



# DECADE

TRANSMITTERS

NEW HORIZONS FOR FM APPLICATIONS

## HI-FI FM TRANSMITTER

### MS-100 series

## INSTRUCTION MANUAL

#### CANADA

" Operation of this device is subject to the following two conditions:

(1) This device may not cause interference and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

#### USA

"This device complies with Part 15 of the FCC rules. Operation of this device is subject to the following two conditions:(1) this device may not cause harmful interference; and (2) this device must accept any interference received, including interference that may cause undesired operation."

200903-100

# DECADE

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## **SECTION 1**

### **GENERAL INFORMATION**

#### **A) Introduction**

Thank you for purchasing one of the fine products made by DECADE transmitters. Before using it, please read this manual carefully in order to obtain the best possible results from your transmitter. The manual contains installation, operation and adjustment procedures for DECADE MS-100 Transmitters.

#### **B) Description**

The **MS-100** is offered in four different audio configurations. The **MS-100 (Mono Unbal)** will accept an unbalanced stereo or mono sound source thru it's 1/4" female chassis connector(Rear panel) and is associated to a volume control on the front panel. The **MS-100 (Mono Bal)** will accept a 600 Ohms balanced line level audio sound source and is associated to a volume control on the front panel. The **MS-100 (Mono Mic)** will accept a 600 Ohms balanced microphone level audio signal (phantom power is present at the input) and is associated to a volume control on the front panel. The **MS-100 (Stereo Unbal)** shares the same type of audio input as the **MS-100 (Mono Unbal)** but has the advantage to broadcast in stereo or mono and also offer a bass boost option.

The sound level of each type of inputs can be adjusted with the help of the of a volume control (**INPUT LEVEL**) located on the front panel so optimal FM modulation can be achieved. This feature makes **Decade** Transmitters very versatile allowing them to accept several types of sound sources.

#### **C) Warranty**

MS-100 transmitters come with a one (1) year warranty that covers parts replacement and labour required to repair any defects resulting from the manufacturing process. All claims must be authorized by DECADE prior to shipment of a faulty unit for repairs, and a copy of the invoice must be included in the shipment. Shipping fees are assumed by the client and DECADE will pay for the return of the repaired unit.

#### **D) Warning**

**DECADE** transmitters operate on the 88.1 MHz - 107.5 MHz commercial FM broadcast band, so signals transmitted can be received on any standard FM receiver. Thus, some care should be taken in the use made out of these transmitters.

**DECADE transmitters inc.** is not responsible for any financial loss or violation of local laws during the utilisation of their transmitters.

The FCC legislate the use of FM transmitters in USA and the CRTC (Canadian Radio-television and Telecommunications Commission) and IC (Industry Canada) legislate the use of FM transmitters in Canada. **No licence is required for the use of these FM transmitters in Canada and USA..**

E) **Technical specifications**

Refer to supplement, Technical specifications of MS-100

**SECTION 2  
INSTALLATION**

A) **Introduction**

Installation of a **DECADE** FM transmitter includes the following steps: 1) receiving inspection; 2) mounting on a shelf; 3) connecting the audio source.

B) **Receiving inspection**

Check the transmitter packaging for any damage that could have occurred during shipping. If you find any damage to the transmitter, keep the packaging for claims purposes with the freight company. Any damage should be noted on the receiving slip at the time of delivery and the freight company advised within 5 working days following the delivery of damaged units.

C) **Connections**

Place the MS-100 to its final location (table, shelf etc..) and hook the provided AC wall adaptor to a 115 Vac electrical outlet and the long cable portion of the wall adaptor to the ac input jack (rear panel) of the MS-100. Hook your sound source to the MS-100 1/4" input jack (rear panel).

Extend the telescopic antenna (rear panel) to the appropriate length in regard to your chosen frequency (See length chart in the **annex** section).

