VQNET 40DF

Product Description

Integrated with cutting edge digital signal processing, network control and dual channel Class D amplification, the VQNET 40DF (40x40), is a very high output down firing Mid/High loudspeaker system designed for applications requiring high impact sound reinforcement with class leading pattern control. The modular design approach allows the sound system designer to create seamless and predictable arrays, or they can be used singly as part of large distributed systems. VQNET 40DF addresses the requirement for compact dimensions without compromising performance in any way.

VQNET MH elements which are available in various patterns will integrate seamlessly with the VQNET DF enclosures to facilitate tight pack arrays; the compound angles on the enclosure avoid unsightly spaces between separate cabinets when arrayed horizontally VQNET MB or VS 15DR elements can be added to extend bandwidth and pattern control to lower frequencies.

Horn design involves balancing compromise…..until now.

Our unique approach in keeping what is effectively a Dual Concentric behind a single horn gives us many performance advantages. Performance of the VQNET 40DF in terms of accuracy & sound quality is second to none. The VQ horn design principles provide definitive and measurable advantages over multiple-horn and co-axial designs.

Each VQNET 40DF incorporates a unique driver technology to radiate a coherent single point source for superior dispersion control when coupled to a PSW™ (Point Source Waveguide). This advanced design aligns the acoustical centres of the transducers providing a single coherent wavefront emanating from the throat. The PSW™ waveguide achieves an optimum balance of extremely well controlled coverage, smooth frequency response, and natural sound character.

The modular approach of amplifiers, processing, monitoring and drivers designed into each loudspeaker enables acoustic optimization for the speaker to perform as a unified whole.The intuitive setup software, integrated processing, tuning control, performance diagnostics and protection produces an easy to install and exceptionally high performance networkable loudspeaker.

For outdoor applications, weather resistant enclosures which incorporate stainless steel hardware are available.

VNET™ Network

Each VQNET DF enclosure is fully VNET™ compliant. VNET™ supports free network topology so that the loudspeakers can be arranged in a daisy chain, linked in a star configuration or in any combination of both. Implementation of the network between nodes is via high quality rugged Neutrik Ethercon connectors, which are compatible with standard RJ45 plugs, and CAT5 cable. Each speaker has a unique address for auto-location on the network. System commissioning and ongoing network control, incorporating real time diagnostics of electronics and drive unit, are all managed by the exclusive VNET™ software package. Supplied with each unit, this intuitive Windows tool controls all critical install, commissioning and performance monitoring functions.

Features

- “PSW™ Waveguide” - Point source design (Patent applied for).
- Excellent Phase Coherence
- Perfect time alignment without the associated problems of multi source interference
- Compact Dimensions
- Class leading directivity characteristics
- Extremely high sensitivity, therefore high SPL’s can be achieved with a very modest amount of amplifier power
- Exceptional transient response

Applications

- Large Houses of Worship
- Large Corporate AV applications
- Stadiums & other Sports facilities
- Dance Clubs
- Live sound – concert halls, theatres, open-air venues

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VQNET 40DF

TECHNICAL SPECIFICATIONS

System	VQNET 40DF
System Type	2-Way Mid/High - Point Source
Frequency Response (-3dB) (1)	400Hz - 23kHz
Frequency Range (-10dB) (1)	350Hz - 27kHz
Dispersion (-6dB)	40 degrees conical
Driver Complement	Dual Concentric™ Compression driver loaded into a single PSW™ Waveguide
Crossover	7kHz (DSP generated) Recommended HighPass Filter @ 450Hz (DSP generated)
Directivity Factor (Q)	28.2 averaged 1kHz to 10kHz
Directivity Index (DI)	14.5 averaged 1kHz to 10kHz
Rated Maximum SPL (2)	139dB (average) 145dB (peak)

Distortion		
110dBSPL	2nd Harmonic	3rd Harmonic
500Hz	0.423	0.423
2kHz	0.821	0.021
5kHz	1.344	0.067
115dBSPL		
500Hz	2.468	0.710
2kHz	1.458	0.041
5kHz	2.379	0.171
120dBSPL		
500Hz	4.893	1.109
2kHz	2.534	0.094
5kHz	4.216	0.616
125dBSPL		
500Hz	8.998	3.067
2kHz	4.208	0.350
5kHz	8.206	2.182

Electronics

Efficiency	>85% typically
Damping Factor	120 ref 8 Ohms
Distortion	<0.05% @ 1kHz -3dB output (22kHz bandwidth)
Input Impedance	5.6 kOhms unbalanced, 11.2 kOhms balanced
Output Power (Programme)	400W MF, 200W HF (limited to)
Input Sensitivity	1.4V (+5.5dBu)
System Type	Dual channel Class D

DSP System

Comms Facilities	Firmware updatable and selected parameters editable
Communications	Serial - RS485 Proprietary message format
Dynamic Range	112dB(A) typical
DSP	3rd generation SHARC
Sampling Frequency	96kHz 24 bit A/D-D/A word length
Format	1 IN - 2 OUT

