

# Accuphase

DIGITAL FREQUENCY DIVIDING NETWORK

## DF-75

- High-speed, high-precision DSP realizes fully digital signal processing in channel divider units
- Standard configuration allows 4-channel (4-way) system setup
- Impressive 3101 point cutoff frequency points
- Steep 96 dB/oct attenuation slope
- Delay function to adjust delay time settings between different speaker units
- Delay compensator automatically corrects delays in filter signals
- A/D converter driving 4 parallel circuits using ANCC
- MDS+ D/A converter driving 4 parallel circuits using ANCC
- Selectable monophonic output mode for enhanced specifications





# Multi-channel divider that achieves full digital signal processing

The DF-75 Digital Frequency Dividing Network can support 4-way system setups. The high-speed 64-bit floating point DSP allows for optimal filtering. Cutoff frequency points have been expanded dramatically from 59 to 3101, accommodating a variety of performance demands. The network also achieves a steep 96 dB/octave attenuation slope. Beyond that, the time delay function allows for time alignment in 0.5-cm steps while a delay compensator automatically corrects signal delays in the filter circuits. Each divider unit can also be configured in a monophonic setting.

## Innovative Technology

### High-speed, high-precision DSP implements fully digital signal processing

This digital channel dividing network is designed to serve as the core component in a multi-amped system. The digital filter uses a 64-bit floating-point DSP capable of high-speed calculations thanks to a 52-bit mantissa and 12-bit exponent section. With its highly precise calculations, the floating-point DSP dramatically improves the dynamic range, allowing very steep cutoff slope settings of 48 dB or 96 dB per octave. Phase switching, delay, and level control are all performed in the digital domain ensuring high dimensionality of the source characteristics. The result is ultra-precise filtering performance free from adverse effects caused by temperature changes or aging.



High-speed, high-precision DSP

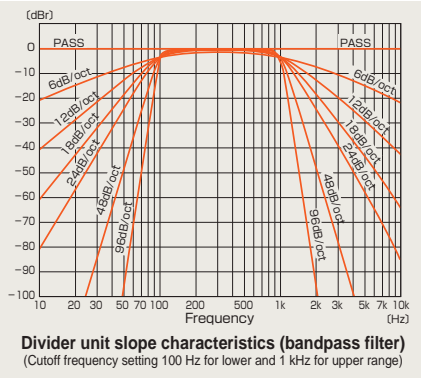
### 3101 selectable filter cutoff frequency points

The conventional 59 cutoff frequency points have been greatly expanded to 3101 points, allowing for radically more choices when selecting cutoff frequencies.

Cutoff frequencies (Hz)	Frequency steps (Hz)	
	Rotation of VALUE knob without pressing it	Rotation and pressing of VALUE knob
10.0, 10.1, ..., 99.9	0.1	10
100, 101, ..., 999	1	100
1000, 1010, ..., 9990	10	1000
10.0k, 10.1k, ..., 50.0k	0.1k	3k

### Six filter slope characteristics with up to 96 dB attenuation per octave

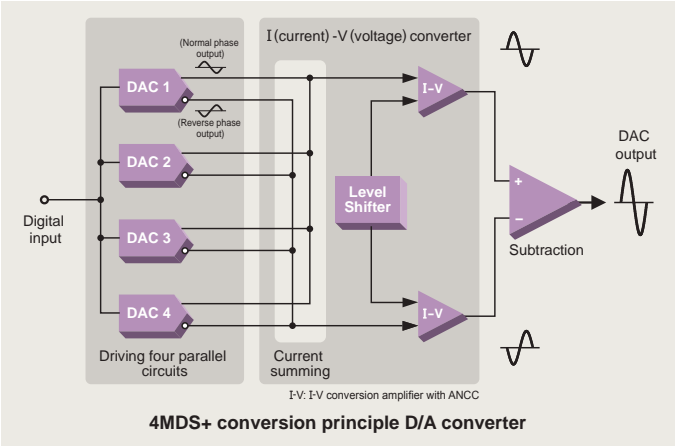
The DF-75 has six filter slope characteristics (6 dB, 12 dB, 18 dB, 24 dB, 48 dB, and 96 dB per octave). The 96 dB/octave setting in particular minimizes sound interruption in adjacent bands, allowing for the creation of a multi-amped system that analog channel dividers cannot achieve.