D) **Location of the transmitter**

**DECADE** transmitters are designed for indoor or outdoor use in a dry environment, in temperatures ranging from 0 to 122°F (50°C). In order to obtain optimum performances, it is recommended to place them far from any electromagnetic noise source (transformers, motors, etc.).

Transmitters should be located as close to the center of the hall or coverage area as possible, and at a sufficient height to give the transmitted signal an unobstructed path to every seat or receiving point. Transmitted signal paths will be weakened by concrete walls or steel beams or sheets placed around them. On the other hand, windows are very permeable to radio waves, so avoid locating the

transmitter near them if you wish to restrain the coverage to the interior of a building.

### **SECTION 3 OPERATION**

#### **A) Controls and indicators**

Input level is controlled by a potentiometer located on the front panel. A power indicator and over-modulation LEDs are also located on the front panel.

#### **B) Input and output connectors**

The **MS-100** is equipped with an 1/4" stereo female chassis phone jack that suits most audio setup combinations. The RF output is permanently linked to a telescopic antenna. The telescopic antenna is secured to the MS-100 rear panel.

#### **C) Optimal input level**

Optimal input level is reached when the audio level at the receiver end is equal to the level of a standard FM broadcast station. To obtain this result it is mandatory to compress the audio input signal (between your audio source output and the inputs of the MS-100).

### **SECTION 4 MAINTENANCE AND ALIGNMENT**

#### **A) Maintenance**

No maintenance is required to keep the transmitter in top operating condition. If an external cleaning appears necessary, use a soft, damp cloth and mild soap only.

#### **B) Frequency selection**

**(Your MS-100 is factory preset to 98.5MHz)**

The transmitting frequency is user programmable via the 10 bits dip switch on the rear panel. If a change of the frequency is required, follow this simple step:

- 1) From the «bits switch» codes table, on the next pages (or the frequency chart underneath the MS-100 cabinet), select the appropriate «bits switch» code (switch 1 to 8) for your chosen frequency and set the «bits switch» accordingly.

- Notes:** 1) The frequency range of the MS-100 is 88.1 MHz to 107.5 MHz.  
 2) Bit switch 9 is for mono/stereo selection & switch 10 is for bass boost selection offered on the **Stereo Unbal** option only.

