

3516A

ISDB-T OFDM MODULATOR



* This unit is 3516A-001.



* This unit is 3516A-003.

Type List

Type	Dimensions	Correspondence to 12+1 segments for partial reception at the time of MPEG2 TS input
3516A-001	482.6(W)×44(H)×400(D) *EIA Specifications	Not corresponded
3516A-011		Corresponded
3516A-002	480(W)×49(H)×400(D) *JIS Specifications	Not corresponded
3516A-012		Corresponded
3516A-003	230(W)×80(H)×420(D)	Corresponded

General

This unit is terrestrial digital broadcasting signal generator corresponding to transmitting route coding system regulated by "The technical condition of terrestrial digital television broadcasting system" (ISDB-T system) in "The technical condition relating to digital broadcasting system" of Telecommunication Technology Deliberative Assembly Consultation No.74.

Transmitting route coding processing of ISDB-T system is made for input broadcasting TS signal, and OFDM wave of 13 segments band is possible to output from built-in up converter as RF signal after processing OFDM framing, reverse FFT, orthogonal modulation and IF frequency conversion.

Generation of OFDM modulated wave by using broadcasting TS actually on air is possible, so that it is more suitable for monitor equipment, such as confirmation of operation of receiver and confirmation of contents.

Also, simple Re-MUX function is equipped, so that direct input of MPEG2 TS which is not converted to broadcasting TS is possible.

Features

- ISDB-T modulator and all channel up-converter are accommodated in small space and output of OFDM modulated wave to VHF/UHF (1~62 channel) and MID/SHB (C13~C63) of CATV is possible (output level is 0dBm / 75Ω fixed).
- Setting of each parameter automatically by broadcasting TS is possible.
- Generation of signal corresponding to 12+1 segments for partial reception is possible.
- Simple Re-MUX function is equipped.
- To synchronize digital process part of this unit with 10MHz from external is possible.
- Output of TS clock is possible.

Composition

Main Unit	1
Weight	Approx. 5 kg
Accessories	
Power Cable (Including 3pin→2pin converter)	1
Instruction Manual and Test Result Sheet	1set
Power Source	
Input Voltage Allowable Range	: AC90V ~ AC250V (50Hz/60Hz)
Power Consumption	: Approx. 80VA
Operating Environment	
Temperature	: 0°C ~ + 45°C
Humidity	: Less than 90%RH (No dew generation)

Rating

• TS Input [TS Input]

This is TS input terminal. Broadcasting TS or MPEG2 TS can be input (Kind of input TS is switched by switch on front).

Connector : BNC-R
Interface : Conforming to DVB-ASI
Impedance : 75 Ω

• Broadcasting TS Input

Broadcasting TS input in chapter 5 of ARIB STD-B31 "Annex Operating guideline of terrestrial digital television" is corresponded.

Automatic setting / renewal of each TMCC parameter setting of this unit are possible by added information (Dummy byte part of each transport stream and IIP : ISDB-T Information Packet).

• Caution Item

- ① This is modulator of 13 segments format of ISDB-T.
(Broadcasting TS, such as ISDB-TSB 1 segment or 3 segments is not corresponded.)
- ② AC data in added information are not corresponded.
(Output AC data in OFDM modulated wave become ALL 1)
- ③ Network information (network synchronization information) in IIP is data used for present broadcasting, so that this unit is not corresponded.
- ④ Parity (From 197th byte to 204th byte) of dummy part of each transport stream is not processed.
- ⑤ In case that added information is multiplexed to both dummy byte and IIP, added information of IIP is used.
- ⑥ In case that clock synchronization of broadcasting TS generator side is not taken from TS clock output of this unit, 10MHz synchronized with broadcasting TS generator side (Synchronized with broadcasting TS) is needed to input to this unit.

MPEG2 TS Input

Automatic detection of 188 / 204 Bytes. Input MPEG2 TS is needed to be rate of less than 40Mbps and to be rate of less than 18.255Mbps for TS rate excluding NULL packet. Also, for input MPEG2 TS, switching operation of PCR is made in this unit.

* At the time of MPEG2 TS input (When simple Re-MUX function is used), synchronization of this unit and TS data generator is not needed.

