MMDS
Transmitter

Operation Manual

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Chapter 1. General Information

1.1 Module Features and Specifications

	PLC100	PLC200
Input Frequency	22~34 MHz	12~42 MHz
Output Frequency	2170~2182MHz	2500~2530MHz
Output 1 dB Compression Point	24dBm Typ.	24dBm Typ.
Output Transmitting Noise	-122dBm/Hz Max	-116dBm/Hz Max
Output Spurious (+22dBm TX Out)	-60dBc Max	-60dBc Max
Output Power Blanking Threshold	-40dBm±1dB	-40dBm±1dB
TX Switching Latency	<1.2uS	<1.2uS
LO Stability	±10kHz	±10kHz
Phase Noise	<- 65 dBc/Hz @100Hz -85 dBc/Hz @lKHz -90 dBc/Hz@10kHz -95 dBc/Hz@100kHz	<- 65 dBc/Hz @100Hz -85 dBc/Hz @lKHz -90 dBc/Hz@10kHz -95 dBc/Hz@100kHz
Input and Output Return Loss	6.0dB min	6.0dB min
Input Impedance	F-type 75 ohms	F-type 75 ohms
Output Impedance	Dipole or N-type 50 ohms	Dipole or N-type 50 ohms
Supply Voltage	+15VDC to +24VDC	+15VDC to +24VDC
Supply Current	350 mA max	350 mA max
Temperature	-10 ~ +70℃	-10 ~ +70℃
Humidity	100% weatherproof	100% weatherproof
Lightning & Surge Protection	Meets IEEE specifications	Meets IEEE specifications

Note: Typical value @25℃, unless otherwise specified. Technical specifications are subject to change without prior notice.

Chapter 2. Installation

2.1 Step by Step Installation

2.1.1 Mounting Bracket Assembly Suite

The following hardwares are suggested for mounting the Transmitter to the pole. A set of mounting bracket includes ONE 2511 mounting bracket, ONE bracket 3, ONE bracket 2, TWO screws 4013, and FOUR hex flange nuts. Please contact TSI sales department for this accessory.

(2511 Mounting Bracket)

(Bracket 3)

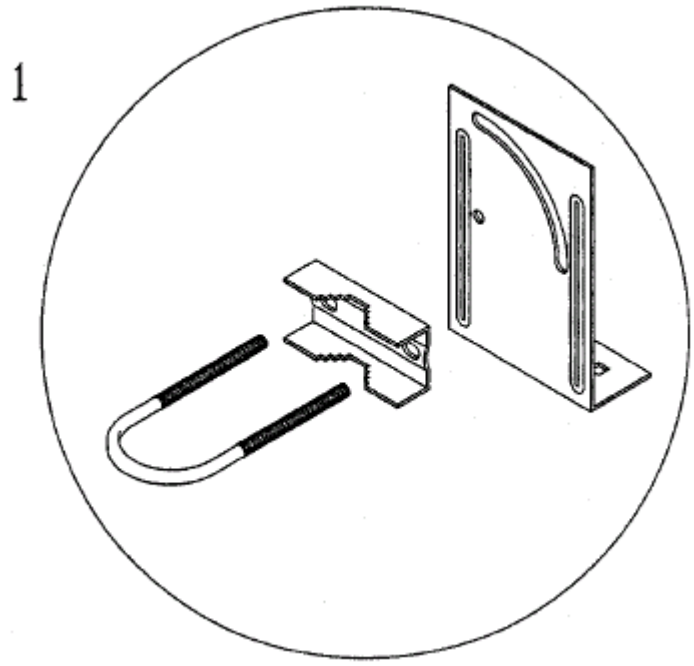
(Bracket 2)

(Screw 4013)

