

24 GHz RADAR KIT (1Tx + 4Rx)

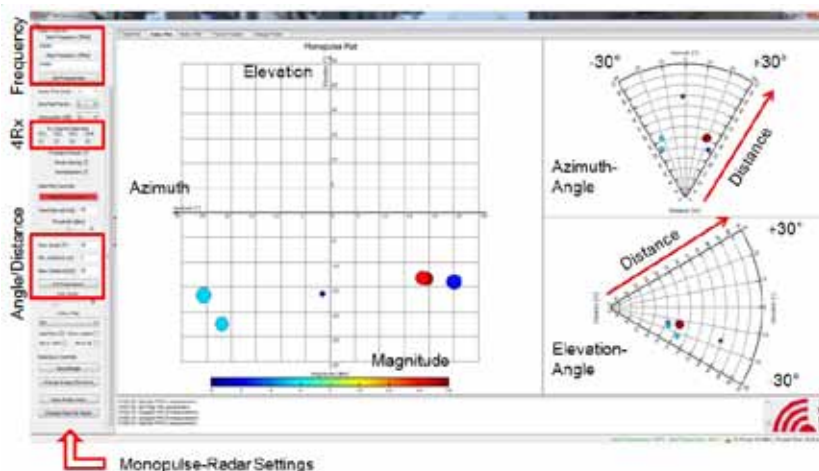
DK-sR-14MPc AND SR-14MPc: FMCW-RADAR WITH CAN-BUS INTERFACE

IMST's 24 GHz MonoPulse Radar **sR-14MPc** and the Development Kit **DK-sR-14MPc** have 1 transmit (Tx) and 4 receive (Rx) channels for multiple targets range measurements and angle estimations. Azimuth and elevation angle are determined by a "phase-comparison monopulse" technique, whereby the direction to a target is estimated from the time-of-arrival phase difference of the two antenna pairs Rx1/Rx2 and Rx3/Rx4. Thus, the received radar signals can be used for target detection and tracking in 3D space. The radar module has a **CAN-bus** interface plus 4 digital signal lines. DK-sR-14MPc comes with a Graphical User Interface (GUI) called **SenTool**. **SenTool** makes it easy to configure the sensor and to measure, visualize and analyze radar data in several different graphical plots. SenTool requires a specific CAN-bus-to-USB adapter. Topics are:



sR-14MPc FMCW MonoPulse Radar with 1Tx, 4Rx and CAN-Bus Interface

- **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 interface.
- Implementation of **User-Defined-Functions**.



SenTool with parameter settings and various data plots

TECHNICAL DATA DK-sR-14MPc

GENERAL

| | |
|----------------------|---|
| Modulation: | FMCW / MonoPulse / CW |
| Operating Frequency: | 24.0 GHz - 24.25 GHz (ISM band) |
| Number of Channels: | 1 Tx, 4 Rx |
| Data Interface: | Can-Bus plus 4 digital lines (IN_1, IN_2, OUT_1, OUT_2) |
| Certification: | CE-Approval |

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

FMCW PERFORMANCE

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|--------------------------|--|
| Frequency Ramp Duration: | 1 ms - 100 ms |
| Typical Update Rate: | 8 Hz - 100 Hz (depending on application) |
| Output Power (EIRP): | -15 to 15 dBm (tunable) |

TEMPERATURE

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

POWER SUPPLY

| | |
|--------------------|---------|
| Operation Voltage: | 12 V DC |
| Operating Power: | 2.5 W |
| Max. Power: | 3.6 W |

HOUSING

| | |
|---------------------------------|--|
| Dimensions (L x W x H): | 98 mm x 89 mm x 44 mm (Housing) 114 mm x 87 mm x 42.5 mm (with Bushing) |
| Weight: | 280 g (with cable) |
| Mounting: | 4 Mounting Holes (5 mm) |
| Connection Cable and Connector: | Shielded Serial Cable with DSUB-9 Female Plug (CAN-Bus) |
| Protection Code for Housing: | IP65 |



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