Installation Guide

H/U952T Terminal Transmitter

2002-11-13/ Rev. A

Contents

1 General

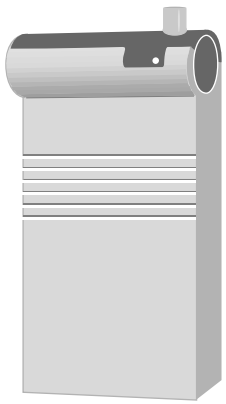


Figure 1. Terminal Transmitter H/U952T.

H/U952T Terminal Transmitter is used in the On-site Paging- and Personal Security Systems. The transmitter operates in both UHF and HF frequency bands.

	H952T	**U952T**
Supply voltage:	12.5 V DC ± 10%	12.5 V DC ± 10%
Max. current consumption:	2.0 A	2.5 A
Max. current consumption during transmission:	1.6 A	1.6 A
Max. current consumption in stand by:	0.2 A	0.4 A

Versions

The transmitters are available in the following frequency bands:

U952T: 425-475 MHz

H952T: 25-29 MHz, 29-32 MHz, 32-37 MHz, 37-42 MHz, 42-47 MHz, 47-50 MHz

Delivery includes

- H/U952T unit
- Coax connector TNC
- Modular bus cabling

Tools etc., required

- Screwdriver
- Screws for mounting
- Multi-meter

Related Documentation

As a complement to this installation guide, see also the applicable system installation document:

- System Installation, On-site Paging System, TD 90227GB
- System Installation, Personal Security System, TD 90678GB

