



DME-2181

DeltaMax™ Low-Frequency, Electronically Controlled Sound-Reinforcement Speaker System

- Dual 18-inch enclosure
- EVX-180A woofer with almost 3-dB additional LF output capability/reduced distortion
- 1,200-watt long-term power handling
- 36- to 100-Hz operating range
- Alternative new grille design
- Frontal dimensions equal to DME-1183/64

Description

The Electro-Voice DME-2181 subwoofer loudspeaker system is part of the DeltaMax™ series and is intended for high-level sound reinforcement for fixed-installation and touring-sound applications. The DME-2181 is a double 457 mm (18-inch) loudspeaker system designed to be used with the Dx34A digital crossover system. This unit all provides frequency division, time delay and equalization, and is appropriate for use with these subwoofers in connection with other full-range DeltaMax™ series products.

The DME-2181 is a vented-box design that utilizes two EVX-180A subwoofers. The EVX-180A subwoofer features a 101.6 mm (4-inch) voice coil and an extremely high X_{MAX} (maximum linear excursion) for very-high sound-pressure levels at very low frequencies.

The DME-2181 enclosure is constructed of 18-mm 13-ply birch plywood and is available in a black carpet finish. The system is a compact rectangular shape and includes a unique, protective, powder coated steel grille.

Applications

The DME-2181 loudspeaker system is an

ideal choice for any professional installation or touring application where accurate low-frequency sound reproduction at high sound-pressure levels is required. In combination with the DeltaMax™ electronic control units, the system will produce maximum fidelity, extended bandwidth, and reliability. The DME-2181 and its controllers offer subwoofer applications where high acoustic power is required from 36 Hz to 100 Hz. The DME-2181 is designed specifically to be used in conjunction with the full-range DeltaMax™ systems (DME-1152/64 and DME-1183/64).

Power Handling Test

Electro-Voice components and systems are manufactured to exacting standards to ensure reliability in continuous use in arduous real-life conditions. Besides utilizing industry-standard power tests, extreme in-house power tests which push the performance boundaries of the loudspeakers are also performed for an extra measure of reliability. The DME-2181 systems are rated per ANSI/EIA RS-426-A Loudspeaker Power Rating, Full Range Test, which uses a shaped-random-noise signal to simulate typical music to test the mechanical and thermal capabilities of the loudspeakers. Specifically, the

DME-2181 passes the ANSI/EIA RS-426-A power test with the following test parameters:

$P_{E(MAX)}$:	1,200 watts
Test Voltages:	58.7 volts rms
	117.4 volts peak
$R_{SR}(1.15 R_E)$:	2.88 ohms

Crossover, Equalization and Time Delay Controller

The Electro-Voice Dx34A electronic crossover system will provide optimal performance with the DME-2181 speaker system.

Electrical Connection and System Wiring

Electrical connections to the DME-2181 are made on the back of the enclosure via a 4-pin connector. There are two connectors on the input panel to allow paralleling of other DME-2181 systems. The Neutrik Speakon® NL4MPR is used for both connections. The pin assignments are as follows:

- Pin 1+: LF1(+)
- Pin 1-: LF1(-)
- Pin 2+: LF2(+)
- Pin 2-: LF2(-)

The wiring diagram of the loudspeaker system is shown in Figure 7. The electrical impedance is shown in Figure 6.

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Amplifier Requirements

The DME-2181 contains two woofers which are separately accessed via the 4-pin input connector. There are two ways the drivers may be wired:

1. Each driver may be connected to its own separate amplifier channel. The recommended power rating is 600-1,200 watts per channel into 8 ohms. The amplifier channels must be identical, having the same voltage gain and power rating.
2. The two drivers may be paralleled to one amplifier channel. The speakers should be paralleled at the amplifier, not at the cabinet. The recommended power rating is 1,200-2,400 watts into 4 ohms.

