EN

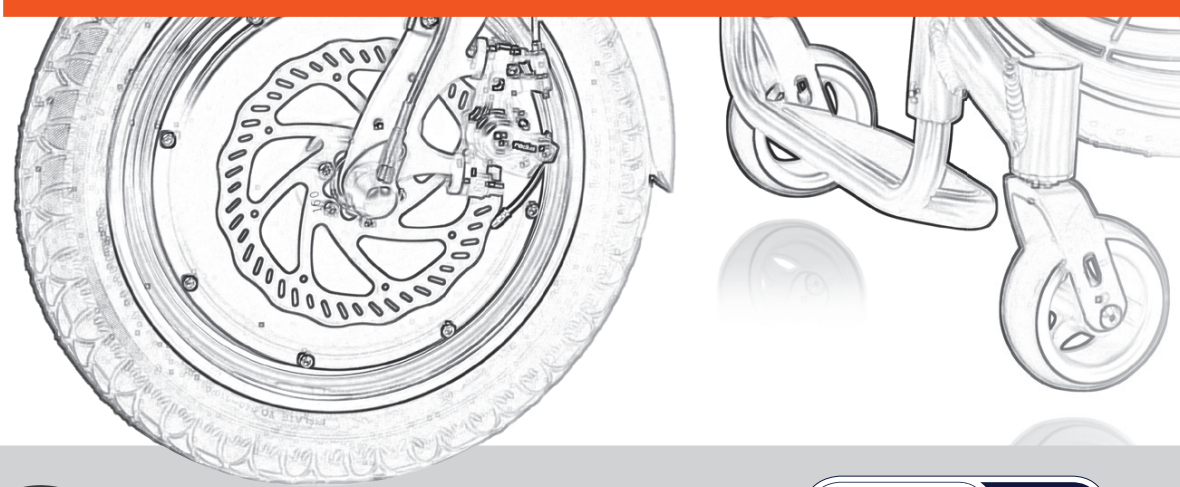
Triride®

by Gianni Conte

USER MANUAL AND MAINTENANCE

Excerpts from the

Drive unit (Display, Motor, Battery)



TÜV InterCert SAAR
PRODUCT CERTIFIED
UNI EN 12182:2012
UNI EN 12183:2014
CEI EN 61601-1:2007

CE

2. SYMBOLS

Graphic symbols are used in the manual and on the device with the meanings indicated in the table below.

SYMBOL	MEANING	NOTES
	Mark of compliance with European legislation	Present on the device
	Symbol for disposal in compliance with Directive RAEE 2012/19/EU	Present on the device
	Date of manufacture	Present on the device
	Manufacturer	Present on the device
	Model	Present on the device
	Serial number	Present on the device
	BF type applied part – Symbol IEC 60417-5333	Present on the device
	Please refer to the instruction manual	Present on the device Follow the instructions
	Generic warning symbol	Present on the device and on the AC/DC adaptor. Pay attention when this symbol is present.
	Warning: dangerous voltage	Present on the device and on the AC/DC adaptor. Pay attention when this symbol is present.
	Generic prohibition symbol	
	Generic mandatory conduct	Mandatory conduct

3. WARNINGS AND SAFETY PRECAUTIONS

BEFORE USING TRIRIDE, CAREFULLY READ AND UNDERSTAND THIS MANUAL AND THE FOLLOWING WARNINGS AND PRECAUTIONS.

The following actions must never be carried out, as they may compromise the compliance and/or characteristics of the device:

- Incorrect installation
- Improper use
- Use of third-party parts and/or accessories which have not been approved by the manufacturer
- Work and/or interference by unauthorised personal
- Lacking or improper maintenance

The following warnings and precautions are to be observed during installation, use and maintenance of the device in order to guarantee satisfaction of requirements for the safety of the operator and final user and the correct functioning of the device.

