

# CALIBRATION PROCEDURE

Ortofon P400

Wait approximately 30 minutes after switching the P400 on, before attempting these adjustments.

- step a)
1. Place a short circuit between pin 1 and 3 of both the A Input and B Input.
  2. Select P400 voltmeter mode
  3. Select DC function mode for channel A and B
  3. Set gain for both the A channel and B channel to 10 mV
  4. Select LIN mode for both channel A and B
  5. Use a DC voltmeter to check offset voltages.

Adjust to < 1 mV offset:

<u>Check offset at:</u>	<u>Adjust:</u>
TP1	R8
TP2	R20
TP3	R27
TP4	R48
TP5	R60
TP6	R67

Adjust to < 5 mV offset:

<u>Check offset at:</u>	<u>Adjust:</u>
TP8	R89
TP61	R96
IC36, pin 6	R187
TP10	R112
TP60	R119
IC40, pin 6	R206

1. Select ABS Average function mode for channel A and B
2. Set gain for the A and B channel to 10 V

Adjust to < 1 mV offset:

<u>Check offset at:</u>	<u>Adjust:</u>
IC31, pin 6	R174
IC32, pin 6	R176

- step b)
1. Check the reading on the P400 voltmeters

Adjust to 0.000V +/- 0.005V:

<u>Check offset at:</u>	<u>Adjust:</u>
Channel A	Potentiometer next to Channel A input on the ADCON board.
Channel B	Potentiometer next to Channel B input on the ADCON board.

- step c)
1. Select AC Average function mode for channel A and B
  2. Remove the short circuit from channel A and B inputs
  3. Apply a 5.555 VRMS - 1 kHz signal to channel A and B inputs
  4. Check the reading on the P400 voltmeters

Adjust to 5.00V +/- 10mV:

<u>Check reading at:</u>	<u>Adjust:</u>
Channel A	R32
Channel B	R72

- step d)
1. Select RMS function mode for channel A and B
  2. Apply a 5.0 VRMS - 1 kHz signal to channel A and B inputs
  4. Check the reading on the P400 voltmeters

Adjust to 5.00V +/- 10mV:

<u>Check reading at:</u>	<u>Adjust:</u>
Channel A	R189
Channel B	R205

- step e)
1. Select LOG mode for both channel A and B
  2. Apply a 3.16 VRMS - 1 kHz signal to channel A and B inputs
  3. Check that you have 10 V gain settings for Channel A and B

This setting controls the offset of the RMS detector  
Adjust to 10.0dBV +/- 0.1dBV

<u>Check reading at:</u>	<u>Adjust:</u>
Channel A	R428
Channel B	R430

- step f)
1. Set gain for Channel A and B to 100 V

This setting controls the slope of the RMS detector  
Adjust to 10.0dBV +/- 0.1dBV

<u>Check reading at:</u>	<u>Adjust:</u>
Channel A	R425
Channel B	R426

Repeat step e) and f) to check the 10.0dBV reading in both the 10V and 100V ranges.

- step g)
1. Set gain to 30 V for both channels



Check for 10.0dBV reading on both channels. Repeat step e) and f) if necessary.

1. Apply a 316 mVRMS - 1 kHz signal to channel A and B inputs
2. Set gain for both channels to 3 V

Check for -10.0dBV reading on both channels. Repeat step e) and f) if necessary.

1. Set gain for both channels to 1 V

Check for -10.0dBV reading on both channels. Repeat step e) and f) if necessary.

step h)

1. Use an oscilloscope to check for a symmetric signal

Check reading at:  
IC73, pin 6

Adjust:  
R350

step i)

1. Set the generator of the P400 to manual mode, 1 kHz
2. Set the amplifier attenuator to "L" mode, 0 dB attenuation

Check the signal on the output of the P400, it should be 5.0 VRMS +/- 0.2V.

# FREQ COUNT SELECT

IC71

14,15

2,3

Channel A	ON		
Channel B		ON	

In Freq Mode the P400 will select the channel in which the signal is first detected if channel A and B are ON.

This procedure will be repeated every second.

## FILTER SETTING

	FILTER			
	CHANNEL A		CHANNEL B	
	OFF	ON	OFF	ON
IC78:6,7		ON	-	-
IC19:2,3		ON	-	-
IC19:14,15	ON		-	-
IC80:6,7	-	-		ON
IC19:6,7	-	-		ON
IC19:11,12	-	-	ON	

MODE SELECT

TIME CONSTANT

Ch A	MAN			AUTO		Ch B
	1 Hz	20 Hz	150 Hz	<156Hz	>156Hz	
IC29:15,16	ON	ON		ON		IC29:11,12
IC29:13,14	ON					IC29:9,10
IC96:13,14	ON					IC96:9,10
IC92:13,14	ON					IC95:13,14
IC92:9,10			ON		ON	IC95:9,10
IC90:9,10			ON		ON	IC93:9,10
IC91:9,10			ON		ON	IC94:9,10
IC90:13,14			ON		ON	IC93:13,14
IC91:13,14			ON		ON	IC94:13,14
IC90:11,12	ON					IC93:11,12
IC90:15,16	ON					IC93:15,16
IC91:11,12	ON					IC94:11,12
IC91:15,16	ON					IC94:15,16



ATTENUATOR SETTING

CHANNEL A

IC78: 14,15+ 10,11    IC78: 2,3    RL4+12    RL5+13    RL7+14    RL8+15    RL16    IC77: 12,13+ 10,11

100V	ON			ON		ON		ON
30V	ON			ON		ON		
10V	ON		ON			ON		ON
3V	ON		ON			ON		
1V	ON		ON		ON			ON
300mV	ON		ON		ON			
100mV	ON		ON		ON		ON	ON
30mV	ON		ON		ON		ON	
10mV		ON	ON		ON		ON	

IC80: 10,11+ 14,15    IC80: 2,3    RL20+28    RL21+29    RL23+30    RL24+31    RL32    IC79: 10,11+ 12,13

CHANNEL B



**MODE SELECT**

LIN

LOG

Ch. A

Ch. B

	DC	RMS	ABS AV	AC AV	+ PEAK	- PEAK	DC	RMS	ABS AV	AC AV	+ PEAK	- PEAK	
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IC35:10,11	ON	ON					ON	ON						IC39:6,7
IC35:6,7					ON	ON						ON	ON	IC39:2,3
IC35:2,3			ON	ON					ON	ON				IC39:10,11
IC35:14,15							ON		ON	ON	ON	ON		IC39:14,15
IC64:15,16		ON					ON	ON	ON	ON	ON	ON		IC65:15,16
IC64:13,14	ON		ON	ON	ON	ON								IC65:13,14
IC64:9,10		ON												IC65:9,10
IC64:11,12							ON	ON	ON	ON	ON	ON		IC65:11,12
IC30:2,3					ON							ON		IC30:6,7
IC30:14,15	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON		IC30:10,11