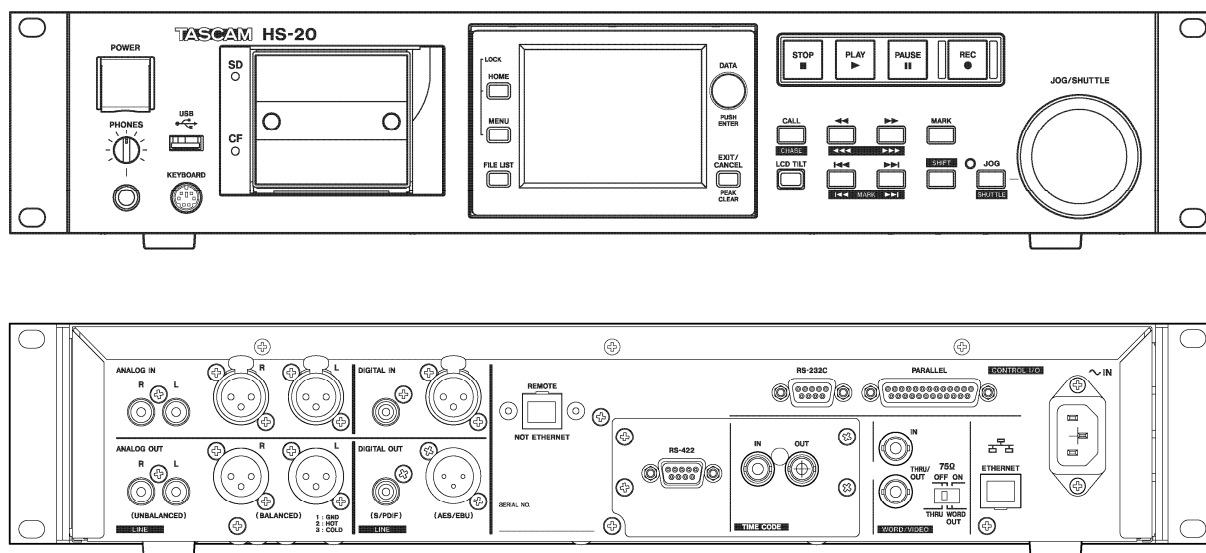


Oct, 2014

Product Spec Sheet

2 Channel Audio Recorder

HS-20



■ Specifications

Audio resolution

•Recording media

SD/SDHC cards
CompactFlash (CF) cards

•File system

FAT32 (4 GB or more)
FAT16 (2 GB or less)

•File formats

BWF (Broadcast Wave Format)
WAV (Waveform Audio File Format)

•Number of channels

2 channels

•Quantization bit depths

16-bit, 24-bit

•Sampling frequencies

44.1/48/88.2/96/176.4/192 kHz

•Clock reference types

INTERNAL, WORD IN, VIDEO IN, DIGITAL IN

•Timecode frame rates

23.976, 24, 25, 29.97DF, 29.97NDF, 30DF, 30NDF

Inputs and outputs**Analog audio inputs and outputs**

The error for nominal and maximum levels is ± 1 dB or less for all input and output jacks except the PHONES jack.

•ANALOG IN L/R (BALANCED)

Connectors:	XLR-3-31 (1: GND, 2: HOT, 3: COLD)
Input impedance:	4.3 k Ω
Nominal input level:	+4 dBu (1.23 Vrms) ± 1 dB (+6 dBu when maximum input level is set to +15 dBu) (+6 dBu when Digital Ref. Level is set to -9 dB)
Maximum input level (selectable):	+15 dBu (4.36 Vrms) (D.Ref: -9 dBFS, A.Input: +4 dBu) +18 dBu (6.16 Vrms) (D.Ref: -14 dBFS, A.Input: +4 dBu) +20 dBu (7.75 Vrms) (D.Ref: -16 dBFS, A.Input: +4 dBu) +22 dBu (9.76 Vrms) (D.Ref: -18 dBFS, A.Input: +4 dBu) +24 dBu (12.3 Vrms) (D.Ref: -20 dBFS, A.Input: +4 dBu) D. Ref: Digital Ref. Level setting A. Input: Analog Input Ref. Level setting.

