

Mobile Telemetry Tracking Station

The DTS-500 Mobile Telemetry Tracking Station is a dual system for telemetry data acquisition and automatic target tracking for mobile and stationary applications perfect for drone (UAV), rocket, missile and general flight tests.

DTS-500 provides a three dimensional position measurement to ensure the redundancy in case of absence or radar failures. Low cost solution to be used in replacement of expensive onboard GPS.

The system performs auto-tracking of targets based on the RF signal and supplies accurate azimuth, elevation and slant range data to determine the location and flight path of a target in real time.

In addition, DTS-500 allows for viewing telemetry data through graphs and tables. It permits real-time monitoring of parameters and events, local recording, playback and data reduction for future data analysis.

Video Camera included (30x optical zoom - 12 x digital zoom)

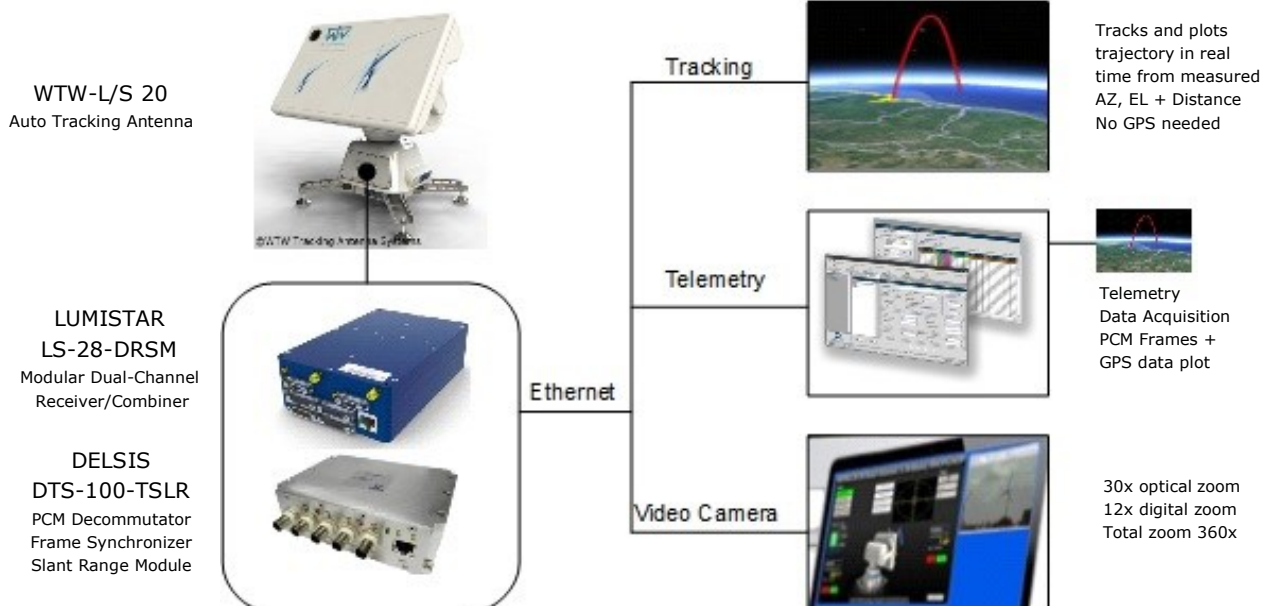
Easy configuration setup is accomplished via a telemetry user application with an intuitive graphical user interface (GUI), that is additionally coupled with airborne processing capabilities. A unique set of programmable PCM Frame and parameters is applied to both, decoder and encoder units, simplifying test engineering work.

Visualization units may be simultaneously used, distributed throughout different IP address in the Gigabit network.

Data acquired with DTS-500 can be exported to other formats, in order to be used by external applications.

Key Features

- Dual System:
 - ◇ **Telemetry Data Acquisition** - Real time acquiring and monitoring of parameters and events
 - ◇ **Target Tracking** - Provides azimuth, elevation and distance to determine the flight path of a target in real time
- Light and compact portable auto tracking antenna
 - ◇ RF Autotrack, Slavetrack, GPS Track and Manual Track
- Video Camera
- IRIG-106 PCM Data Rates up to 10 Mbps
- Receiver, Bit Synchronizer, PCM Decommulator, and Frame Synchronizer
- PCM Simulator
- IRIG-B Time Code Reader
- Ethernet Gigabit
- Storage, playback and real time data processing
- Programmable data stored in non-volatile memory



WTW-L/S 20 Auto-Tracking Antenna

The WTW-LS 20, from WTW Anlagenbau GmbH, is a portable, mobile dual axis Auto Tracking Antenna. WTW-LS 20 is IP64, no Radom needed. An embedded webpage controls the Antenna and allows up to 4 operators to look at the Antenna Parameters through High Speed Ethernet and/or secured WIFI with a PC, Laptop, Tablet or Smartphone .

