

PWR-100154 – User Guide

The following information is to be included in the PWR-100154 User Guide to accompany the product on a printed insert. For readability, the product is described as the PEEX tX Transmitter and PEEX tX in this guide.

N.B. The PEEX tX is a professional part of the PEEX system which is only available for installation and use by trained operators. Operators must confirm that the radio channels selected for use are allowed by the country specific regulations before enabling transmission.

There will be five main elements covered, Radio Specifications; Installation; Use; Status and Care.

Radio Specifications:

Approved for Use Country List

Austria	Hungary	Portugal
Belgium	Iceland	Romania
Bulgaria	Ireland	Slovakia
Croatia	Italy	Slovenia
Cyprus	Latvia	Spain
Czech Republic	Liechtenstein	Sweden
Denmark	Lithuania	Switzerland
Estonia	Luxembourg	Turkey
Finland	Malta	United Kingdom
France	Netherlands	United States of America
Germany	Norway	Canada
Greece	Poland	Australia & New Zealand

DFS	Dynamic Frequency Selection
TPC	Transmit Power Control
e.i.r.p	effective (or equivalent) isotropic radiated power
PSD	Power Spectral Density
COP	Conducted Output Power
LSB	Listen before talk

US Regulatory Requirements

Frequency [MHz]	20 MHz channels	Applicable standard
5150-5350	36,40,44,48,52,56,60,64	FCC Part 15 Subpart E (U-NII)
5470-5725	100,104,108,112,116,120,124,128,132,136,140,144	FCC Part 15 Subpart E (U-NII)
5725-5850	149,153,157,161,165	FCC Part 15 Subpart E (U-NII)

5150-5250 MHz

Available 20 MHz channels: 36,40,44,48

		Section in standard
Maximum PSD	17 dBm in any 1 MHz band	FCC §15.407.a.1.i/ii
Maximum COP	1W with antenna gain < 6dBi	FCC §15.407.a.1.i/ii
Radar detection	No	FCC §15.407.h.2
TPC	No	FCC §15.407.h.1
LSB	No	N/A

5250-5350 MHz

Available 20 MHz channels: 52,56,60,64

		Section in standard
Maximum PSD	11 dBm in any 1 MHz band	FCC §15.407.a.2
Maximum COP	Whichever is lower 250 mW (24 dBm) or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz, with antenna gain < 6dBi	FCC §15.407.a.2
Radar detection	Yes	FCC §15.407.h.2
TPC	No	FCC §15.407.h.1
LSB	No	N/A

5470-5725 MHz

Available 20 MHz channels: 100,104,108,112,116,120,124,128,132,136,140,144

		Section in standard
Maximum PSD	30 dBm in any 500-kHz band	FCC §15.407.a.3
Maximum COP	1W, with antenna gain < 6dBi	FCC §15.407.a.3
Radar detection	Yes	FCC §15.407.h.2
TPC	No	FCC §15.407.h.1
LSB	No	N/A

5725-5850 MHz

Available 20 MHz channels 149,153,157,161,165

		Section in standard
Transmit power (including antenna gain) e.i.r.p	14 dBm	EN 300 440 7.1.3
Radar detection	No	N/A
TPC	No	N/A
LSB	Yes	EN 300 440 9

EU Regulatory Requirements

Frequency [MHz]	20 MHz channels	Applicable standard
5150-5350	36,40,44,48,52,56,60,64	ETSI EN 301 893 V2.1.1
5470-5725	100,104,108,112,116,120,124,128,132,136,140,144	ETSI EN 301 893 V2.1.1
5725-5850	149,153,157,161,165,169	ETSI EN 300 440

5150-5250 MHz

Available 20 MHz channels: 36,40,44,48

		Section in standard
Transmit power (including antenna gain) e.i.r.p	23 dBm (no TPC)	ETSI EN 301 893 Table 2
Radar detection	No	ETSI EN 301 893 4.2.6.1.2
TPC	No	ETSI EN 301 893 4.2.3.1.2
LSB	Yes	ETSI EN 301 893 4.2.7

CAUTION: The 5150 to 5250 MHz band is restricted to indoor use only.

