

OPERATION MANUAL

USF-402AADC


Audio Analog Digital Converter

1st Edition


Precautions

Important Safety Warnings



[Operation]

 Hazard	Do not operate the unit under hazardous or potentially explosive atmospheric conditions. Doing so could result in fire, explosion, or other hazardous results.
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[Transportation]

 Hazard	Handle with care to avoid impact shock during transit, which may cause malfunction. When you need to transport the unit, use the original or suitable alternative packing material.
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[Circuitry Access]

	Do not remove covers, panels, casing, or access the circuitry with power applied to the unit. Turn the power off and disconnect the power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
 Stop	Do not touch any parts / circuitry with a high heat factor. Capacitors can retain enough electric charge to cause mild to serious shock, even after the power has been disconnected. Capacitors associated with the power supply are especially hazardous.

[Potential Hazards]

 Caution	If abnormal odors or noises are noticed coming from the unit, immediately turn the power off and disconnect the power cord to avoid potentially hazardous conditions. If problems similar to the above occur, contact an authorized service representative before attempting to operate the unit again.
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[Consumables]

 Caution	Consumable items that are used in the unit must be periodically replaced. For further details on which parts are consumables and when they should be replaced, refer to the specifications at the end of the Operation Manual. Since the service life of the consumables varies greatly depending on the environment in which they are used, such items should be replaced at an early date. For details on replacing consumable items, contact your dealer.
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Upon Receipt

USF-402AADC Audio Analog Digital Converters are fully inspected and adjusted prior to shipment. Check your received items against the packing lists below. Check to ensure no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

◆ **USF-402AADC Box**

ITEM	QTY	REMARKS
USF-402AADC	1	USF-402AADC Front Module USF-402AADC Rear Module
CD-ROM	1	Operation Manual (PDF)

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1. 1. Prior to Starting

1-1. Overview

The USF-402AADC is a module type Audio Analog Digital Converter to be installed into USF-212S frame.

The USF-402AADC converts 4ch analog audio signal to 4ch AES digital audio signal.

Web-based monitoring and control of the USF-402AADC over the network are available. SNMP monitoring of the USF-402AADC is also available.

1-2. Features

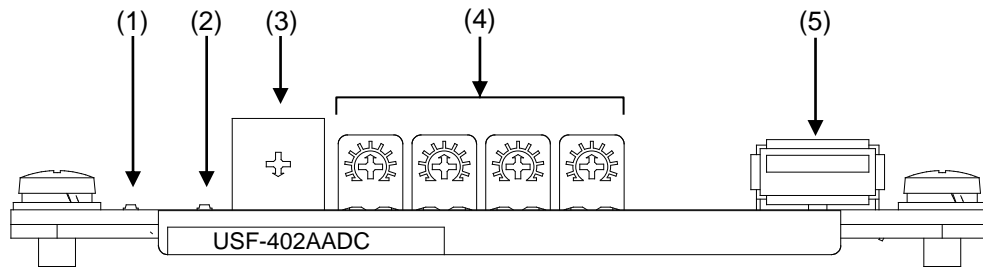
- Input impedance switchable between 600Ω / High Impedance
- Audio signal gain adjustable via the front panel and Web GUI.
- Analog audio signal input level adjustable.
- Synchronous output with USF frame reference signal available.
- SNMP monitoring and network control over the USF-402AADC are available.

1-3. About This Manual

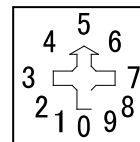
This manual is intended to help the user easily operate this product and make full use of its functions during operation. Before connecting or operating your unit, read this operation manual thoroughly to ensure you understand the product. Afterwards, store this manual in a safe place for future reference.

2. Panel Descriptions

2-1. Front Panel

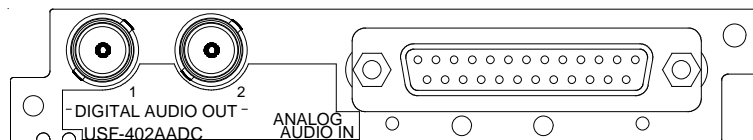


No.	Item	Description
(1)	POWER	LED lights green when normal DC power is supplied by USF frame.
(2)	REF	LED lights green when Reference is supplied by USF frame.
(3)	Input Level	Sets input attenuation with rotary switch SW2 in the range from scale 4 to 7. 0-3: -10 dB 4: -10 dB 5: 0 dB (Factory setting) 6: +4 dB 7: +8 dB 8-9: +8 dB
(4)	GAIN	Adjusts audio signal gain volume. Plus/minus 6dB adjustable against input signal. (Factory setting: 0dB)*
(5)	USB Connector	Used to update USF-402AADC software. (Do not connect to USB devices)



*Available when gain adjustment mode is set at front of card. * Refer to Sec. 4-1. "Setting Gain Adjustment Mode (SW2, SW4, SW6, SW8)" for details on Gain Adjustment Mode settings.