DME-2181 speakers may be paralleled only with other DME-2181 speakers if the amplifier is capable of delivering full power at the lower impedances. The use of amplifiers with lower power ratings is acceptable; however, the full-power capabilities of the DME speakers will not be realized. The use of amplifiers with significantly higher power ratings will generate maximum dynamic range and fidelity, but care must be utilized for longer duration signals, as mechanical and thermal damage are possible in the system. See owner's manuals on various controllers for appropriate settings.

Field Replacement

The DME-2181 was designed for expedient field service. Removing the woofer bolts allows the woofer to be easily removed. A woofer failure will require replacement of the entire driver.

The following replacement parts are available from the EVI Audio Service in Straubing, Germany:

LF: Complete woofer: EV Part No. 818-2389.

Architects' and Engineers' Specifications

The loudspeaker system shall be a low-frequency system with performance controlled by the processors listed in this engineering data sheet. The loudspeaker system shall have two 18-inch low-frequency woofers. Each woofer shall have an 8-ohm, 4-inch-diameter voice coil constructed of aluminum

wire, and which shall be capable of handling a 600-watt shaped pink-noise signal with a 6-dB crest factor for eight hours (as per ANSI/EIA RS-426A). The loudspeaker system shall have a sensitivity of 99.5 dB (1 watt at 1 meter).

The loudspeaker system shall have an enclosure constructed of 18-mm, 13-ply birch plywood and shall have powder coated steel grille.

The loudspeaker dimensions shall be 919 mm (36.2 inches) high, by 577 mm (22.7 inches) wide and 764 mm (30.1 inches) deep and shall weigh 75 kg (165 lb).

The loudspeaker system shall be the Electro-Voice DME-2181.

Limited Warranty

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. **Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than EVI Audio Service or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to EVI Audio Service or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from EVI Audio Service at 600 Cecil

Street, Buchanan, MI 49107 (800/234-6831 or FAX 616/695-4743). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Speakers and Speaker Systems are guaranteed against malfunction due to defects in materials or workmanship for a period of five (5) years from the date of original purchase. The Limited Warranty does not apply to burned voice coils or malfunctions such as cone and/or coil damage resulting from improperly designed enclosures. Electro-Voice active electronics associated with the speaker systems are guaranteed for three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Electro-Voice Accessories are guaranteed against malfunction due to defects in materials or workmanship for a period of one (1) year from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Electro-Voice Flying Hardware (including enclosure-mounted hardware and rigging accessories) is guaranteed against malfunction due to defects in materials or workmanship for a period of one (1) year from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

For warranty repair or service information, contact the service repair department at: +49 9421 706350, Fax: +49 9421 706265.

For technical assistance, contact Technical Support at +49 9421 706350, Fax: +49 9421 706265.

Specifications subject to change without notice.

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Figure 1—Polar Response

The directional response of the system was measured in an anechoic environment at a distance of 6.7 m (22 feet) using 1/3-octave-filtered pink noise with a full spherical measurement system. The Dx34A digital electronic unit was used to provide the necessary crossover filters, equalization and time delay. The polar response of the loudspeaker system at selected 1/3-octave frequencies is shown. The selected frequencies are representative of the polar response of the system.

