DALLAS SEMICONDUCTOR

Application Note
DS4201 Universal Serial Bus Descriptors

It is assumed that the reader of this application note is familiar with Universal Serial Bus (USB) technology and terms. USB documents referenced in this application note may be obtained from the USB Implementers Forum web site at: www.usb.org. The DS4201 is compliant with the following USB specifications:

- *Universal Serial Bus Specification, Revision 1.0*
- *Universal Serial Bus Device Class Definition for Audio Devices, Revision 0.9*

A typical Universal Serial Bus (USB) environment consists of a USB enabled host computer and one or more USB device peripherals. In USB terminology, descriptors are used to inform the host PC system what capabilities are supported by a USB device as well as specific device characteristics. When requested by the host, these descriptors are provided by the device and are communicated in a hierarchical manner, providing top to low level information. Additionally, a typical USB device will described itself to the host with USB core specification descriptors and, depending on device complexity, descriptors from one or more USB device class specifications. The DS4201 is a USB Audio Device and is described with descriptors from the USB core and USB Audio Device Class specifications.

When a USB device is attached to the bus, an initialization or enumeration process begins during which descriptor requests are made by the host computer. First a Device Descriptor request is sent to determine general device information. A Configuration Descriptor request then follows which returns configuration, interface, and lower level descriptors in the proper order. Figure 1 shows the descriptor hierarchy for the DS4201 and Table 1 is a complete listing of the descriptor types and attributes in the order in which they will be sent to the host.