2-2. Rear Panel



Item	Description
DIGITAL AUDIO OUT 1-2	AES Digital Audio Output Port
ANALOG AUDIO IN	Analog Audio IN Port See Sec. 3-1. "Audio Input Connector Pin Arrangement" for details on pin assignment.

3. Connection

Refer to USF frame operation manuals for details on USF-402AADC module installation into USF frames.

3-1. Audio Input Connector Pin Arrangement

Pin No.	Signal Name	Pin No.	Signal Name
1	GND	14	GND
2	GND	15	GND
3	GND	16	GND
4	GND	17	GND
5	GND	18	GND
6	GND	19	GND
7	CH4 IN+	20	CH4 IN -
8	CH4 IN COM	21	CH3 IN +
9	CH3 IN -	22	CH3 IN COM
10	CH2 IN +	23	CH2 IN -
11	CH2 IN COM	24	CH1 IN +
12	CH1 IN -	25	CH1 IN COM
13	GND		

3-2. Balanced Input

For balanced input, connect each analog audio signal Hot (+), COLD (-), and SHIELD (COM) to the respective HOT, COLD, and SHIELD (COM) pin of each connector.

3-3. Unbalanced Input

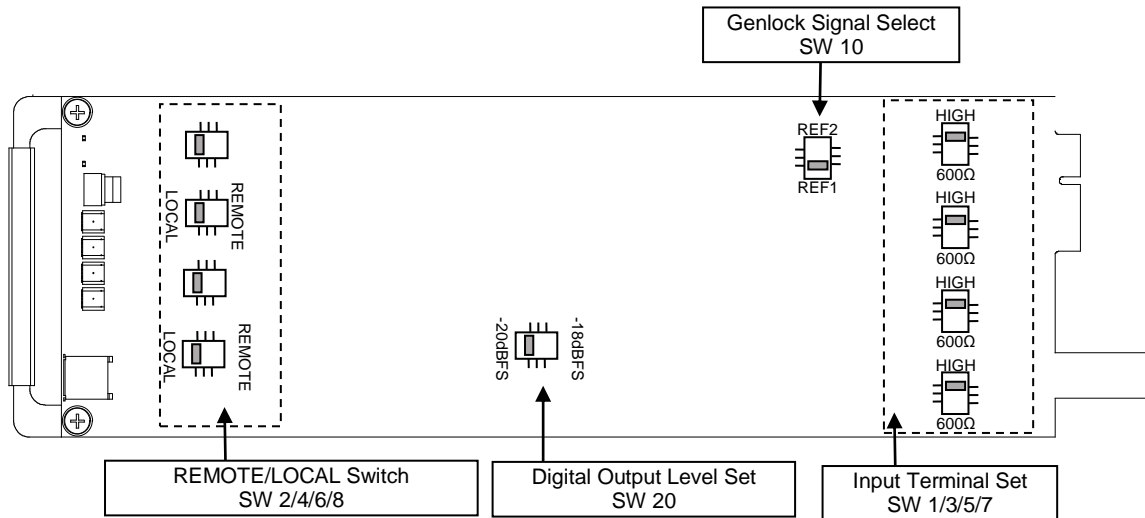
For unbalanced input, connect each analog audio signal line to the HOT pin of each connector and connect the shield line to both COLD and SHIELD.

Check the input level after system connection and adjust the level if required.

* When the output impedance is low with unbalanced input, set the input terminal of SF-402AADC to high impedance.

4. Settings

Various settings are available using the DIP switches on the front module.
Set DIP switch settings before installing the module into a frame.



4-1. Gain Adjustment (SW2, SW4, SW6, SW8)

Selects each gain adjustment setting for CH1 to 4 via SW2, SW4, SW6 and SW8 respectively.