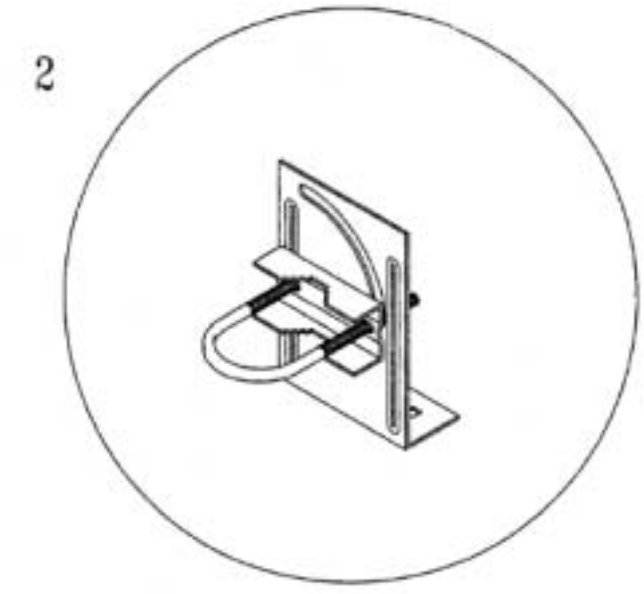
(Hex Flange Nuts)

2.1.2 Step by Step Installation

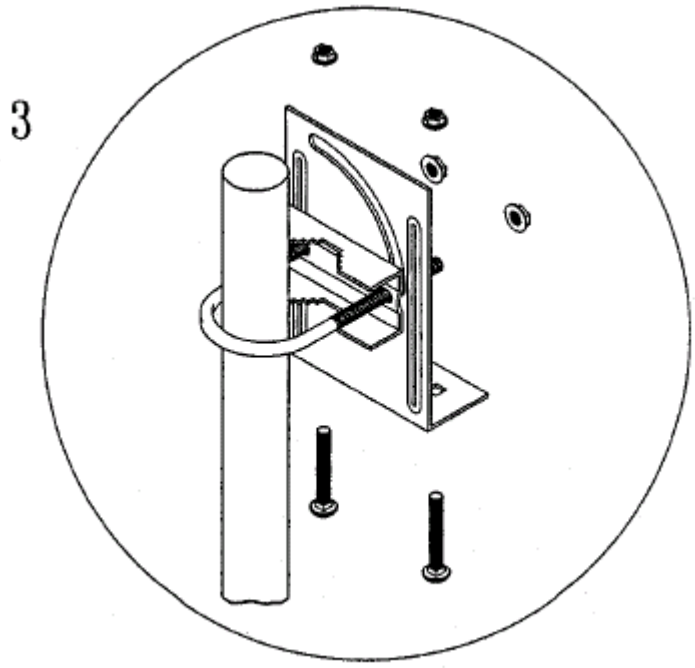
Step 1 – Attach sequence
Left to right: Bracket 3, Bracket 2, and 2511 Mounting Bracket.



Step 2 – How to Attach
The concave of Bracket 2 is for holding onto the pole.

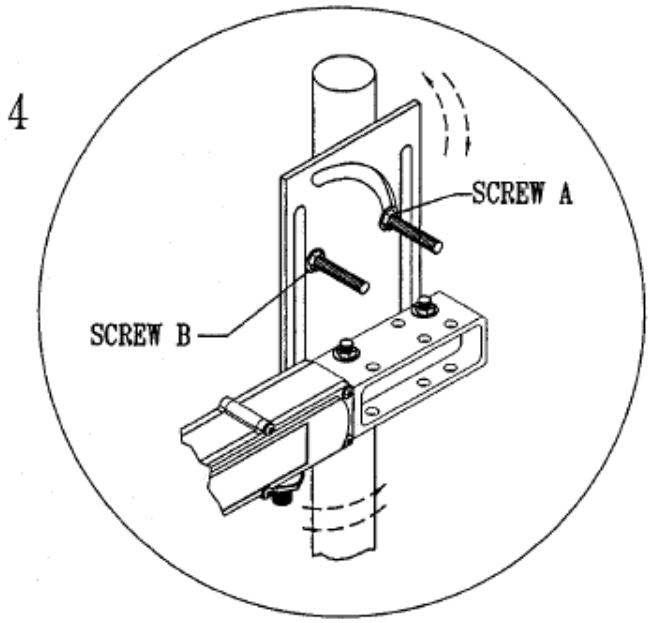


Step 3 – Tighten the bracket against pole



Step 4 – Installation Complete

Loosen Screws A & B for left-and-right and up-and-down angle adjustments. Tighten up Screws A & B after fixing the directions.