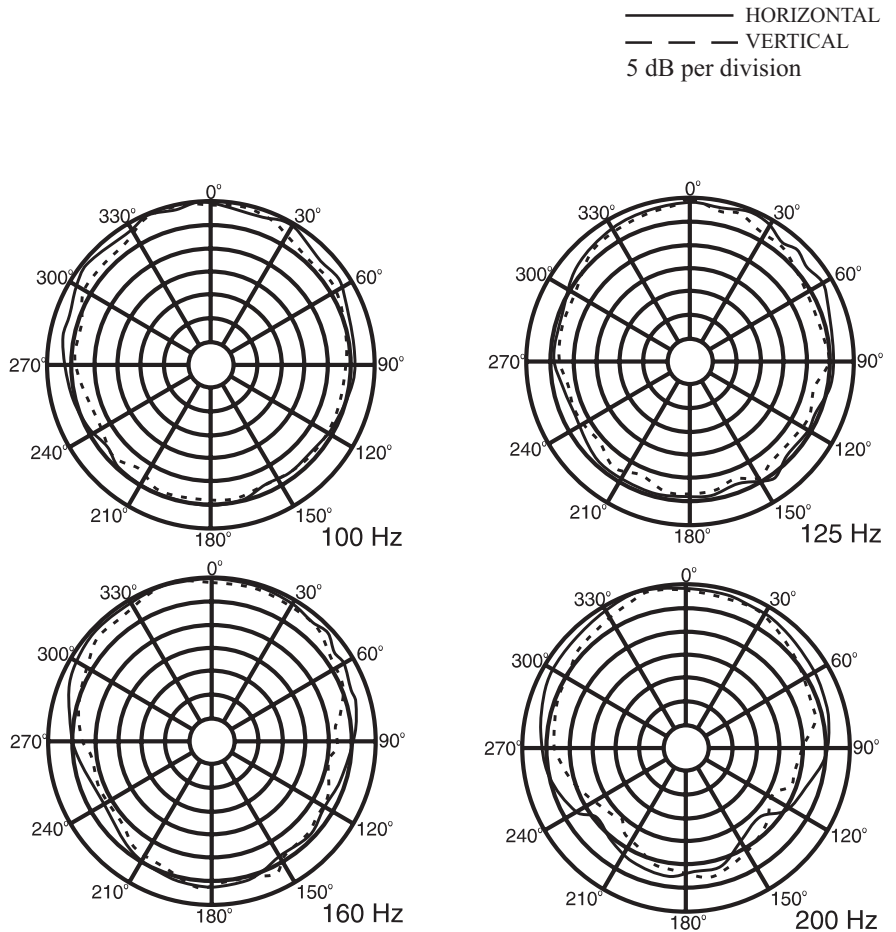
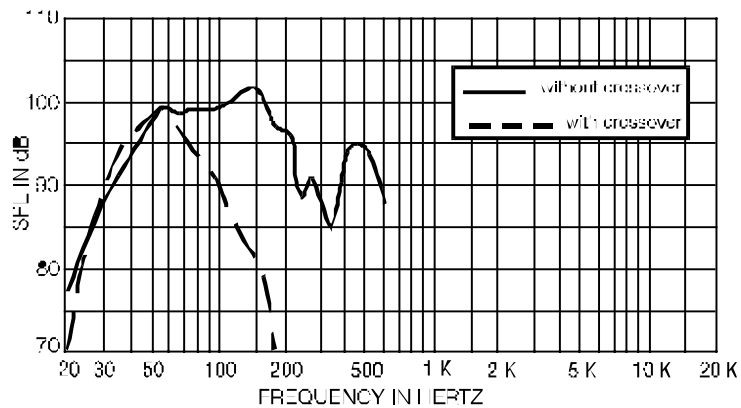


Figure 2—Frequency Response

The frequency response of the system was measured on axis in the farfield in an anechoic environment using a swept sine-wave signal. The Dx34A digital electronic unit was used to provide the necessary crossover filters, equalization and time delay. One watt of power (2.00 volts rms at 60 Hz) was applied to the midband of the low-frequency section. The sound-pressure level was normalized for an equivalent one-meter distance.



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Figure 3—Beamwidth

The beamwidth of the system, (i.e., the included horizontal and vertical coverage angles at the 6-dB-down point) was measured with a full spherical measurement system as described in "Polar Response."