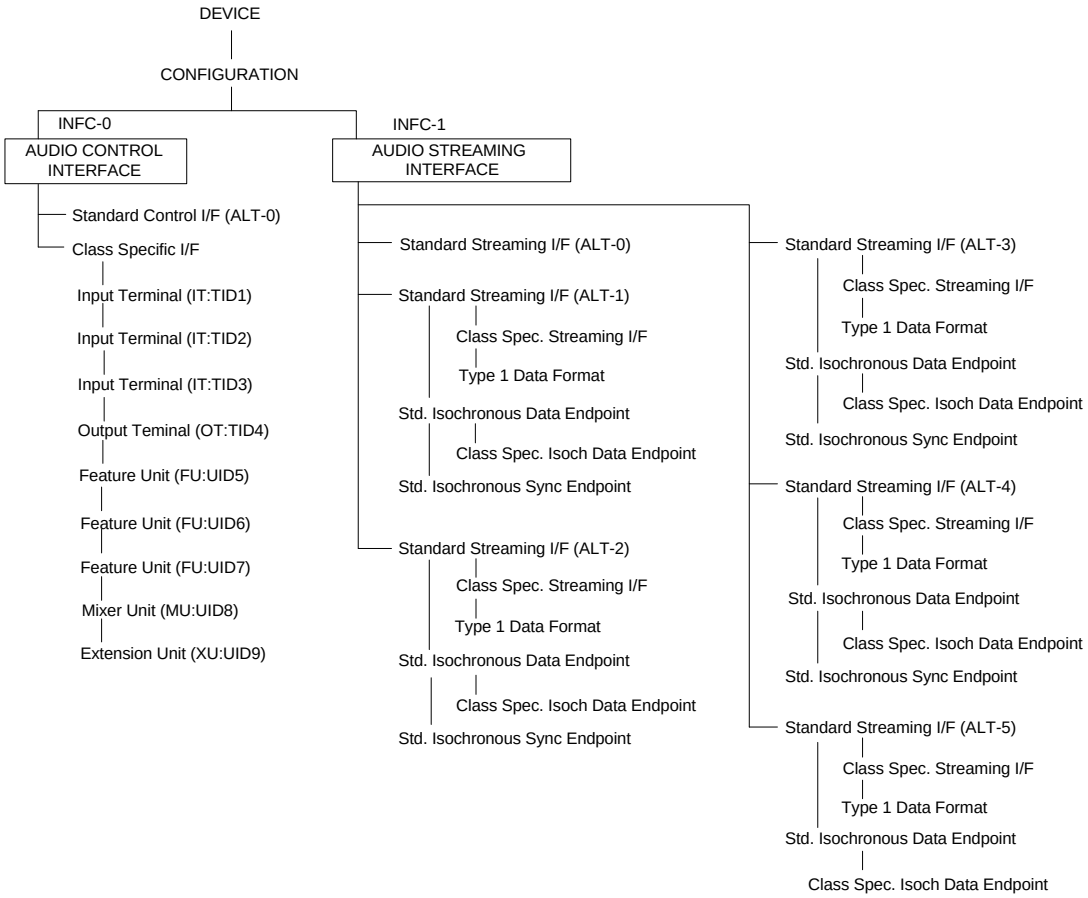

Figure 1. DS4201 USB Descriptor Hierarchy

Table 1. DS4201 USB Descriptor Summary

Descriptor	Interface Number	Alternate Setting	Size (bytes)
Device description			18
Device configuration			9
AUDIO CONTROL: standard interface	0	0	11
AUDIO CONTROL: class interface	0	0	9
AUDIO CONTROL: input terminal (IT:TID1)	0	0	12
AUDIO CONTROL: input terminal (IT:TID2)	0	0	12
AUDIO CONTROL: input terminal (IT:TID3)	0	0	12
AUDIO CONTROL: feature unit (FU:UID5))	0	0	10
AUDIO CONTROL: feature unit (FU:UID6)	0	0	10
AUDIO CONTROL: feature unit (FU:UID7)	0	0	10
AUDIO CONTROL: mixer unit (MU:UID8)	0	0	15
AUDIO CONTROL: extension unit (XU:UID9)	0	0	15
AUDIO CONTROL: output terminal (OT:TID4)	0	0	9
AUDIO STREAMING: standard interface	1	0	11
AUDIO STREAMING: standard interface	1	1	11
AUDIO STREAMING: class interface	1	1	7
AUDIO STREAMING: isoch type 1 data format	1	1	14
AUDIO STREAMING: standard isoch data endpoint	1	1	9
AUDIO STREAMING: class isoch data endpoint	1	1	7
AUDIO STREAMING: standard isoch synch endpoint	1	1	9
AUDIO STREAMING: standard interface	1	2	11
AUDIO STREAMING: class interface	1	2	7
AUDIO STREAMING: isoch type 1 data format	1	2	14
AUDIO STREAMING: standard isoch data endpoint	1	2	9
AUDIO STREAMING: class isoch data endpoint	1	2	7
AUDIO STREAMING: standard isoch synch endpoint	1	2	9
AUDIO STREAMING: standard interface	1	3	11
AUDIO STREAMING: class interface	1	3	7
AUDIO STREAMING: isoch type 1 data format	1	3	14
AUDIO STREAMING: standard isoch data endpoint	1	3	9
AUDIO STREAMING: class isoch data endpoint	1	3	7
AUDIO STREAMING: standard isoch synch endpoint	1	3	9
AUDIO STREAMING: standard interface	1	4	11
AUDIO STREAMING: class interface	1	4	7
AUDIO STREAMING: isoch type 1 data format	1	4	14
AUDIO STREAMING: standard isoch data endpoint	1	4	9
AUDIO STREAMING: class isoch data endpoint	1	4	7
AUDIO STREAMING: standard isoch synch endpoint	1	4	9
AUDIO STREAMING: standard interface	1	5	11
AUDIO STREAMING: class interface	1	5	7
AUDIO STREAMING: isoch type 1 data format	1	5	14
AUDIO STREAMING: standard isoch data endpoint	1	5	9
AUDIO STREAMING: class isoch data endpoint	1	5	7
		Total Descriptor Size	439 bytes

The remainder of this application note lists the detailed DS4201 descriptor values and meanings. These consist of the Device, Configuration, Audio Control Interface, Audio Streaming Interface, and lower level descriptors as shown and listed in Figure 1 and Table 1.

DEVICE DESCRIPTOR

Summary:
The device descriptor provides the host with general information about the DS4201. It informs the host that it is an audio class device and there is only one configuration.

Device Descriptor

Offset	Field	Size	Value	Description
0	*bLength*	1	0x12	Size of this descriptor in bytes: 18
1	*bDescriptorType*	1	0x01	DEVICE Descriptor Type
2	*bcdUSB*	2	0x0100	USB Specification Release Number in Binary-Coded Decimal
4	*bDeviceClass*	1	0x00	Class code. Set to zero for an audio only device.
5	*bDeviceSubClass*	1	0x00	Subclass code.
6	*bDeviceProtocol*	1	0x00	Protocol code.
7	*bMaxPacketSize0*	1	0x08	Maximum packet size for endpoint zero: 8 bytes
8	*idVendor*	2	0x04FA	Dallas Semiconductor Vendor ID (assigned by USB)
10	*idProduct*	2	0x4201	Product ID (assigned by Dallas Semiconductor)
12	*bcdDevice*	2	Note 1	Device release number in binary-coded decimal
14	*iManufacturer*	1	0x00	Index of string descriptor describing manufacturer
15	*iProduct*	1	0x00	Index of string descriptor describing product
16	*iSerialNumber*	1	0x00	Index of string descriptor describing the device's serial number
17	*bNumConfigurations*	1	0x01	Number of possible configurations

Notes:
1. Silicon version of the DS4201 in a right justified BCD format. For example, the bcdDevice field for version A1 will be 0x00A1.

CONFIGURATION DESCRIPTOR

Summary:
The configuration descriptor informs the host of the amount of descriptor data to be returned to describe the configuration, the number of interfaces that are included in the configuration, and device power characteristics.

Configuration Descriptor

Offset	Field	Size	Value	Description
0	*bLength*	1	0x09	Size of this descriptor in bytes: 9
1	*bDescriptorType*	1	0x02	CONFIGURATION
2	*wTotalLength*	2	0x01A5	Total length of data returned for this configuration. Includes the combined length of all descriptors (configuration, interface, endpoint, and class or vendor specific) returned for this configuration. (421 bytes)
4	*bNumInterfaces*	1	0x02	Number of interfaces supported by this configuration
5	*bConfigurationValue*	1	0x01	Value to use as an argument to Set Configuration to select this configuration
6	*iConfiguration*	1	0x00	Index of string descriptor describing this configuration
7	*bmAttributes*	1	0xC0	Configuration characteristics D7 Bus Powered D6 Self Powered D5 Remote Wakeup D4..0 Reserved (reset to 0)
8	*MaxPower*	1	0x50	Maximum power consumption of USB device from the bus in this specific configuration when the device is fully operational. Expressed in 2 mA units (i.e., 50 = 100 mA).

AUDIO CONTROL INTERFACE DESCRIPTORS

Summary:
The AUDIO CONTROL INTERFACE is interface number 0 within the DS4201 device. It has no alternate settings. Four audio terminals (IT:TID1, IT:TID2, IT:TID3, OT:TID4) and five audio units (FU:UID5, FU:UID6, FU:UID7, MU:UID8, XU:UID9) are defined to receive and transmit audio signals and to control muting and mixing.

