

# V-Series

## Multi-Channel Antenna Arrays for GPR



### Application Areas

- ◆ Road/Bridge Inspection
- ◆ Archaeology
- ◆ Railroad Inspection
- ◆ Military – IED/UXO
- ◆ Utility Mapping
- ◆ Airport Inspection

### Features and Benefits

- ◆ Wideband coverage, 200MHz to 3GHz
  - Enables detailed surveys from near surface to a depth of 2 meters in a single pass with depth resolution of 3cm at shallow depths.
- ◆ Selectable antenna elements, up to 29 channels
  - Capture wide swaths of survey data in one pass. Use all antenna elements for more details, or fewer elements for faster surveys.
- ◆ Uniform antenna size
  - All channels have the same frequency range and identical impulse response, making data processing easy.
- ◆ Multi-offset recording
  - The optional Multi-Offset recording allows data to be recorded with different offsets between transmitter and receiver antennas. Automated common mid-point (CMP) gathers are easily performed for wave velocity analysis.

3d-Radar V-Series antenna arrays allow scanning of up to 29 channels of GPR data over a continuous 200MHz to 3GHz frequency range. The air-coupled antenna design offers clear impulse response with low ringing and high suppression of the direct wave from transmitter to receiver.

The V-Series antenna arrays represent the latest innovation in GPR antenna design. Operated with the GeoScope™ step-frequency radar, the V-Series antennas offer a unique capability of collecting 3-dimensional GPR data with dense line spacing, allowing full 3-dimensional data processing.

The air-coupled antenna array is suitable for applications where the antenna needs to be elevated off the surface such as fast road/railroad inspection and landmine/IED detection.

All antenna elements cover the entire 200MHz to 3GHz bandwidth, offering a high depth resolution in the order of 3cm at shallow depths which makes the antenna array ideal for measuring pavement thickness and for inspecting bridge decks.

The unique wideband antenna design consists of bow-tie monopole antennas where the combination of the different transmit/receive antenna pairs allows the user to collect data along multiple survey lines (channels). Hence, for full 3d-imaging, the antenna array can be programmed to collect data in a 7.5 x 7.5cm grid. The user may program the system to collect only a few radar profiles for high-speed surveys.

Delivered in a rugged shipping container for safe storage and transportation. The antenna is equipped with a standard 5/8" thread mount for easy mounting of a GPS antenna.

3D-RADAR  
...the ground is no limit!

**3D-RADAR**  
a Curtiss-Wright Company

# V-Series Multi-Channel Antenna Arrays for GPR

Figure 1: System Overview

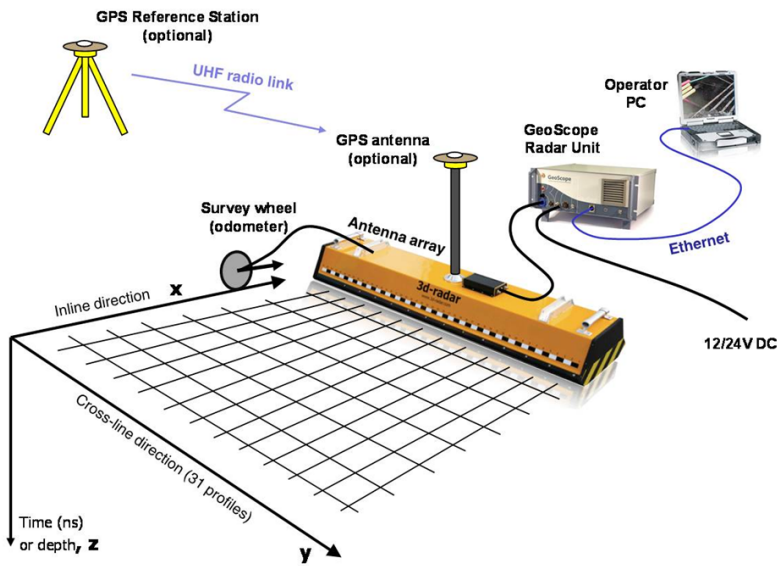
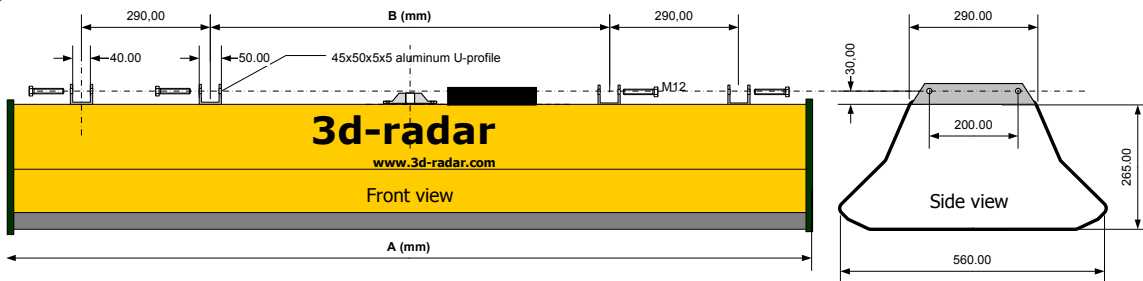