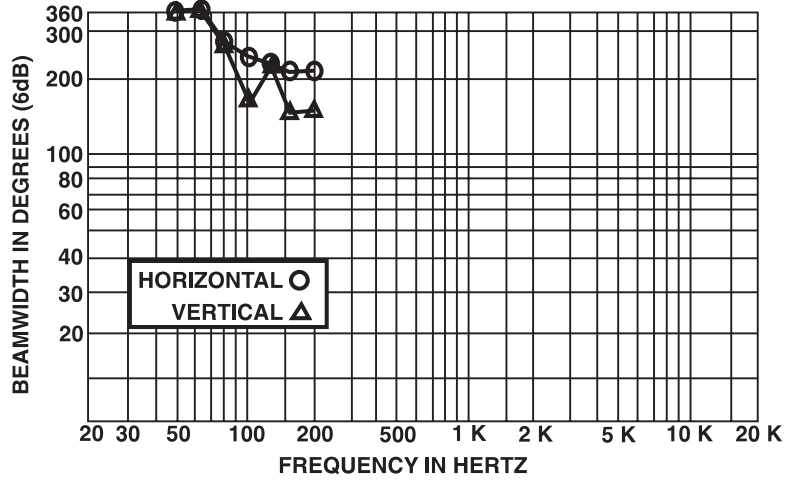


Figure 4—Directivity

The directivity index, D_i , and directivity factor, $R_0(Q)$, of the system were measured with a full spherical measurement system as described for the "Polar Response."

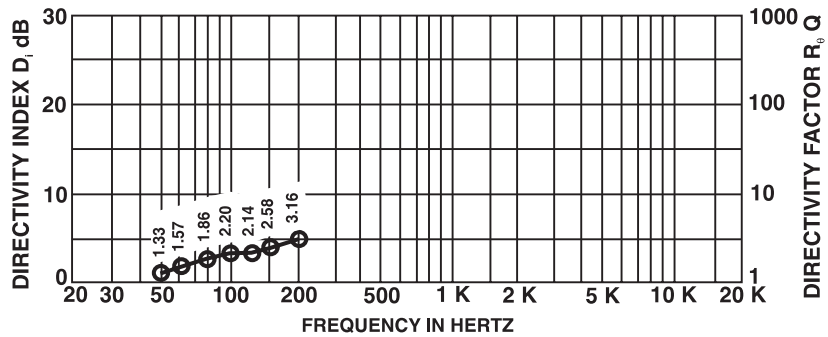
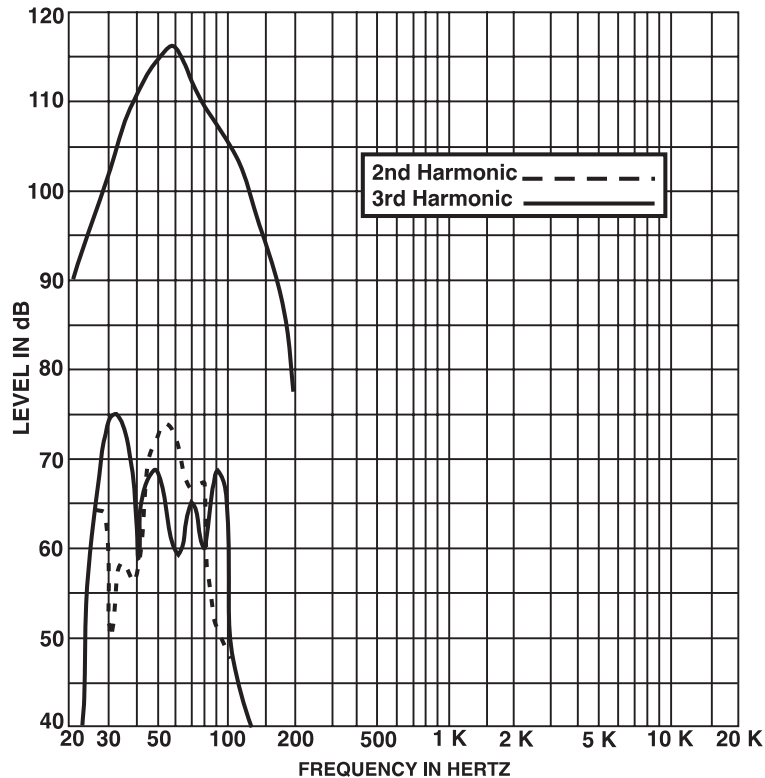