2 Board Description

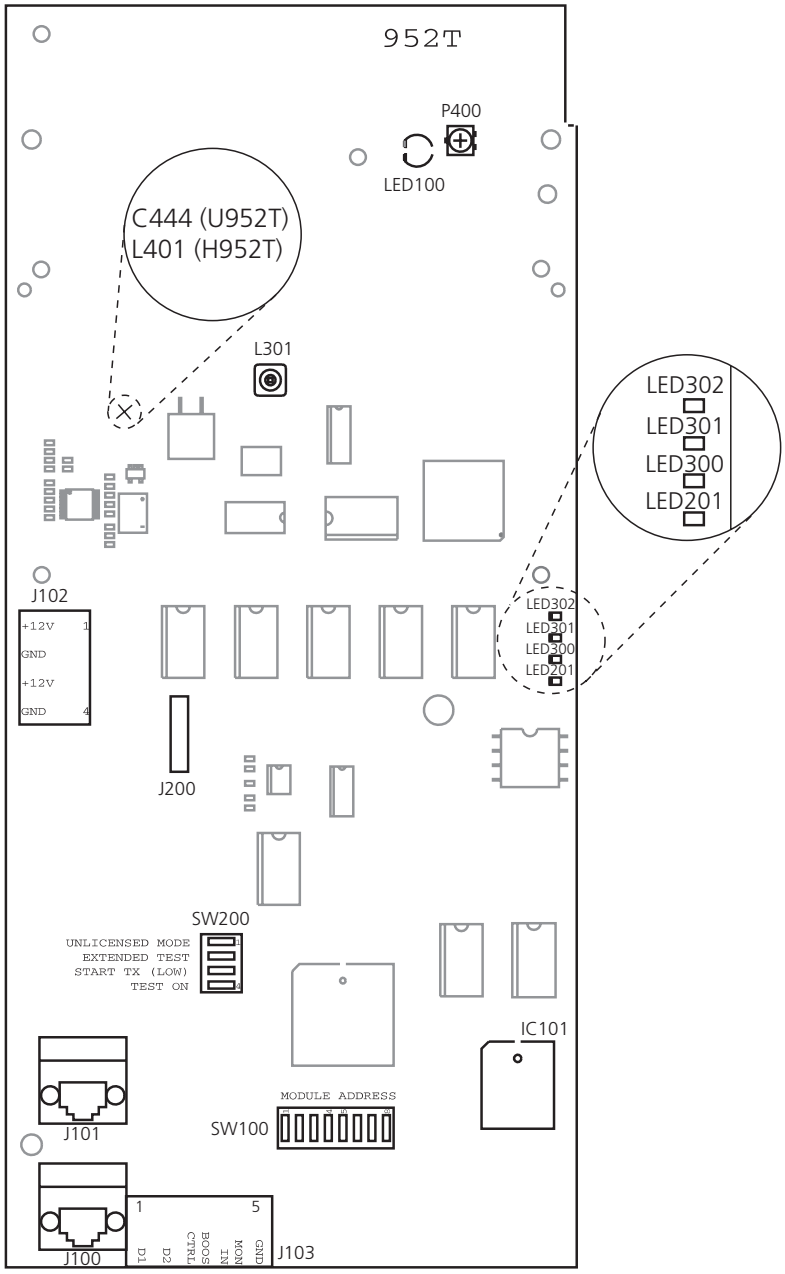


Figure 2. H/U952T Circuit board.

Connectors

J100, J101	For connecting D-, and SP-bus via modular bus cabling.
J102	Supply voltage.
J103	For connecting D-bus (if modular bus cabling is not used) and Control Equipment.
J200	For connecting the Speech and Frequency (T952SM/FL) Lock module.

Switches

SW100	Address selector switch.
SW200	Test switch, set to OFF during normal operation.

LEDs

LED100	Function indicator for green, red, or orange indication.
LED201	LED, TX ON, indicates carrier.
LED300	LED, TX DATA ON, indicates paging.
LED301	Indicates DSP running (blinks).
LED302	Indicates speech on.

Flash PROM

IC101	Program memory

Adjustable Components

P400	Potentiometer, for calibration of output power.
L301	Inductance coil, for fine adjustment of reference frequency.
C444	Capacitor, for adjustment of VCO frequency. **Note:** Only U952T
L401	Inductance coil, for adjustment of VCO frequency. **Note:** Only H952T.

3 Installation

The unit should be placed in a dry environment. A temperature between 0 and +40°C is preferred. The transmitter will operate in the temp range -15 up to +55°C. The transmitter can be installed alone or together with other system units using the modular bus cabling or twisted-pair wiring.

To prevent dust or moisture from damaging the electronics it is important to have the cover mounted after installation and during use.

3.1 Mounting

The illustration below shows the dimensions for mounting the H/U952T.

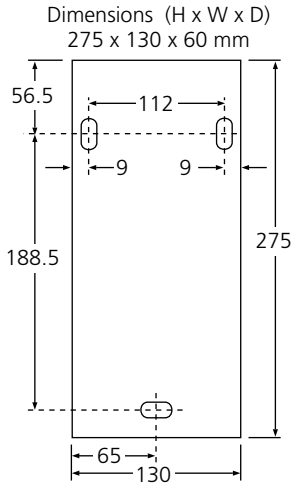


Figure 3. Mounting dimensions in mm.

Note: To facilitate service after the unit is installed, we recommend a free space of about 150 mm above and 50 mm below the unit.

Use a screwdriver or similar to release the cover by applying a light pressure to the two snap catches (1) and remove the cover (2).

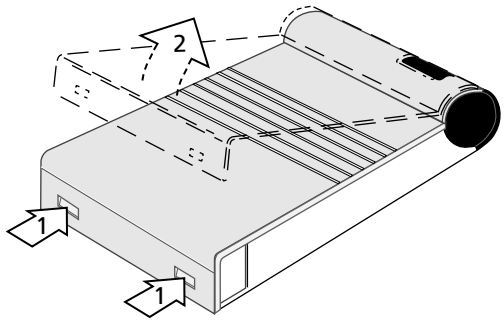


Figure 4. Releasing the cover.

Note: The internal metal shield should not be opened.

3.2 Mounting together with Other Units

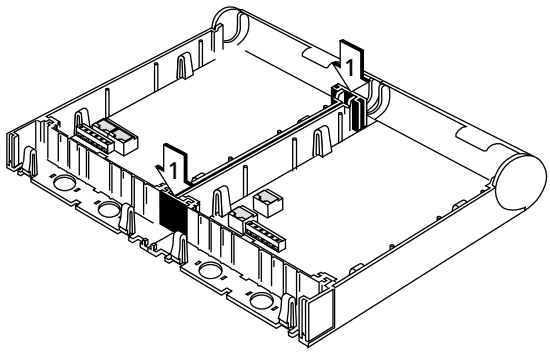


Figure 5. Mounting with other units.

