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# **AWMT-4000K**

## **Ku-BAND 80W - 150 W**

### **TRANSCEIVER**

#### **INTRODUCTION**

AWMT-4000K<sup>®</sup> is ADVANTECH's new family of hub-mount transceivers operating in the Ku-band. These transceivers are designed for continuous operation in the harshest outdoor environment. Except for the LNB, the complete unit is available in a single integrated package. The built-in microprocessor controller provides for external monitoring and control of the operating parameters, and for the redundancy control. The LNB is connected to the transceiver with a single coaxial cable. Higher power transceivers are also available in the AWMT-K<sup>®</sup> series for up to 250W.

#### **FEATURES**

- **Easy to install and operate**
- **Compact light weight design**
- **Weatherproof single package**
- **Two Frequency Synthesizers (1 MHz step) for independent operation in Tx and Rx**
- **High stable phase-locked LNB.**
- **Superior phase noise**
- **Remote Monitor & Control (RS232 / RS485)**
- **Relay form "C" contacts available**
- **Alarm LED display for Tx and Rx**
- **Protection against thermal runaway and out-of-lock conditions**
- **Automatic high power reflected power protection**
- **No external switch controller required for 1:1 redundancy**
- **Independent 1:1 redundant operation in Tx and Rx**
- **Built-in Receive Reject Filter**

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## **APPLICATION**

The AWMT-4000K is designed to operate in the Ku-band with an IF frequency of 70 or 140 MHz (Option) in the transmit and the receive directions. The unit is self-contained and is intended for mounting outdoors, near the hub of an antenna.

When used in conjunction with Advantech SPL/ACT wireless modems, AWMT-4000K terminal is ideal for single- or multiple- carriers over a 36 MHz or 72 MHz bandwidth.

## **REDUNDANT OPERATION**

The AWMT-4000K series of transceivers may be configured to operate in 1:1 redundancy mode. No extra controller is required for redundancy operation, as the built-in controller in each amplifier provides this function. Especially, 1:1 redundant operation is redundant in Tx and Rx.

## **MONITOR AND CONTROL**

An onboard microprocessor monitors and controls all operational parameters and system status of the AWMT-4000K. This powerful M&C system enables the user to locally and remotely control functions such as output power and transmit/receive channel frequencies. The M&C system also controls a sophisticated digital temperature compensation system, ensuring the highest gain stability over temperature and frequency of any transceiver package available.

The AWMT-4000K has universal RS-232 interface compatibility capable of operating with dumb terminals, Laptop/PC emulating terminals, hand-held terminals and PDAs without proprietary software. The versatile configuration provides two M&C ports: one RS-232 and one RS-485. If one indoor M&C computer or one indoor remote control panel is adopted, the RS-485 serial port will be used with Advantech M&C software.

Two kinds of controllers are available from Advantech:

- Hand-Held Terminal, suitable for in the field installation setup.
- Remote Control Panel, suitable for indoor rack mounting to provide permanent monitoring and control capabilities. It might be used for both configuration standalone and redundancy

## **MAJOR OPTIONS**

### **Transmit frequency bands (GHz)**

Band 1 14.0-14.5  
Band 2 13.75-14.5

### **Receive frequency bands (GHz)**

Band 1 10.95-11.7  
Band 2 11.7-12.2  
Band 3 12.25-12.75

### **Bandwidth**

Narrow band (40MHz), 70MHz IF  
Wide band (80 MHz), 140MHz IF

### **Accessories**

**Mounting Kits for transceiver installation**  
**Redundancy kits**  
**Mounting frame for redundancy applications**  
**Transmit Reject Filter**  
**Remote Control Panel**  
**Hand-Held terminal**



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## SPECIFICATIONS

### Transmit

<b>Power</b>	<b>P1dB min.</b>	<b>Gain min.</b>
80W	48 dBm	75dB
100W	49 dBm	75 dB
125W	50 dBm	75 dB
150W	51 dBm	75 dB

#### IF input

Frequency range	70 ± 18 MHz (140 ± 36 MHz optional)
Input Level	-25 to -5 dBm
Input Connector	Type N female
Connector Impedance	50 Ω (75 Ω optional)
Input VSWR	1.3: 1 max. at 50 Ω

#### RF output

Frequency range	14.00-14.50 GHz
Output connector	WR75-G
Output VSWR	1.3:1 max.

