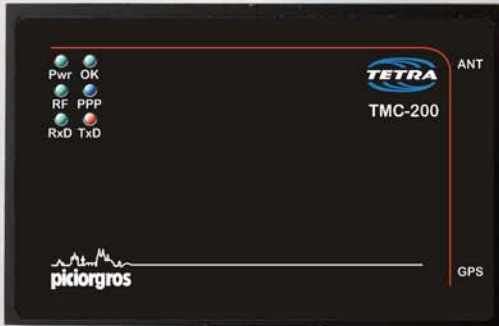




# TETRA Voice & Data



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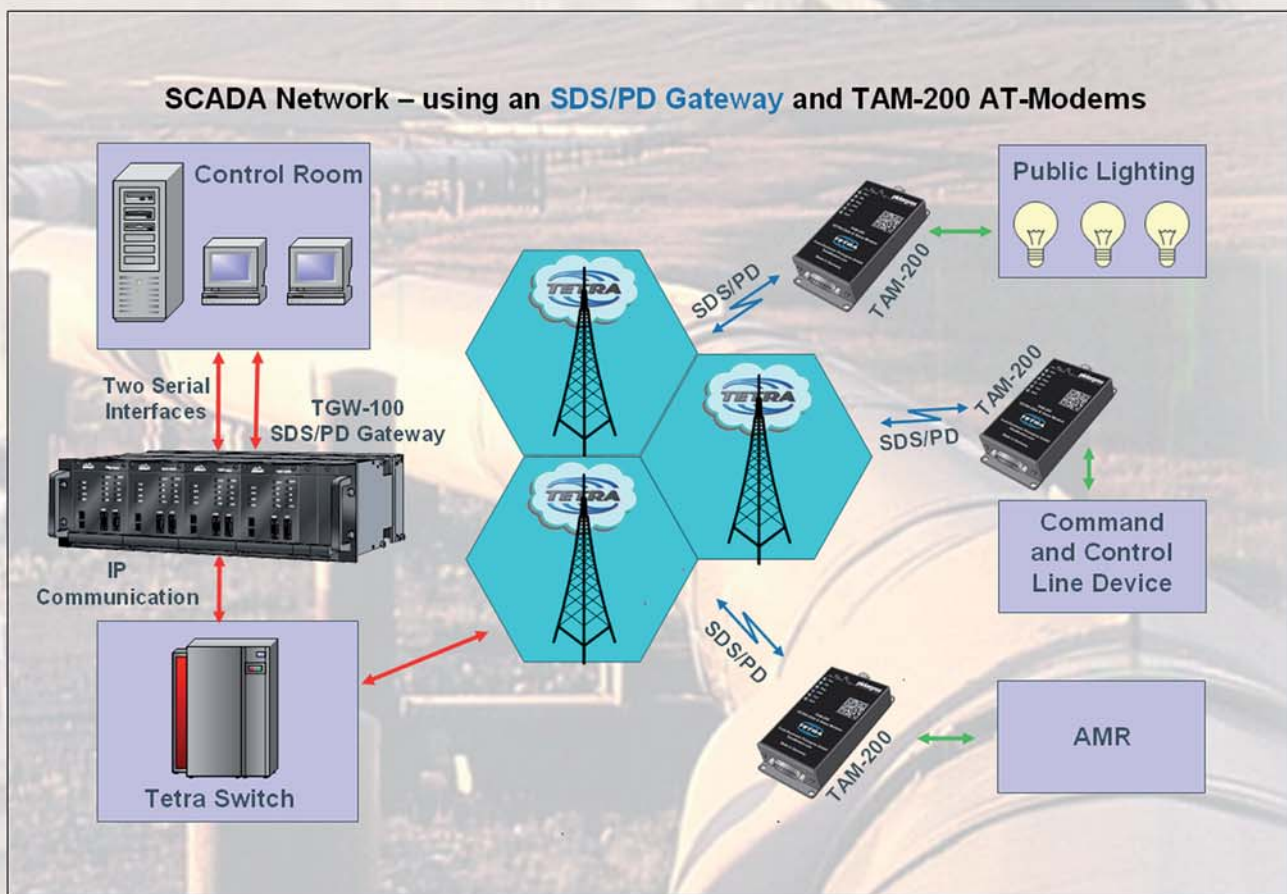
# TETRA PCB- and AT-Modem



## TMC-200 TETRA Modem Core

The TMC-200 is a TETRA Core device for PCB-mounting that can be used for Data and Voice applications in TETRA infrastructures. Its small size (of approx. 80 x 66 x 11 mm, aluminum enclosure) and the interface design allow an easy and time saving integration and provide a platform to adopt almost any application for Voice, Serial Data and IP Communication - and the six multi-function LED's provide Power Supply, Network and Interface Information during operation.