•ANALOG IN L/R (UNBALANCED)

Connectors:	RCA pin jacks
Input impedance:	3.9 k Ω
Nominal input level:	-10 dBV (0.316 Vrms) ± 1 dB
Maximum input level:	+6 dBV (2.0 Vrms) ± 1 dB

•ANALOG OUT L/R (BALANCED)

Connectors:	XLR-3-32 (1: GND, 2: HOT, 3: COLD)
Output impedance:	100 Ω or less
Nominal output level:	+4 dBu (1.23 Vrms) ± 1 dB (+6 dBu when Digital Ref. Level is set to -9 dB)
Maximum output level (selectable):	+15 dBu (4.36 Vrms) (D.Ref: -9 dBFS, A.Output: +4 dBu) +18 dBu (6.16 Vrms) (D.Ref: -14 dBFS, A.Output: +4 dBu) +20 dBu (7.75 Vrms) (D.Ref: -16 dBFS, A.Output: +4 dBu) +22 dBu (9.76 Vrms) (D.Ref: -18 dBFS, A.Output: +4 dBu) +24 dBu (12.3 Vrms) (D.Ref: -20 dBFS, A.Output: +4 dBu) D. Ref: Digital Ref. Level setting A. Output: Analog Out Ref. Level setting

•ANALOG OUT L/R (UNBALANCED)

Connectors:	RCA pin jacks
Output impedance:	100 Ω or less
Nominal input level:	-10 dBV (0.32 Vrms) ± 1 dB
Maximum input level:	+6 dBV (2.0 Vrms) ± 1 dB

•PHONES jack

Connector:	standard 6.3 mm (1/4") stereo jack
Maximum output level:	45 mW + 45 mW or more (THD+N 0.1% or less, into 32 Ω)

Digital audio inputs and outputs**•DIGITAL IN (S/PDIF)**

Connector:	RCA pin jack
Input signal voltage amplitude:	200 mVp-p to 600 mVp-p/75 Ω
Input impedance:	75 Ω
Formats:	AES3-2003/IEC60958-4 (AES/EBU) IEC60958-3 (S/PDIF)
Supported sampling frequencies:	44.1/48/88.2/96/176.4/192 kHz (Single/Double/Quad) When SRC is ON, the receivable range is 32-192 kHz.

•DIGITAL IN (AES/EBU)

Connector:	XLR-3-31
Input signal voltage range:	200 mVp-p to 10 Vp-p/110 Ω
Input impedance:	110 $\Omega \pm 20\%$
Formats:	AES3-2003/IEC60958-4 (AES/EBU) IEC60958-3 (S/PDIF)
Supported sampling frequencies:	44.1/48/88.2/96/176.4/192kHz (Single/Double/Quad) When SRC is ON, the receivable range is 32-192 kHz.

•DIGITAL OUT (S/PDIF)

Connector:	RCA pin jack
Output voltage:	0.5 Vpp $\pm 20\%$ /75 Ω
Input impedance:	75 Ω
Format:	IEC60958-3 (S/PDIF)
Supported sampling frequencies:	44.1/48/88.2/96/176.4/192 kHz (Single/Double/Quad)

•DIGITAL OUT (AES/EBU)

Connector:	XLR-3-32
Output voltage:	2-5 Vp-p/110 Ω
Output impedance:	110 $\Omega \pm 20\%$
Format:	IEC60958-4 (AES3-2003, AES/EBU)
Supported sampling frequencies:	44.1/48/88.2/96/176.4/192 kHz (Single/Double/Quad)

Control input/output ratings**•RS-422 (attached with optional SY-2 board)**

Connector:	D-sub 9-pin (female, inch specification)
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•RS-232C

Connector:	D-sub 9-pin (female, inch specification)
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•PARALLEL

Connector:	D-sub 25-pin (female, inch specification)
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•TIMECODE IN (attached with optional SY-2 board)

Connector:	BNC
Signal voltage amplitude:	0.5-5 Vp-p
Input impedance:	10 k Ω
Format:	SMPTE 12M-1999 compliant

•TIMECODE OUT (attached with optional SY-2 board)

Connector: BNC
Signal voltage amplitude: 2 V_{p-p}
Output impedance: 600 Ω
Format: SMPTE 12M-1999 compliant

