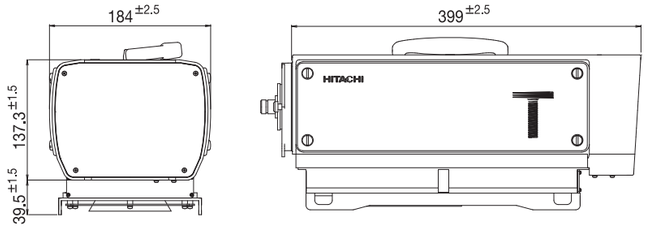
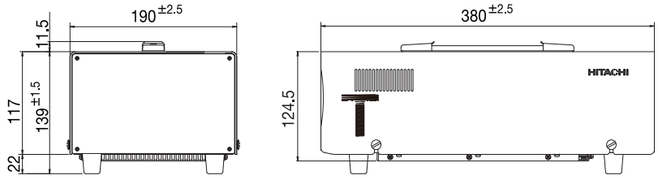
Dimensions

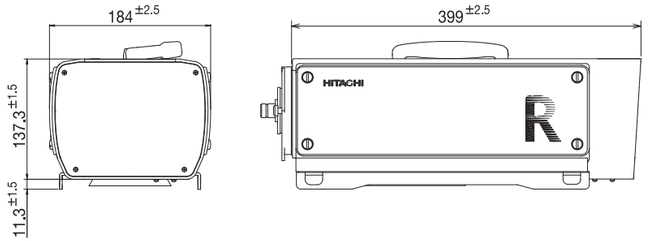
Transmitter Head



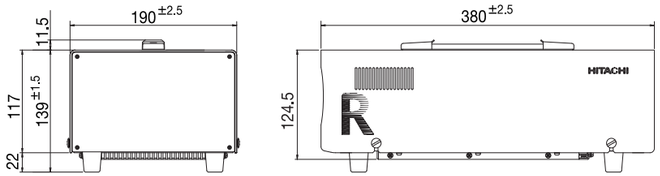
Transmitter Control



Receiver Head



Receiver Control



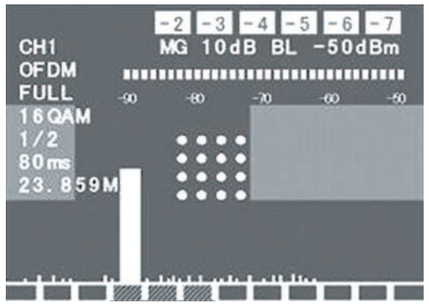
Delay Profile Adaptor

NTSC: DP-A1
PAL: DP-A1PAL

The DP-A1 is an optional tool specifically designed for Hitachi Digital Microwave links. It satisfies the essential need to know condition of the physical link that the Microwave system is being used under.
Detailed transmission link parameter Delay Profile information is gathered, analyzed and displayed such that sound judgment can be made about the performance and robustness of a given transmission path. Pertinent data is displayed on an external video monitor.

Functions and features

Facilitates Antenna Alignment
Detection and analysis of reflection waves
Link Margin Display
Constellation Display



Specifications

Power Supply: AC117V or AC220V
Power Consumption: 15W
Dimensions: 210(W) x 44(H) x 350(D) mm
Weight: 2kg approx.

⚠ CAUTION : To ensure safe operation, please read the instruction manual before using this product.

These Specifications are subject to change without notice.

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Hitachi Kokusai Electric

HITACHI

Advances digital microwave link featuring Hitachi's advanced microwave radio technology

Digital Microwave Link
FR-Z100 Series

Hitachi's Z100 series are innovative portable digital microwave link systems that are designed to facilitate the coverage of temporary O/B (Outside Broadcasting) venues.
High Definition and Standard Definition video and audio can easily be transmitted digitally from the field to a TV station, production site or central receive point during events such as breaking news, marathons, parades, sports and other outdoor TV production applications.

The full-featured Hitachi Z100 Digital Microwave Link, can transmit SD-SDI, VBS (NTSC or PAL) video signals with the use of a new-design built-in SD CODEC. Analog signals are digitized into a transport stream (TS) and transmitted through the DVB-ASI interface. This practicality makes the unit as easy to use as analog microwave links. Furthermore, signal integrity and transmission robustness are of utmost importance in the Z100 design criteria therefore, the units can be confidentially employed to replace older analog portable microwave links.

The use of COFDM (Coded Orthogonal Frequency Division Multiplex) significantly improves deployment and setup time of the Z100 series microwave link. This ease of use reduces operation costs due to the fact that the link can be not only used be in traditional line-of-sight links but also in heavy multipath interference environments. COFDM by nature, performs best in multi-object-bounce link paths.

With our optional High Definition built-in CODEC or, a third party's external High Definition CODEC with DVB-ASI I/O's, the Z100 can transport an effective data rate payload of up to 59 Mbps.

Performance

Front panel
Simple & Intuitive Operation

Modulation Method
COFDM
QAM (option)

Frequency Bnad
7GHz band (6.4 to 7.2GHz)
other frequency: to be discussed

Frequency Channel
Standard 4 channels (10 channels max.)