- Any handling, replacement of parts or work on the device not carried out by authorised TRIRIDE S.R.L. personal will void the guarantee and release the manufacturer from all responsibility for any direct and/or indirect damage caused to persons or property;

- To charge the battery, use the power supply provided in the package. Periodically check the state of the cable. Fully insert the plug into the mains-electricity socket;

- Use a supply voltage between 120-240 VAC, 50/60 Hz (or that indicated on the data plate);

- To avoid danger to people or property, observe all nominal values and indications on the product. Consult the manual before connecting the appliance;

- Avoid exposed circuits. Do not touch exposed connections or components connected to the mains;

- Do not operate in case of suspected fault or broken casing on the battery or control unit;

- If you suspect that the appliance is faulty and/or damaged, it must be checked by TRIRIDE S.R.L. specialist staff or personnel authorised by TRIRIDE S.R.L.;

- Carry out cleaning and maintenance only after disconnecting the device from the mains and switching it off;

- Avoid contact with or penetration of liquids and powders into the device;

- Do not operate in potentially explosive environments and/or in the presence of inflammable mixtures;

• Avoid exposure to sources of excessive heat. The operating temperature must be between -10°C and +50°C; maximum operating humidity is 90%, without condensation, at atmospheric pressure between 800 hPa and 1060 hPa;

• Use the device only with original spare parts supplied by the manufacturer;

• Ensure the electricity grid is compliant with the power requirements of the device and as indicated on the device label and in this manual;

• Do not use the device in environments with strong electromagnetic fields that may lead to malfunctioning of Triride and other appliances in the surrounding environment.

• Carry out maintenance on the device as indicated by Triride srl.

• The appliance must be installed and commissioned in compliance with the EMC information contained in this manual;

• Portable and mobile radiocommunications appliances may affect the functioning of the device;

• Do not operate shortwave or microwave therapy APPLIANCES in proximity (e.g. 1 m) to the device;

• The use of accessories other than those supplied may have a negative impact on the electromagnetic compatibility of Triride;

• Warning – use of controls and settings or procedures other than those specified herein may place the patient and operator at risk.

• Do not use the device with uncharged batteries, it can turn off and block.

• Triride srl does not assume any responsibility for damage, accident or injury caused by a failure to observe the requirements and safety indications/directives provided in this Manual.

• Therefore, TRIRIDE S.R.L. will not assume responsibility for any damage deriving from improper use and/or abuse of the product. Neither will it respond in any way for eventual damage deriving from wear, negligence, carelessness, interference, incorrect/faulty installation and/or connection of the products, or from improper use and/or incorrect use by the operator/final user or any third parties unauthorised to use the products.

9.5 Console with Main Controls

Power button ON/OFF	Press for 2/3 seconds until the display turns on. The Triride is ready to use.
UP arrow button DOWN arrow button	Press for changing the speed gear on the display from 1 to 5. Zero (0) for neutral gear. Refer to the display instruction manual for all others command.
Driving mode Normal (O) Sport (|)	Switch the button for normal or sport mode. Available only on “Special” models. Normal mode: Soft acceleration, soft braking, energy saving. Sport mode: Acceleration and more intense braking, active driving.
Reverse	Switch on to the right the button for reverse. The command activates only when device is stationary.
Cruise Control / ICC*	Press the button while driving in order to maintain the set speed without using the accelerator. With the optional ICC function is possible to maintain the set speed also downhill. In order to deactivate the command, press the button, accelerate or brake.
Assisted load	While installing the Triride, keep pressing the button and accelerate in order to lift the device up to the hooking position. (Refer to section 11.4)
Electronic brake / IBS*	Press the electronic brake button* in order to decrease the speed. Whit IBS (optional) the braking results more progressive and can be customized more or less softer.

*The electronic brake button and the software commands ICC and IBS are optional and not standard.
NB: Different models of LCD display available. Refer to the user instruction of the display attached to this manual.
FOR MORE INFORMATION ON IBS & ICC VISIT OUR WEBSITE WWW.TRIRIDEITALIA.COM

9.10 ECODRIVE

EcoDrive[1] is an electronic power management system that allows you to increase the autonomy of the device up to 40% more! EcoDrive offers 5 driving modes that can be entered directly from the display: 1 - ECO | 2 - URBAN | 3 - TOUR | 4 - SPEEDY | 5 - TURBO

The 1 | 2 | 3 modes allow great energy savings and an even smoother and more relaxing drive. Modes 4 | 5 allow the Triride to tackle the most demanding situations such as mountain trails or steeper climbs.