•WORD/VIDEO IN

Connector: BNC
Input voltage: 5V TTL equivalent (WORD IN)
Signal voltage amplitude: 1 V_{p-p} (VIDEO IN)
Input impedance: 75 Ω ±10%
Allowable frequency deviation of external synchronization:
±100 ppm
Includes switch for enabling termination
Input frequencies (WORD): 44.1/48/88.2/96/176.4/192 kHz
Input signal (VIDEO): 24/25/29.97/30 Frame
(NTSC/PAL Black burst, HDTV Tri-Level)

•WORD/VIDEO THRU/OUT

Connector: BNC
Signal voltage amplitude: 5V TTL equivalent
Output impedance: 75 Ω ±10%
Output frequency (WORD): 44.1/48/88.2/96/176.4/192 kHz
Frequency stability ±10 ppm or less (Ta = 20° C)
OUT/THRU switch included (OUT is only for WORD OUT)

•ETHERNET

Connector: RJ45
Compatibility: 100BASE-TX, 1000BASE-T

•KEYBOARD

Connector: Mini-DIN (PS/2)

•USB

Connector: USB A-type 4-pin
Protocol: USB 2.0 HIGH SPEED (480 Mbps) compliant

•REMOTE

Connector: RJ45
Supply voltage: 13 V
Signal: LVDS serial

Audio performance**•Frequency response**

ANALOG IN to ANALOG OUT:

20 Hz – 20 kHz: ±0.5 dB
(Fs = 44.1/48 kHz, JEITA) (recording and playback)
20 Hz – 40 kHz: +0.5 dB/–2 dB
(Fs = 88.2/96 kHz, JEITA) (recording and playback)
20 Hz – 80 kHz: +0.5 dB/–5 dB
(Fs = 176.4/192 kHz, JEITA) (recording and playback)

•Distortion

 ANALOG IN to ANALOG OUT: 0.005% or less (JEITA)
 (recording and playback)

•S/N ratio

 ANALOG IN to ANALOG OUT: 100 dB or more (JEITA)
 (recording and playback)

General
•Power

AC 100–240 V, 50–60 Hz

•Power consumption

22 W

•Dimensions (W × H × D)

482.6 x 94 x 314.1 mm (including protrusions)

•Weight

4.7 kg

•Operating temperature range

5–35°C

PARALLEL connector

The **PARALLEL** connector on the rear panel allows external control of this unit. (A TASCAM RC–SS20 can also be connected.)

The pin assignments are as follows.

Pin No.	Normal	RC–SS20 PonMode	I/O	Pin No.	Normal	RC–SS20 PonMode	I/O
1	GND	GND		14	REMORT_SELECT,H or Open	REMOTE_SELECT ,L	I
2	PLAY	FLASH 1	I	15	PAUSE	FLASH 6	I
3	STOP	FLASH 2	I	16	(Reserved)	FLASH 7	I
4	RECORD	FLASH 3	I	17	AUX1, FF	FLASH 8	I
5	SKIP FWD	FLASH 4	I	18	AUX2, REW	FLASH 9	I
6	SKIP BWD	FLASH 5	I	19	AUX3, MARK	FLASH 10	I
7	(Reserved)	STOP	I	20	(Reserved)	FLASH_PAGE	I
8	FADER_START	FADER_START	I	21	(Reserved)	(Reserved)	O
9	(Reserved)	(Reserved)	O	22	TALLY_SD	TALLY_SD ¹	O
10	TALLY_PAUSE	TALLY_PAUSE	O	23	(Reserved)	(Reserved)	O
11	TALLY_RECORD	RESERVED	O	24	TALLY_CF	TALLY_CF ²	O
12	TALLY_STOP	TALLY_STOP	O	25	+5V ³	+5V ³	
13	TALLY_PLAY	TALLY_PLAY	O				

I: Command input for transport control

Internal circuit, +5V pull-up

Triggers from a low input level of 50 msec or more

O: Command output, for tally output

The internal circuit is open collector

(10Ω output impedance)

