HScan

Horizontal Scanner

HScan is a fast and ultra-accurate horizontal near-field planar scanner particularly suited for the antenna measurement of space-borne antennas, large reflectors and certain vehicle mounted antennas. HScan also enables the testing and calibration of multi beams of phased array antennas. Hscan integrates the latest motor drive and encoder technologies. Excellent manufacturing precision combined with direct readout high resolution linear encoders and alignment capabilities ensures unrivaled mechanical positioning accuracy and planarity.

- **Highly accurate planarity and measurement speed**
- **Low profile**

SOLUTION FOR

- **Space-borne antenna measurements**
- **Payload testing**
- **Phased array antenna testing**
- **High gain antenna testing**
- **Array illumination assessment**
- **Array element failure analysis**

Main features

Technology

- Near-field/Planar
- Optional: - Near-field/Spherical - Near-field/Cylindrical

Measurement capabilities

- Gain
- Beamwidth
- Sidelobe levels
- Radiation pattern in any polarization - (linear)
- Directivity
- Cross-polar discrimination
- 3D radiation (limited coverage)
- Antenna efficiency
- Beam pointing properties
- Multi beam antenna measurement and calibration

Frequency bands

- 100 MHz to 110 GHz

Max weight of DUT

- DUT is stationary, the maximum weight of the DUT is limited by the foundation, antenna mount (including any DUT alignment features), and building infrastructure.

Typical dynamic range

- 80 dB, depending on the frequency and antenna gain

Available movements(1)

- X – travel: up to 30 m
- Y – travel: up to 25 m
- Z – travel: up to 3 m
- Polarization: 360°Polarization

High precision linear motors (Optional)

- High speed
- High power
- No backlash

System configurations

Software

Measurement control, data acquisition and post processing

- ■ MiDAS
- ■ 959 Spectrum (North America only)

Advanced post processing

- ■ MV-Echo
- □ Insight

Equipment

- ■ Z-roll probe mount
- ■ AL-4164 positioner controller
- ■ Uninterruptible power supply
- ■ High resolution encoders
- □ Linear motors
- □ RF cables
- □ System for DUT transportation into chamber
- □ Port switch
- □ Active antenna beam control
- ○ Vector network analyzer
- □ RF absorbers for scanner
- □ Instrumentation rack
- □ Direct encoder
- □ Rotary joint for roll axis
- □ DUT positioner
- □ RF Tx head
- □ RF Rx head
- □ Switch controller
- □ RF system upconverters/ downconverters above 20 GHz

Add-on

- ○ DUT stand
- ○ Shielded anechoic chamber
- □ DUT positioner axes for upgrade to cylindrical or spherical NF(2)
- □ Cylindrical and spherical software transform
- □ Portable absorber walls
- □ Linear probe array
- □ Y axis inclination mechanism

Accessories

- ■ Data acquisition and analysis workstation
- □ High speed channel switching (OFR9800)
- □ Reference antennas: wideband horns, standard gain horns, etc.
- □ Near-field Open-ended wave guide
- □ Near-field broadband dual polarized probes with interchangeable aperture
- □ Real time controller

