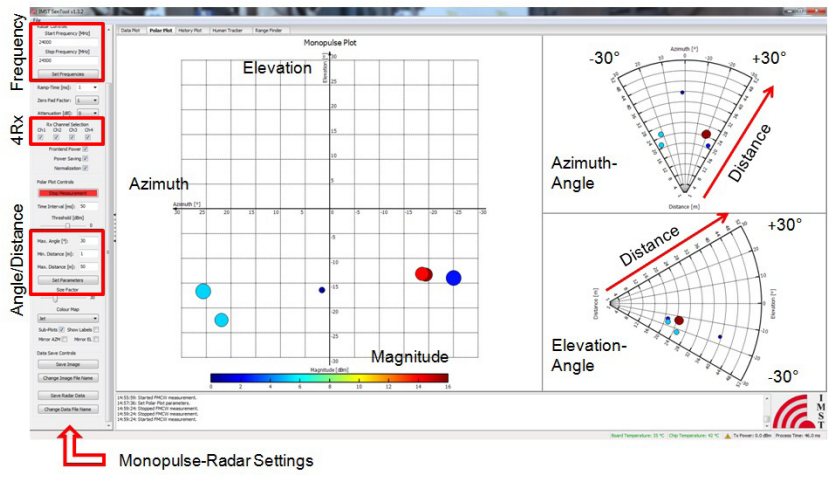
24 GHz RADAR KIT (1Tx + 4Rx)

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

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

IMST GmbH
Carl-Friedrich-Gauss-Str. 2-4
47475 Kamp-Lintfort
Germany

T +49-2842-981-0
F +49-2842-981-199
E radar@imst.com
I www.radar-sensor.com