

10Pin Audio Visual Input / Output Specification

for

Mobile Equipment

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Vodafone K.K.

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References

Reference	Description
[10Pin-EXT]	10Pin External Interface Specification for Mobile Equipment Revision 1.1.0, Vodafone K.K.
[10Pin-EAR]	10Pin Earphone/Microphone Specification for Mobile Equipment Revision 1.1.0, Vodafone K.K.
[CPR-1201]	CPR-1201 "Interconnection between Television Tuner and Analogue Peripherals", JEITA
[CP-1203]	CP-1203 "Requirements for the Electrical Signals of AV Devices", JEITA
[CP-1211A]	CP-1211A "Interconnection between Videotape Recorder and Peripherals", JEITA
[RC-5231]	RC-5231 "Pin plug Jack for Electronic Equipments", JEITA

1. Objective

This document stipulates special notes on audio/visual input/output equipments in external interfaces that use the connector defined in [10Pin-EXT] (Hereafter described as "10Pin Connector").

*Items not described in this document shall comply with [10Pin-EXT].

2. Applicable Range

This document shall apply to handsets that have a 10Pin Connector and a function to input or output image and audio using an audio/visual input/output equipment, regardless of their generation (2G, 2.5G, 3G etc.).

3. Connector Terminal

Table 3-1 illustrates specifications of the terminal of 10Pin Connector defined in this document:

Written below is banned when 10pin Connector terminal is used at an audio/visual input/output equipment:

- Allocating a terminal specification different from those described in Table 3-1 for an original purpose

Even if a signal that is not in the definition is received at each terminal, abnormal behaviour, etc. shall not occur.

Appropriate measures shall be taken at handset and external device so that destruction, etc. will not occur easily even if there is a signal level input/output that is not in the definition.

Table 3-1 Connector Terminal Specifications

Pin No	Signal Direction		Terminal Specification	Signal Level
	H a n d s e t	External Device		
1	-		Audio GND	GND Connection to handset
2	-		-	(⁽¹⁾)
3	-		-	Pull up (VDD) at handset (⁽²⁾)
4	<=>		Audio Rch (Input/Output)	For analogue output Output level: 2Vrms(Max.) Load impedance: 22kΩ or less [Reference value](⁽³⁾) For analogue input Input level: 2Vrms(Max.) Load impedance :22kΩ or less [Reference value](⁽³⁾)
5	<=>		Audio Lch (Input/Output)	For analogue output Output level:2Vrms(Max.) Load impedance:22kΩ or less [Reference value](⁽³⁾) For analogue input Input level:2Vrms(Max.) Load impedance:22kΩ or less [Reference value](⁽³⁾)
6	-		-	(⁽⁴⁾)
7	-		-	(⁽¹⁾)
8	-		-	(⁽¹⁾)
9	<=>		Image Signal (Input/Output)	For NTSC Composit (Video) signal output Output level:1.0±0.2Vp-p Load impedance:75Ω For NTSC Composit (Video) signal input Input level:1.0±0.2Vp-p Load impedance:75Ω
10	-		Image GND	GND Connection to handset

(⁽¹⁾) When audio/visual mode at handset, the handset shall make the terminal N.C. or invalid. If making it N.C. is difficult in designing the circuit of handset, some measures shall be taken so that abnormal behaviour, destruction, etc. shall not occur by inputting/outputting a signal to/from the terminal.

(⁽²⁾) VDD=3±0.3V

(⁽³⁾) Reference value. For implementation, adjustment shall be made to the extent that doesn't generate a trouble in a normal usage state.

(⁽⁴⁾) (⁽²⁾)shall apply to handsets that support Earphone Microphone Type A (monaural) with switch defined in [10Pin-EAR]. However, Pull up (VDD) shall apply to handsets that support other earphone microphone than above.

4. Signal Method

The image signal and audio signal stipulated in this document shall be signal methods that comply with the standards described in Table 4-1:

Table 4-1 Signal Method

Signal	Standard to be complied	Comment
Image signal	[CPR-1201],[CP-1211A]	NTSC Composit (Video) signal
Audio signal	[CPR-1201],[CP-1203],[CP-1211A]	Audio signal

5. Handset requirement

Written below stipulates functions that must be implemented on the handset part.

5.1. Handset implementation range

If a function to input and output image and audio to external devices (Hereafter, described as “Audio/Visual Mode”) is implemented in the handset, it shall support the audio/visual input/output equipment defined in this document.

It is desirable that inputting and outputting audio/visual signal via an audio/visual input/output equipment is possible.

However, if it difficult to support audio/visual input/output, it is acceptable to implement only either audio/visual signal input or output.

5.2. Audio/Visual Mode

- It shall be possible to turn on and off the audio/visual mode with HMI.

5.3. Signal input/output control

Handsets shall control input and output of audio/visual in compliance with Table 5-1.

Specifications that stipulate copyright protection shall be complied with, if any.

Specifications that stipulate audio/visual signal input/output control shall override this document, if any.