Standard Audio Control Interface Descriptor (INFC-0)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x00	Number of interface within configuration.
3	bAlternateSetting	1	0x00	Value used to select an alternate setting for the interface identified in the prior field.
4	bNumEndpoints	1	0x00	Number of endpoints used by this interface (excluding endpoint 0).
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x01	AUDIOCONTROL subclass
7	bInterfaceProtocol	1	0x00	Not Used
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Class Specific Audio Control Interface Descriptor (INFC-0)

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x01	HEADER descriptor subtype.
3	bcdADC	2	0x0009	Audio Device Class spec with which the DS4201 complies. BCD formatted.
5	wTotalLength	2	0x0072	Total number of bytes returned for the class-specific Audio Control Interface descriptor. Includes the combined length of this descriptor header and all Unit and Terminal descriptors: 114 bytes
7	bInCollection	1	0x01	Number of streaming interfaces in the audio interface collection to which this control interface belongs: 1
8	baInterfaceNr(1)	1	0x01	Interface number of the associated streaming interface.

Input Terminal Descriptor (INFC-0, IT:TID1)

Offset	Field	Size	Value	Description
0	bLength	1	0x0C	Size of this descriptor in bytes: 12
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	INPUT_TERMINAL descriptor subtype.
3	bTerminalID	1	0x01	Constant uniquely identifying the Terminal within the audio function. This value is used in all requests to address this Terminal.
4	wTerminalType	2	0x0101	Constant characterizing the type of Terminal: USB STREAMING
6	bAssocTerminal	1	0x00	Not a bi-directional terminal.
7	bNrChannels	1	0x02	Number of logical output channels in the Terminal's audio channel cluster
8	wChannelConfig	2	0x0003	Describes the spatial location of the logical channels: Left Front, Right Front
10	iChannelNames	1	0x00	Index of a string descriptor, describing the name of the first logical channel: none
11	iTerminal	1	0x00	Index of a string descriptor, describing the Input Terminal: none

Input Terminal Descriptor (INFC-0, IT:TID2)

Offset	Field	Size	Value	Description
0	bLength	1	0x0C	Size of this descriptor in bytes: 12
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	INPUT_TERMINAL descriptor subtype.
3	bTerminalID	1	0x02	Constant uniquely identifying the Terminal within the audio function. This value is used in all requests to address this Terminal.
4	wTerminalType	2	0x0601	Constant characterizing the type of Terminal: External Analog connector
6	bAssocTerminal	1	0x00	Not a bi-directional terminal.
7	bNrChannels	1	0x02	Number of logical output channels in the Terminal's audio channel cluster
8	wChannelConfig	2	0x0003	Describes the spatial location of the logical channels: Left Front, Right Front
10	iChannelNames	1	0x00	Index of a string descriptor, describing the name of the first logical channel: none
11	iTerminal	1	0x00	Index of a string descriptor, describing the Input Terminal: none

Input Terminal Descriptor (INFC-0, IT:TID3)

Offset	Field	Size	Value	Description
0	bLength	1	0x0C	Size of this descriptor in bytes: 12
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	INPUT_TERMINAL descriptor subtype.
3	bTerminalID	1	0x03	Constant uniquely identifying the Terminal within the audio function. This value is used in all requests to address this Terminal.
4	wTerminalType	2	0x0601	Constant characterizing the type of Terminal: External Analog Connector
6	bAssocTerminal	1	0x00	Not a bi-directional terminal.
7	bNrChannels	1	0x02	Number of logical output channels in the Terminal's audio channel cluster
8	wChannelConfig	2	0x0003	Describes the spatial location of the logical channels: Left Front, Right Front
10	iChannelNames	1	0x00	Index of a string descriptor, describing the name of the first logical channel: none
11	iTerminal	1	0x00	Index of a string descriptor, describing the Input Terminal: none

Feature Unit Descriptor (INFC-0, FU:UID5)

Offset	Field	Size	Value	Description
0	bLength	1	0x0A	Size of this descriptor in bytes: 10
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type
2	bDescriptorSubtype	1	0x06	FEATURE_UNIT descriptor subtype.
3	bUnitID	1	0x05	Constant uniquely identifying the Unit within the audio function. This value is used in all requests to address this Unit.
4	bSourceID	1	0x09	ID of the Unit or Terminal to which this Feature Unit is connected: Extension Unit - XU:UID9
5	bControlSize	1	0x01	Size in bytes of an element of the bmaControls() array: 1
6	bmaControls(0)	1	0x01	Bit map indicating control supported for master channel 0: MUTE
7	bmaControls(1)	1	0x01	Channel 1, Left DAC, same bit map as bmaControls(0)
8	bmaControls(2)	1	0x01	Channel 2, Right DAC, same bit map as bmaControls(0)
9	IFeature	1	0x00	Index of a string descriptor, describing this Feature Unit: none

Feature Unit Descriptor (INFC-0, FU:UID6)