The WTW Anlagenbau GmbH is a premium manufacturer for telemetry antennas using the latest technology combined with ultimate performance for Airplane, Helicopter, Missile and Rocket test on Land or Water.

WTW-L/S-20



Technical Specifications

Gain	appr. 16 dBi @ 1435 MHz appr. 20 dBi @ 2250 MHz appr. 20 dBi @ 5100 MHz (Option)
3dB beam width	appr. 26.5° @ 1435 MHz appr. 16.2° @ 2250 MHz appr. 12.1° @ 5100 MHz
Frequency Range	1400 MHz to 2400 MHz Optional C-Band
Polarization	LHCP and RHCP (dual Polarization)
Tracking Mode:	Manual, Program, GPS, Auto tracking
Wind speed (stationary):	Operating ~100 km/h, Stowed ~160 km/h
Camera	30x optical zoom, 12x digital zoom, Total zoom 360x
Movement	AZ. Unlimited, EL -5° up to 90°
Speed	AZ. Max. 60°/sec. EL. Max. 60°/sec
Power	85 – 264 VAC, 50/60Hz 150W
Temperature	-20°C to +70°C
Humidity	0 to 100%
Windspeed	Up to 65mph
Dimensions	650x365x530 mm (WxDxH)
Weight	~25 kg = ~60 lbs

Options

Radom

Gimbel

Battery

Diesel Generator

Mobile Hydraulic Tower (up to 8 m)

Modular Dual-Channel Receiver/Combiner

The Lumistar LS-28-DRSM Modular Dual-Channel Receiver functions as an independent data & tracking receiver in one package.

The LS-28-DRSM is an advanced technology Dual-Channel Receiver/Combiner employing sophisticated "fifth generation" Digital Signal Processing (DSP) technologies. The LS-28-DRSM supports independent two-channel reception and/or combining of up to six RF bands including E, S, Lower-L, Upper-L, P, C, (as well as customer defined bands from 250 MHz to 6 GHz).

The unit has provision for direct PCM bit-synchronization from external sources as well for Combined or Independent channel data.

PCM code converted output data is provided simultaneously to TTL and high speed differential (RS422/485 signal standards). Optional IRIG Chapter10 UDP time stamped data outputs are available.

LS-28-DRSM



Technical Specifications

RF Input Frequency:	S-band (S): 2200-2400 MHz
Input Level:	+10 dBm to threshold
Maximum Input Level:	29 dBm (self-protection at startup)
Tuner Resolution:	50 KHz (consult factory for tighter resolution option)
Frequency Accuracy:	0.001% typical, 0.002% max
Noise Figure:	5 dB (max); 3-4 dB (typical, near threshold)
IF Filters:	SAW and FIR filters, default bandwidth auto-selected by "data rate, PCM code and modulation format", or user override programmable filters
	Eight SAW pre-selection filters (0.25, 0.50, 1, 2, 5, 10, 20, 40
	Precision digital FIR filtering employed at demodulation input
	<10 KHz resolution bandwidth
Phase Noise:	Exceeds requirements for ARTM Tier II phase noise
	(< -90 dBc/Hz typ at 10 KHz)
AGC Slope and Range:	Programmable over any portion, -4V to +4V, Linear, Pos/Neg
	CH1/CH2 & Combined
AGC Time Constants:	Selectable: 0.1, 1, 10, 100, 1000 mSec
	Programmable between 0.1 and 6500 mSec
RF Input AGC Range:	120 dB (+10 to -110 dBm)
Input Compression:	> +10 dBm
AM Demodulation:	DC to 50 KHz bandwidth, programmable output vs. AM depth
	(Typical 2V p-p for 50% modulation depth in to 75 ohms)
	CH1/CH2 & Combined
AM Filtering:	32 each low pass filters
Adj Channel Interference:	exceeds IRIG requirements
Dimensions:	6.00" x 4.00" x 1.70" inches

DTS-100-TSLR Telemetry Slant Range Unit

DTS-100-TSLR is a dual system for telemetry data acquisition and Slant Range system able to measure the radial distance between the rocket and the telemetry station.