10MHz Input [10MHz INPUT]

This is reference frequency input of digital processing part of this unit. Reference frequency internal (INT) / external (EXT) switching function is equipped (Switched by sliding switch on rear panel).

In case that external (EXT) is set, synchronization of data of broadcasting TS is taken by 10 MHz input from this terminal.

In case that internal (INT) is set, TS clock output terminal of item 4.3 is connected with clock input terminal of TS data generator and data of broadcasting TS are got synchronization. In this case, TS data generator becomes slave operation.

* At the time of MPEG2 TS input (When simple Re-MUX function is used), synchronization of this unit and TS data generator is not needed.

Connector : BNC-R
Input Level : Within 0 dBm ± 3dB
Input Frequency : 10MHz
Input Frequency Accuracy : Within ±1 × 10⁻⁶ (Synchronization with broadcasting TS is needed)
Impedance : 50 Ω

TS Clock Output [TS CLK OUTPUT]

This is TS clock (Byte clock) output, By connecting this output with clock input terminal of TS data generator, synchronization of broadcasting TS is taken. In this case, TS data generator becomes slave operation.

But, this is only output in case that clock setting of this unit is "Internal (INT)"

* At the time of MPEG2 TS input (When simple Re-MUX function is used), synchronization of this unit and TS data generator is not needed.

Connector : BNC-R
Output Frequency : 256/63 MHz ≒ 4.063MHz
Output Level : TTL
Impedance : 50 Ω

RF Output [RF OUTPUT]

This is modulated wave output of RF.

Setting Possible Channel :
1 ~ 62 channel and C13 ~ C63 channel (1/7 MHz offset is existed)
Output Level : 0dBm
Connector : F-R
Impedance : 75 Ω

Performance

Output Level Accuracy : Within ±3dB
Output Return Loss : More than 14dB (At 47-870MHz)
Output Frequency Accuracy : Within ±1ppm (In case that digital processing part is synchronized with external 10MHz)
IM : Less than -45dB (At ±3.3MHz offset of output center frequency)
Spurious : Less than -60dB (Appeared at 47-870MHz and as referenced to total power)

RF Monitor Output [RF MONITOR]

This is monitor output of modulated wave output of RF.

Output Level : 20dB
Connector : F-R
Impedance : 75 Ω

Transmitting Parameter**• Parameter at Broadcasting TS Input**

At broadcasting TS input, transmitting parameters corresponded to this unit are shown in following.

MODE : MODE2, MODE3
Guard Interval Rate : 1/4, 1/8, 1/16
Carrier Modulation Scheme : QPSK, 16QAM, 64QAM, *DQPSK is not corresponded.
Convolution Coding Rate : 1/2, 2/3, 3/4, 5/6, 7/8
Time Interleave Length : 0, 2, 4, (MODE 2)
0, 1, 2 (MODE 3)

• Parameters When Simple Re-MUX Function is used.

When simple Re-MUX function is used (At MPEG2 TS input), transmitting parameters are shown in following.

(For layer configuration when simple Re-MUX function is used, following 2 kinds are switched by switch on front.)

• 13 segments single layer

MODE : MODE 3
Guard Interval Rate : 1/8
Layer Configuration : 13 segments single layer
Carrier Modulation Scheme : 64QAM
Convolution Coding Rate : 3/4
Time Interleave Length : 2

• 12+1 segments for partial reception

MODE : MODE 3
Guard Interval Rate : 1/8
A Layer : 1 segment (Partial reception)
Carrier Modulation Scheme : QPSK
Convolution Coding Rate : 1/2
Time Interval Length : 2
B Layer : 12 segments
Carrier Modulation Scheme : 64QAM
Convolution Coding Rate : 3/4
Time Interleave Length : 2
* Data of B Layer become PN data.

Alarm Output [ALARM]

This is contact output of alarm. Make at the time of alarm. Also, total alarm is OR output of "FAN ALARM" and "ALARM" on front panel.

Connector : D-sub 9 pins S (Fixing base 4-# 40 in. screw)
Pin Assignment : Following list

Pin No.	Signal Name	Pin No.	Signal Name
1	Total Alarm+	6	Total Alarm-
2	Not used	7	Not used
3	Not used	8	Not used
4	Not used	9	Not used
5	Not used	-	-