**Your MS-100 is now locked to your chosen FM frequency.**

**C) Bits switch codes table**

Freq MHz	1	2	3	4	5	6	7	8	9	10
88.1	ON	ON	ON	OFF	OFF	OFF	ON	OFF	<b>MS-100 STEREO OPTION ONLY : MONO = OFF, STEREO = ON</b>	<b>MS-100 STEREO OPTION ONLY : BASS BOOST = ON</b>
88.3	OFF	ON	ON	OFF	OFF	OFF	ON	OFF		
88.5	ON	OFF	ON	OFF	OFF	OFF	ON	OFF		
88.7	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF		
88.9	ON	ON	OFF	OFF	OFF	OFF	ON	OFF		
89.1	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF		
89.3	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF		
89.5	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF		
89.7	ON	ON	ON	ON	ON	ON	OFF	OFF		
89.9	OFF	ON	ON	ON	ON	ON	OFF	OFF		
90.1	ON	OFF	ON	ON	ON	ON	OFF	OFF		
90.3	OFF	OFF	ON	ON	ON	ON	OFF	OFF		
90.5	ON	ON	OFF	ON	ON	ON	OFF	OFF		
90.7	OFF	ON	OFF	ON	ON	ON	OFF	OFF		
90.9	ON	OFF	OFF	ON	ON	ON	OFF	OFF		
91.1	OFF	OFF	OFF	ON	ON	ON	OFF	OFF		
91.3	ON	ON	ON	OFF	ON	ON	OFF	OFF		
91.5	OFF	ON	ON	OFF	ON	ON	OFF	OFF		
91.7	ON	OFF	ON	OFF	ON	ON	OFF	OFF		
91.9	OFF	OFF	ON	OFF	ON	ON	OFF	OFF		
92.1	ON	ON	OFF	OFF	ON	ON	OFF	OFF		
92.3	OFF	ON	OFF	OFF	ON	ON	OFF	OFF		
92.5	ON	OFF	OFF	OFF	ON	ON	OFF	OFF		
92.7	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF		
92.9	ON	ON	ON	ON	OFF	ON	OFF	OFF		
93.1	OFF	ON	ON	ON	OFF	ON	OFF	OFF		
93.3	ON	OFF	ON	ON	OFF	ON	OFF	OFF		
93.5	OFF	OFF	ON	ON	OFF	ON	OFF	OFF		
93.7	ON	ON	OFF	ON	OFF	ON	OFF	OFF		
93.9	OFF	ON	OFF	ON	OFF	ON	OFF	OFF		
94.1	ON	OFF	OFF	ON	OFF	ON	OFF	OFF		
94.3	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF		
94.5	ON	ON	ON	OFF	OFF	ON	OFF	OFF		
94.7	OFF	ON	ON	OFF	OFF	ON	OFF	OFF		
94.9	ON	OFF	ON	OFF	OFF	ON	OFF	OFF		
95.1	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF		
95.3	ON	ON	OFF	OFF	OFF	ON	OFF	OFF		
95.5	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF		
95.7	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF		
95.9	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF		
96.1	ON	ON	ON	ON	ON	OFF	OFF	OFF		
96.3	OFF	ON	ON	ON	ON	OFF	OFF	OFF		
96.5	ON	OFF	ON	ON	ON	OFF	OFF	OFF		

96.7	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
96.9	ON	ON	OFF	ON	ON	OFF	OFF	OFF
97.1	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
97.3	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
97.5	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
97.7	ON	ON	ON	OFF	ON	OFF	OFF	OFF
97.9	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
98.1	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
98.3	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
98.5	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
98.7	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
98.9	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
99.1	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
99.3	ON	ON	ON	ON	OFF	OFF	OFF	OFF
99.5	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
99.7	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
99.9	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
100.1	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
100.3	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
100.5	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
100.7	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
100.9	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
101.1	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
101.3	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
101.5	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
101.7	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
101.9	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
102.1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
102.3	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
102.5	ON	ON	ON	ON	ON	ON	ON	ON
102.7	OFF	ON	ON	ON	ON	ON	ON	ON
102.9	ON	OFF	ON	ON	ON	ON	ON	ON
103.1	OFF	OFF	ON	ON	ON	ON	ON	ON
103.3	ON	ON	OFF	ON	ON	ON	ON	ON
103.5	OFF	ON	OFF	ON	ON	ON	ON	ON
103.7	ON	OFF	OFF	ON	ON	ON	ON	ON
103.9	OFF	OFF	OFF	ON	ON	ON	ON	ON
104.1	ON	ON	ON	OFF	ON	ON	ON	ON
104.3	OFF	ON	ON	OFF	ON	ON	ON	ON
104.5	ON	OFF	ON	OFF	ON	ON	ON	ON
104.7	OFF	OFF	ON	OFF	ON	ON	ON	ON
104.9	ON	ON	OFF	OFF	ON	ON	ON	ON
105.1	OFF	ON	OFF	OFF	ON	ON	ON	ON
105.3	ON	OFF	OFF	OFF	ON	ON	ON	ON
105.5	OFF	OFF	OFF	OFF	ON	ON	ON	ON
105.7	ON	ON	ON	ON	OFF	ON	ON	ON
105.9	OFF	ON	ON	ON	OFF	ON	ON	ON
106.1	ON	OFF	ON	ON	OFF	ON	ON	ON
106.3	OFF	OFF	ON	ON	OFF	ON	ON	ON
106.5	ON	ON	OFF	ON	OFF	ON	ON	ON
106.7	OFF	ON	OFF	ON	OFF	ON	ON	ON
106.9	ON	OFF	OFF	ON	OFF	ON	ON	ON
107.1	OFF	OFF	OFF	ON	OFF	ON	ON	ON