1 Remove upper and lower covers. Fasten together the lower rectangular covers of adjacent units (1).

2 Fasten each unit to the wall with three screws, see figure figure 3 on page 3.

3.3 Addressing the Transmitter

- Select the address by setting the address selector switch SW100, see the System Installation document under *Addressing*.

Note:
1) The address for H/U952T must **not** be 00, nor the same as any other 900-unit D-bus address.
2) In case the system includes speech, the transmitter must be in the address range for speech transmitters (hex address 80-FF).

3.4 Wiring Runs

The plastic partition (shaded in the illustration) is scored to facilitate breaking at convenient intervals.

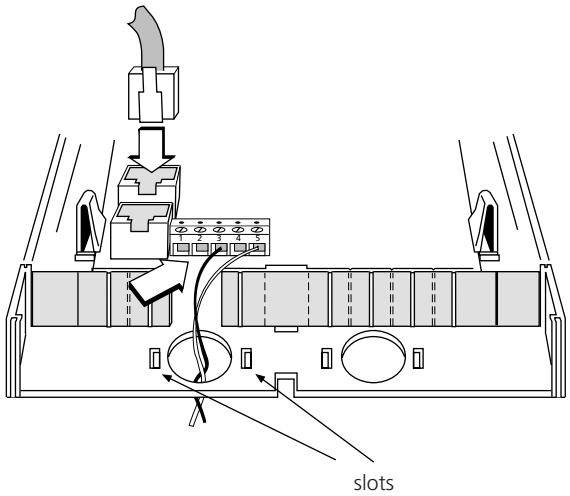


Figure 6. Scored plastic partition for breaking.

1 Use pliers to break off a suitable section.

2 Run the wiring out through the cable duct at the bottom.

3 Use the slots at the opening to secure the wiring with cable straps.

Wiring can be run four ways for connection with other units:

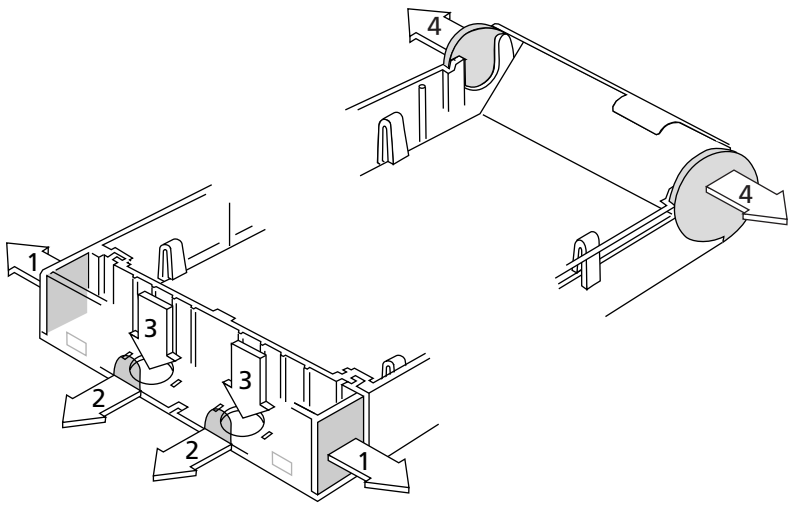


Figure 7. Four ways of wiring runs.

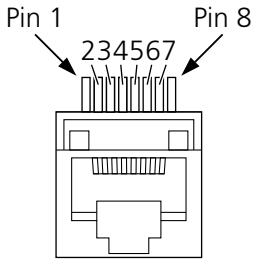
- Remove the rectangular covers and run the cabling out through the side (1).
- Break off sections at short side of case and run the cabling downwards (2).
- Run the cabling through the round holes at the bottom of the case (3).
- Remove the circular covers at the top of the side case (4).

3.5 Connection of Buses and Control Equipment

Buses are connected either via modular bus cabling or twisted-pairs.

Note: Data buses are polarized! Use only twisted-pairs for separate wiring!

Bus Connections via Modular Bus Cabling



J100 + J101	
Pin	Signal
1	A1 data bus
2	A2 data bus
3	B1 data bus
4	B1 data bus
5	D1 data bus
6	D2 data bus
7	SP1 speech bus
8	SP2 speech bus

Figure 8. Modular bus cable pins.