Low command output when operating

20V dielectric strength, 35mA maximum current

- 1For RC-SS20, assigned to CF indicator
- 2For RC-SS20, assigned to CD indicator
- 3+5V: maximum supplied current is 50 mA

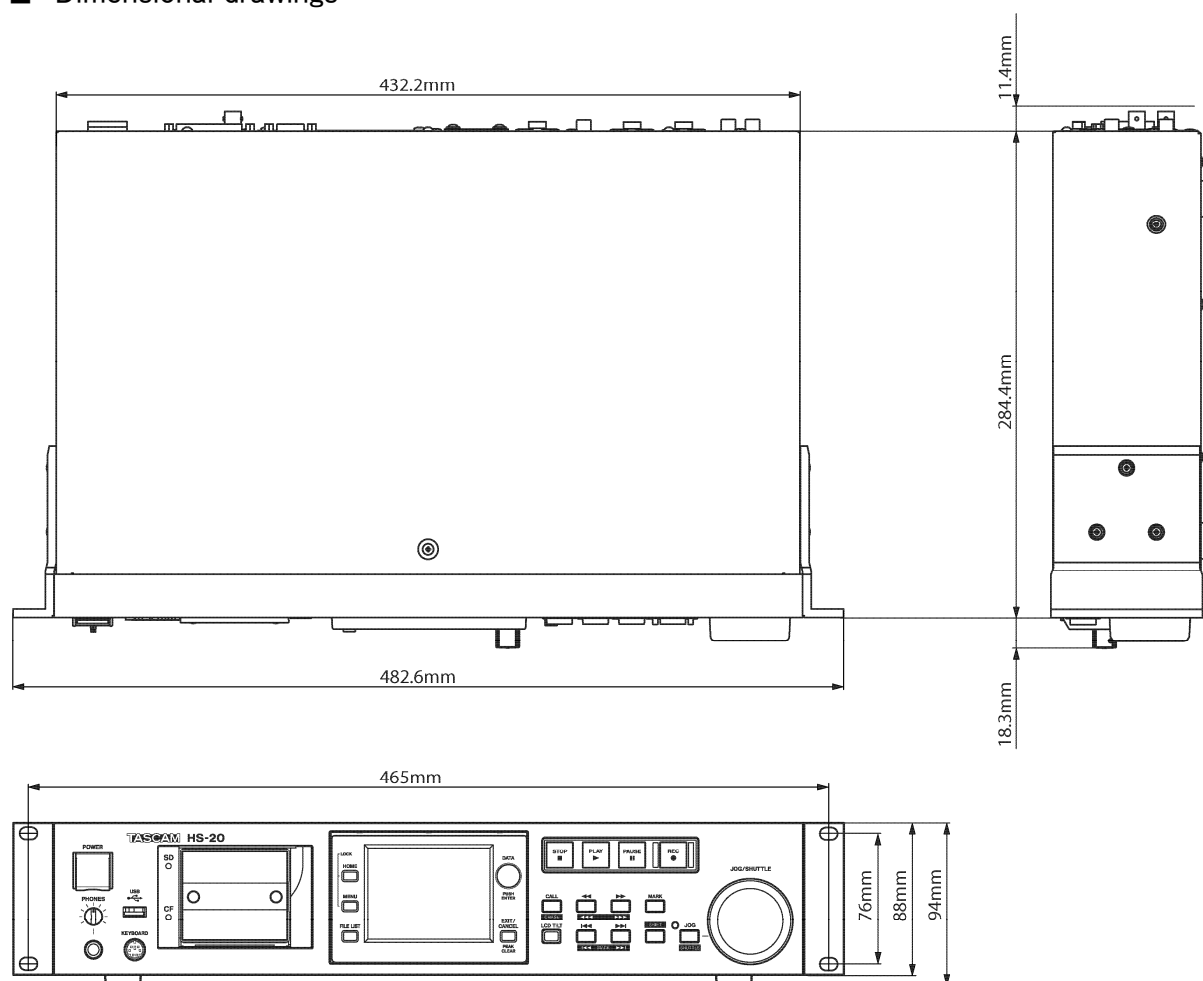
When REMOTE Select (pin 14) is set to high, it can be used as an ordinary parallel controller.

When set to low, flash start mode is enabled.