## Impeccable Sound Quality

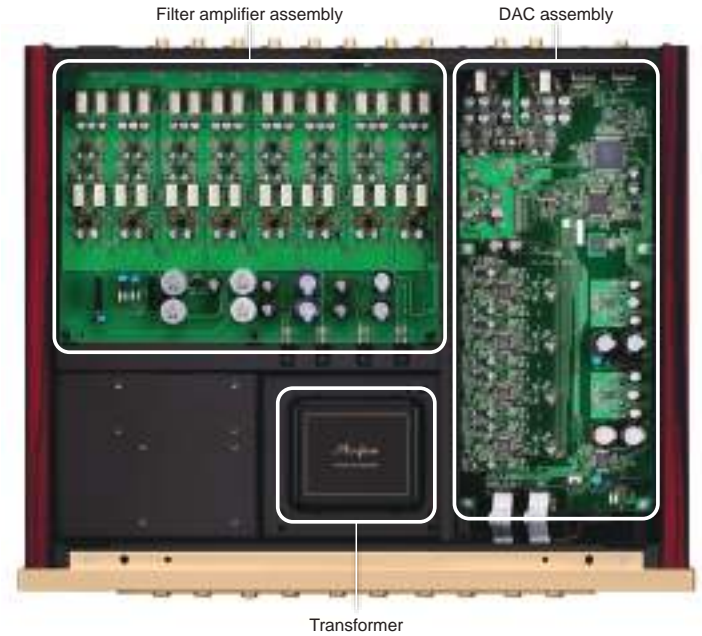
### MDS+ (Multiple Delta Sigma) converter with four parallel circuits

The MDS+ conversion principle drives  $\Delta\Sigma$  (Delta Sigma) type D/A converters in parallel to achieve a D/A converter with drastically improved performance. In the DF-75, four Hyperstream™ DAC chips (ES9028PRO made by ESS Technology) are driven in parallel to improve the theoretical performance specifications like distortion, noise characteristics, and linearity by a factor of 2 ( $= \sqrt{4}$ ). Additionally, the I-V converter circuits rely on Accuphase's original low-noise, low-distortion ANCC\* circuits. Performance improvements from the MDS+ conversion principle operate independently of signal frequency and level, allowing for reduction of ultra-low level noise that conventional Delta Sigma D/A converters struggle to remove.



### 32-bit A/D converter driving 4 parallel circuits

The A/D converter incorporates the AK5578EN circuit from Asahi Kasei Microdevices. Combining this A/D converter with ANCC to drive four parallel circuits allows for low noise and ultra-low distortion.



\*: ANCC is a unique Accuphase technology that improves performance by using a secondary amplifier to cancel out noise and distortion from the main amplifier.



## Divider units

**① Low-range cutoff frequency**  
PASS, 10 to 50,000 Hz

**③ Low/range slope**  
6, 12, 18, 24, 48, 96 dB/oct

**⑤ Output level**  
-40.0 dB to +12.0 dB

**⑦ Delay compensator**  
ON/OFF  
(See next page)

**⑨ Output**  
ON/OFF

**⑪ Unit display selector**  
Register characters /  
Input characters

Parameter display

Function selector  
(functions ① to ⑪)