PSU Specifications

Input Connector	Locking Neutrik Powercon	
Voltage Selection	Automatic (115 / 230V, 45 - 65Hz)	
Type	High current, high frequency switch mode	
Efficiency	>90% typical	
Input voltage	100V / 115V / 230V nominal +/-10%	
Mains fuse	External	
Fuse type	T10AT	
Other features	Automatic soft start	
Current Draw	115V	230V
Startup (inrush)	3.5A	1.9A
idle	1.0A	0.56A
Max	3.5A	1.7A

Construction

Enclosure	18mm (0.71") birch plywood. Internally braced.
Grille	Powder coated perforated steel grille
Finish	Textured black or white paint (custom colours on request)
Connectors	1 x female XLR (input) 1 x male XLR (link) 1 x RJ45 (network in) 1x RJ45 (network link) 1 x Neutrik Powercon 1 x Neutrik Powercon (outlet)
Controls & Indicators	LED on front of cabinet behind grill. (wink indicator for locating & assigning) Power LED (Blue) Signal LED (Green) Limit LED (Red) User DSP - defeat switch Power Switch
Fittings	2 x Recessed carrying handles 11 x M10 flying inserts
Dimensions	500 mm x 694mm x 515mm (19.69" x 27.32" x 20.28")
Net Weight	32kg (70.4lbs)

Notes:
(1) Average over stated bandwidth. Measured at 3 metres on axis, then referred to 1 metre
(2) Unweighted pink noise input, measured at 3 metres in an anechoic chamber, then referred to 1 metre

A full range of measurements, performance data, CLF and Ease™ Data can be downloaded from www.tannoy.com

Full independent verification of published specifications carried out by NWAA Labs, California can also be obtained from the downloads section of www.tannoy.com

Tannoy operates a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed the published specifications, which Tannoy reserves the right to alter without prior notice. Please verify the latest specifications when dealing with critical applications.

Ordering Information

PART NUMBER	MODEL NAME	COLOUR	PACKED QUANTITY
8001 5800	VQNET 40DF	BLACK	1
8001 5801	VQNET 40DF	WHITE	1

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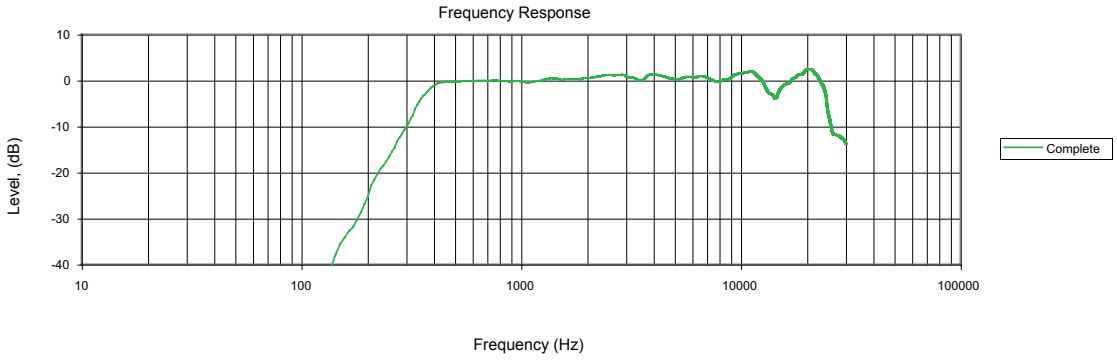
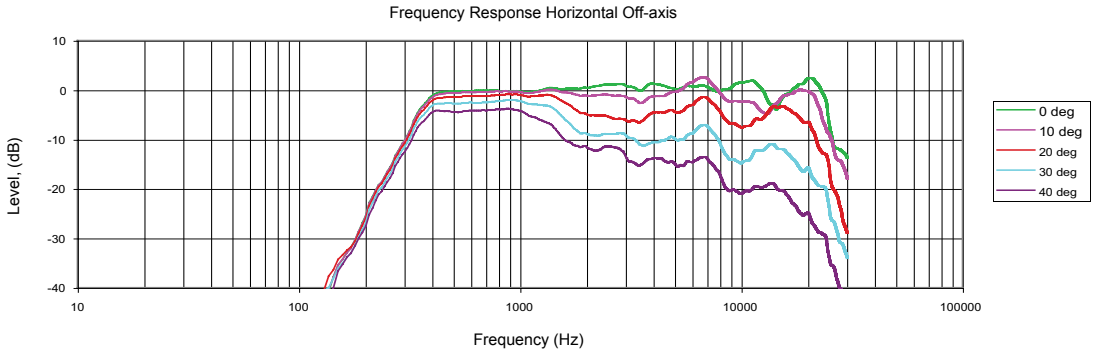
VQNET 40DF

