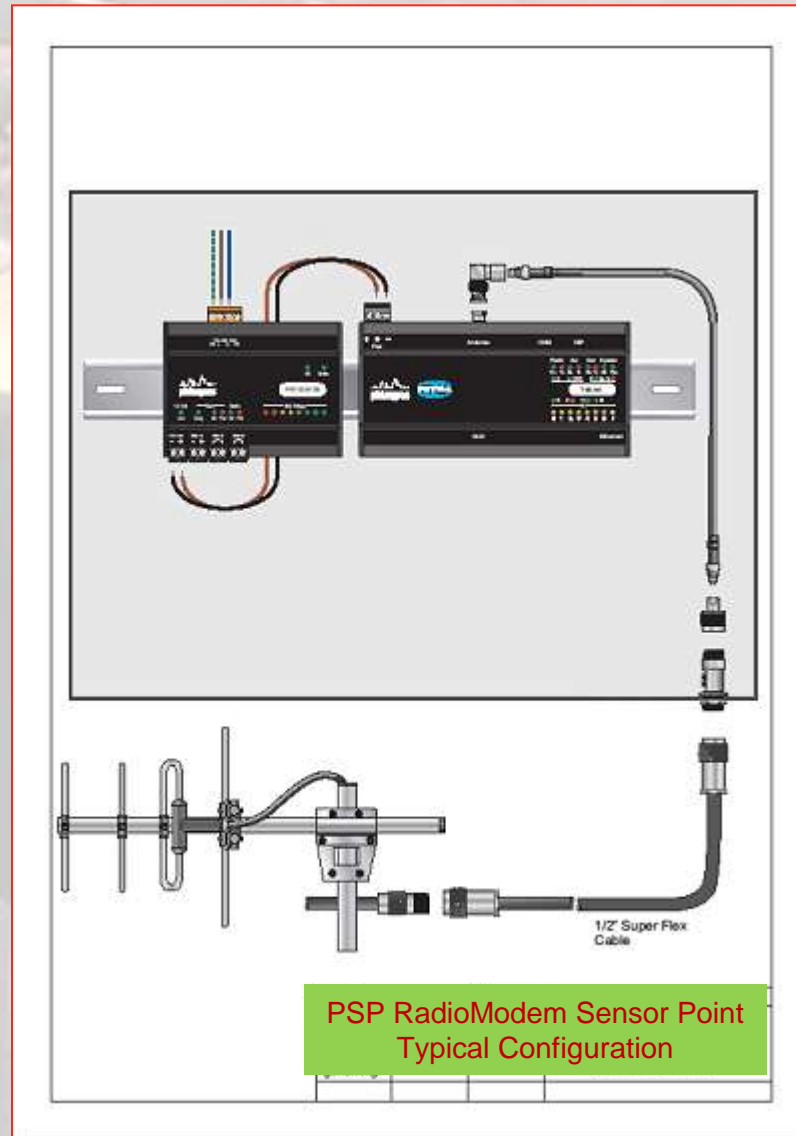
- ❖ Configurable to present needs and re-configurable to match growth
- ❖ Transports both data and voice (Messages and Status also)
- ❖ In several configurations performs this simultaneously, no other radio system provides this capability (one RF Carrier used for a multitude of transport services)
- ❖ Voice Transport is one-to-one or Group (Dispatch), or Broadcast, instantly selectable
- ❖ Many types of Emergency Modes and Alarms can be transported and announced by the Radio System



**Supply of
Complete Solutions with Positive
Results
System Determination, Design,
Integration
with SCADA, Server, Gateway, Modem
and Enclosure**



PSP Supply Complete Solutions



Typical Cabinet Mounting Configuration

Antenna typically mounted externally for proper RF Field Strength



PSP Potomac Spectrum Partners, Configuring, Designing, Supporting Customer Radio Communications Needs