**② High-range cutoff frequency**  
10 to 50,000 Hz, PASS

**④ High-range slope**  
6, 12, 18, 24, 48, 96 dB/oct

**⑥ Delay time (converted into distance)**  
-3,000 cm to +3,000 cm  
(See next page)

**⑧ Phase selector (L/R)**  
NOR/NOR    REV/REV  
NOR/REV    REV/NOR

**⑩ Output mode selector**  
STEREO  
MONO L+R  
MONO L  
MONO R

Parameter selector  
for each function

## Center unit

**12 Input display**  
Input can be set to BALANCED, LINE, HS-LINK, COAXIAL, or OPTICAL.

**13 Memory number display**  
Stores up to five settings for the dividing network.

**14 Input selector**

**15 Memory number selector**



Aluminum top plate with hairline finish



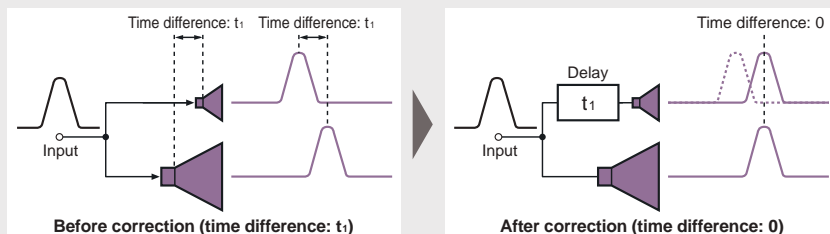
Side panels with natural wood grain finish



High carbon cast iron insulator feet

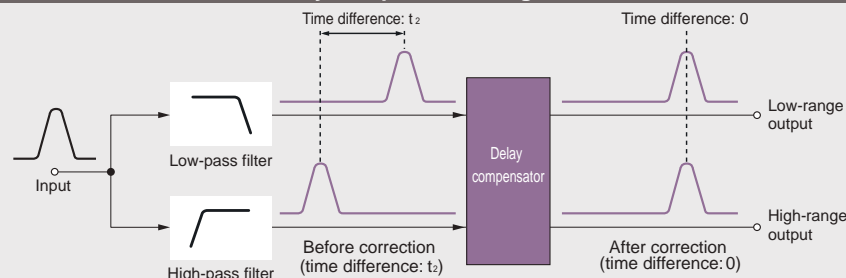


## Delay correction diagram



The delay correction from the delay manually corrects the time delay caused by the installation location of the speaker units.

## Delay compensator diagram



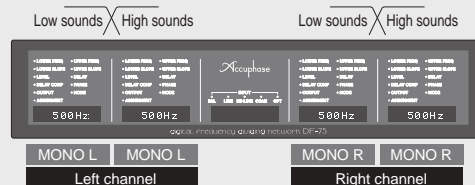
The delay compensator automatically corrects any time delays in the filtered signals.

## Monophonic mode

Setting the divider unit to monophonic mode will improve performance by having the D/A converter drive the channels in parallel.

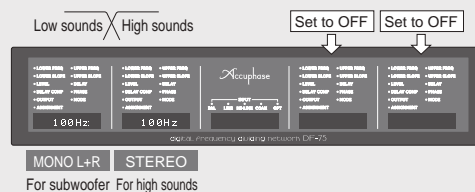
### 12-Way system

Use two units for MONO L and two units for MONO R.

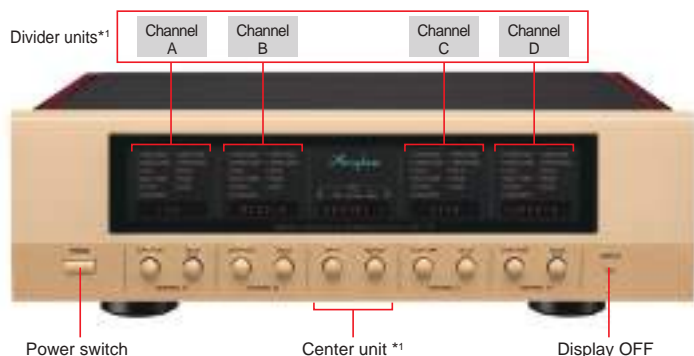


### 2-Subwoofer (3D) system

Set the unit using the subwoofer to MONO L+R.

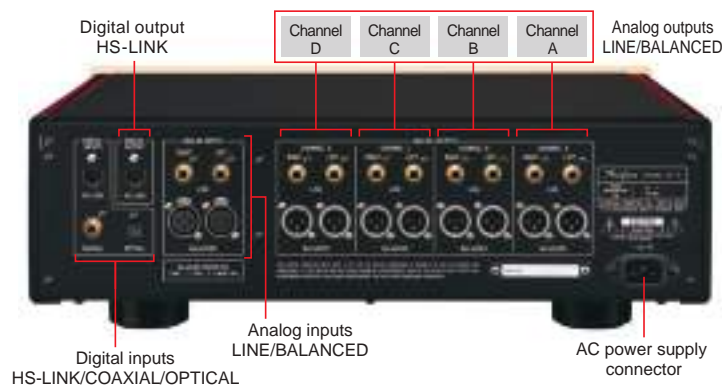


## Front Panel



\*1: See the previous page for explanations of the features of the display units and center unit.