Offset	Field	Size	Value	Description
0	bLength	1	0x0A	Size of this descriptor in bytes: 10
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type
2	bDescriptorSubtype	1	0x06	FEATURE_UNIT descriptor subtype.
3	bUnitID	1	0x06	Constant uniquely identifying the Unit within the audio function. This value is used in all requests to address this Unit.
4	bSourceID	1	0x02	ID of the Unit or Terminal to which this Feature Unit is connected: Input Terminal - IT:TID2
5	bControlSize	1	0x01	Size in bytes of an element of the bmaControls() array: 1
6	bmaControls(0)	1	0x01	Bit map indicating control supported for master channel 0: MUTE
7	bmaControls(1)	1	0x01	Channel 1, Left AUX, same bit map as bmaControls(0)
8	bmaControls(2)	1	0x01	Channel 2, Right AUX, same bit map as bmaControls(0)
9	iFeature	1	0x00	Index of a string descriptor, describing this Feature Unit: none

Feature Unit Descriptor (INFC-0, FU:UID7)

Offset	Field	Size	Value	Description
0	bLength	1	0x0A	Size of this descriptor in bytes: 10
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type
2	bDescriptorSubtype	1	0x06	FEATURE_UNIT descriptor subtype.
3	bUnitID	1	0x07	Constant uniquely identifying the Unit within the audio function. This value is used in all requests to address this Unit.
4	bSourceID	1	0x03	ID of the Unit or Terminal to which this Feature Unit is connected: Input Terminal - IT:TID3
5	bControlSize	1	0x01	Size in bytes of an element of the bmaControls() array: 1
6	bmaControls(0)	1	0x01	Bit map indicating control supported for master channel 0: MUTE
7	bmaControls(1)	1	0x01	Channel 1, Left MIC, same bit map as bmaControls(0)
8	bmaControls(2)	1	0x01	Channel 2, Right MIC, same bit map as bmaControls(0)
9	iFeature	1	0x00	Index of a string descriptor, describing this Feature Unit: none

Mixer Unit Descriptor (INFC-0, MU:UID8)

Offset	Field	Size	Value	Description
0	bLength	1	0x0F	Size of this descriptor in bytes: 15
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type
2	bDescriptorSubtype	1	0x04	MIXER_UNIT descriptor type.
3	bUnitID	1	0x08	Constant uniquely identifying the Unit within the audio function. This value is used in all requests to address this Unit.
4	bNrInPins	1	0x03	Number of Input Pins of this Unit: 3
5	baSourceID(1)	1	0x05	ID of the Unit or Terminal to which the first Input Pin of this Mixer Unit is connected - FU:UID5
6	baSourceID(2)	1	0x06	ID of the Unit or Terminal to which the first Input Pin of this Mixer Unit is connected - FU:UID6
7	baSourceID(3)	1	0x07	ID of the Unit or Terminal to which the first Input Pin of this Mixer Unit is connected - FU:UID7
8	bNrChannels	1	0x02	Number of logical output channels in the Terminal's audio channel cluster.
9	wChannelConfig	2	0x0003	Describes the spatial location of the logical channels: Left Front, Right Front
11	iChannelNames	1	0x00	Index of a string descriptor, describing the name of the first logical channel: none
12	bmControls	2	0x9990	Bit map indicating which mixing controls are programmable.
14	iMixer	1	0x00	Index of a string descriptor, describing the Mixer Unit: none

Extension Unit Descriptor (INFC-0, XU:UID9)

Offset	Field	Size	Value	Description
0	bLength	1	0x0F	Size of this descriptor in bytes: 15
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x08	EXTENSION_UNIT descriptor subtype.
3	bUnitID	1	0x09	Constant uniquely identifying the Unit within the audio function. This value is used in all requests to address this Unit.
4	wExtensionCode	2	0x0000	Vendor-specific code identifying the Extension Unit: none
6	bNrInPins	1	0x01	Number of Input Pins of this Unit: 1
7	baSourceID	1	0x01	ID of the Unit or Terminal to which the Input Pin of this Extension Unit is connected: IT:TID1
8	baNrChannels	1	0x02	Number of logical output channels in the Extension Unit's first audio channel cluster.
9	waChannelConfig	2	0x0003	Describes the spatial location of the logical channels in the Extension Unit's audio channel cluster: Left Front, Right Front

Offset	Field	Size	Value	Description
11	iChannelNames	1	0x00	Index of a string descriptor, describing the name of the first logical channel in the Extension Unit's first audio channel cluster: none
12	bControlSize	1	0x01	Size in bytes of the bmControls field: one
13	bmControls	1	0x01	Enable/Disable control supported
14	iExtension	1	0x00	Index of a string descriptor, describing this Extension Unit: none

Output Terminal Descriptor (INFC-0, OT:TID4)

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x03	OUTPUT_TERMINAL descriptor subtype.
3	bTerminalID	1	0x04	Constant uniquely identifying the Terminal within the audio function. This value is used in all requests to address this Terminal.
4	wTerminalType	2	0x0304	Constant characterizing the type of Terminal: DESKTOP SPEAKER
6	bAssocTerminal	1	0x00	Not a bi-directional terminal.
7	bSourceID	1	0X08	ID of the Unit or Terminal to which this Terminal is connected: MU:UID8
8	iTerminal	1	0x00	Index of a string descriptor, describing the Output Terminal: none

AUDIO STREAMING INTERFACE DESCRIPTORS

Summary:
The AUDIO STREAMING INTERFACE is interface number 1 within the DS4201 device. It has six alternate settings:
ALT-0: no endpoints - zero bandwidth default setting
ALT-1: two endpoints - isoch data and isoch synch for 16-bit stereo PCM with asynchronous synchronization
ALT-2: two endpoints - isoch data and isoch synch for 16-bit mono PCM with asynchronous synchronization
ALT-3: two endpoints - isoch data and isoch synch for 8-bit stereo PCM with asynchronous synchronization
ALT-4: two endpoints - isoch data and isoch synch for 8-bit mono PCM with asynchronous synchronization
ALT-5: one endpoint - isoch data for 16-bit stereo PCM with adaptive synchronization