**MS-100 STEREO OPTION ONLY : MONO = OFF, STEREO = ON**

**MS-100 STEREO OPTION ONLY : BASS BOOST = ON**

107.3	ON	ON	ON	OFF	OFF	ON	ON	ON		
107.5	OFF	ON	ON	OFF	OFF	ON	ON	ON		

**SECTION 5  
APPLICATIONS**

Applications for **DECADE** transmitters are almost unlimited, but here are a few very popular ones. With **DECADE** transmitters, a whole new world opens up for hearing impaired people, and most of all for people demanding the best sound reproduction possible, regardless of the environment.

**CHURCHES:** Connected to the church sound system, the transmitter broadcasts the oral and musical content of the celebrations to the attendants, hearing impaired or not.

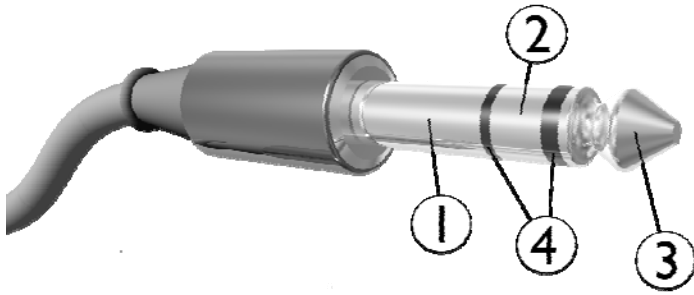
**THEATRES:** With one microphone installed on the stage and fed to the transmitter through a mixing board, you will have the sensation of being seated right next to the actors, even if you are actually sitting in the last row.

**CONFERENCE HALLS:** Many transmitters can be used as part of a simultaneous translation scheme, where attendants can listen to the conference in the language of their choice. A single transmitter can also be used as an aid for hearing impaired persons.



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## Inputs connection



Numbers indicate:

1. Sleeve - usually ground
2. Ring - Right-hand channel for stereo signals, negative phase for balanced mono signals, power supply for power-requiring mono signal sources
3. Tip - Left-hand channel for stereo signals, positive phase for balanced mono signals, signal line for unbalanced mono signals
4. Isolating rings

# TECHNICAL SPECIFICATIONS

## MS-100

### RF SECTION

**MODULATION:** FM, 75 kHz deviation

**FREQUENCY SELECTION:** 88.1 to 107.5 MHz

**FREQUENCY PRECISION:** .005%

**SPURIOUS REJECTION:** 45 dB min.

**SPURIOUS REJECTION:** 45 dB min.

**MAXIMUM POWER:** 250 $\mu$ V/m @ 3 m (FCC Part 15 compliance for USA)(RSS-210 for Canada)  
: 1.0miliwatt (DOC RSS-123) (Canada only).

**CERTIFICATION STANDARDS:** FCC Part 15, CNR-123, CNR-210

**HOMOLOGUATION #:** **FCC:** MCHMS-100, **INDUSTRY CANADA:** CAN 1857102155, CAN 1857231121

### AUDIO SECTION

**MODE:** mono (HI-FI): (Mono Unbal, Mono Bal, Mono Mic)  
Stereo (HI-FI): (Stereo Unbal)

**FREQUENCY RESPONSE:** 20 Hz - 20 000 Hz, @-1dB (Mono Unbal, Mono Bal, Mono Mic)  
20 Hz - 15 000 Hz, @-1dB (Stereo Unbal)