Note that only D- and SP-bus are used by the transmitter. When the modular bus cable is used, no further connection of the SP-bus to T952SM/FL Speech and Frequency Lock module is required.

- Connect the modular bus cabling to connectors J100 and J101, see figure 2 on page 2.

Bus Connections via twisted-pairs

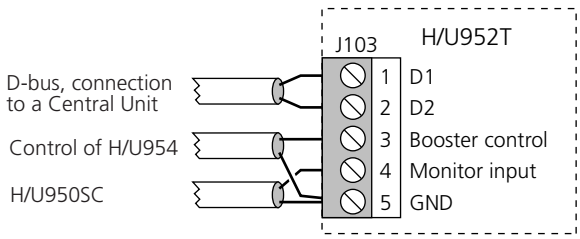


Figure 9. Connection via twisted-pairs.

- Connect the D bus to connector J103, screw 1 and 2.
- If speech is used, see *Connection of SP/FL bus via twisted-pairs* on page 11 in "*Appendix A*".

Connection of Control Equipment

- Connect control of H/U954 Power Amplifier* to J103 screw 3 and 5, **and** H/U950SC Output Power Surveillance Module* to J103 screw 4 and 5, see figure 9 above.

  *See also the installation guides for the respective units.

Note: H/U989M Monitor Receiver (phased out product) is connected in the same ways as H/U950SC.

3.6 Connection of Supply Voltage

- Connect supply voltage to connector J102 screw 1 and 2. See also the System Installation document, under *Power Supply*.

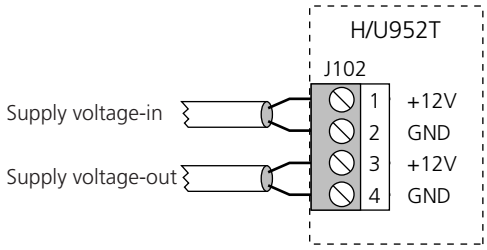


Figure 10. Power supply connector.

3.7 Coax Connection to Antenna

- Connect the antenna coax to the antenna output connector located at the upper right of the transmitter, see figure 1 on page 1.
- To prevent water from running along the antenna cable and entering the transmitter, let the cable form a loop downwards. See figure 11 below.

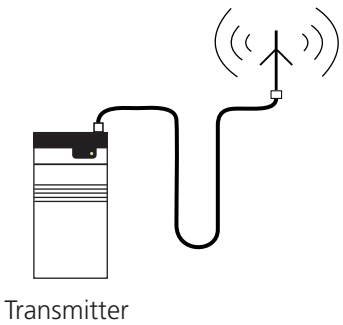


Figure 11. Preventing water to run along the cable and entering the transmitter.

For assembly of the coax connector to the cable, see *Appendix B*.

3.8 Connection to Slave Transmitter

If the transmitter is to drive a slave transmitter, slave driver U952DR (UHF systems) or power divider MPT-50 (HF systems) is to be installed between the transmitter and the slave. The slave driver or power divider is connected to the antenna output, in series with the coax from the antenna.

For installation of U952DR Slave Driver, see Installation Guide for U952DR, TD 92038GB. The installation of MPT-50 is described in the Installation Guide for H950S,TD 90318GB.

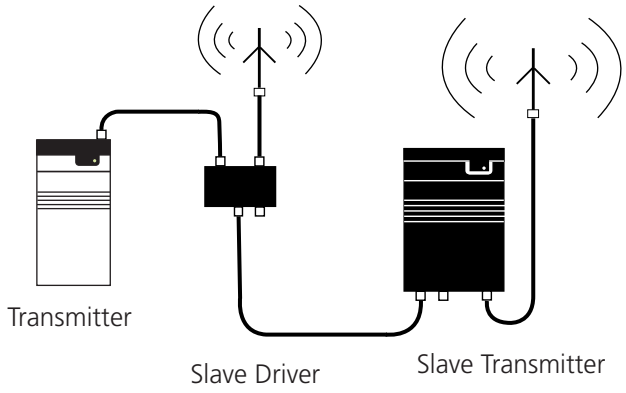


Figure 12. Connection to Slave Transmitter in an UHF-system.