Alternate settings 1-5 support fixed sampling rates of 44.1 KHz and 48.0 KHz

ALTERNATE SETTING- 0: ZERO BANDWIDTH

Standard Audio Streaming Interface Descriptor (INFC-1, ALT-0)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x01	Number of interface within configuration.
3	bAlternateSetting	1	0x00	Value used to select this alternate interface setting: Alt-0 - Zero bandwidth
4	bNumEndpoints	1	0x00	Number of endpoints used by this interface (excluding endpoint 0): none
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x02	AUDIOSTREAMING subclass
7	bInterfaceProtocol	1	0x00	Not Used
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Note: Since there are no endpoints for ALT-0, no additional class, data or synchronization descriptors exist.

ALTERNATE SETTING- 1: 16-BIT STEREO PCM

Standard Audio Streaming Interface Descriptor (INFC-1, ALT-1)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x01	Number of interface within configuration.
3	bAlternateSetting	1	0x01	Value used to select this alternate interface setting: ALT-1 - 16 bit PCM Stereo
4	bNumEndpoints	1	0x02	Number of endpoints used by this interface (excluding endpoint 0).
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x02	AUDIOSTREAMING subclass
7	bInterfaceProtocol	1	0x00	Not Used

Offset	Field	Size	Value	Description
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Audio Class Specific Streaming Interface Descriptor (INFC-1, ALT-1)

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type
2	bDescriptorSubtype	1	0x01	AS_GENERAL descriptor subtype
3	bTerminalLink	1	0x01	The Terminal ID of the Terminal to which this endpoint is connected - IT:TID1
4	bDelay	1	0x01	Delay (δ) introduced by this endpoint. Expressed in number of frames.
5	wFormatTag	2	0x0001	The Audio Data Format that has to be used to communicate with this endpoint: Type 1 PCM

Type 1 Format Type Descriptor (INFC-1, ALT-1, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x0E	Size of this descriptor in bytes: 14
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	FORMAT_TYPE descriptor subtype.
3	bFormatType	1	0x01	PCM: FORMAT_TYPE_1
4	bNrChannels	1	0x02	Indicates the number of physical channels in the audio data stream. PCM stereo: 2 channels
5	bSubframeSize	1	0x02	The number of bytes occupied by one audio subframe. PCM 16 bit: 2 bytes per subframe.
6	bBitResolution	1	0x10	The number of effectively used bits from the available bits in a subframe: 16 bits.
7	bSamFreqType	1	0x02	Indicates how the sampling frequency can be programmed: 2 fixed sampling frequencies - 44.1kHz, 48 kHz
8	tSamFreq[1]	3	0x00AC44	Sampling frequency 1 in Hz for this endpoint: 44.1 KHz
11	tSamFreq[2]	3	0x00BB80	Sampling frequency 2 in Hz for this endpoint: 48 KHz

Standard Isochronous Data Endpoint Descriptor (INFC-1, ALT-1, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x01	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0, The endpoint number, Bit 6..4, Reserved, reset to zero. Bit 7, Direction: 0 = OUT endpoint (Audio sink) 1 = IN endpoint (Audio source)
3	bmAttributes	1	0x05	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 01 = Asynchronous Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x00C4	Maximum packet size this endpoint is capable of sending or receiving when this configuration is selected: 196 bytes.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds.
7	bRefresh	1	0x00	Not used for iso data, set to zero
8	bSynchAddress	1	0x02	Address of synch pipe endpoint.

Audio Class Specific Isochronous Data Endpoint Descriptor (INFC-1, ALT-1, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x25	CS_ENDPOINT descriptor type
2	bDescriptorSubtype	1	0x01	EP_GENERAL descriptor subtype
3	bmAttributes	1	0x01	Bit map which indicates which controls are supported by the endpoint D0: sampling frequency control D1: pitch control D6..2: reserved D7: MaxPackets only
4	bLockDelayUnits	1	0x00	Units for delay: undefined for asynch synchronization
5	wLockDelay	2	0x0000	Lock time: zero lock time for asynch

Standard Isochronous Synchronization Endpoint Descriptor (INFC-1, ALT-1, EP-2)
ENDPOINT ADDRESS - 2

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x82	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0: The endpoint number. Bit 6..4: Reserved, set to zero. Bit 7: Direction: 0 = OUT endpoint. 1 = IN endpoint.
3	bmAttributes	1	0x01	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 00 = None Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0003	Maximum packet size this endpoint is capable of sending or receiving. Endpoint is used to transfer 3-byte F_f values.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds: 1 ms
7	bRefresh	1	0x06	Rate at which the synch pipe provides new data. The rate is a power of 2 therefore only the power is reported: 2^6 = 64 ms
8	bSynchAddress	1	0x00	Set to zero, this is the synch pipe.