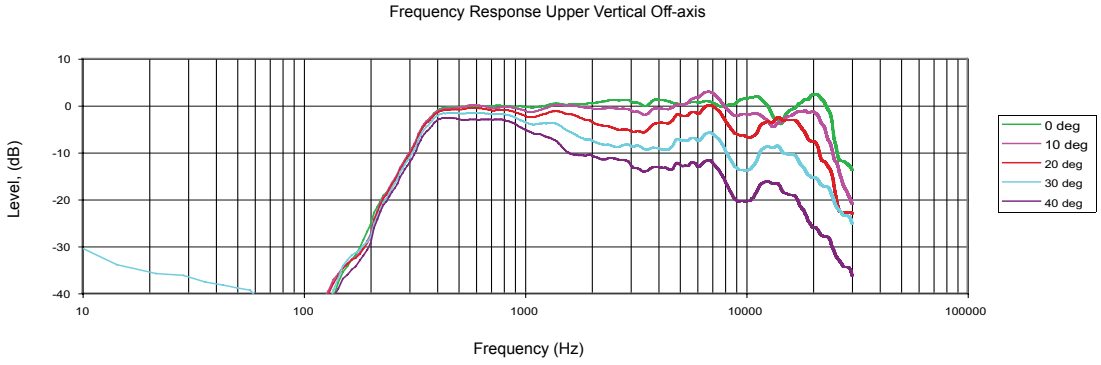
PERFORMANCE MEASUREMENTS



ANECHOIC FREQUENCY RESPONSE



HORIZONTAL OFF AXIS RESPONSE



UPPER VERTICAL OFF AXIS RESPONSE

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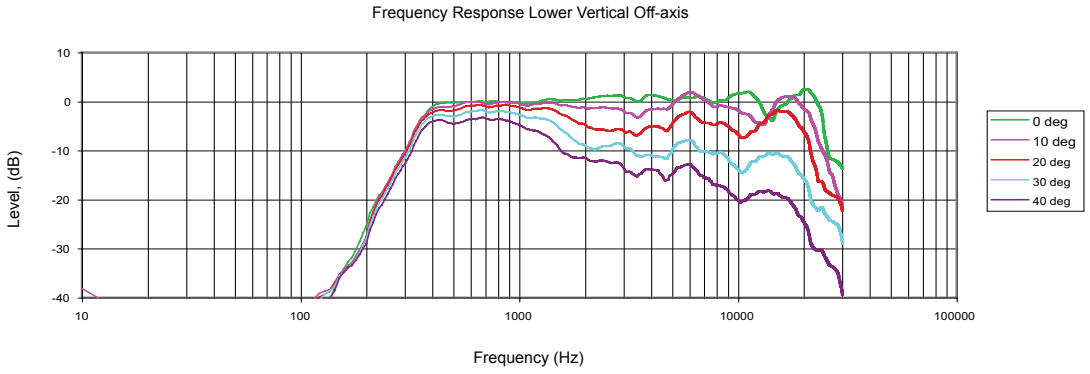
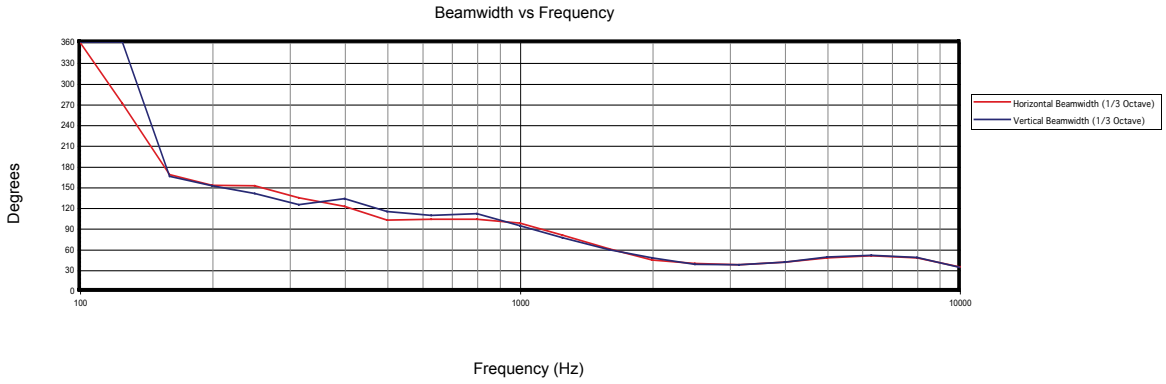
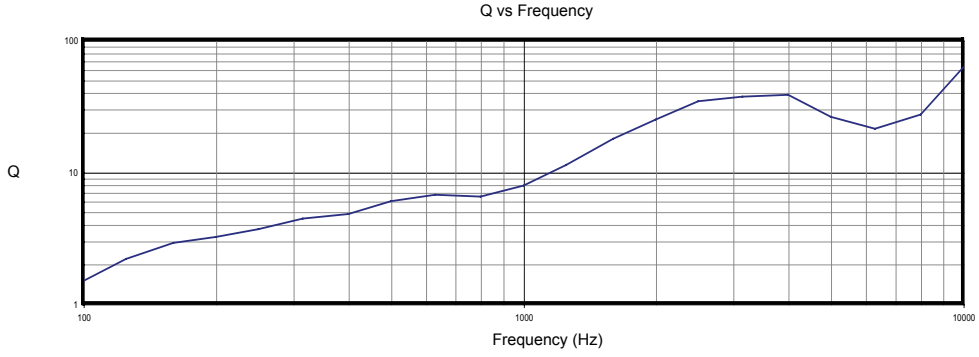