Table 1: Antenna Overview

| Technical Specifications                    | V0605                      | V1213                      | V1821                      | V2125                      | V2429                      |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Width                                       | 0.6m                       | 1.2m                       | 1.8m                       | 2.1m                       | 2.4m                       |
| Frequency Range                             | 200 – 3000MHz              | 200 – 3000MHz              | 200 – 3000MHz              | 1200 – 3000MHz             | 200 – 3000MHz              |
| Number of Channels                          | 5                          | 13                         | 21                         | 25                         | 29                         |
| Channel Spacing (cross-line)                | 75 mm                      | 75 mm                      | 75 mm                      | 75 mm                      | 75 mm                      |
| Effective Scan Width                        | 375 mm                     | 975 mm                     | 1575 mm                    | 1875 mm                    | 2175 mm                    |
| Direct Wave Suppression                     | > 43 dB                    | > 43 dB                    | > 43 dB                    | > 43 dB                    | > 43 dB                    |
| Polarization                                | Linear (in-line direction) | Linear (in-line direction) | Linear (in-line direction) | Linear (in-line direction) | Linear (in-line direction) |
| Size  | 610 x 560 x 310 mm         | 1210 x 560 x 310 mm        | 1810 x 560 x 310 mm        | 2110 x 560 x 310 mm        | 2410 x 560 x 310 mm        |
| Antenna Weight                              | 15 kg                      | 28 kg                      | 32kg                       | 36 kg                      | 40 kg                      |
| Shipping container                          | 670 x 630 x 400 mm         | 1270 x 630 x 400 mm        | 1870 x 630 x 400 mm        | 2170 x 630 x 400 mm        | 2470 x 630 x 400 mm        |
| Total Weight (including shipping container) | 37kg (approx.)             | 51 kg (approx.)            | 67kg (approx.)             | 76kg (approx.)             | 86kg (approx.)             |

Figure 2: Mechanical Dimensions



| Model | A (mm) | B (mm) | Remarks         |
|-------|--------|--------|-----------------|
| V0605 | 610    | 500    | 2 brackets only |
| V1213 | 1210   | 900    | 2 brackets only |
| V1821 | 1810   | 900    |                 |
| V2125 | 2110   | 900    |                 |
| V2429 | 2410   | 1300   |                 |

Note: All units in millimeters.

## Accessories:

- 4-wheel lightweight trailer
- Programmable paint marker
- Antenna cables (6 or 8 meter length)

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## 3D-RADAR AS

Klæbuveien 196 B  
N0-7037 Trondheim  
Norway

Østnøysjøveien 32  
N0-0667 Oslo  
Norway

PO Box 341  
Homer, NY 13077  
USA

Tel +47 7289 3200  
Fax +47 7289 3201

sales@3d-radar.com  
www.3d-radar.com

3D-RADAR  
a Curtiss-Wright Company