4 Parameter Settings

All parameters must be set in the U/H952 Flash PROM IC 101, before the tuning procedure. The instruction for programming fixed equipment is described in *General Description PCPAR, TD 90799GB.* Note that licence is required when FOM/SFO or FL is used.

1 Open PCPAR and select software S952T.

2 Set the transmitter frequency in Hz.

3 Set the channel spacing.

4 If there is speech in the system check:

- Subtone frequency (default 127.3 Hz).

When FL (frequency locking) is used check:

- That frequency locking is enabled with the right reference frequency.

5 When FOM or SFO is used this has to be enabled with the right offset.

6 If the transmitter is to be used with old central software that do not support U/H952T (specified in the parameter list), set the transmitter to act as an U/H950T.

7 If FOM/SFO or FL is used, enter the required licence code.

8 When you have edited the parameter list, download the changes to flash prom IC 101 and exit PCPAR.

5 Installation Test Procedure

1 Check that all sections of switch SW200 on the transmitter are set to OFF.

2 Check that address switch SW100 has the right address, see the System Installation document, under *Addressing*.

3 Energize all units in the 900-system. Function indicator LED100 on the transmitter should light red for about 1 second and then change to a flashing green.

If it continues to indicate steady red, check that supply voltage is 12.5 Vdc ± 10%. Flashing red indicates a program fault, parameter fault, or a faulty 125 MHz oscillator.

4 If H/U952T is connected to another unit, the indicator should show a steady green indication within 90 seconds.

If the indicator continues to blink green, check:

- Polarity of data bus(es)
- Connections on H/U952T
- That H/U952T is properly addressed
- That all sections of SW200 is set to OFF

If everything seems to be OK but the function indicator still blinks, the fault is probably located outside H/U952T:

Check the other 900-units according to the System Installation document, or contact your dealer.

5 If T952SM/FL module is used:

- Check that T938RM is connected as a reference module if the transmitter is included in a frequency locked system.
- When frequency locking is used it should be locked to a reference frequency within 20 seconds, the indicator on the T952SM/FL module is lit red.
- Perform a speech test.

6 Initiate a paging from a unit. The LEDs TX ON and DATA ON lights momentarily, about 2.5 sec. If not, contact your dealer.

7 Replace the cover.

When all other units are installed, perform the system check described in the System Installation document.

5.1 Field Adjustment

Reference frequency, VCO frequency and output power are all factory-set. If adjustments are to be done, see *Repair Manual H/U952T Transmitter, TD 92023GB,* in chapter *Alignment and Adjustment.*

6 Circuit Board Replacement

1 Disconnect the power supply.

2 Remove the antenna coax.

3 Release the cover, see figure 4 on page 4.

4 Lift off the screw connectors from the circuit board.

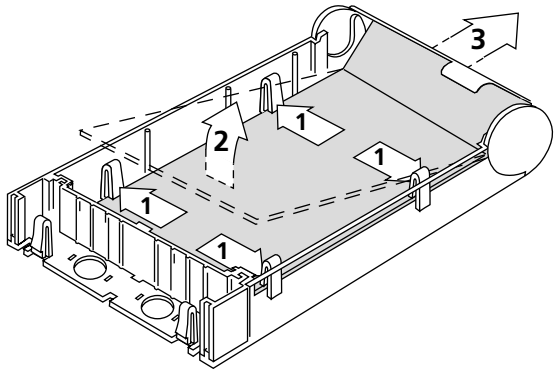


Figure 13. Circuit board replacement.