2.2 Connection to the Power Inserter and Cable Modem

Connections to the Transmitter are shown in diagram 2.2. Please note:

① The power inserter normally has 3 ports:

DC	Connect to wall adapter with RG-59 cable
ANT	Connect to the Transmitter
TV	Connect to Cable modem

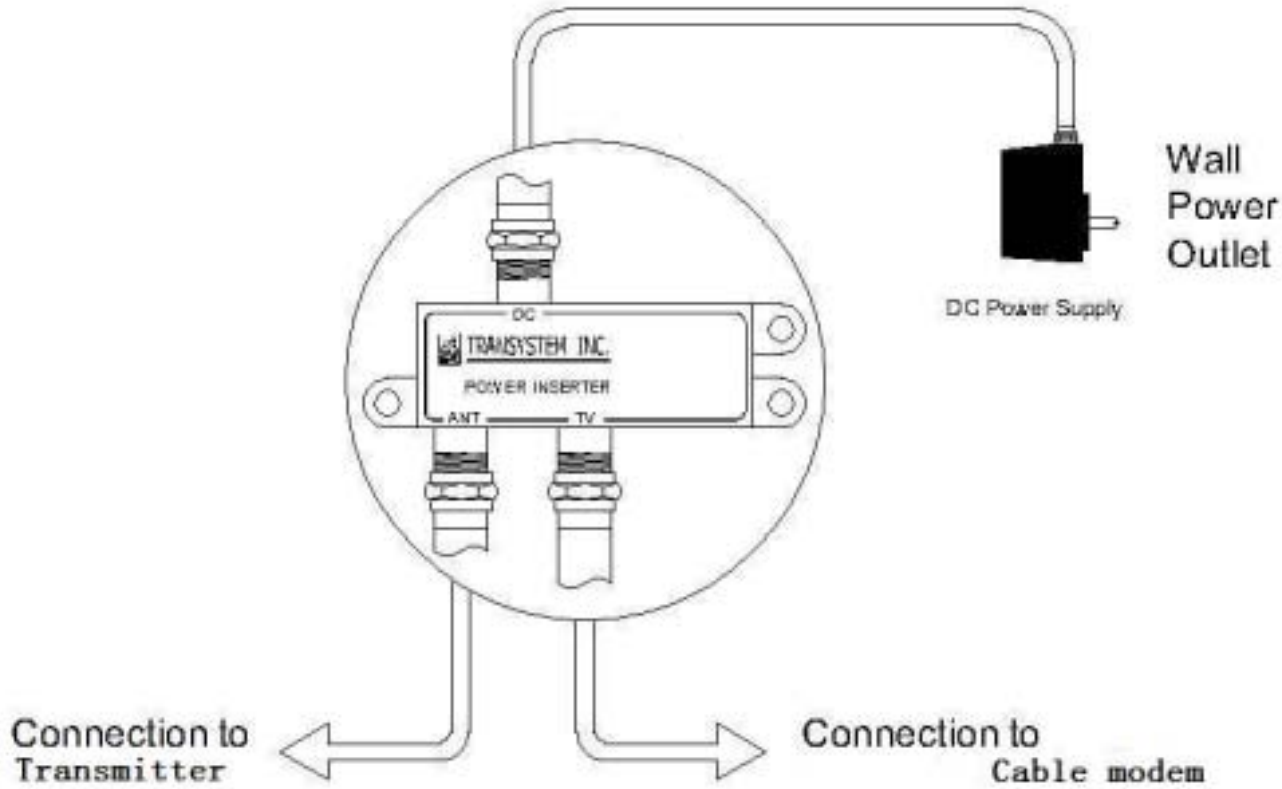
VERY IMPORTANT NOTICE!

a. The power inserter should be correctly connected, or the Transmitter will not operate.

b. Ensure that all wires and cables are hooked up before plugging into the AC adapter/power supply (i.e. you must hook up the power supply last).