Figure 5—Distortion

Distortion for the system was measured on axis in the farfield in an anechoic environment with an input signal that would result in a sound-pressure level of 115 dB at one meter. The Dx34A digital electronic unit was used to provide the necessary crossover filters, equalization and time delay. A frequency spectrum typical of close-miked rock music was employed. The sound-pressure level was normalized for an equivalent one-meter distance. Plots of second and third harmonic distortion are shown referenced to the fundamental.



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Figure 6—Impedance

The impedance of each frequency band of the system was measured in an anechoic environment.

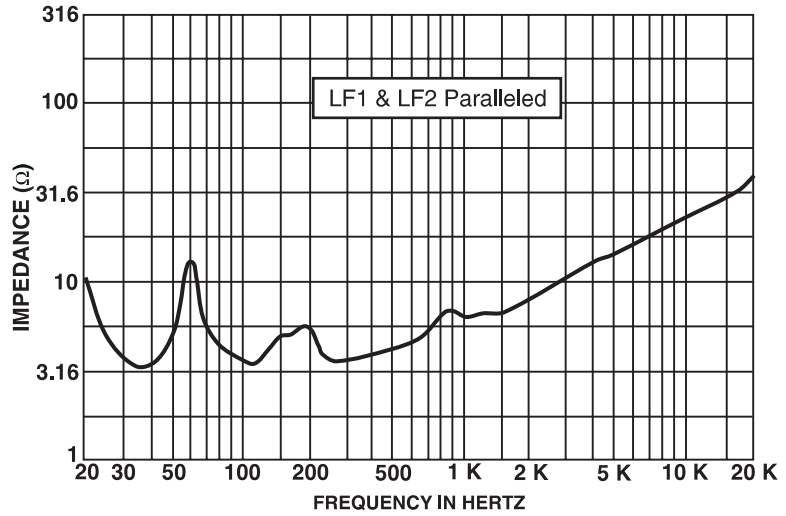


Figure 7—Wiring Diagram

The wiring diagram of each frequency band of the system is shown.

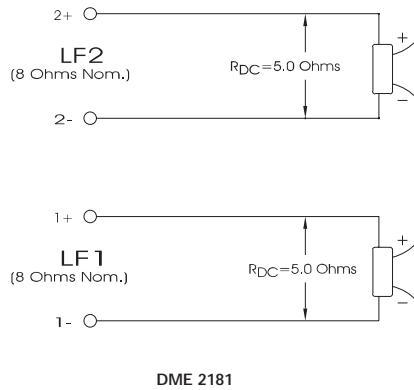
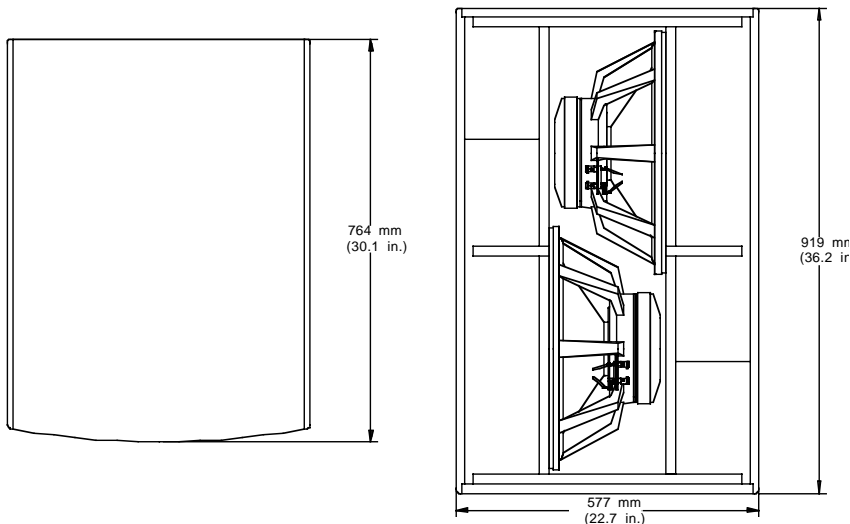


