Synthetic Aperture Radar (SAR, iSAR)

SkyRadar's SAR system builds on the FMCW base module. Set on a linear high-precision conveyor, driven by a servo motor and controlled with an industrial drive system, it produces a variable number of radar images which are aggregated in a time-multiplex approach.

General Features

SkyRadar *FMCW SAR* Hardware Features

Synthetic Aperture Radar (SAR) hardware setup, with servo controlled movement of the antenna on a linear rail.

- Synthetic Aperture Radar (SAR) hardware setup, with step-motor driven the radar (FMCW) on a 2050 mm linear rail .
- Phased-Array through a 2-segment patch antenna Default operation in at 24 GHz.

SkyRadar *FMCW SAR* Software Features

- Wireless communication between Radar element and computers or CloudServer.
- A –Scope, B-Scope with time-scale on the x-axis.
- Very high resolution of the radar image through synthetic aperture image generation.

Stepper Motor

A high precision brushless DC servo motor with integrated controller (stepper) actuates the linear drive.
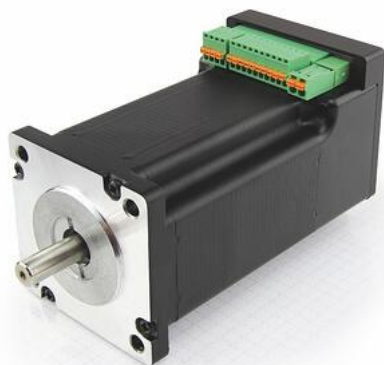
Operating Voltage	12 V DC - 48 V DC
Peak Current (RMS)	6.3 A
Type Digital Inputs	24V, 5/24 V switchable
Type Analog Input	0-10 V
Type Digital Output	Open-Drain (30 V max.)
Size	56 mm
Interface	USB
Holding Torque	110 Ncm
Rated Current (RMS)	4.2 A
Number of Digital Inputs	6
Number of Analog Inputs	1
Digital Outputs	1
Encoder Resolution	1024 Cycles per Revolution
Weight	0,8 kg

Table : Operative characteristics of the servo motor

Linear Conveyor

The linear conveyor creates the defined and highly precise displacement, allowing the radar to shoot shifted images that will be aggregated into one high resolution images in a subsequent time-multiplex principle.

Length	2,050 mm
Width	315 mm
Height	approx. 850 mm
Required Space	approx. 2,400 mm x 800 mm
Track Gauge	97 mm
Weight	5.6 Kg
Traverse Path	1,700 mm
Feed (1/U)	75,36 mm

Table : Operative characteristics of the linear conveyor