Switch No.	Associated Channel	Function	Factory Setting
SW2	CH1	Sets method to adjust gain. LOCAL: Front Panel Volume REMOTE: Web GUI	LOCAL
SW4	CH2		LOCAL
SW6	CH3		LOCAL
SW8	CH4		LOCAL

◆ When set to "LOCAL"

Gain can be set via the front panel. (± 6 dB)
Gain settings via web browser are disabled.

◆ When set to "REMOTE"

Gain can be set via web browser. (± 20 dB)
Gain settings via the Front Panel are disabled.

* Refer to Sec. 5. "WEB GUI" for details on displaying web pages.

4-2. Input Termination (SW1, SW3, SW5, SW7)

Sets CH1 to 4 input termination via SW1, SW3, SW5 and SW7 respectively.

Switch No.	Associated Channel	Function	Factory Setting
SW1	CH1	Sets method for input termination. 600Ω : 600Ω HIGH : High Impedance	600Ω
SW3	CH2		600Ω
SW5	CH3		600Ω
SW7	CH4		600Ω

4-3. Digital Output Level (SW20)

Sets digital output level via SW20.

Switch No.	Associated Channel	Function	Factory Setting
SW 20	CH1/2 CH3/4	Sets digital output level. -18dBFS : -18 dBFS -20dBFS : -20 dBFS	-20dBFS

* Disabled when set via web browser.

4-4. Genlock (SW10)

Switch No.	Function	Factory Setting
SW10	Selects Genlock signal supplied by USF frame. REF1: Genlock 1 REF2: Genlock 2	REF1

5. Web GUI

USF-402AADC operation can be monitored and network settings changed via web browser/PC-network connection by installing USF-402AADC into a USF-212S unit. Refer to the USF-212S operation manual for details on displaying web pages.

5-1. Web Display Information

The USF-402AADC web page changes at LOCAL or REMOTE settings in Gain Setting. See Sec. 4-1. "Gain Adjustment (SW2, SW4, SW6, SW8)" for switching the LOCAL / REMOTE setting.

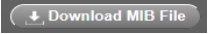
<LOCAL screen>

<REMOTE screen>

◆ Module Information

Item	Description
Slot	USF-212S slot no. in which the USF-402AADC is installed
S/N	Serial number of USF-402ADAC
SOFT Version	Software version of USF-402AADC
FPGA Version	FPGA version of USF-402AADC
IP Address	IP Adress of USF-402AADC
MAC Address	MAC Address of USF-402AADC
Installed Cards	Indicates whether the front and rear modules match. Matched: Correct (front/rear) modules are installed. Mismatched: Incorrect rear module is installed. Install a correct rear module
Genlock	Lock status of USF frame-supplied Genlock and output signals.

◆ **Downloading MIB Files**

- (1) Click  to download SNMP Manager MIB (Management Information Base).
- (2) Select SAVE (S) from the opened dialog box.
- (3) FORA-USFAADC-MIB.zip file will download.
- (4) Unzip the file from SNMP Manager.

◆ **Audio Status**

Item	Description
Gain Control	USF-402AADC Gain setting mode for respective channels See Sec. 4-1. "Gain Adjustment (SW2, SW4, SW6, SW8)" for setting details.
Audio Input	Analog audio input status in each channel is displayed.
Termination	Analog audio termination settings in each channel are displayed.

◆ **Audio Settings**

Item	Description
Analog Input Level	Analog audio input levels are displayed.
Audio Gain Ch1-4	Sets analog audio input gain. Sets gain for Ch1 to Ch4 respectively. Audio Gain bar does not show when setting is LOCAL. See Sec. 4-1. "Gain Adjustment (SW2, SW4, SW6, SW8)" for setting details.
Digital Reference Port	Sets the digital reference port setting. Local: Front Panel Volume Knob. Remote: Web GUI
Digital Reference Level	Sets digital reference level. Range : -18dBFS, -20dBFS
Silence Detect Time Ch1-4	Sets Silence Detection Time for Ch 1-4. Detect Level: -40 dB Setting: 1 -10sec Factory Setting: 2 sec Step: 1sec When silence continues over the set range, input is judged as no input. Affects Audio In on the web and Get/Trap on SNMP.

◆ **Input Status Trap**

Enable: When analog audio input changes, SNMP trap is sent to SNMP manager.

6. About SNMP

The USF-402AADC can be remotely monitored using an external SNMP monitoring system that supports SNMPv2C. MIB (Management Information Base) files required for SNMP monitoring system can be downloaded from Web GUI. (See "Downloading MIB files" in previous section for details.) Refer to the USF-212S Operation Manual for SNMP settings.