ALTERNATE SETTING- 2: 16-BIT MONO PCM

Standard Audio Streaming Interface Descriptor (INFC-1, ALT-2)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x01	Number of interface within configuration.
3	bAlternateSetting	1	0x02	Value used to select this alternate interface setting: ALT-2: 16 bit PCM Mono
4	bNumEndpoints	1	0x02	Number of endpoints used by this interface (excluding endpoint 0).
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x02	AUDIOSTREAMING subclass
7	bInterfaceProtocol	1	0x00	Not Used
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Audio Class Specific Streaming Interface Descriptor (INFC-1, ALT-2)

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type
2	bDescriptorSubtype	1	0x01	AS_GENERAL descriptor subtype
3	bTerminalLink	1	0x01	The Terminal ID of the Terminal to which this endpoint is connected - IT:TID1
4	bDelay	1	0x01	Delay (δ) introduced by this endpoint. Expressed in number of frames.
5	wFormatTag	2	0x0001	The Audio Data Format that has to be used to communicate with this endpoint: Type 1 PCM

Type 1 Format Type Descriptor (INFC-1, ALT-2, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x0E	Size of this descriptor in bytes: 14
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	FORMAT_TYPE descriptor subtype.
3	bFormatType	1	0x01	PCM: FORMAT_TYPE_1
4	bNrChannels	1	0x01	Indicates the number of physical channels in the audio data stream. PCM mono: 1 channel
5	bSubframeSize	1	0x02	The number of bytes occupied by one audio subframe. PCM 16 bit: 2 bytes per subframe

Offset	Field	Size	Value	Description
6	bBitResolution	1	0x10	The number of effectively used bits from the available bits in a subframe: 16 bits.
7	bSamFreqType	1	0x02	Indicates how the sampling frequency can be programmed. 2 fixed sampling frequencies - 44.1kHz, 48 kHz
8	tSamFreq[1]	3	0x00AC44	Sampling frequency in Hz for this endpoint: 44.1 KHz
11	tSamFreq[2]	3	0x00BB80	Sampling frequency in Hz for this endpoint: 48 KHz

Standard Isochronous Data Endpoint Descriptor (INFC-1, ALT-2, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x01	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0, The endpoint number, Bit 6..4, Reserved, reset to zero. Bit 7, Direction: 0 = OUT endpoint (Audio sink) 1 = IN endpoint (Audio source)
3	bmAttributes	1	0x05	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 01 = Asynchronous Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0062	Maximum packet size this endpoint is capable of sending or receiving when this configuration is selected: 98 bytes.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds.
7	bRefresh	1	0x00	Not used for iso data, set to zero
8	bSynchAddress	1	0x02	Address of synch pipe endpoint.

Audio Class Specific Isochronous Data Endpoint Descriptor (INFC-1, ALT-2, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x25	CS_ENDPOINT descriptor type
2	bDescriptorSubtype	1	0x01	EP_GENERAL descriptor subtype
3	bmAttributes	1	0x01	Bit map which indicates which controls are supported by the endpoint. None supported D0: sampling frequency control D1: pitch control D6..2: reserved D7: MaxPackets only All other bits are reserved.
4	bLockDelayUnits	1	0x00	Units for delay: undefined for asynch synchronization
5	wLockDelay	2	0x0000	Lock time: zero lock time for asynch

Standard Isochronous Synchronization Endpoint Descriptor (INFC-1, ALT-2, EP-2)
ENDPOINT ADDRESS - 2

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x82	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0: The endpoint number. Bit 6..4: Reserved, set to zero. Bit 7: Direction: 0 = OUT endpoint. 1 = IN endpoint.
3	bmAttributes	1	0x01	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 00 = None Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0003	Maximum packet size this endpoint is capable of sending or receiving. Endpoint is used to transfer 3-byte F_t values.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds: 1 ms
7	bRefresh	1	0x06	Rate at which the synch pipe provides new data. The rate is a power of 2 therefore only the power is reported: 2^6 = 64 ms
8	bSynchAddress	1	0x00	Set to zero, this is the synch pipe.

ALTERNATE SETTING- 3: 8-BIT STEREO PCM

Standard Audio Streaming Interface Descriptor (INFC-1, ALT-3)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x01	Number of interface within configuration.
3	bAlternateSetting	1	0x03	Value used to select this alternate interface setting: ALT-3: 8 bit PCM Stereo
4	bNumEndpoints	1	0x02	Number of endpoints used by this interface (excluding endpoint 0).
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x02	AUDIOSTREAMING subclass
7	bInterfaceProtocol	1	0x00	Not Used
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Audio Class Specific Streaming Interface Descriptor (INFC-1, ALT-3)

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x24	CS_ INTERFACE descriptor type
2	bDescriptorSubtype	1	0x01	AS_GENERAL descriptor subtype
3	bTerminalLink	1	0x01	The Terminal ID of the Terminal to which this endpoint is connected - IT:TID1
4	bDelay	1	0x01	Delay (δ) introduced by this endpoint. Expressed in number of frames.
5	wFormatTag	2	0x0002	The Audio Data Format that has to be used to communicate with this endpoint: Type 1 PCM8

Type 1 Format Type Descriptor (INFC-1, ALT-3, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x0E	Size of this descriptor in bytes: 14
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	FORMAT_TYPE descriptor subtype.
3	bFormatType	1	0x01	PCM: FORMAT_TYPE_1
4	bNrChannels	1	0x02	Indicates the number of physical channels in the audio data stream. PCM stereo: 2 channels

Offset	Field	Size	Value	Description
5	bSubframeSize	1	0x01	The number of bytes occupied by one audio subframe. PCM 8 bit: 1 byte per subframe
6	bBitResolution	1	0x08	The number of effectively used bits from the available bits in a subframe: 8 bits.
7	bSamFreqType	1	0x02	Indicates how the sampling frequency can be programmed. 2 fixed sampling frequencies - 44.1kHz, 48 kHz
8	tSamFreq[1]	3	0x00AC44	Sampling frequency in Hz for this endpoint: 44.1 KHz
11	tSamFreq[2]	3	0x00BB80	Sampling frequency in Hz for this endpoint: 48 KHz

Standard Isochronous Data Endpoint Descriptor (INFC-1, ALT-3, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x01	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0, The endpoint number, Bit 6..4, Reserved, reset to zero. Bit 7, Direction: 0 = OUT endpoint (Audio sink) 1 = IN endpoint (Audio source)
3	bmAttributes	1	0x05	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 01 = Asynchronous Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0062	Maximum packet size this endpoint is capable of sending or receiving when this configuration is selected: 98 bytes.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds.
7	bRefresh	1	0x00	Not used for iso data, set to zero
8	bSynchAddress	1	0x02	Address of synch pipe endpoint.