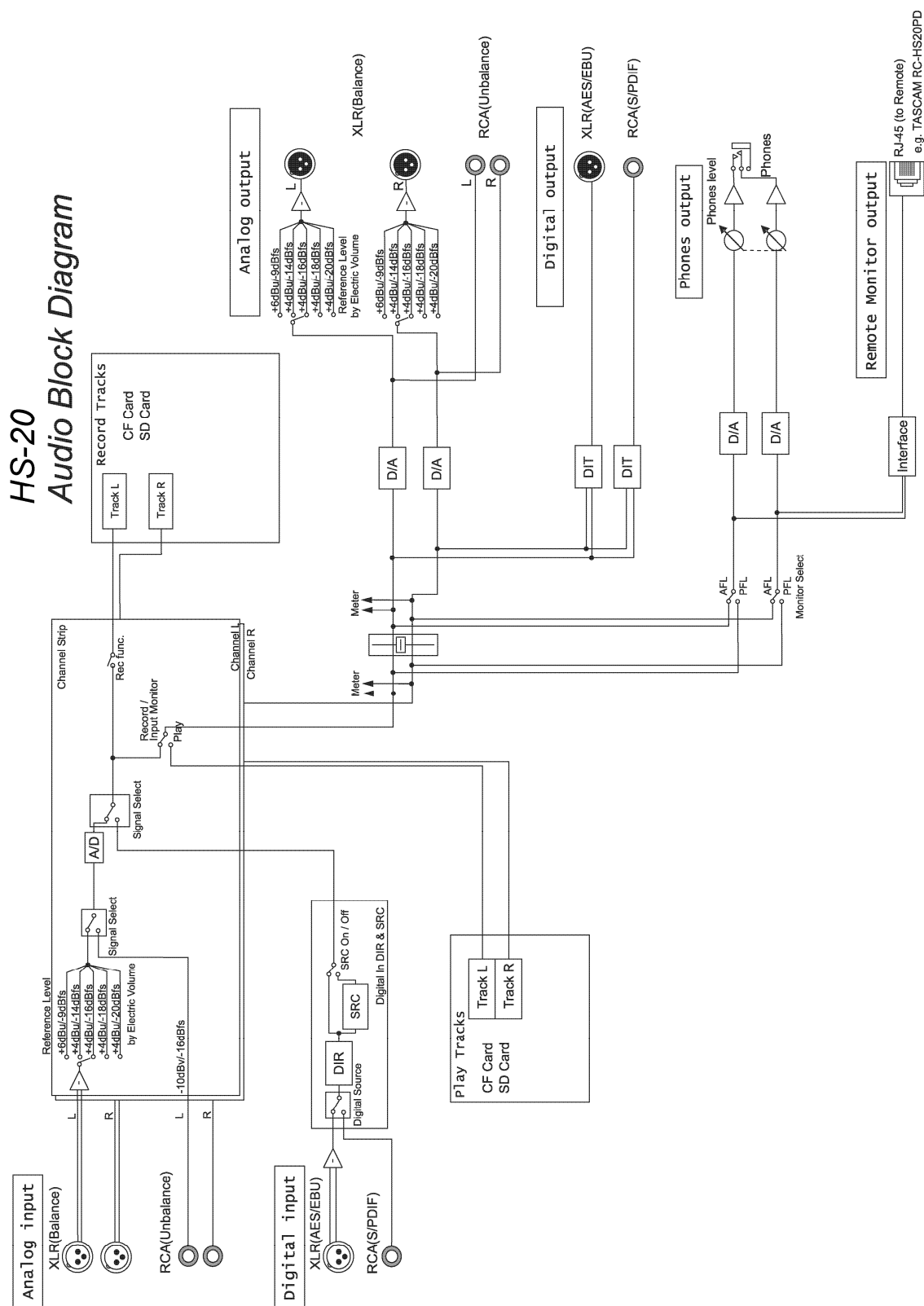
In addition, depending on the high/low setting of the Flash Page (pin 20), the key assignments are as follows.

Pin 14	Pin 20	Flash start take
Low	High	1-10
Low	Low	11-20

■ Dimensional drawings



■ Block diagram



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※All information included in this document is as of Oct, 2014.