② After connection, the F connector of Transmitter must be sealed with an asphalt sealing tape. (For details, please refer to Section 2.3 Waterproofing Connections)

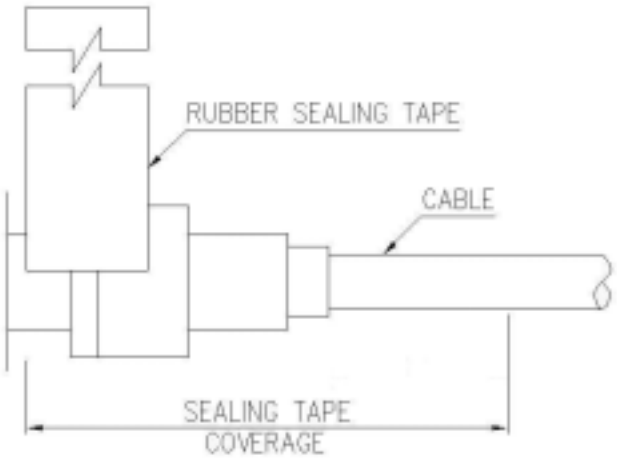
Diagram 2.2: Connection to Cable modem & Power Inserter



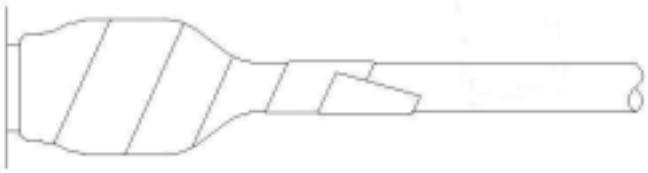
2.3 Waterproofing Connections

Water-proofing is very important during installation of Transmitter. Please use the included water-proof asphalt tape to seal off the F-connector as shown below:

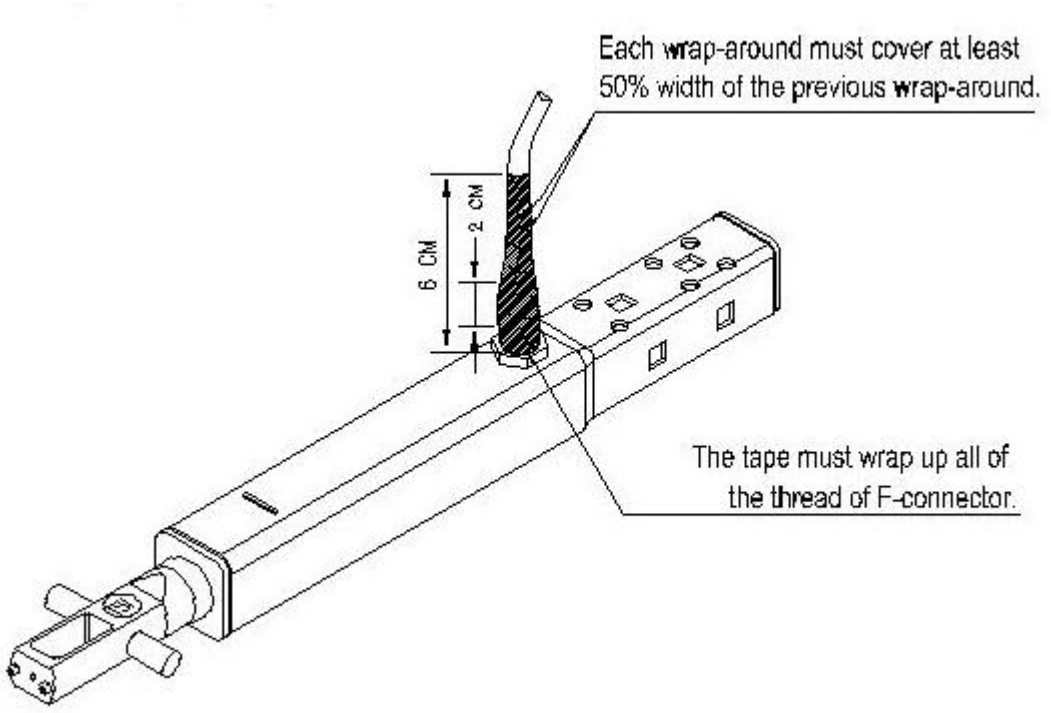
① After you plug in the coaxial cable into the F-connector, use the included water-proofing asphalt tape to seal off the F-connector from the bottom (i.e. the part close to Transmitter). Note that the tape must wrap up all the thread of the F-connector.