Audio Class Specific Isochronous Data Endpoint Descriptor (INFC-1, ALT-3, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x25	CS_ENDPOINT descriptor type
2	bDescriptorSubtype	1	0x01	EP_GENERAL descriptor subtype
3	bmAttributes	1	0x01	Bit map which indicates which controls are supported by the endpoint. None supported D0: sampling frequency control D1: pitch control D6..2: reserved D7: MaxPackets only
4	bLockDelayUnits	1	0x00	Units for delay: undefined for asynch synchronization
5	wLockDelay	2	0x0000	Lock time: zero lock time for asynch

Standard Isochronous Synchronization Endpoint Descriptor (INFC-1, ALT-3, EP-2)
ENDPOINT ADDRESS - 2

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x82	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0: The endpoint number. Bit 6..4: Reserved, set to zero. Bit 7: Direction: 0 = OUT endpoint. 1 = IN endpoint.
3	bmAttributes	1	0x01	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 00 = None Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0003	Maximum packet size this endpoint is capable of sending or receiving. Endpoint is used to transfer 3-byte F_f values.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds: 1 ms
7	bRefresh	1	0x06	Rate at which the synch pipe provides new data. The rate is a power of 2 therefore only the power is reported: 2^6 = 64 ms
8	bSynchAddress	1	0x00	Set to zero, this is the synch pipe.

ALTERNATE SETTING- 4: 8-BIT MONO PCM

Standard Audio Streaming Interface Descriptor (INFC-1, ALT-4)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x01	Number of interface within configuration.
3	bAlternateSetting	1	0x04	Value used to select this alternate interface setting: ALT-4: 8 bit PCM Mono
4	bNumEndpoints	1	0x02	Number of endpoints used by this interface (excluding endpoint 0).
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x02	AUDIOSTREAMING subclass
7	bInterfaceProtocol	1	0x00	Not Used
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Audio Class Specific Streaming Interface Descriptor (INFC-1, ALT-4)

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x24	CS_ INTERFACE descriptor type
2	bDescriptorSubtype	1	0x01	AS_GENERAL descriptor subtype
3	bTerminalLink	1	0x01	The Terminal ID of the Terminal to which this endpoint is connected - IT:TID1
4	bDelay	1	0x01	Delay (δ) introduced by this endpoint. Expressed in number of frames.
5	wFormatTag	2	0x0002	The Audio Data Format that has to be used to communicate with this endpoint: Type 1 PCM8

Type 1 Format Type Descriptor (INFC-1, ALT-4, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x0E	Size of this descriptor in bytes: 14
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	FORMAT_TYPE descriptor subtype.
3	bFormatType	1	0x01	PCM: FORMAT_TYPE_1
4	bNrChannels	1	0x01	Indicates the number of physical channels in the audio data stream. PCM mono: 1 channel
5	bSubframeSize	1	0x01	The number of bytes occupied by one audio subframe. PCM 8 bit: 1 byte per subframe

Offset	Field	Size	Value	Description
6	bBitResolution	1	0x08	The number of effectively used bits from the available bits in a subframe: 8 bits.
7	bSamFreqType	1	0x02	Indicates how the sampling frequency can be programmed. 2 fixed sampling frequencies - 44.1kHz, 48 kHz
8	tSamFreq[1]	3	0x00AC44	Sampling frequency in Hz for this endpoint: 44.1 KHz
11	tSamFreq[2]	3	0x00BB80	Sampling frequency in Hz for this endpoint: 48 KHz

Standard Isochronous Data Endpoint Descriptor (INFC-1, ALT-4, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x01	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0, The endpoint number, Bit 6..4, Reserved, reset to zero. Bit 7, Direction: 0 = OUT endpoint (Audio sink) 1 = IN endpoint (Audio source)
3	bmAttributes	1	0x05	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 01 = Asynchronous Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0031	Maximum packet size this endpoint is capable of sending or receiving when this configuration is selected: 49 bytes.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds.
7	bRefresh	1	0x00	Not used for iso data, set to zero
8	bSynchAddress	1	0x02	Address of synch pipe endpoint.