A wide range of powerful AT-Commands are used to control the device. And with the embedded user application interface (optional) the unit can be customized for example to control external events via its serial ports, to perform data compression or to act as a responder for SDS or status messages reporting events or just the RF-Field strength,



neighborhood cells or the complete TETRA SysInfo Message.

Two serial ports are available in the basic setup: the AT-Command Port and the PPP/ACELP Port. That makes it possible to still use all AT-Commands on the first port during IP-Data Communication or while receiving or sending an ACELP (TETRA digital voice) data stream on the second port.

For voice applications a microphone and speaker can directly be connected to the TMC-200. The AF output power is about 150 mW at 8 Ohm and can directly drive a speaker or an external Power Amplifier.

The TMC-200 is available for 350 – 470 MHz and for the 800 MHz frequency band and provides different TETRA options (not all included in the basic setup) as AIE, AUTH, SDS, PD, MSPD, and when connecting an external card reader also E2EE.

### TMC-200 Developer Support

A complete developer environment is available for the TMC-200:

A device motherboard with three RS-232 level interface ports (AT-Port, PPP/ACELP Port and Service and Update Port), the complete PCB data as Gerber file, the schematics for a powerful four Amperes peak wide range power supply, and several AT-Command Scripts for device test, TETRA network registration, Status Message and SDS Send and receive, PPP Link set up and more, as well as PC interface tools and descriptions to be able to integrate this module in shortest time to the final hardware.

### TAM-200 TETRA AT-Modem

The TMC-200 becomes the TAM-200, when mounted inside a metal enclosure and equipped with a wide range power supply of 12 Volt - 24 Volt (+/- 20%) and serial port driver chips. The 15 pin Submin-D Connector provides the AT-Port as RS-232 with TxD, RxD, CTS and RTS and the PPP/ACELP Port delivers TxD and RxD, as well as two loudspeaker and two microphone connectors.

The six multi color LED on the front panel indicate Power Supply and OK, the PPP link when established (blue), a three level Registered and RF Field Strength indication (not registered, red=bad RF, yellow=good RF, green=very good RF) and for the serial communication one green LED for RxD and a red one for TxD.

The size of the enclosure is approx. 130 x 31 x 65 mm, and the housing has 4 mounting holes for fixing the device with screws on any surface.





# Technical Data:

Device Features	TETRA Features
<p><b>Applications:</b> TETRA AT-Modem for Serial and IP Communication Alarm Device for SDS and Status Messages TETRA Voice Terminal</p> <p>TMC-200: Smart Device with embedded application</p> <p><b>Voice Option:</b> The devices provides Microphone and Loudspeaker connectors</p> <p><b>Data Options TMC-200:</b> Serial (AT) Port for Status and SDS Messages Serial (PPP) Port for PD/IP Communication optional Serial Port for ACELP (voice) streaming</p> <p><b>Data Options TAM-200:</b> COM: RS-232, SubMin-D 15pin AUX: RS-232, SubMin-D 15pin</p> <p><b>LED Displays:</b> Power, OK (green) RF/Registered: Three color LED PPP Link established (blue LED) Communication: TxD (red) and RxD (green)</p> <p><b>Operating Voltage:</b> TMC-200: 3,7 Volt TAM-200: 12 V - 24 V (+/- 20%)</p> <p><b>Average Power Consumption (Receive):</b> TMC-200: P &lt;= 2 Watt TAM-200: P &lt;= 3 Watt</p> <p><b>Operating Temperature:</b> -20 deg C to +65 deg C</p> <p><b>Enclosure:</b> TMC-200: Anodized aluminium TAM-200: Metal enclosure</p>	<p><b>Operating Modes:</b> Status Messages send (Alarm) and receive (Control) SDS-based Data Communication Packet Data based data Communication Multi Slot Packet Data Communication Text Messages</p> <p><b>Protocols used with TMC-200 (in TMO-100):</b> Modbus-RTU, Modbus/IP, IEC-60870-5-101, IEC-60870-5-104 DNP3, DNP3/IP, PakBus, ROC, BSAP Siemens Sinaut ST1, ST7, and more</p> <p><b>TETRA Features:</b> SDS, Status, SCCH, PD, MSPD SDS size up to 2047 Bit, Multi SDS transmission Encryption, Authentication</p> <p>Class 3 (3 Watts) Output Power (350 - 470 MHz) Class 3 (3 Watt) Output Power (800 MHz) Static RX Sensitivity: min -112 dBm (Typ -115 dBm) Dynamic RX Sensitivity: min -103 dBm (Typ -107 dBm)</p> <p><b>Special Device Features (Optional):</b> Embedded User Application Interface AUX-Port can interface to internal GPS Receiver</p> <p><b>Frequency Range:</b> 350-370 MHz 370-390 MHz 410-430 MHz 450-470 MHz 806-870 MHz</p>



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