Services

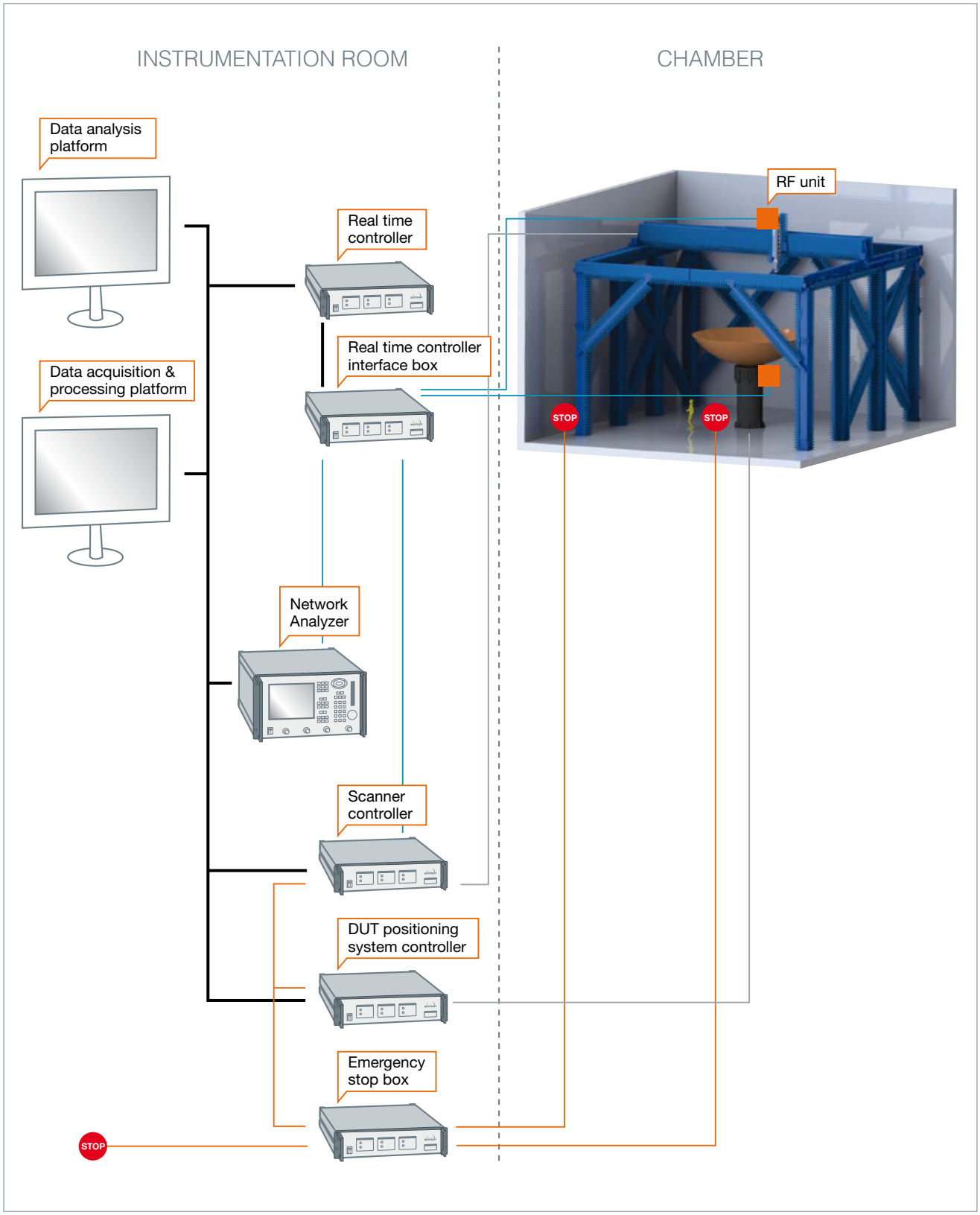
- ■ Installation
- ■ Training
- ■ Warranty
- □ MV-Cor™ correction table service
- □ Post-warranty service plans
- □ Periodic alignment

■ Included □ Optional ○ Required

Note: (1) Longer travel ranges are available upon special request.

(2) To include cylindrical and spherical near-field measurement capabilities in a planar facility, one can choose to install the DUT on an azimuth positioner (cylindrical) or a roll-over-azimuth positioner (cylindrical and spherical).

System overview



Standard system components

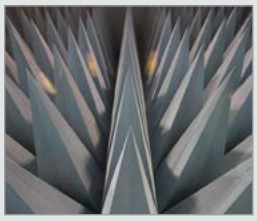
1 Horizontal scanner

The Hscan is composed of an X axis linear slide and a moving tower for the Y axis. The slide is constructed of modular sections. These modules are fixed to the scanner foundation and leveled as one integral track.

- T – shape rail with an encoder system

2 Z and Roll Axis

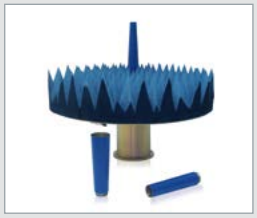
- The Z axis can have various travel ranges starting from 250 mm up to 3 m.



3 Absorbers and anechoic chambers

- A selection of standard, adapted and specialty absorbers
- Anechoic chambers with integrated design, production, installation and testing services

See absorber catalog www.mvg-world/absorbers



4 Measurement probes

- Open-ended waveguides or dual polarized open ended waveguides

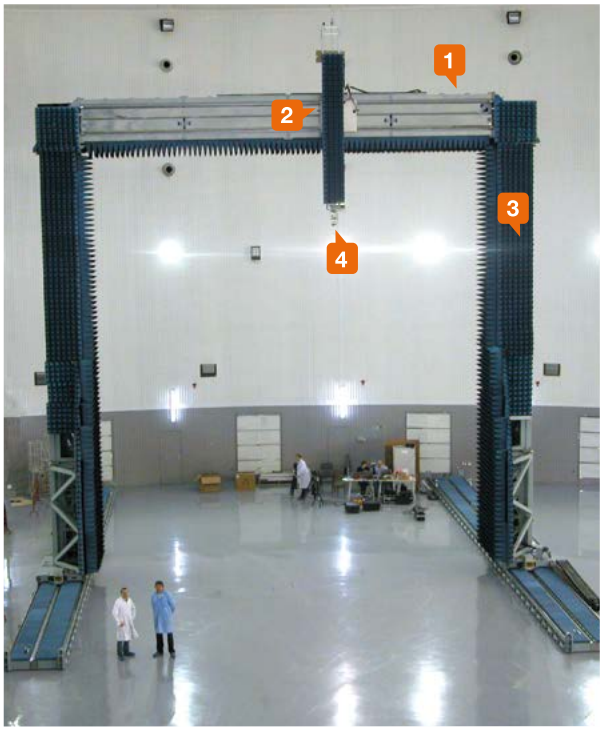
See antenna catalog www.mvg-world.com/antennas