◆ GET List

Object group	Item Name	Object name in MIB file	Value	OID	Type	TRAP Function
OID: 1.3.6.1.4.1.20175.1.337.1. (Unit Info)						
Module Information	Product Name	usf402AadcProductName	USF-402AADC	1	OCTET STRING	
	Product Code	usf402AadcProductCode	1023834	2	INTEGER	
	Serial Number	usf402AadcSerialNumber	1720****	3	INTEGER	
	Soft Version	usf402AadcSoftVersion	**. **	4	OCTET STRING	
	FPGA Version	usf402AadcFpgaVersion	**. **	5	OCTET STRING	
	Slot Number	usf402AadcSlotNumber	1-12	6	INTEGER	
	Genlock	usf402AadcGenlockStatus	0: unLock 1: lock	7	INTEGER	
	Input Termination Ch 1	usf402AadcInputTerminateCh1	-1: notAvailable 0: term600-Ohm 1: high-impedance	8	INTEGER	
	Input Termination Ch 2	usf402AadcInputTerminateCh2	ditto	9	INTEGER	
	Input Termination Ch 3	usf402AadcInputTerminateCh3	ditto	10	INTEGER	
	Input Termination Ch 4	usf402AadcInputTerminateCh4	ditto	11	INTEGER	
	Input Status Ch 1	usf402AadcInputStatusCh1	-1: notAvailable 0: silence 1: present	12	INTEGER	✓
	Input Status Ch 2	usf402AadcInputStatusCh2	ditto	13	INTEGER	✓
Input Status Ch 3	usf402AadcInputStatusCh3	ditto	14	INTEGER	✓	
Input Status Ch 4	usf402AadcInputStatusCh4	ditto	15	INTEGER	✓	

* Item parameters cannot be set from SNMP.

◆ TRAP List

Object group	Item Name	Object name in MIB file	OID	Type	Reference Object
OID: 1.3.6.1.4.1.20175.1.337.0. (TRAP)					
Trap	Ch 1 Input	usf402AadcInputStatusChangedCh1	1	INTEGER	usf402AadcSlotNumber usf402AadcInputStatusCh1
	Ch 2 Input	usf402AadcInputStatusChangedCh2	2	INTEGER	usf402AadcSlotNumber usf402AadcInputStatusCh2
	Ch 3 Input	usf402AadcInputStatusChangedCh3	3	INTEGER	usf402AadcSlotNumber usf402AadcInputStatusCh3
	Ch 4 Input	usf402AadcInputStatusChangedCh4	4	INTEGER	usf402AadcSlotNumber usf402AadcInputStatusCh4

7. Specifications and Dimensions

7-1. Specifications

	Except as otherwise noted, 0dBu \approx 0.775V (r.m.s.)
Audio input	4Ch (balanced/unbalanced) 25 pin D-sub (Female)
Input impedance	600 Ω or high impedance
Audio output	AES/EBU (unbalanced 1Vp-p) 75 Ω BNC x 2
Maximum input level	+24 dB
Frequency characteristics	20 Hz to 20 kHz \pm 0.2 dB (Standard: 1kHz)
ATT	-10 dB, 0 dB, +4 dB, +8 dB
GAIN adjustable range	Output signal \pm 6.0 dB (Front Panel), \pm 20.0 dB (Web GUI) adjustable
Digital audio reference	-18 dBFS, -20 dBFS
Audio silence setting	1 - 10 Sec.
Sampling frequency	48 kHz
Sound resolution	24 Bit
Distortion ratio	Less than 0.05 % (When input is 1kHz +24dB)
S/N ratio	More than 80 dB (When input is +24 dB A weight FILTER)
Genlock input	BB: 0.429 V(p-p) (NTSC), 0.45 V(p-p) (PAL), Tri-Level Sync.: 0.6 V(p-p) Supplied by the USF frame.
Temperature	0°C to 40°C
Humidity	30% to 90% (no condensation)
Power	+12 V DC (Supplied by USF frame)
Power Consumption	Approx. 910 mA (+12V)
Weight	0.5 kg
Dimensions	Front Module: 106 (W) x 356 (D) mm Rear Module: 114 (W) x 20.2 (H) mm
Required slot	1 slot

7-2. External Dimensions

(All dimensions in mm)