5250-5350 MHz

Available 20 MHz channels: 52,56,60,64

		Section in standard
Transmit power (including antenna gain) e.i.r.p	20 dBm (no TPC)	ETSI EN 301 893 Table 2
Radar detection	Yes	ETSI EN 301 893 4.2.6.1.2
TPC	No	ETSI EN 301 893 4.2.3.1.2
LSB	Yes	ETSI EN 301 893 4.2.7

CAUTION: The 5250 to 5350 MHz band is restricted to indoor use only.

5470-5725 MHz

Available 20 MHz channels: 100,104,108,112,116,120,124,128,132,136,140,144

		Section in standard
Transmit power (including antenna gain) e.i.r.p	27 dBm (no TPC)	ETSI EN 301 893 Table 2
Radar detection	Yes	ETSI EN 301 893 4.2.6.1.2
TPC	No	ETSI EN 301 893 4.2.3.1.2
LSB	Yes	ETSI EN 301 893 4.2.7

5725-5850 MHz

Available 20 MHz channels 149,153,157,161,165,169

		Section in standard
Transmit power (including antenna gain) e.i.r.p	14 dBm	EN 300 440 7.1.3
Radar detection	No	N/A
TPC	No	N/A
LSB	Yes	EN 300 440 9

Regulatory Notices:

FCC ID: 2AO3Y-PWR100154

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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 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.

FCC Caution:

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

IC: 23657-PWR100154

- ❶ This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
 - 1) this device may not cause interference, and
 - 2) this device must accept any interference, including interference that may cause undesired operation of the device.
- ❶ Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
 - 1) l'appareil ne doit pas produire de brouillage, et
 - 2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
- ❷ This Class B digital apparatus complies with Canadian ICES-003.
- ❷ Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- ❸ This device complies with RSS-310 of Industry Canada. Operation is subject to the condition that this device does not cause harmful interference.
- ❸ Cet appareil est conforme à la norme RSS-310 d'Industrie Canada. L'opération est soumise à la condition que cet appareil ne provoque aucune interférence nuisible.
- ❹ This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter, except tested built-in radios.
- ❹ Cet appareil et son antenne ne doivent pas être situés ou fonctionner en conjonction avec une autre antenne ou un autre émetteur, exception faites des radios intégrées qui ont été testées.
- ❺ The Country Code Selection feature is disabled for products marketed in the US/Canada.
- ❺ La fonction de sélection de l'indicatif du pays est désactivée pour les produits commercialisés aux États-Unis et au Canada.

Caution:

- (i.) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- (ii.) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;



(iii.) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate;

(iv.) where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Avertissement:

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(i.) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii.) le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350 MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e;

(iii.) le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;

(iv.) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

47 CFR § 2.1077 Compliance Information (SDoC)

Responsible Party -

RML Labs

2550 E Desert Inn Rd. #438

Las Vegas NV 89121

(702) 597-0476

PowerChord Group Limited

Registered in England & Wales No. 9303518

Registered Office: 1 Blythe Road, London W14 0HG

Installation:

- 1) The PEEX tX Transmitter is a sealed device with no assembly required.
- 2) The device can be mounted using a number of attachment points suitable for cable ties. If mounted at height, the PEEX tX should have a certified safety harness connected between permanent infrastructure and the safety loop point at the top of the PEEX tX.

