RFbeam Microwave GmbH

product information

V-MD3

digital 3D
radar transceiver

Available in Q2/2019



Features

- Low cost 61 GHz FMCW radar with digital signal processing
- Digital output of target list or raw data
- Measures distance, speed and angle of multiple objects
- 100BASE-T1 Ethernet connection or Serial/SPI
- Switchable antenna pattern (70°/70° or 30°/30°)
- Available with/without housing
- Detection distance: 30 m for persons/100 m for cars
- Distance range: 0–100 m, up to 4cm resolution
- Speed range: ±100 km/h, 1 km/h resolution
- Angle range: ±40°
- Compact size: 71×56×18 mm

Applications

- Indoor movement detection with position measurement
- Security applications
- Vital sign monitoring
- Industrial measurements
- Level measurements
- Traffic analysis and classification

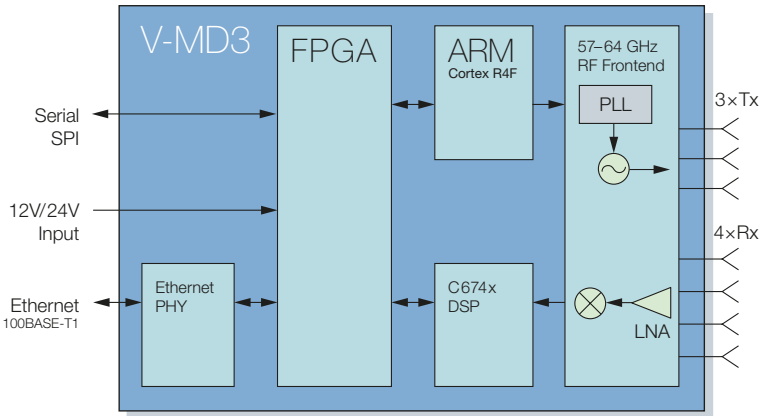
Description

The V-MD3 is a high-end 3D radar transceiver with 2 switchable antenna patterns and angle measurement in azimuth and elevation. The high frequency bandwidth allows for a good distance resolution enabling applications like people counting or precise distance measurement.

The module is available in a water-proof housing or as a PCB to be integrated in own applications. Different signal processing stages can be enabled inside the module what makes it easy to implement the module in customer's environment.

Block Diagram

Figure 1: block diagram



CHARACTERISTICS

Parameter	Conditions/Notes	Symbol	Min	Typ	Max	Unit
Operating Conditions						
Supply voltage		V_{cc}	8.0	12.0/24.0	28.0	V
Supply current		I_{cc}		450		mA
Operating temperature		T_{op}	-20		+85	°C
Storage temperature		T_{st}	-40		+105	°C
Transmitter						
Transmitter frequency	T_{amb} = -20 °C .. + 85 °C	f_{TX}	57.0		64.0	GHz
Output power	EIRP	P_{TX}		15		dBm
Frequency stability		Δf		50		ppm
Phase noise	@100kHz	P_N		-80		dBc
Spurious emissions	According to ETSI 305 550	P_{spur}		-30		dBm
Antenna						
Polarisation				Vertical		
TX1 antenna gain	f_{TX} = 61.0 GHz	G_{antTX1}		6		dBi
TX1 horizontal -3dB beamwidth	E-Plane	$W_{\varphi TX1}$		70		°
TX1 vertical -3dB beamwidth	H-Plane	$W_{\theta TX1}$		70		°
TX2 antenna gain	f_{TX} = 61.0 GHz	G_{antTX2}		9		dBi
TX2 horizontal -3dB beamwidth	E-Plane	$W_{\varphi TX2}$		30		°
TX2 vertical -3dB beamwidth	H-Plane	$W_{\theta TX2}$		30		°
RX antenna gain	f_{TX} = 61.0 GHz	G_{antRX}		6		dBi
RX horizontal -3dB beamwidth	E-Plane	$W_{\varphi RX}$		70		°
RX vertical -3dB beamwidth	H-Plane	$W_{\theta RX}$		70		°
Receiver						
Receiver sensitivity		P_{RX}		-128		dBm
Overall sensitivity	S/N = 6 dB	S		-145		dBc
Signal Processing						
Modulation				FMCW		
Range processing				256 point FFT		
Velocity processing				128 point FFT		
Update rate				50		ms
Output						
Ethernet output				100BASE-T1		
SPI output level				3.3		V
Serial output level				3.3		V
Serial baudrate				115200		Bit/s
Body						
Outline dimensions				71×56×18		mm³
Weight				112		g