LOWER VERTICAL OFF AXIS RESPONSE



BEAMWIDTH



Q VS FREQUENCY

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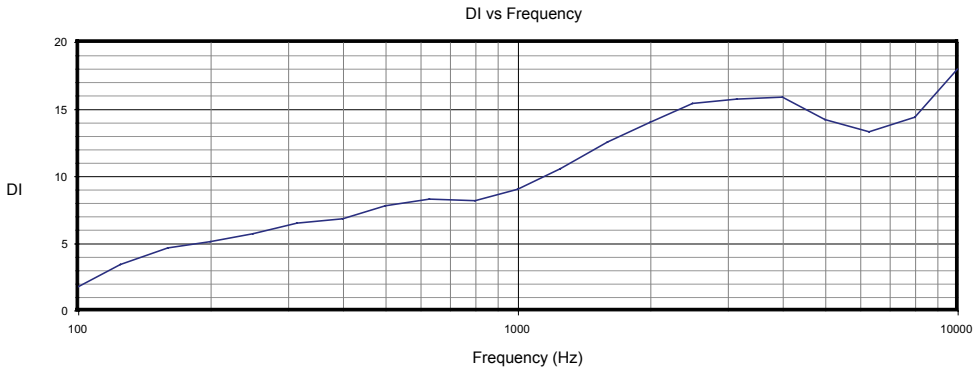

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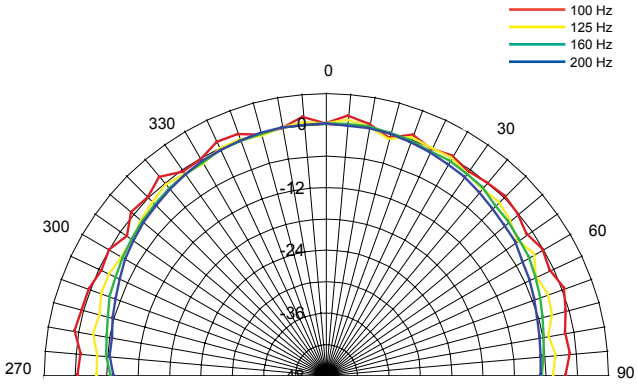
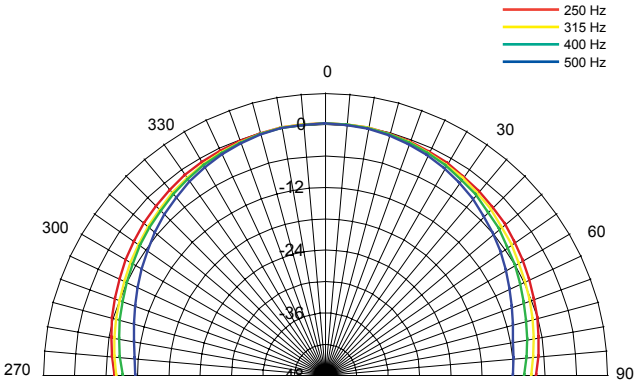
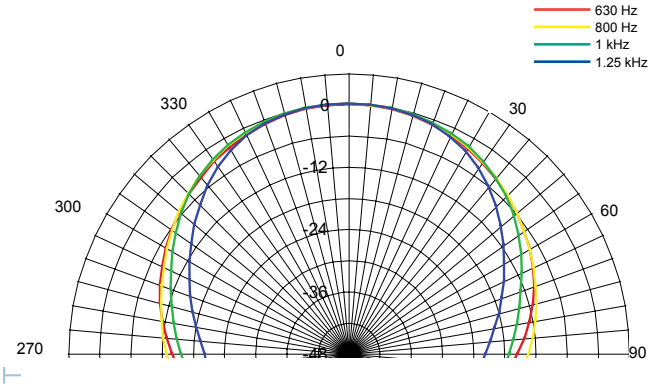
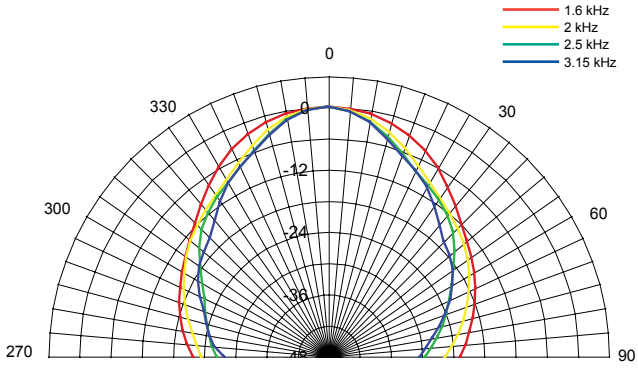
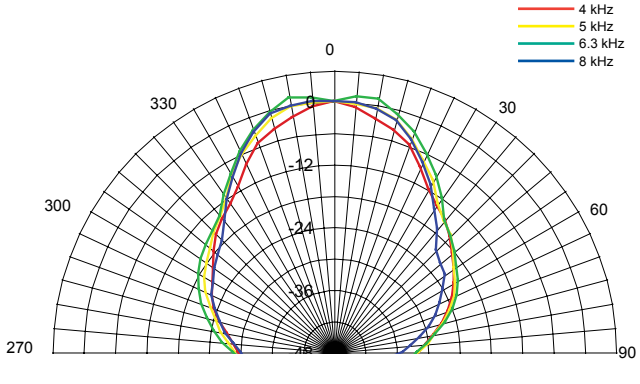
PERFORMANCE MEASUREMENTS POLAR PLOTS (1/3 OCTAVE)