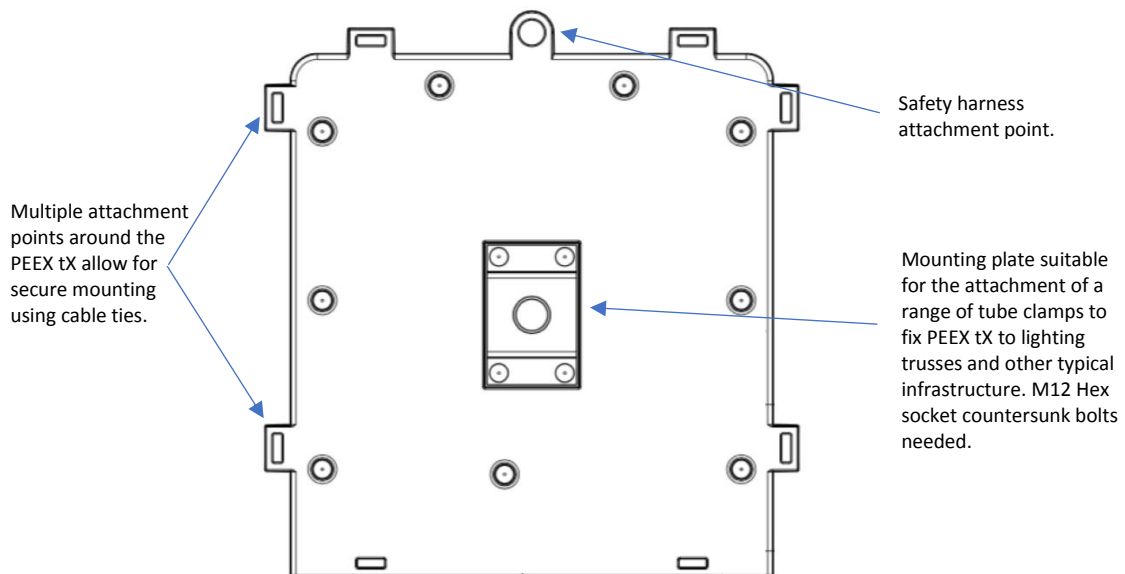


Figure 1. The PEEX PWR-100154 Transmitter Attachment Points and Mounting Plate

- 3) Mounting to typical 50mm tubing and other fixed infrastructure can be achieved by attachment of a suitable clamp to the mounting plate at the rear of the PEEX tX. The clamp should use countersunk M12 Hex socket bolts to ensure secure connection and avoid obstructing with the connection of the clamp to tubing. Please make sure that the M12 Hex socket bolts cannot enter further than 25mm into the mounting plate.
- 4) The PEEX tX is water resistant to the level of IP54.
- 5) To maintain the water resistance rating, the unit should only be mounted vertically with the cables entering from below. Indoor use allows the device to be mounted in any orientation.

Use:

- 6) The PEEX tX is powered from a mains electricity input supply of 100-240 VAC, 50-60Hz and draws 0.25amps RMS.
- 7) To connect the PEEX tX to the power supply a powerCon True 1 NAC3FX-W connector must be fitted to a suitable mains cable capable of easily supporting a

maximum amperage of 6 amps. This can then be inserted into the left-side (viewed from the front) of the powerCon NAC3PX socket located on the underside of the PEEX tX.

- 8) If power is to be looped through the PEEX tX to another device, then a powerCon True 1 NAC3MX-W connector must be fitted to a suitable mains cable capable of easily supporting a maximum amperage of 6 amps. This can then be inserted into the right-side of the powerCon NAC3PX socket located on the underside of the PEEX tX.