- **GREATER RIDING AUTONOMY WITH ALL TRIRIDE!**
- **INCREASE IN AUTONOMY UP 40%!**
- **SMOOTHER DELIVERY OF POWER AND TRACTION**

The Normal/Sport function, (that allows greater acceleration and more intense electronic braking) remains unchanged.

Reverse and cruise control (if available) operate automatically at maximum power..

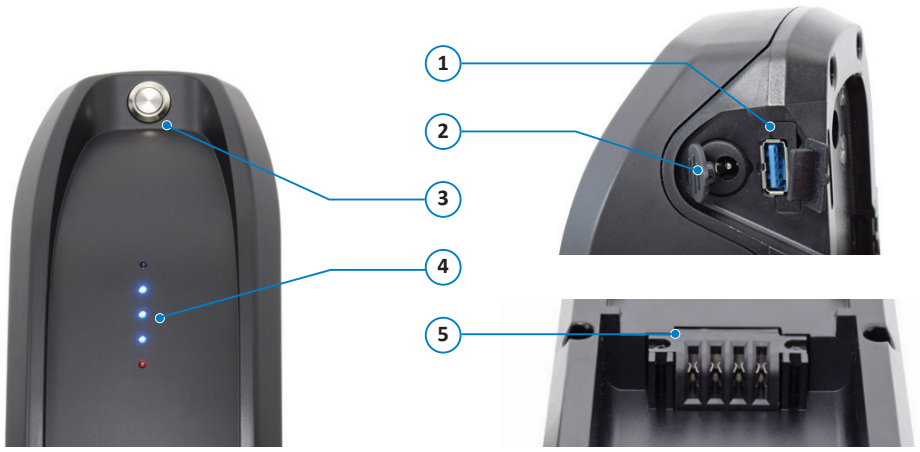
The 5 display functions do not determine the speed levels but correspond to the level of power supplied, therefore to the possibility of improving the autonomy performance.

1	**ECO**	for maximum energy savings	20% of the maximum power. **Battery range increase + 40%** Maximum gradient[2] 8%
2	**URBAN**	smooth drive for urban environments	30% of the maximum power. **Battery range increase + 30%** Maximum gradient[2] 10%
3	**TOUR**	torque and power with ease for most situations	50% of the maximum power. **Battery range increase + 20%** Maximum gradient[2] 15%
4	**SPEEDY**	to face the paths more demanding	75% of the maximum power. **Battery range increase + 5%** Maximum gradient[2] 20%
5	**TURBO**	for the most demanding routes and situations	100% of the maximum power. **Battery range increase + 0%** Maximum gradient[2] more than 20%

[1]The Eco Drive system is available as an option. The EcoDrive system can also be implemented on existing Trirides from 2016.
[2]It is recommended not to go uphill or downhill with slopes greater than those indicated in the User Manual. The actual slope that can be overcome depends on the Triride model used, the driver's ability, the type of road surface, the user weight, the wheelchair model, the state of wear of the front tire.

10. TRIRIDE BATTERY

10.1 “Special Models” Battery (from 2019)



1. USB Port for smartphone or other dispositives
2. Battery charger socket
3. ON/OFF switch
4. Charge level indicator
5. Connectors for battery

10.6 Battery charge status

Each battery model has a charge status indicator.

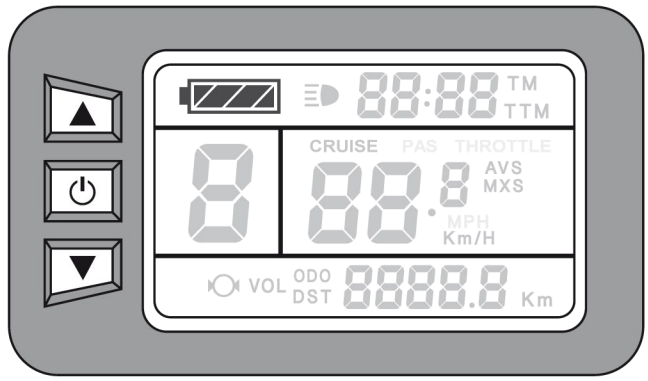
In general, this indicator is composed of LED lights of different colors.

Battery life and the corresponding indication value vary depending on the way the Triride is used, the user's weight and the type of road course.