DTS-100-TSLR combines the functions of the DTS-100 PCM Decommutator and DTS-100-SLR Slant Range Unit in a single equipment.

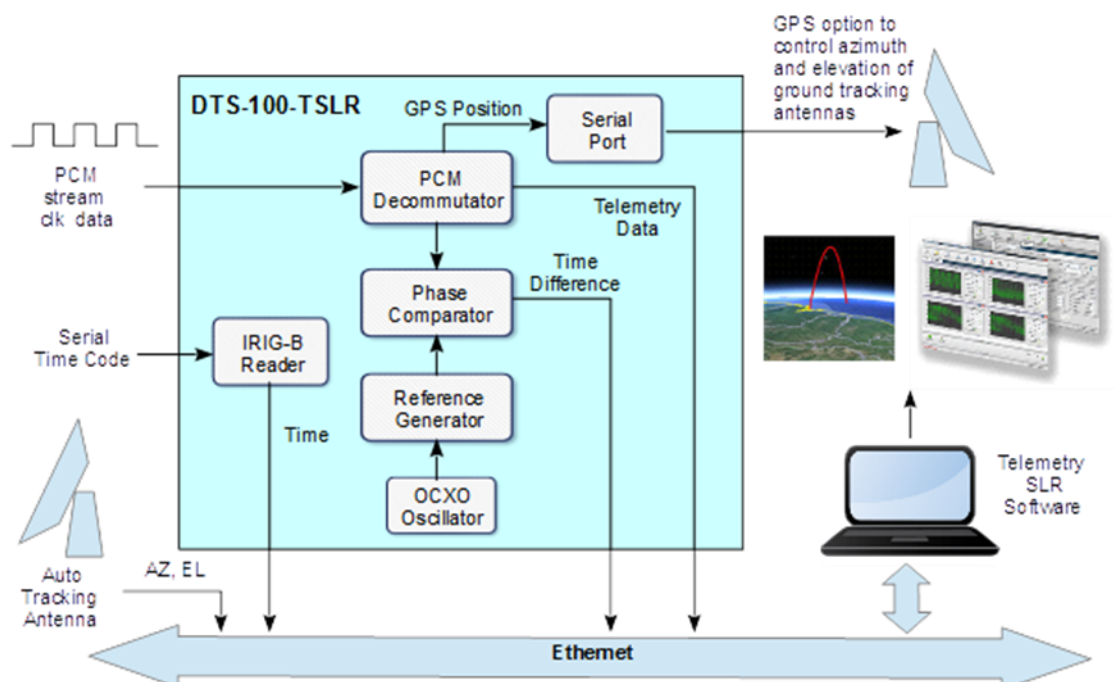
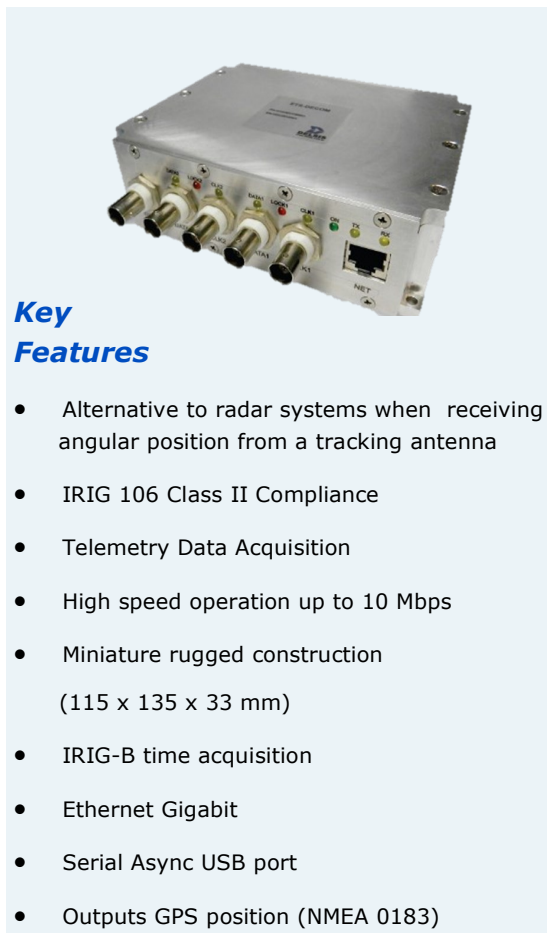
The distance is calculated based on the delay of the telemetry signal reception from the rocket, which is proportional to the position of the rocket related to the ground telemetry antenna. When a tracking antenna azimuth and elevation angles are incorporated, a payload trajectory can be generated and plotted in real time over Google Earth.