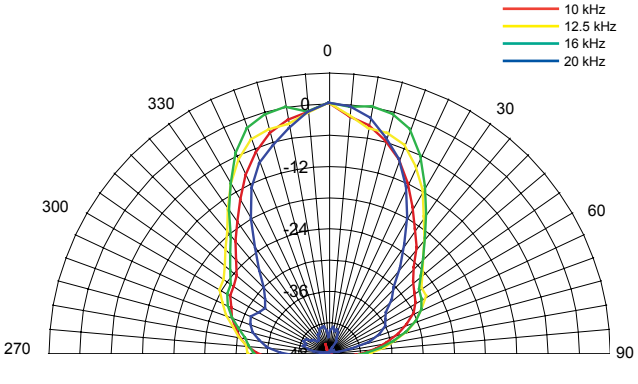












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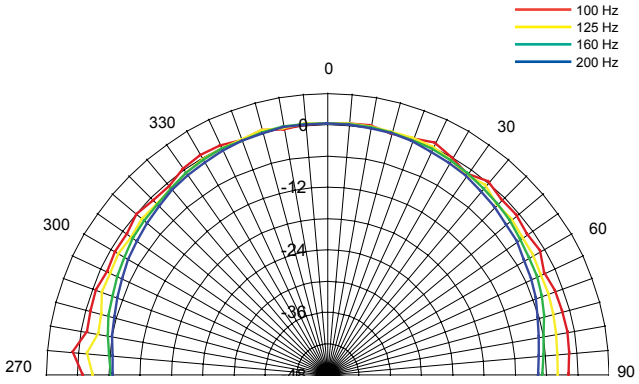