DUT positioning equipment

- Elevation stage positioner - to adjust the height of the antenna and align it for measurement. A complete range of rotary positioners and model towers are available.

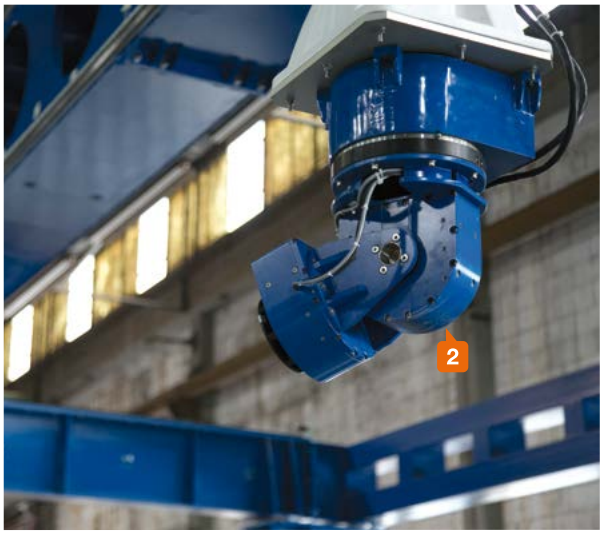
See positioning equipment catalog www.mvg-world.com/positioners

Excellent manufacturing precision combined with direct readout high resolution linear encoders and alignment capabilities ensures unrivaled mechanical positioning accuracy and planarity. The positioning accuracy for all axes can then be further improved using MV-Cor™*.



Floor mount configuration

HScan is available in 3 standard configurations: Floor mount, column mount, or ceiling mount. The structure may be mounted to existing steel beams or concrete pillars within an existing building.



z-roll positioner

Mechanical characteristics

SYSTEMS	SMALL SERIES AL-49410-1	MEDIUM SERIES AL-49420-1	LARGE SERIES AL-49430-1	EXTRA LARGE SERIES AL-49440-1
Structure Material	Aluminum/Steel	Steel	Steel	Steel
Scan Travel X	Up to 3 m (10ft)	Up to 12 m (40ft)	Up to 20 m (66ft)	Up to 30 m (100ft)
Scan Travel Y	Up to 3 m (10ft)	Up to 12 m (40ft)	Up to 15 m (50ft)	Up to 25 m (83ft)
Std. Z Axis Travel*	Up to 0.5 m	Up to 2 m	Up to 3 m	Up to 3 m
Planarity (RMS) Uncorrected	0.05 mm (0.002”)	0.2 mm (0.008”)	0.35 mm (0.015”)	0.5 mm (0.02”)
Planarity (RMS) Corrected	0.025 mm (0.001”)	0.1 mm (0.004”)	0.2 mm (0.008”)	0.25 mm (0.01”)
Position Repeatability (RMS)	0.05 mm (0.002”)	0.05 mm (0.002”)	0.05 mm (0.002”)	0.05 mm (0.002”)
X Axis Velocity	250 mm/sec (10 in/sec)	250 mm/sec (10 in/sec)	250 mm/sec (10 in/sec)	250 mm/sec (10 in/sec)
Y Axis Velocity	300 mm/sec** (12 in/sec)	300 mm/sec** (12 in/sec)	300 mm/sec** (12 in/sec)	300 mm/sec** (12 in/sec)
Payload***	40 kg (90 lbs)	50 kg (110 lbs)	50 kg (110 lbs)	50 kg (110 lbs)
Position Readout Resolution	0.001 mm (0.00004”)	0.001 mm (0.00004”)	0.01 mm (0.0004”)	0.01 mm (0.0004”)
X-Axis Accuracy (RMS)	0.05 mm (0.002”)	0.05 mm (0.002”)	0.15 mm (0.006”)	0.2 mm (0.008”)
Y-Axis Accuracy (RMS)	0.05 mm (0.002”)	0.05 mm (0.002”)	0.15 mm (0.006”)	0.2 mm (0.008”)
Z-Axis Accuracy (RMS)	0.03 mm (0.001”)	0.03 mm (0.001”)	0.03 mm (0.001”)	0.03 mm (0.001”)
Roll-Axis Accuracy (deg)	± 0.025°	± 0.025°	± 0.025°	± 0.025°