5 Press the four holding clips (1) and release the circuit board as shown (2 and 3), see figure 13 on page 10.

6 Install the new circuit board in the case, make sure it clicks into the position.

7 Remove the SM/FL module from the old circuit board (if any) and install it on the new circuit board.

8 Set all switches and jumpers as they were on the old circuit board.

9 Replace the connectors and the antenna coax.

10 Check installation according to the System Installation document.

11 Replace the cover.

Appendix A: Installation of T952SM/FL Speech and Frequency Lock module

Board description

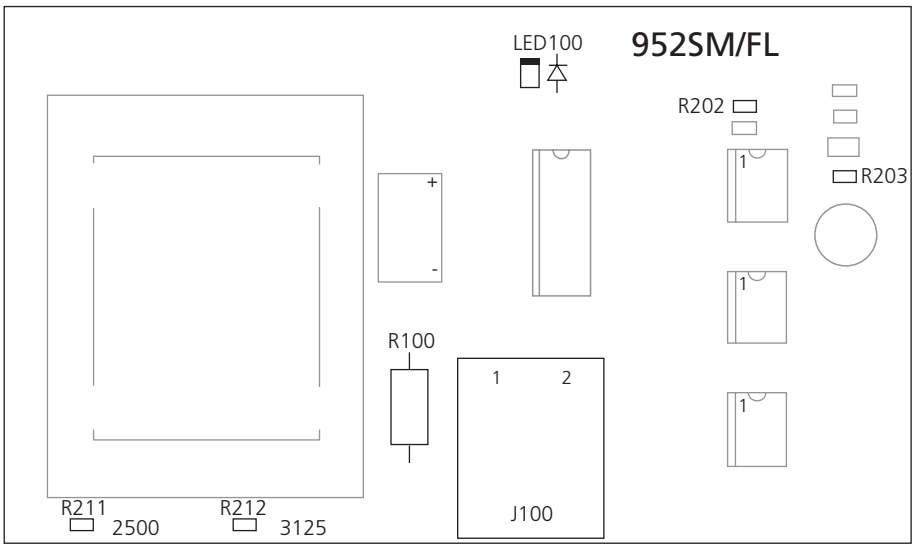


Figure 14. Circuit Board for 952SM/FL.

Connections, etc.

J100	Screw terminal, for speech bus (SP-bus) if system bus cabling is not used.
LED100	Indicates frequency locking (red).
R100	Speech bus termination resistor.
R211, R212	The mounted resistor indicates the reference frequency used (default 3125 Hz).
R202, R203	These resistors have to be exchanged when reference frequency 2500 Hz is used.

Changing reference frequency to 2500 Hz

1 Move R212 to R211

2 Change R202 from 33 kΩ to 39 kΩ (tolerance 1%).

3 Change R203 from 34.8 kΩ to 47 kΩ (tolerance 1%).

Installation

- Plug the T952SM/FL Speech and Frequency Lock module onto the connector J200 on the transmitter board, see figure 2 on page 2.

Connection of SP/FL bus via twisted-pairs

Note: Not needed if the buses are connected to the Terminal Transmitter via modular bus cabling.

- Connect SP-bus to connector J100.

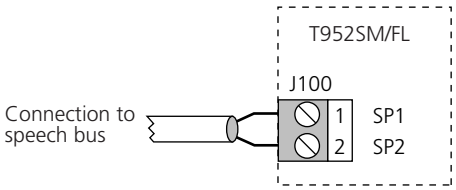


Figure 15. SP-bus connection via twisted-pairs.

Speech Termination

If more than one speech transmitter is used in a system, only one of the T952SM/FL modules can have the speech bus termination resistor (R100) connected. R100 must be cut off on all other T952SM/FL modules.

Appendix B: Coaxial Connectors

When connecting the antenna cable to the transmitter the TNC coax connector for soldering is preferable to use, but an TNC-UHF adapter can be ordered from your supplier if for example the antenna cable already is equipped with a PL259 (UHF) connector.

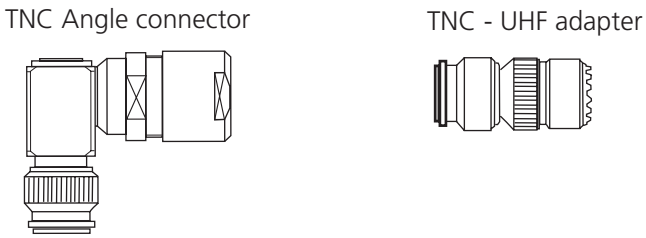


Figure 16. TNC connector and TNC-UHF adapter.