However, range not stipulated in such specifications shall comply with Table 5-1:

Table 5-1 Handset state-specific audio/visual signal control

Audio/Visual Mode state	Audio/Visual signal input /output
ON	Valid
OFF	Invalid

6. Audio/visual input/output equipment requirements

Written below stipulates functions that must be implemented on the audio/visual input/output equipment part:

6.1. Cable drawing direction

Cable shall be drawn from 10Pin Connector of an audio/visual input/output equipment in the direction of 10 pin of the plug as shown in Figure, if necessary:

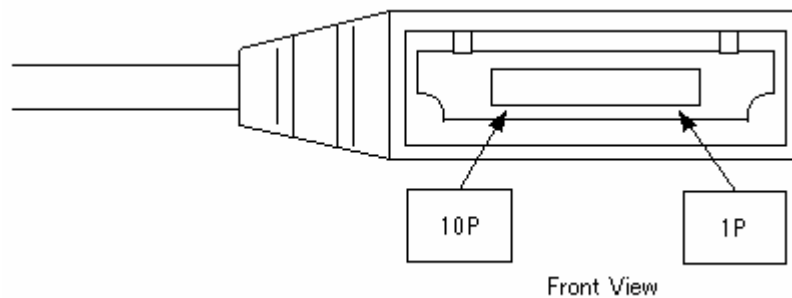


Figure 6-1 Cable Drawing Direction

6.2. Necessary functions

Table 6-1 illustrates functions that must be implemented in audio/visual input/output equipments:

Table 6-1 Audio/Visual input/output Functions

No.	Function
1	Image signal input/output function
2	Audio signal(Rch) input/output function
3	Audio signal (Lch) input/output function

6.3. Audio/visual connector

Connectors to be used to input/output audio/visual signal to/from audio visual devices in audio/visual input/output equipments (Hereafter, described as “Audio/visual Connector”) is defined as follows:

A. When RCA plug is used for Audio/visual Connector

Connector to be used shall be RCA plug that complies with [RC-5231].

Connection to 10Pin connector shall be performed in compliance with Figure 6-2:

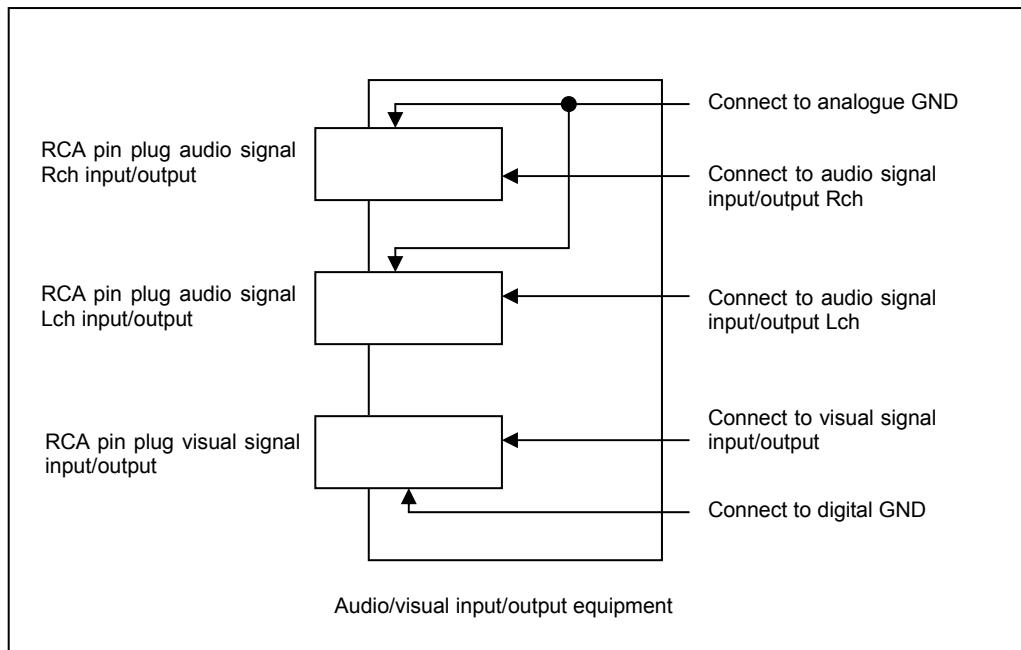


Figure 6-2 Connection of Audio/visual input/output equipment

7. External device connection procedure

Handset shall not judge about connection of audio/visual input/output equipment but control audio and visual input or output with HMI. If an external device is connected via other 10Pin connector in Audio/visual Mode and the handset recognizes the connection of the device, the input/output signal of each terminal shall not be processed as an audio/visual signal.

Conflicting behaviour

Written below is a requirement for the conflicting behaviour on the state where handset and audio/visual input/output equipment is connected:

- If the handset state is something other than Audio/visual Mode, the audio/visual input/output equipment shall be invalid. i.e. the handset shall not generate a conflicting behaviour in a state other than Audio/visual Mode.

Appendix A.

Revision History

Revision History

Version	Date	Comments
1.0.0	2003/10/31	Initial version