**TOTAL HARMONIC DISTORTION:** 0.05% max (All models)

**SIGNAL TO NOISE RATIO:** 70 dB min. (All models)

**DYNAMIC RANGE:** 80 dB min. (All models)

**STEREO SEPARATON:** 35dB Min, 40dB Typ (Stereo Unbal)

**INPUT SENSITIVITY:** -9.7dBm to +22.7dBm, 6K Ohms (Mono Unbal)  
- 5dBm to +22dBm, 600 Ohms (Mono Bal)  
-58 dBm to +22dBm, 950 Ohms (Mono Unbal)  
-8dBm à +22.7dBm, 10K Ohms (Stereo Unbal)

**PHANTOM POWER:** +15 Volts DC (unloaded) (Mono Bal & Mono Mic models only)

**INDICATORS:** Power status, over modulation status.

**CONTROLS:** Modulation volume, frequency selection (10 bit dip switch).

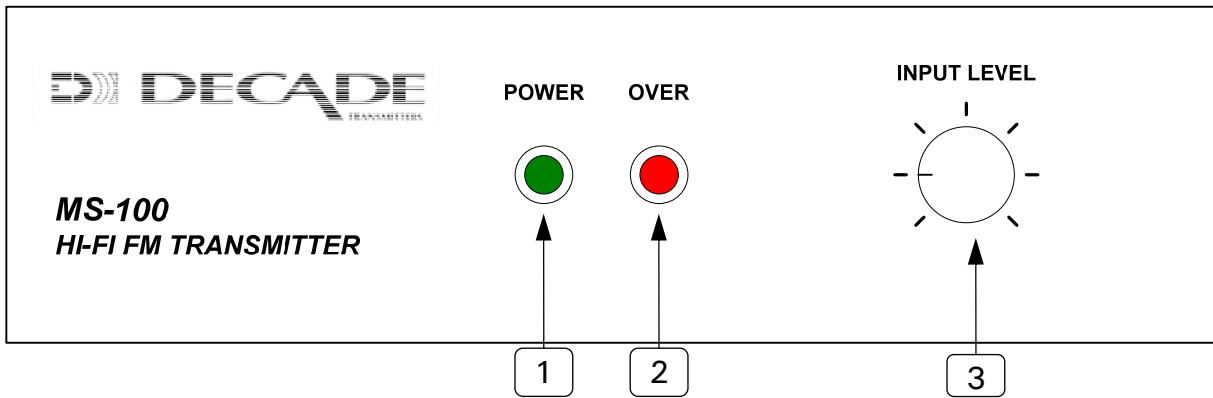
### MISC

**POWER SUPPLY:** 115/16vAC @ 300Ma.

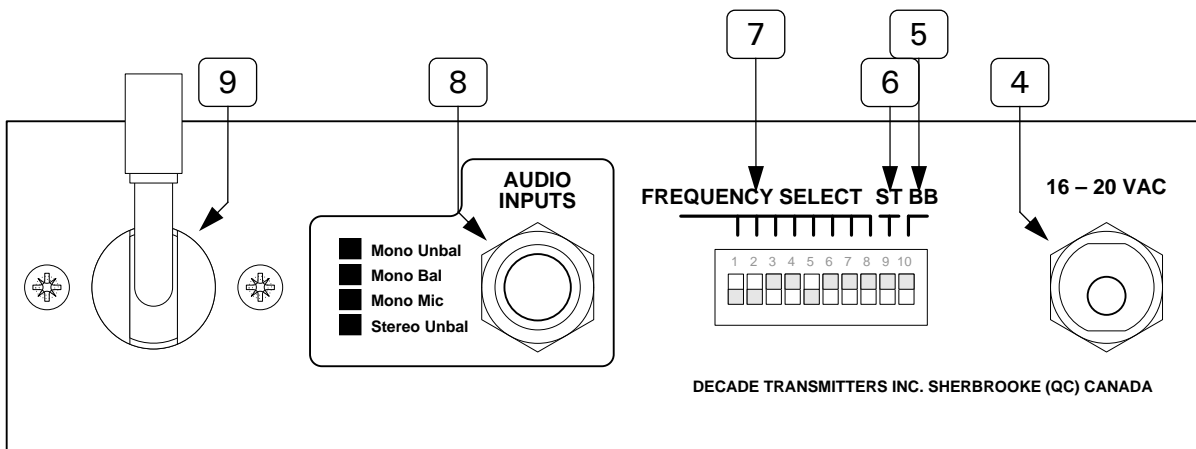
**DIMENSIONS:** 6.3" (L) X 10.5" (D) X 1.75" (H)