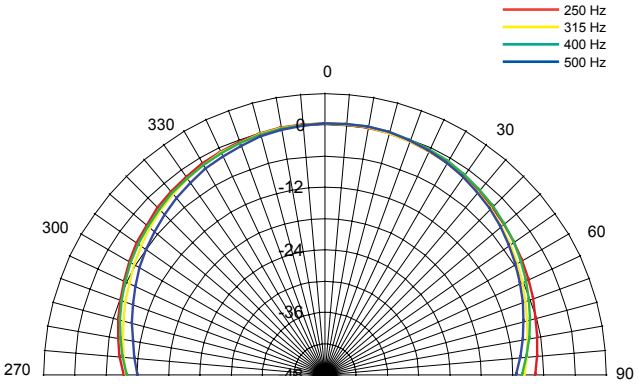

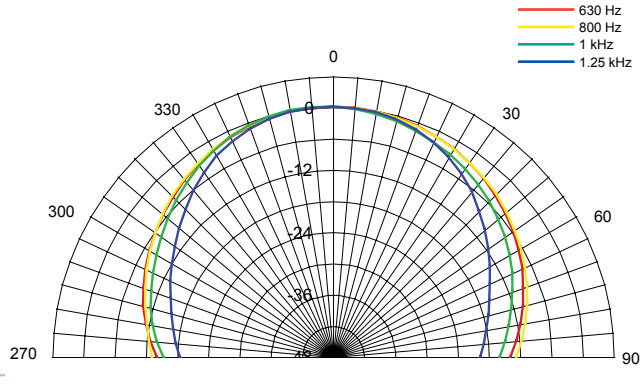

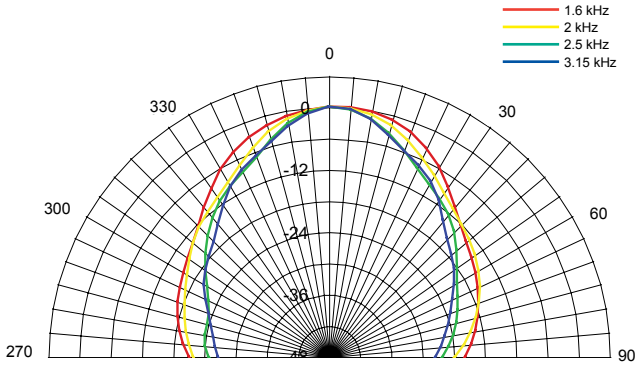

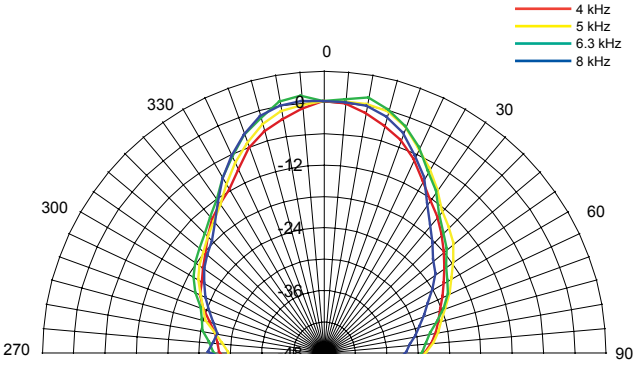

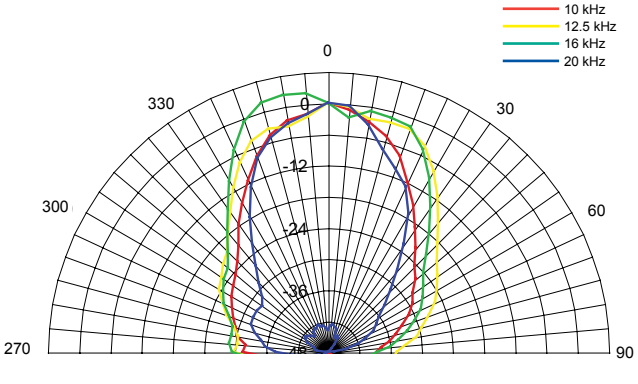

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VQNET 40DF

VNET SOFTWARE

VNET™ SOFTWARE_

The loudspeakers are fully calibrated at the factory, avoiding the need to in put the correct speaker management settings or dynamics at the point of install. This frees the installer to concentrate instead on room measurement and system optimisation. System commissioning and ongoing venue network control, incorporating real time diagnostics of electronics and drive unit, are all managed by the exclusive VNET™ software package. Supplied with each unit, this intuitive Windows tool controls all of the critical install, commissioning and performance monitoring functions. A standard wireless LAN-to-serial bridge can be used to communicate with the network, allowing the commissioning engineer to sit in the auditorium communicating from a laptop on 802.11b

MONITORING & TELEMETRY FUNCTIONS_

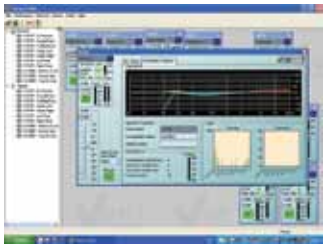
During normal operation the speakers on the network will appear as minimised panels in the form of a status monitor icon (Monicon) on the computer screen. These are laid out to reflect the physical layout of the speakers within the venue so that the user can monitor system status and component condition at a glance. The minimised panels can be expanded to reveal highly detailed information in real time:

- Input clip indicator
- Two output limiter bar graph meter
- Heat sink temperature bar graph meter
- Amplifier clip indicators (HF & LF on full range units)
- Transducer Failure Indicators (HF & LF on full range units)
- Amplifier protect status indicator

VNET™ Software Features

The on-screen control panel for each device in the network has a properties tab consisting of the following:

- Model Name is factory set with product model name
- Network Handle (read only) is a numerical value set at the time of manufacture to uniquely identify the device on the network
- Device Name is the specific user defined name, such as ‘Stage.Left’ or ‘Delay 1’
- Firmware Version (read only) is a numerical value of firmware version running in the device
- Configuration Name is the 12 character name the user can define to describe the current settings (such as ‘Live Mode’)
- Current ‘Voice’ profile indication (read only) is a numerical value indicating the current speaker ‘voicing’ profile (the factory set equalization, crossover, & dynamics functions)
- Software file loader in VNET™ allows a future modification to the software to be uploaded, such as a ‘voicing’ change or revised control software with new features
- Record of any temperature or current shutdowns
- Record of the number of power cycles
- Rolling four day bar graphs recording amplifier temperature and any dynamics applied



Signal Processing

- Gain Section: input gain fader with edit box (-30 to +15dB in 0.2dB steps)
- Input Mute: On, Off
- High-Pass Filter section: frequency spin / edit box and shape drop-down box
- Low-Pass Filter Section: frequency spin / edit box and shape drop-down box
- Equaliser Section: high resolution input EQ curve display
- Low Shelf Band: frequency spin / edit box, slope spin / edit box and boost-cut / edit box
- High Shelf Band: frequency spin / edit box, slope spin / edit box and boost-cut / edit box
- Parametric EQ Bands (x 8): frequency spin / edit box, slope spin / edit box and boost-cut / edit box
- Delay Section: delay spin / edit box (up to 180ms)

