



24 GHz MONOPULSE-RADAR KIT DEVELOPMENT KIT DK-sR-14MPe WITH PC SOFTWARE SenTool

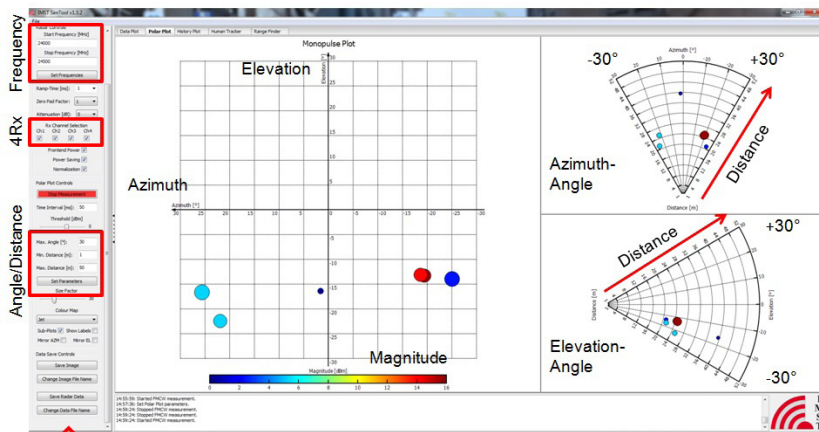
IMST 24 GHz **Monopulse** Radar Development Kit **DK-sR-14MPe** is designed for obstacles detection of UAVs in autonomous flight operation. The radar consists of one transmit and four receive antennas. By evaluating the time-of-arrival parameter from the Rx_1/Rx_2 pair of vertically displaced antennas the calculation of the elevation angle becomes possible. The azimuth angle is determined by the Rx_3/Rx_4 pair of horizontally separated antennas. Thus, the received radar signals can be used for detection and tracking of targets in 3D space. DK-sR-14MPe comes with a Graphical User Interface (GUI) called SenTool. **SenTool** makes it easy to configure the sensor and to measure, visualize and analyze the data in several different graphical plots.

SenTool offers a wide range of functions:

- **Configuration** of the Radar and the interface.
- **Radar Selection** out of several connected sensors.
- High level measurement modes as **Target Tracking** and **Range Finding**.
- **Measurement Monitoring** in different presentation forms: Time Domain, Frequency Domain, Polar Plot, History Plot, Range Plot.
- **Storing and Restoring** of measurement data in binary or ASCII format.
- **Offline Viewing** of measurement data without connection to the Radar.
- **Animated or Static** display of recorded data.
- **Magnifying View**.
- **Firmware Update** via Ethernet interface.
- Implementation of **User-Defined-Functions**.



DK-sR-14MPe Monopulse Radar with Ethernet Interface mounted on an UAV



SenTool with parameter settings and various data plots

Monopulse-RadarSettings

TECHNICAL DATA DK-sR-14MPe

GENERAL

Modulation:	FMCW / CW
Operating Frequency:	24.0GHz - 24.25GHz (ISM band), max. BW = 700 MHz
Number of Channels:	1 Tx, 4 Rx
Data Interface:	Ethernet

ANTENNA

Antenna Type:	Integrated Patch Antennas
Tx Antenna Characteristics:	60° Azimuth, 60° Elevation
Rx ₁ /Rx ₂ Antenna Characteristics:	60° Azimuth, 120° Elevation
Rx ₃ /Rx ₄ Antenna Characteristics:	120° Azimuth, 60° Elevation
Antenna Gain:	10 dBi (Tx), 7 dBi (Rx)
Antenna Polarization:	linear

MEASUREMENT

Min. Measurement Range:	0.6m (@ ISM band)
Max. Measurement Range:	307m (@ ISM band)
Range Resolution:	max. 0.6m (@ ISM band)
Max./Min. Speed (theoretical):	±3200m/s
Speed Resolution:	6.25m/s (@ 24GHz, CW Mode, Measurement Time = 1ms)

FMCW PERFORMANCE

Frequency Ramp Duration:	1ms - 100ms
Typical Update Rate:	8Hz - 100Hz (depending on application)
Output Power (EIRP):	10dBm - 25dBm (tunable)

TEMPERATURE

Min. Operating Temperature:	-40°C
Max. Operating temperature:	60°C (@ duty cycle < 50%)

POWER SUPPLY

Operation Voltage:	12V or PoE with 44V - 54V
Standby Power:	2.2W
Operating Power:	5.5W

HOUSING

Dimensions (L x W x H):	98mm x 87mm x 42.5mm (Housing) 114mm x 87mm x 42.5mm (with Bushing)
Weight:	280g (with cable)
Mounting:	4 Mounting Holes (5mm)
Connection Cable and Connector:	CAT-6 with RJ45 Female Plug (Ethernet)
Protection Code for Housing:	IP65



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