Assemble TNC Coax Connector as follows:

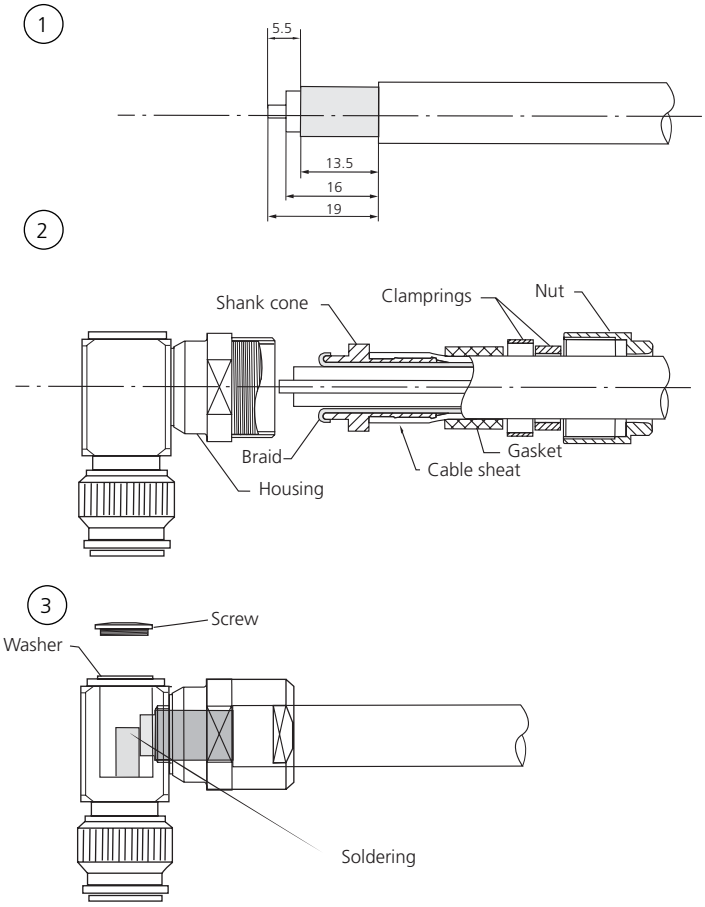


Figure 17. Assembly of TNC coax connector.

1 Cut and strip cable as shown in figure at (1).

2 Slide nut, clamprings and gasket onto cable.

3 Push shank cone between braid and cable sheat until stop (2).

4 Insert cable into housing and screw on the nut.

5 Solder the inner conductor (3).

IMPORTANT: Overheating during soldering may damage insulation between inner conductor and shield resulting in negative effects on cable.

6 Check with ohmmeter for short circuit between connector body and inner conductor.
Note: If the cable is connected to a dc-grounded antenna, disconnect it before making this check.

7 Insert washer and screw (3).

When connecting the antenna cable to MPT-50 Power Divider and Slave transmitters, the connector PL259 (UHF) is used.

Assemble PL259 Coax Connector as follows:

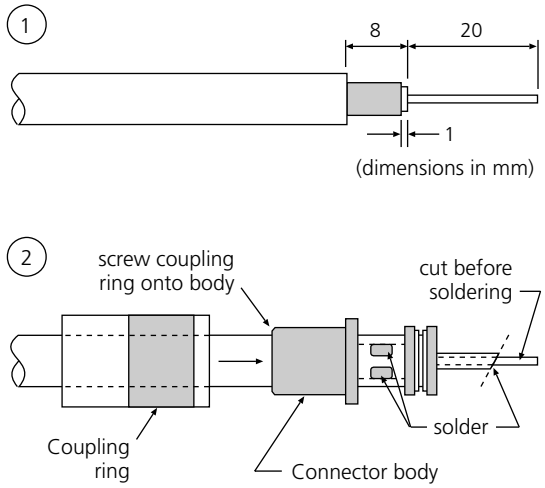


Figure 18. Assembly of PL259 coax connector.

1 Cut and strip cable as shown in figure at (1).

2 Slide coupling ring onto cable and screw connector body onto cable (2).

3 Solder braided shield to body through the two solder holes.

IMPORTANT: Overheating during soldering may damage insulation between inner conductor and shield resulting in negative effects on cable.

4 Cut inner conductor diagonally as shown and solder to connector.

5 Screw coupling ring onto body.

6 Check with ohmmeter for short circuit between connector body and inner conductor.

Note: If the cable is connected to a dc-grounded antenna, disconnect it before making this check.