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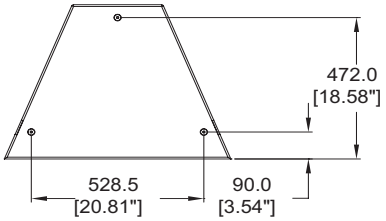
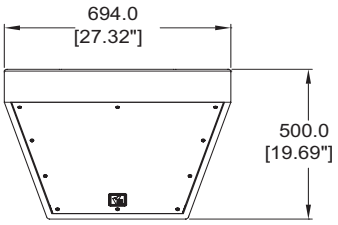
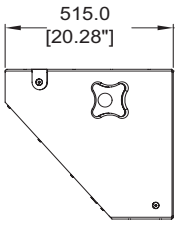
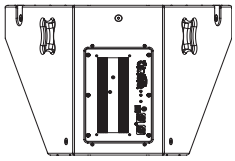
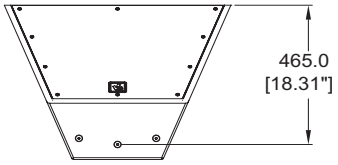
DIMENSIONAL SKETCHES

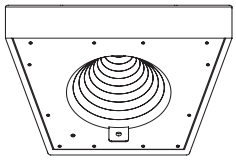


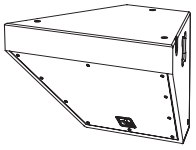




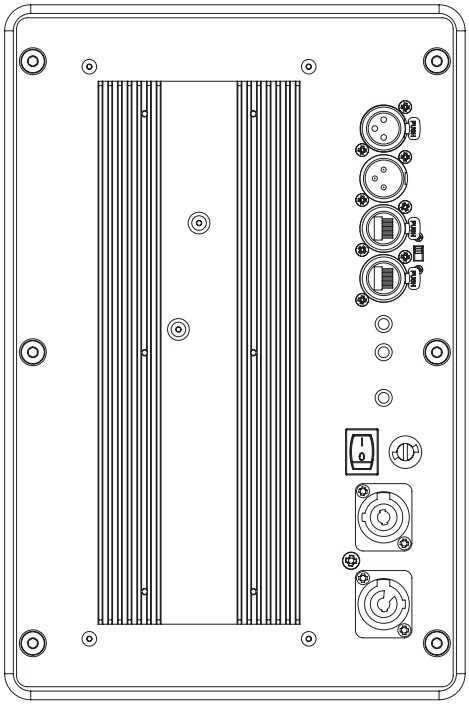








INPUT PANEL



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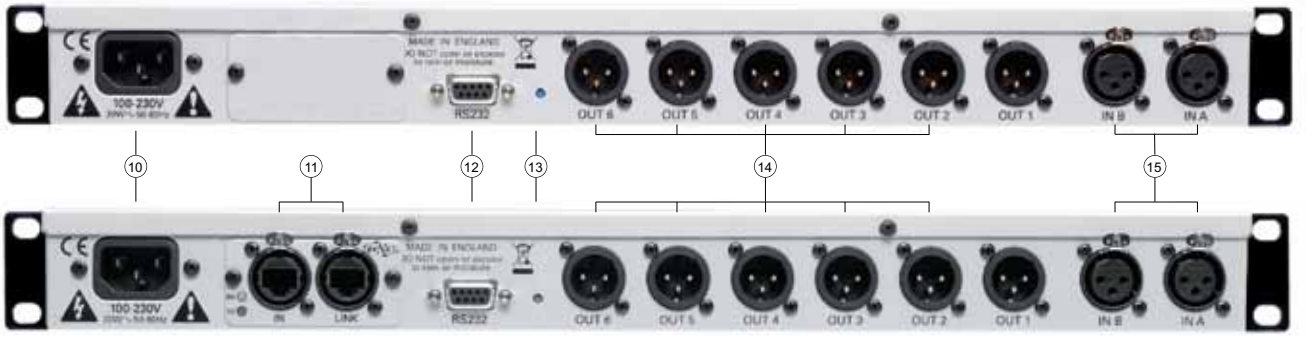
VQNET 40DF

VNET SC1 CONTROLLER

VNET SC1 Controller



VNET SC1 Controller (network enabled)

(1) **INPUT SIGNAL INDICATORS**
A set of three pairs of LEDs indicate signal present, +4dBu and input clip for each channel.

(2) **STORE BUTTON**
The unit has 45 preset locations.

(3) **RECALL BUTTON**
To recall a preset, press the recall button and use parameter knob A to select the required preset.

(4) **CHANNEL SELECT BUTTONS**
The currently selected input or output channel is shown in the top left corner of the display. Pressing the channel select buttons scrolls through the available inputs and outputs.