② The wrap up of the tape must be tight and sturdy. Each wrap-around must cover at least 50% width of the previous wrap-around.



③ The total width of the wrap-around is about 6cm, which corresponds to 7 to 8 rounds of tapes.



*** Warning: If you do not follow the above procedure, the Transmitter could become malfunctioning due to water leakage.**

FCC Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

CAUTION: Change or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.

CAUTION:
Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

PLC-200

2.5GHz Integrated CPE Transmitter

Overview

PLC-200 is TSI's latest offering for 2-way wireless broadband Internet application. It accepts an IF signal of 12~42MHz from cable modem, upconverts the signal to 2500~2530MHz and transmits it back to the MMDS headend site.

With a built-in automatic on/off switch, PLC-200 will enter sleep mode to eliminate broadband noise when there is no data packet transmission. Without exception, PLC-200 embodies the long term stability and reliability common to all TSI products.

Together with TSI's high quality downconverters, PLC-200 provides the best cost / performance solution for your 2-way MMDS operation.

Key Features

- QPSK, 16 QAM Transmission Compatible
- Automatic On/Off switch
- Up to 50Km cell coverage
- Integrated dipole, saves a passive dipole
- Easy installation with various antennas
- Low phase noise
- High frequency stability
- Low power consumption
- Meet FCC spectral mask requirement
- Light-weighted, saves shipping cost
- RoHS compliant

Application

- MMDS CPE Internet access

PLC-200

2.5GHz Integrated CPE Transmitter

Specifications

Frequency

Input	12 ~ 42 MHz
Output	2500~2530 MHz
Stability	±10 KHz

Transmitting Noise

Noise	-116 dBm/Hz max @2500~2530 MHz
Spurious	< -55dBc (@Tx power +22dBm)

Local Oscillator

LO Frequency	1st LO: 854MHz 2nd LO: 1634MHz
Phase Noise	-85 dBc/Hz @ 1KHz -90 dBc/Hz @ 10KHz -95 dBc/Hz @ 100KHz
LO Leakage	-50 dBm max

Power Output

@ 1dB compression	+24 dBm typ.

Return Loss

Input / Output	6.0 dB min

On / Off Switch

Latency	<1.2 micro second
Threshold	-40dBm @ IF input port

Input Interface

Impedance	75 ohm
Connector	F-type Female

Power Supply

Voltage	+15 to +24 VDC
Current	350mA max (@15VDC)

Environment

Temperature	-30℃ ~ +60℃
Humidity	100% waterproof

Physical Dimension

Dimensions	294 x 55 x 31 mm

Accessories Options

Antenna	Corner Reflector (12dBi), Spotbeam (15dBi) Parabolic Mesh (18-25dBi)
Power Supply	110V/220V Adapter & Inserter

Typical value @ 25℃, unless otherwise specified.
Specifications are subject to change without prior notice.

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Rev: 0.7