Output Power
COFDM: 0.5 / 0.2 / 0.1W (Switchable)
due to frequency (to be discussed)

Preset Mode Function
Transmission Method (Switchable)

Input & Output Signal
VBS (NTSC or PAL)
Two Analog Audio
DVB-ASI (option)
SDI (option)
Embedded Audio (option)
AES/EBU Digital Audio (option)

CODEC
SD CODEC
HD/SD CODEC (Option)

Power Supply
AC100V to AC240V / DC+12V

Version Information

Standard Version

Transmitter Head

Transmitter Control

Receiver Head

Receiver Control

High-Grade Version

Transmitter Head

Transmitter Control

Receiver Head

Receiver Control

SPECIFICATIONS

Transmitter

Frequency:	4 channels (6.4 to 7.2GHz) (up to 10 channels at option) other frequency: to be discussed
Power Output (COFDM):	0.5 / 0.2 / 0.1W due to frequency (to be discussed)
Spurious Emission:	50μW
Intermediate Frequency:	first 130MHz (70MHz at option) second 1,500MHz
IF Cable Length:	300m max. (with RG-5A/U cable equivalent)
DC Voltage of IF:	DC+50V
Frequency Stability:	±7x10-6
Side lobe:	-37dB or less (fo±9MHz)

Receiver

Local Osc. Freq. Stability:	$\pm 3 \times 10^{-6}$
Noise Factor:	4dB or less
Reception method:	Double Super-heterodyne
Leakage Radiation:	10μW or less
Intermediate Frequency:	first 1,500MHz second 130MHz (70MHz at option)
IF Cable Length:	300m max. (with RG-5A/U cable equivalent)
DC Voltage of IF:	DC+50V
Range of reception input:	-30 to -80dBm (with AGC response)

COFDM Transmission Parameter

Interval of Channels:	18MHz
Occupied Bandwidth:	17.2MHz
Interval of Carrier:	19.971 kHz
Number of Carrier (Total):	857
Modulation Method:	BPSK, DBPSK, QPSK, DQPSK, 16QAM, 32QAM, 64QAM
Number of FFT points:	1024
FFT Sampling clock Freq:	20.450743MHz
No. of Symbols/Frame:	408
No. of Frames/Super-Frame:	8
Valid Symbol Length:	50.07μs
Guard Interval Length:	6.26μs
Symbol Length:	56.33μs
Frame Length:	22.98ms
Inner Code:	Convolution (1/2, 2/3, 3/4, 5/6)
Outer Code:	RS (204/188 t=8)
Inner interleave:	Bit Interleave Frequency Interleave Time Interleave
Outer interleave:	Byte Interleave

QAM Transmission parameter (option)

Modulation Method:	64QAM, 32QAM, 16QAM, QPSK
Frame Cycle:	1438μs
Preamble Signal Length:	19.2μs
Roll-off Rate:	30%
Interleave System:	Convolution interleave
Error Correction Method:	Convolution encoding Viterbi encoding
Transmission Bit Rate:	64QAM (FEC ON): 65.880Mbit/s 59.648Mbit/s 32QAM (FEC ON): 52.704Mbit/s 44.736Mbit/s 16QAM (FEC ON): 39.528Mbit/s 29.824Mbit/s QPSK (FEC ON): 13.176Mbit/s 13.131Mbit/s

Power Supply

Transmitter	
AC input:	AC100V to AC240V
DC input:	DC+12V
Receiver	
AC input:	AC100V to AC240V
DC input:	DC+12V

Temperature

Performance Guarantee:	-10 to +40 degree
Operation:	-10 to +50 degree

Video Signal

NTSC/PAL:	1.0Vp-p 75 ohm BNC

Audio Signal

Analog:	Stereo L/R 0dBm balanced (2ch)

Digital Signal
DVB-ASI

SD CODEC

Video Format:	NTSC or PAL
Field Frequency:	59.94Hz or 50Hz
SDI:	Video: SMPTE259M-C 480i or 576i Audio: Embedded Audio SMPTE272M 4ch max
AES3 (option):	AES-3id 4ch max. (Option)
ENC Method:	Video: MPEG2 422P@ML, MP@ML Audio: MPEG1 LayerII
Number of Pixels:	720x480 or 720x576
Chrominance Format:	4:2:2 / 4:2:0

HD/SD-CODEC (option)

Video Format:	NTSC or PAL
Field Frequency:	59.94Hz or 50Hz
SDI:	Video: SMPTE292M 1080i SMPTE259M-C 480i or 576i Audio: Embedded Audio SMPTE299M 8ch max. Embedded Audio SMPTE272M 4ch max.
AES3 (option):	HD: AES-3id 8ch max. SD: AES-3id 4ch max.
ENC Method:	Video: MPEG2 422P@HL, MP@HL MPEG2 422P@ML, MP@ML Audio: SMPTE302M 16bit SMPTE302M 20bit MPEG1 LayerII MPEG2 AAC LC profile
Number of Pixels:	1920x1080, 1440X1080, 720x480 or 720x576
Chrominance Format:	4:2:2 / 4:2:0

ACCESSORIES
0.6m or 0.9m Parabolic Antenna
Primary Radiator
Tripod
Carrying Case
IF Cable