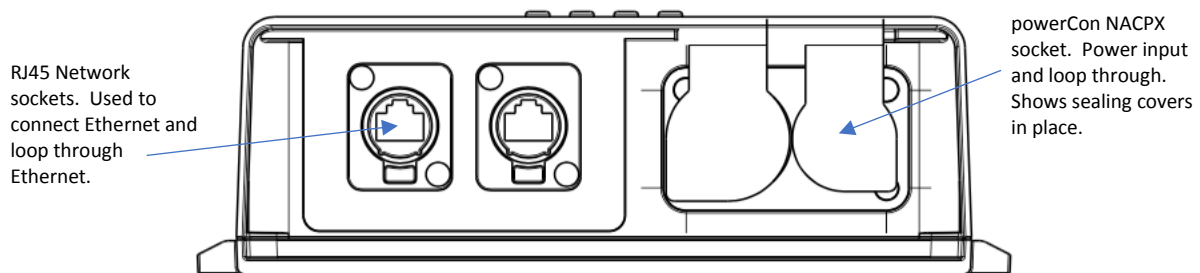


Figure 2. The PEEX PWR-100154 Transmitter Cable Sockets

- 9) The PEEX tX is designed to be connected to the PEEXNet network via Ethernet and will not function as a radio transmitter without connection to the PEEX muX Multiplexer. Please see 'PowerChord – PWR 100101 User Guide' for further details.
- 10) To connect the PEEX tX to the PEEXNet network, RJ45 sockets are located adjacent to the powerCon socket. Suitable Ethernet cable, capable of supporting 100base-T networking, can be inserted into either one of these sockets.
- 11) If the Ethernet is to be looped through the PEEX tX to another device, then suitable Ethernet cable, capable of supporting 100base-T networking, can be inserted into the free socket.
- 12) The front panel of the PEEX tX Transmitter has a 4-segment LED display with four buttons below it. The display shows either the value being entered for the device ID or the distance value being entered. This is achieved by using the four buttons below the display:
 - i) **Mode / Esc** – used to toggle between the two tX setup modes and escape the manual setup mode.
 - ii) **Up / Down** – used to enter values for either device ID or distance.
 - iii) **Enter** – used to confirm a value entered for either device ID or distance.
 - iv) **ID entry** – used to manually enter a device ID for the PEEX tX. This is also automatically assigned on connection with the PEEX muX.
 - v) **Distance entry** – used to enter a distance in meters that the device is located with respect to the nearest stage speaker. This is used to create the early estimate of audio delays required to properly synchronise the acoustic and digital sound sources.

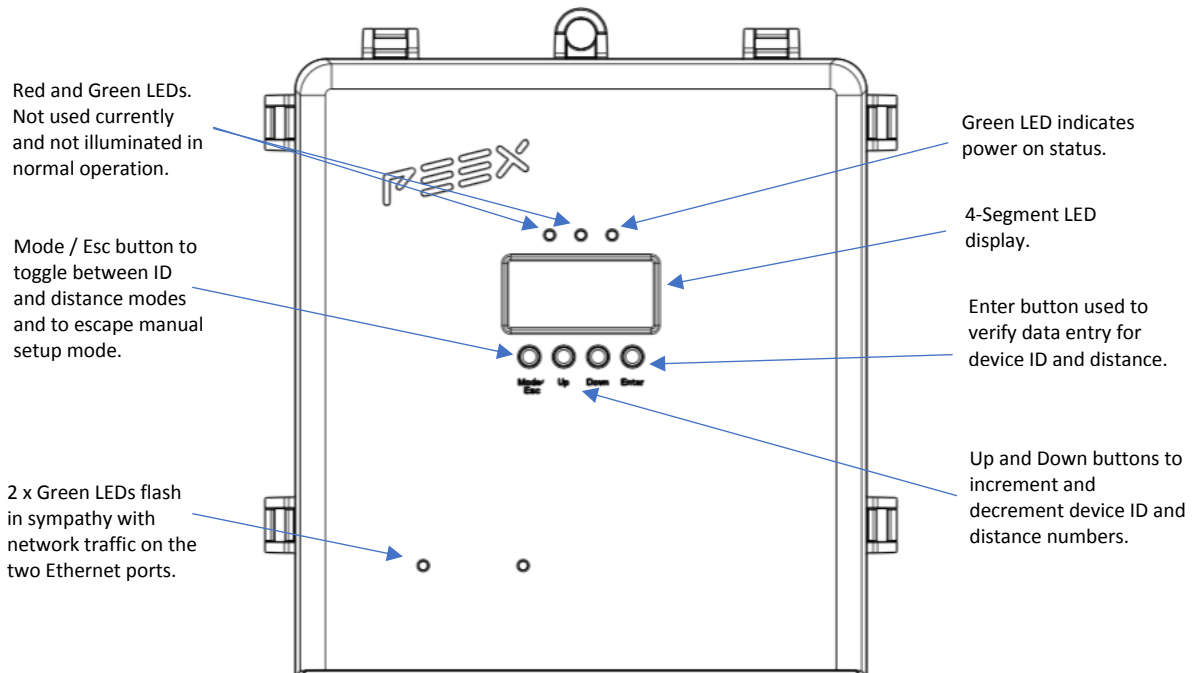


Figure 3 The PEEX PWR-100154 Transmitter Front Panel Controls and Screen

Status:

- 13) The PEEX tX provides status information via the LEDs and the 4-segment LED display.
- 14) Green LED lights, adjacent to the two RJ45 Ethernet connectors, are visible from the front side view of the PEEX tX and show network connection status and flash in sympathy with data flow.
- 15) A green LED is located just above and to the right of the 4-segment display and indicates that power is available to the device.
- 16) Two other LEDs are mounted above the display, but are not currently used.
- 17) All other statuses are only available via the PEEX muX Multiplexer – see separate document.

Care:

- 18) To keep your PEEX tX clean, use a damp cloth to remove any marks and then dry thoroughly. Do not immerse in water.
- 19) Regularly check the cable sockets to ensure that no debris has entered the sockets. Use the attached rubber seals for each socket whenever they are not in use.