Audio Class Specific Isochronous Data Endpoint Descriptor (INFC-1, ALT-4, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x25	CS_ENDPOINT descriptor type
2	bDescriptorSubtype	1	0x01	EP_GENERAL descriptor subtype
3	bmAttributes	1	0x01	Bit map which indicates which controls are supported by the endpoint. None supported D0: sampling frequency control D1: pitch control D6..2: reserved D7: MaxPackets only
4	bLockDelayUnits	1	0x00	Units for delay: undefined for asynch synchronization
5	wLockDelay	2	0x0000	Lock time: zero lock time for asynch

Standard Isochronous Synchronization Endpoint Descriptor (INFC-1, ALT-4, EP-2)
ENDPOINT ADDRESS - 2

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x82	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0: The endpoint number. Bit 6..4: Reserved, set to zero. Bit 7: Direction: 0 = OUT endpoint. 1 = IN endpoint.
3	bmAttributes	1	0x01	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 00 = None Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x0003	Maximum packet size this endpoint is capable of sending or receiving. Endpoint is used to transfer 3-byte F_f values.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds: 1 ms
7	bRefresh	1	0x06	Rate at which the synch pipe provides new data. The rate is a power of 2 therefore only the power is reported: 2^6 = 64 ms
8	bSynchAddress	1	0x00	Set to zero, this is the synch pipe.

ALTERNATE SETTING- 5: 16-BIT STEREO PCM, ADAPTIVE SYNCHRONIZATION

Standard Audio Streaming Interface Descriptor (INFC-1, ALT-5)

Offset	Field	Size	Value	Description
0	bLength	1	0x0B	Size of this descriptor in bytes: 11
1	bDescriptorType	1	0x04	INTERFACE descriptor type
2	bInterfaceNumber	1	0x01	Number of interface within configuration.
3	bAlternateSetting	1	0x05	Value used to select this alternate interface setting: ALT-5: 16 bit PCM Stereo Adaptive
4	bNumEndpoints	1	0x01	Number of endpoints used by this interface (excluding endpoint 0).
5	bInterfaceClass	1	0x01	AUDIO Interface Class code.
6	bInterfaceSubClass	1	0x02	AUDIOSTREAMING subclass
7	bInterfaceProtocol	1	0x00	Not Used
8	iInterface	1	0x00	Index of a string descriptor that describes this interface: none
9	wNumClasses	2	0x0001	Not a dynamic interface.

Audio Class Specific Streaming Interface Descriptor (INFC-1, ALT-5)

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x24	CS_ INTERFACE descriptor type
2	bDescriptorSubtype	1	0x01	AS_GENERAL descriptor subtype
3	bTerminalLink	1	0x01	The Terminal ID of the Terminal to which this endpoint is connected - IT:TID1
4	bDelay	1	0x01	Delay (δ) introduced by this endpoint. Expressed in number of frames.
5	wFormatTag	2	0x0001	The Audio Data Format that has to be used to communicate with this endpoint: Type 1 PCM

Type 1 Format Type Descriptor (INFC-1, ALT-5, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x0E	Size of this descriptor in bytes: 14
1	bDescriptorType	1	0x24	CS_INTERFACE descriptor type.
2	bDescriptorSubtype	1	0x02	FORMAT_TYPE descriptor subtype.
3	bFormatType	1	0x01	PCM: FORMAT_TYPE_1
4	bNrChannels	1	0x02	Indicates the number of physical channels in the audio data stream. PCM stereo: 2 channels
5	bSubframeSize	1	0x02	The number of bytes occupied by one audio subframe. PCM 16 bit: 2 bytes per subframe

Offset	Field	Size	Value	Description
6	bBitResolution	1	0x10	The number of effectively used bits from the available bits in a subframe: 16 bits.
7	bSamFreqType	1	0x02	Indicates how the sampling frequency can be programmed: 2 fixed sampling frequencies - 44.1kHz, 48 kHz
8	tSamFreq[1]	3	0x00AC44	Sampling frequency 1 in Hz for this endpoint: 44.1 KHz
11	tSamFreq[2]	3	0x00BB80	Sampling frequency 2 in Hz for this endpoint: 48 KHz

Standard Isochronous Data Endpoint Descriptor (INFC-1, ALT-5, EP-1) ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x09	Size of this descriptor in bytes: 9
1	bDescriptorType	1	0x05	ENDPOINT descriptor type
2	bEndpointAddress	1	0x01	The address of the endpoint on the USB device described by this descriptor. The address is encoded as follows: Bit 3..0, The endpoint number, Bit 6..4, Reserved, reset to zero. Bit 7, Direction: 0 = OUT endpoint (Audio sink) 1 = IN endpoint (Audio source)
3	bmAttributes	1	0x09	This field describes the endpoint's attributes when it is configured using the *bConfigurationValue*. Bit 1..0, Transfer Type: 01 = Isochronous Bit 3..2, Synch Type: 10 = Adaptive Bit 4, Share Type: 0 = Not Shared All other bits are reserved
4	wMaxPacketSize	2	0x00C4	Maximum packet size this endpoint is capable of sending or receiving when this configuration is selected: 196 bytes.
6	bInterval	1	0x01	Interval for polling endpoint for data transfers, expressed in milliseconds.
7	bRefresh	1	0x00	Not used for iso data, set to zero
8	bSynchAddress	1	0x00	Address of synch pipe endpoint: None

Audio Class Specific Isochronous Data Endpoint Descriptor (INFC-1, ALT-5, EP-1)
ENDPOINT ADDRESS - 1

Offset	Field	Size	Value	Description
0	bLength	1	0x07	Size of this descriptor in bytes: 7
1	bDescriptorType	1	0x25	CS_ENDPOINT descriptor type
2	bDescriptorSubtype	1	0x01	GENERAL descriptor subtype
3	bmAttributes	1	0x01	Bit map which indicates which controls are supported by the endpoint. None supported D0: sampling frequency control D1: pitch control D6..2: reserved D7: MaxPackets only
4	bLockDelayUnits	1	0x01	Units for delay: milliseconds
5	wLockDelay	2	0x0000	Lock time: zero