Figure 8—Dimensions



Parameter List

TITLE	DME 2181
DX34 CONFIGURATION	
CHANNEL	FR
MASTER DELAY (ms)	2,0
MAST PEQ FREQ (Hz)	
MAST PEQ Q	
MAST PEQ GAIN (dB)	
LOW-CUT FREQ (Hz)	37
LOW-CUT SLOPE (dB/Okt)	12
LOW-CUT Q	0,8
LOWSHEL V FREQ (Hz)	100
LOWSHEL V SLOPE (dB/Okt)	6
LOWSHEL V GAIN (dB)	0
HI-PASS FREQ (Hz)	
HI-PASS FILTER Type	
HI-PASS SLOPE (dB/Okt)	
PEQ 1 FREQ (Hz)	42
PEQ 1 Q	4,0
PEQ 1 GAIN (dB)	+8
PEQ 2 FREQ (Hz)	
PEQ 2 Q	
PEQ 2 GAIN (dB)	
LO-PASS FREQ (Hz)	80
LO-PASS FILTER Type	L-R
LO-PASS SLOPE (dB/Okt)	24
HISHEL V FREQ (Hz)	
HISHEL V SLOPE (dB/Okt)	
HISHEL V GAIN (dB)	
DELAY (us)	3000
POLARITY (Norm/Inv)	norm
OUTPUT GAIN (dB)	+2
LIMIT THRESH (dBu)	+21
LIMIT DECAY (dB/ms)	50
LIMIT HOLD	5

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Specifications

Frequency Response (measured in far field, with and without crossover and equalization, calculated to one meter on axis, swept sine wave, one watt into system—2.00 V at 60 Hz, anechoic environment; see Figure 2):

37-200 Hz

Crossover Frequency:

80 Hz

Efficiency:

6.8 %

Maximum Long-Term-Average Power-Handling Capacity (per ANSI/EIA RS-426A 1980):

1,200 watts

Maximum Long-Term-Average Midband Acoustic Output:

82 acoustic watts

Sensitivity (SPL at one meter, indicated input power, anechoic environment, average level),

1 watt:

99.5 dB

1,200 watts:

130.5 dB

Beamwidth (angle included by 6-dB-down points on polar responses, indicated one-third-octave bands of pink noise; see Figures 1 and 3),

Horizontal, 63-100 Hz:

285° (+75°, -52°)

Vertical, 63-100 Hz:

240° (+120°, -77°)

Directivity Factor, $R_0(Q)$, 63-100 Hz Average (see Figure 4):

1.9 (+0.3, -0.2)

Directivity Index, D_i , 63-100 Hz Average (see Figure 4):

2.8 dB (+0.6 dB, -0.6 dB)

Distortion (115 dB SPL at one meter, shaped spectrum; see Figure 6),

Second Harmonic,

40 Hz:

0.6 %

80 Hz:

0.3 %

Third Harmonic,

40 Hz:

0.3 %

80 Hz:

0.2 %

Transducer Complement:

Two EVX-180A 18-in. woofers

Impedance (see Figure 6),

Nominal:

4 ohms

Minimum:

3.3 ohms

Input Connections:

Two Neutrik NL4MPR Speakon® connectors paralleled

Recommended Amplifier Power:

1,200-2,400 watts

Enclosure Construction,

Shell:

18 mm, 13-ply birch plywood

Finish:

Black carpet

Grille:

Powder coated steel grille

Dimensions,

Height:

919 mm (36.2 in.)

Width:

577 mm (22.7 in.)

Depth:

764 mm (30.1 in.)

Net Weight:

75 kg (165 lb)

Shipping Weight:

85 kg (187 lb)



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