**WEIGHT:** 5 lbs.

## FRONT & BACK PANEL DESCRIPTION



1. **Power:** Indicates that the AC power has been activated.
2. **Over:** Indicates over modulation (100% and more).
3. **Input level:** Controls the audio level that is applied to the transmitter's audio section.
4. **AC input:** This is where you plug the AC adaptor (furnished with the transmitter).
5. **BB:** When activated, the bass boost switch enables a circuitry that will produce a 6dB gain from 20Hz to 150Hz.
6. **ST:** When activated, the stereo switch enables a digital circuitry that will produce stereo broadcasting.
7. **FREQUENCY SELECT :** Frequency programming switch
8. **AUDIO INPUTS:** The audio inputs signals.
9. **The transmitting telescopic antenna.**



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# Telescopic antenna length adjustment.

In a manner to achieve good performances (more coverage distance) with your **Decade** FM transmitter, it is mandatory to adjust the length of the telescopic antenna to its associated frequency.

- Procedures:**
- 1) Choose a free frequency (see Frequency selection page 5).
  - 2) Take note of the associated length (ex: 88.5MHz = 35 inches).
  - 3) With the help of a measuring tape or ruler; extend the telescopic antenna in a manner to obtain the desired length (from base to tip of antenna).

Frequency MHz	Rod length Inches	Frequency MHz	Rod length Inches	Frequency MHz	Rod length Inches	Frequency MHz	Rod length Inches
88.1	35	93.3	32	98.5	29 1/2	103.7	27 1/2
88.3	35	93.5	32	98.7	29 1/2	103.9	27 1/2
88.5	35	93.7	32	98.9	29 1/2	104.1	27 1/2
88.7	35	93.9	32	99.1	29 1/2	104.3	27 1/2
88.9	35	94.1	31 1/2	99.3	29 1/2	104.5	27
89.1	35	94.3	31 1/2	99.5	29	104.7	27
89.3	35	94.5	31 1/2	99.7	29	104.9	27
89.5	35	94.7	31 1/2	99.9	29	105.1	27
89.7	35	94.9	31	100.1	29	105.3	27
89.9	35	95.1	31	100.3	29	105.5	27
90.1	35	95.3	31	100.5	29	105.7	27
90.3	35	95.5	31	100.7	28 1/2	105.9	27
90.5	35	95.7	31	100.9	28 1/2	106.1	26 1/2
90.7	35	95.9	31	101.1	28 1/2	106.3	26 1/2
90.9	34 1/2	96.1	30 1/2	101.3	28 1/2	106.5	26 1/2
91.1	34 1/2	96.3	30 1/2	101.5	28 1/2	106.7	26 1/2
91.3	34	96.5	30 1/2	101.7	28	106.9	26 1/2
91.5	34	96.7	30 1/2	101.9	28	107.1	26 1/2
91.7	33 1/2	96.9	30 1/2	102.1	28	107.3	26
91.9	33	97.1	30	102.3	28	107.5	26
92.1	33	97.3	30	102.5	28	107.7	26
92.3	33	97.5	30	102.7	28	107.9	26
92.5	32 1/2	97.7	30	102.9	28	*108.1	26
92.7	32 1/2	97.9	30	103.1	28	*108.3	26
92.9	32	98.1	30	103.3	27 1/2	*108.5	26
93.1	32	98.3	30	103.5	27 1/2	*108.7	26

(\*) Available in Asia & Europe only.

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