#### Gain specification

Attenuator range	20 dB
Attenuator step size	1 dB (0.1 dB optional)
Gain flatness	2.0 dB P-P max. 36 MHz 3.0 dB P-P max. 72 MHz
Gain stability	±1.5 dB max. -40°C to +55°C
Intermodulation Product (IMD3)	-25 dBc (2 carriers each at 6 dB back-off from P1dB) -55 dBc max.
Spurious.	1 MHz
Synthesizer step size	

#### Frequency stability

-40°C to +55°C	+/-2 x 10 <sup>-8</sup> / day
Aging	+/-1 x 10 <sup>-7</sup> / year

#### Phase noise

Offset frequency	Phase noise
100Hz	-63 dBc/Hz max.
1000 Hz	-73 dBc/Hz max.
10 KHz	-83 dBc/Hz max.
>100 KHz	-93 dBc/Hz max.

## Receive

### Phase Locked Low Noise Block (PL LNB)

RF Input Frequency	10.95-11.70 GHz 11.70-12.20 GHz 12.25-12.75 GHz
RF Input Interface	WR-75-G
Noise Temperature at 25°C	75°K typical
Gain	60 dB typical
External Reference for LNB	10MHz (supplied from Transceiver)
L-band Output Frequency	950-1700 MHz
L-band Output Interface	Type N female 50 Ω.

### Down Converter (exclude LNB)

#### RF Input

Frequency Range	950-1700 MHz
Input Connector	Type N female
Connector Impedance	50 Ω
Input VSWR	1.3: 1 max at 50 Ω

#### IF Output

Frequency range	70 ± 18 MHz (140 ± 36 MHz optional)
Output Level	+14 dBm at P1dB
Output Connector	Type N female
Connector Impedance	50 Ω (75 Ω optional)
Output VSWR	1.3: 1 max at 50 Ω

#### Gain specification

Gain	35 dB min.
Attenuator range	20 dB
Attenuator step size	1 dB (0.1 dB optional)
Gain flatness	2.0 dB P-P max. 36 MHz band 3.0 dB P-P max. 72 MHz band
Gain stability	±3.0 dB max. -40°C to +55°C
Noise Figure	10 dB
Spurious	-55 dBc
Image Rejection	60 dB
Synthesizer step size	1 MHz

#### Frequency stability

-40°C to +55°C	+/-2 x 10 <sup>-8</sup> / day
Aging	+/-1 x 10 <sup>-7</sup> / year

#### Phase Noise

Offset frequency	Phase noise
100Hz	-63 dBc/Hz max.
1000 Hz	-73 dBc/Hz max.
10 KHz	-83 dBc/Hz max.
>100 KHz	-93 dBc/Hz max.

**ISO 9001 certified****Monitor & Control**

Serial port (RS-485)	MS3112E10-6P
Serial port (RS-232)	MS3112E10-6P
Redundancy Port	MS3112E16-26P

**Environmental**

Cooling	Forced Air
Operational	-40°C to +55°C standard -50°C to +55°C option
Storage	-55°C to +85°C
Humidity	up to 100% condensing
Altitude	3,000 m AMSL(derated 2°C/300m)

**DC Output to LNB**

+18V DC at RF IN connector

**Power requirements**

AC input voltage	MS3102R16-10P 220 VAC ±15% , 47 to 63 Hz
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**Mechanical**

Dimensions	16" x 13.5" x 31"
Packaging	Weatherproof for outdoor use

*ADVANTECH reserves the right to change the above specifications without prior notice*



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