## Rear Panel



## DF-75 Guaranteed Specifications

Digital Inputs	HS-LINK	Format		Accuphase original standard
		Compatible cable		HS-LINK dedicated cable
		Sampling frequencies	Ver.1	32 kHz to 192 kHz (16 to 24 bits, PCM)
			Ver.2	32 kHz to 384 kHz (16 to 32 bits, PCM)
Analog Inputs	COAXIAL	Format		IEC 60958/AES3 compliant
		Compatible cable		75-ohm coaxial digital cable
		Sampling frequencies		32 kHz to 192 kHz (16 to 24 bits, PCM)
		Format		JEITA CP-1212 compliant
Analog Outputs	OPTICAL	Compatible cable		JEITA standard fiber optic cable
		Sampling frequencies		32 kHz to 96 kHz (16 to 24 bits, PCM)
		Maximum input level		BALANCED/LINE 3.7V/3.7V
		Input impedance		BALANCED/LINE 40 kilohms/20 kilohms
Digital Output	HS-LINK	Format		Accuphase original standard
		Compatible cable		HS-LINK dedicated cable
		Sampling frequencies	Ver.1	32 kHz to 192 kHz (16 to 24 bits, PCM)
			Ver.2	32 kHz to 384 kHz (16 to 32 bits, PCM)
Analog Outputs	D/A converter	Output voltage/		BALANCED 2.5 V/50 ohms
		Output impedance		LINE 2.5 V/50 ohms
		STEREO/MONO		4MDS+ principle/8 MDS+ principle

Frequency Response	2 to 50,000 Hz (+0, -3 dB)	
	THD + Noise 0.0006% (20 to 20,000 Hz)	
S/N Ratio	HS-LINK/COAXIAL/OPTICAL	STEREO: 121 dB, MONO: 123 dB
	BALANCED/LINE	STEREO: 117 dB, MONO: 118 dB
Dynamic Range	119 dB	
Channel Separation	110 dB (20 to 20,000 Hz)	
	10.0, 10.1, ..., 99.9	0.1
	100, 101, ..., 999	1
	1000, 1010, ..., 9990	10
Cutoff Frequency (Hz)/ Frequency Step (Hz)	10.0k, 10.1k, ..., 50.0k	0.1k
	Slope Characteristics (dB/octave) 6, 12, 18, 24, 48 <sup>*2</sup> , 96 <sup>*3</sup>	
Delay (Independent settings for left/right possible)	-3,000 to +3,000 cm (converted into distance, 0.5 cm steps)	
Level Adjustment Range (Independent settings for left/right possible)	Analog ATT OFF	-40 dB to +12.0 dB (0.1 dB steps)
	Analog ATT ON	-50 dB to +2.0 dB (0.1 dB steps)
Power Requirements	120/220/230 V AC (voltage as indicated on rear panel), 50/60 Hz	
Power Consumption	33 watts	
Maximum Dimensions	(WxHxD) 465 mm (18.31") x 151 mm (5.95") x 396 mm (15.59")	
Mass	Net	15.1 kg (33.3 lbs)
	In shipping carton	21 kg (47 lbs)

\*2: Cutoff frequencies cannot be set between 10.0 Hz and 19.9 Hz.

\*3: Cutoff frequencies cannot be set between 10.0 Hz and 31.4 Hz.

### Supplied accessories

- AC power cord (2 m (6.5'))
- Cleaning cloth

### Remarks

- ★ This product is available in versions for 120/220/230 V AC. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.
- ★ The 230 V version has an Eco Mode that switches power off after 120 minutes of inactivity.
- ★ The shape of the plug of the supplied AC power cord depends on the voltage rating and destination country.



ACCUPHASE LABORATORY, INC.