In addition, DTS-100-TSLR allows for acquiring and viewing telemetry data through graphs and tables. It permits real-time monitoring of parameters and events, local recording, playback and data reduction for future data analysis.

Serial UART to USB outputs GPS position (NMEA 0183) from asynchronous data embedded in the PCM telemetry stream. The GPS position can optionally control angular position of ground tracking antennas.

Easy configuration setup is accomplished via a telemetry user application with an intuitive graphical user interface (GUI), that is additionally coupled with airborne processing capabilities. A unique set of programmable PCM Frame and parameters is applied to both, decoder and encoder units, simplifying test engineering work.

DTS-100-TSLR may be directly plugged to the Ethernet network and delivers complete telemetry frames to the destination IPs.



Technical Specifications



PCM Decommutator

Standard	IRIG 106 Class II
Input Data Rates	10 bps to 10 Mbps
No. of channels	One
Input Format	NRZ-L, NRZ-M, NRZ-S, BiØ-L, BiØ-M, BiØ-S
Input Levels	TTL and RS-422
Data Polarity	Normal or Inverted
Data Alignment	MSB first or LSB first
Major Frame Length	1 to 1024 Minor Frames per Major Frame
Minor Frame Length	2 to 16.384 bits per Minor Frame
Word Length	6 to 16 bits
Frame Sync Pattern	Up to 33 bits
Frame Sync Location	Leading or trailing the frame
Frame Sync Strategy	Adaptive mode (search-lock-verify) & burst mode (search lock)
Sync Error Tolerance	0 - 7 bits
Sub-Frame Sync	SFID, FCC & URC

IRIG-B Time Code Reader

Input Signal:	1 KHz ASK (Amplitude Shifting Key) amplitude modulated
Time frame	1 second
Counter Indice	10 ms (100 pps)
Year time	BCD (Binary Coded Decimal).
Day seconds	SBS (Straight Binary Seconds).
30 bits (BCD)	days (10), hours (6), minutes (7) and seconds (7).
17 bits (BCD)	Day seconds
9 bits (BCD)	year
18 bits	control

Synthesized Generator

Type	OEXO (Oven Controlled Crystal Oscillator)
Thermal Stability	2.0E-10
Resolution	3 m
Temperature Range	-30 °C to +70 °C
Aging	Per Day 5.0E-10 Per Year 5.0E-08

Connections

IRIG-B	BNC (F)
PCM DATA SIMUL	BNC (F)
PCM CLOCK SIMUL	BNC (F)
PCM DATA IN	BNC (F)
PCM CLOCK IN	BNC (F)
Test Points	Miniature Push-Pull Circular Connector HR25A
Ethernet	RJ-45
USB Serial Com	USB connector type B
Power	DC Power Connector

PCM Simulator

Standard	IRIG 106 Class II
Output Data Rates	10 bps to 10 Mbps
No. of channels	One
Output Format	NRZ-L, NRZ-M, NRZ-S, BiØ-L, BiØ-M, BiØ-S
Output Levels	TTL or RS-422
Data Polarity	Normal or Inverted
Data Alignment	MSB first or LSB first
Major Frame Length	1 to 1024 Minor Frames per Major Frame
Minor Frame Length	2 to 16.384 bits per Minor Frame
Word Length	6 to 16 bits
Frame Sync Pattern	Up to 33 bits
Sub-Frame Sync	SFID, FCC & URC

UART To USB

Description	USB to asynchronous serial data transfer interface
Data Rates	300 baud to 3 Mbaud

ENVIRONMENTAL

Temperature	Operation: 0 °C to +50°C Storage: 0 °C to +70 °C
Humidity	0% to 90% Relative

Physical and Power

Size	115 x 135 x 33 length, width, height (mm)
Weight	0.9 Kg
Chassis Material	Aluminum
Power Supply	115 VDC to 20 VDC 15 W

Test Points Connector

Pin	Signal
1	PCM DATA IN
2	PCM CLOCK IN
3	PCM DATA SIMULATOR
4	PCM CLOCK SIMULATOR
5	IRIG-B
7	Frame / Sub-Frame / Word selection
12	+12V
13	+5V
14	+3.3V
15	GND