(5) **EDIT PARAMETER SELECT BUTTON**
The name of the edit parameter page is displayed in the bottom left portion of the LCD.

(6) **DISPLAY SCREEN**
Preset, channel, parameter and status information is shown on the 2x 24-character text display. In most screens the currently selected channel is displayed being the upper line and the edit parameter on the lower line.

(7) **PARAMETER EDIT ENCODERS**
Three velocity sensitive parameter knobs are used to adjust parameters shown on the display. Up to three parameters at a time are displayed on the screen.

(8) **LIMITER INDICATOR**
Two LEDs are provided for each output channel.

(9) **MUTE BUTTONS**
Each output has a mute button and associated mute status LED.

(10) **POWER INLET**
The processor has a switch mode power supply that is capable of operating with a nominal mains voltage of 85V to 240V, 50/60Hz withoutre-configuration.

(11) **VNET™ NETWORK PORTS**
The network enabled VNET SC1 controller features two network ports for connection to any VNET™ system.

(12) **COMMUNICATIONS PORT CONNECTOR**
Tannoy VNET SC1 processors may be controlled entirely from a PC running Vnet™ software using this RS232 serial port connector. This port is also used for updating the firmware in the unit.

(13) **SECURE MODE SWITCH**
A momentary button is fitted behind the rear panel, between the output XLRs and the RS232 port. When activated, this will disable all the front panel controls so they cannot affect the signal path, making the unit secure against tampering.

(14) **AUDIO OUTPUT CONNECTORS**
The processed outputs are impedance balanced.

(15) **AUDIO INPUT CONNECTORS**
All audio connections are fully balanced.

Tannoy United Kingdom | T: 00 44 (0) 1236 420199 | E: enquiries@tannoy.com
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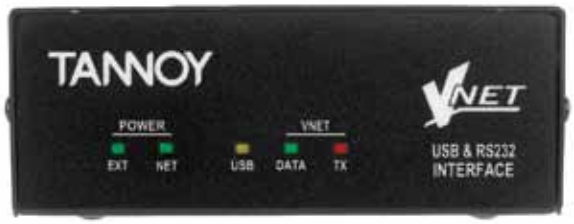
VQNET 40DF

VNET SC1 CONTROLLER

OPTIONAL VNET™ USB AND RS232 INTERFACE

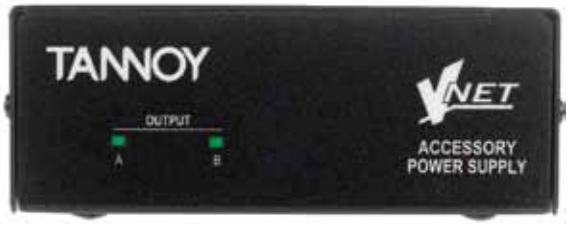
The rack-mountable VNET™ interface allows for communication between a VNET™ network and computer.

If communicating with a non-networked SC1 direct communication via the PC & SC1 can be made with a standard serial lead, or USB-RS232 cable.



OPTIONAL VNET™ ACCESSORY POWER SUPPLY

The PSU is only required when communication with a VNET™ network is by RS232.



OPTIONAL RACK MOUNT KIT

This 1U bracket allows you to rack mount up to three VNET™ interface accessories in a standard 19” equipment rack.

Ordering Information

PART NUMBER	MODEL NAME	COLOUR	PACKED QUANTITY
8001 4450	VNET™ USB / RS 232 Interface	BLACK	1
8001 4460	VNET™ Power Supply Interface	BLACK	1
8001 4470	VNET™ Interface 1U rack mount kit	BLACK	1

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VQNET 40DF

Architectural specifications

The loudspeaker shall consist of a Dual Concentric™ Compression driver with a 3.5” Midrange voice coil and a 2” High Frequency voice coil, both mounted in a common subsystem with a common 2” exit. This Dual Concentric™ compression driver shall be coupled to a PSW™ (Point Source Waveguide) constant directivity horn operating over the frequency range of 400Hz to 23kHz. The Mid/High frequency elements shall be driven by an integrated dual channel Class D amplifier through a DSP generated crossover. The loudspeaker shall have user configurable DSP functionality.

A variable high pass filter shall be provided for use with subwoofers.

The loudspeaker shall be trapezoidal in shape.

Performance of the loudspeaker shall meet or exceed the following criteria:
The Mid/High section shall be capable of producing a peak output of 141dB SPL on axis at 1 meter.

The dispersion of the loudspeaker shall be 40 degrees conical (-6dB). The enclosure shall be of birch plywood construction and internally braced. The enclosure shall be fitted with two integral carrying handles, and eleven M10 inserts for flying hardware. The enclosure shall not exceed the following dimensions (H x W x D): 500 mm x 694mm x 515mm (19.69” x 27.32” x 20.5”)

The loudspeaker shall be the Tannoy... VQNET 40DF.

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