* OPTIONAL Z AXIS TRAVEL - 0.25, 0.5, 1, 2, 3 m
** OPTIONAL 500 mm/sec
*** FOR OTHER PAYLOAD CONSULT FACTORY

13 m x 13 m x 2 m column mount configuration

ORDERING INFORMATION

To help us define the system configuration you need for your range, please make your selection by using the ordering example below:

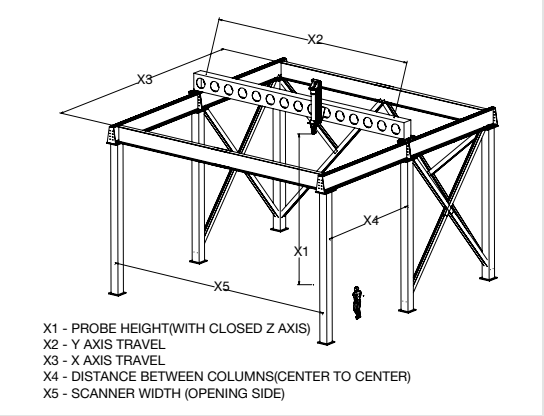
AL-494 -

SERIES		CONFIGURATION		X - AXIS TRAVEL (m)		Y - AXIS TRAVEL (m)		Z - AXIS TRAVEL (m)		POSITIONER	
CHOICE	CODE	CHOICE	CODE	CHOICE	CODE	CHOICE	CODE	CHOICE	CODE	CHOICE	CODE
SMALL	10	COLUMNS	A	1 m increments	1	1 m increments	1	0.25	025	NO ROLL	A
MEDIUM	20	FLOOR	B		2		2	0.6	050	AL-160	B
LARGE	30	CEILING	C		3		3	1	100	AL-360	C
EXTRA LARGE	40	OTHER	D		etc.		etc.	2	200	AL-4567	D
								3	300	OTHER	E

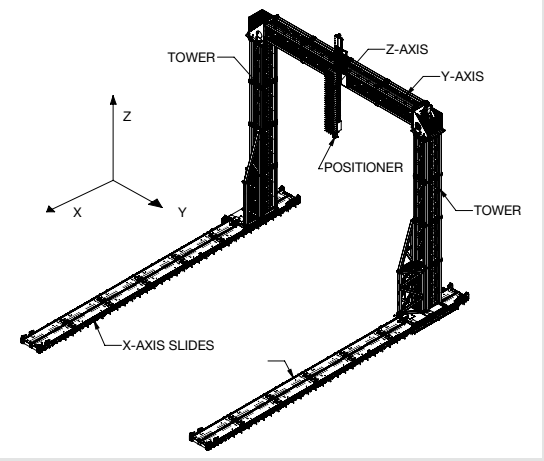
EXAMPLE: for the order of a small series horizontal scanner, floor mount configuration, x-axis travel = 3 m, y-axis travel = 3 m, z-axis = 0.5 m, and choice of positioner AL-160: **P/N: AL-49410-B-3-3-050-B**

Please also mention: scanner height/axes speed/ chamber dimensions/door size and location /other requirements.

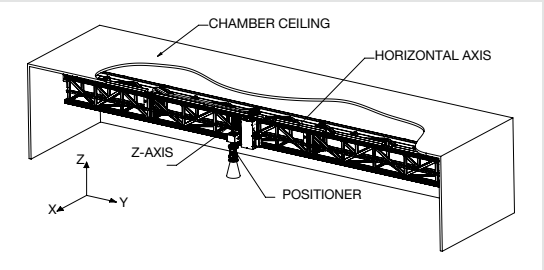
CONFIGURATION TYPES



TYPE A - COLUMN MOUNT



TYPE B - FLOOR MOUNT



TYPE C - CEILING MOUNT

MVG - Meeting the Testing Challenges of a Fully Connected World

The Microwave Vision Group (MVG) has developed unique expertise in the visualization of electromagnetic waves. These waves are at the heart of our daily lives: smartphones, computers, tablets, cars, trains, planes - these devices and vehicles would not work without them. MVG expertise brings measurement solutions to R&D teams for the characterization of antennas and their performance within these devices, and chamber solutions for EMC testing. MVG innovation remains focused on supplying the world with the most advanced EMF measurement technology to date.

WORLDWIDE GROUP, LOCAL SUPPORT

Our teams, in offices around the world, guide and support you from purchase, through design, to delivery and installation. Because we are local, we can assure speed and attention in project follow through. This includes customer support and maintenance once the system is in place. For the exact addresses and up-to-date contact information: **www.mvg-world.com/mvg-offices**

Contact your local sales representative for more information

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