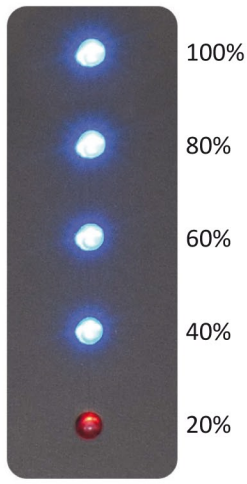
Charge level indicator on the display

The indication of the battery charge status is also shown on the Tririder's LCD display (when present), however the one on the battery may be more accurate.

For the indicators and instructions on the LCD display on the device, refer to the enclosed leaflet with the users and maintenance manual.



Below is a diagram of indicator with the corresponding charge residue for each LED lit:



"Special" Battery (20/19)

10.7 Battery connection

Inserting the "Special" Battery

Insert the battery vertically in the special housing until the looking, following the arrow in the picture.

By turning the key and removing it, the batery will be locked to the device. To release the battery, turn the key and unlock the battery performing the reverse procedure.

WARNING - Always lock the battery before turn on the Triride!

10.8 Correct battery use

The main rules for correct usage are indicated on the label, located on the back of the battery.

WARNING

- Do not short circuit the battery.
- The battery must be disposed of correctly.
- Only use specific battery chargers.
- Risk of explosion if the battery is exposed to open flames.

12.2 Switching On and Operating Triride

IMMAGE	STEP/DESCRIPTION
	**Switching on the battery** After inserting the battery into the housing, turn it on using the ON / OFF button. Refer to section 10 for the different battery models.
	**Switching on console** Press the ON/OFF button until the display turns on. Refer to Display Instruction attached to this manual.
	**Operation and driving** Push the potentiometer lever downwards and use the handlebars to steer the front wheel. The speed will be directly proportional to the pressure applied to the lever.
	**Brake** To brake, release the potentiometer lever and pull the brake lever.
	**Switching off** Use the ON/OFF button to turn the display OFF. Use the ON/OFF button to turn the battery OFF. Refer to section 10 for the different battery models.

12.3 Charging the Battery

IMAGE	STEP/DESCRIPTION
	**Turn OFF the battery** Use the switch to turn the battery OFF. Refer to section 10 for the different battery models.
	**Unlocking and removing the battery** Turn the key anticlockwise (if present). Remove the battery from the support as indicated on section 10.6.
	**Connecting to charger** Connect the smaller plug on the battery charger to the socket on the battery, underneath the protector flap. Refer to section 10 for the different battery models. (in the picture is shown the charge of the “Special” battery).
	**Connect to power outlet** Connect the plug on the battery charger to a 230V max 16 A (in the picture is shown the charge of the “Special” battery).

The charger LED will indicate the status as below.

Red(1): charger ON.

Red(2): charging.

Green(2): charging complete, battery fully charged.

13. GUIDELINES FOR USING LITHIUM BATTERIES

• Always charge your battery, even when you only travel a few kilometres. There are several reasons for this:

1. You will always have maximum available distance;

2. You will maximise system performance (control unit and motor), as the voltage is always higher;

3. You will extend the life of the battery. Lithium batteries of all types, whether lithium ion or lithium polymer, do not have a memory effect and can therefore also be charged when only partially discharged. In fact, lithium batteries can be damaged if completely discharged, although in this case there is a control unit within the battery itself (battery management system – BMS) that interrupts the current when voltage falls below a certain limit.

• Do not leave the battery charger connected at 230 V for too long once the charging cycle is complete, indicated by the green LED.

• Always charge your battery in a ventilated area and away from inflammable materials.

• Do not short circuit the battery (creating a connection between the battery terminals using metal elements).

• Do not throw the battery in water.

• Do not attempt to open the battery pack.

• Do not let children play with the battery pack.

• Do not dispose of the battery with normal household waste at the end of its useful life. Take it to a specific disposal centre.

• Do not leave the battery in the sun or rain for too long.

• Avoid contact with any liquids which leak out of the damaged battery.

If the battery is not used, remember to charge it at least once every three months. If you notice that the battery is damaged, the casing is broken or it is swelling, or if you see smoke issuing from it, do not use it and immediately contact customer support.

Always keep the original battery packaging; it is the only option that meets the legal requirements for transport of batteries. If problems are experienced with the battery in future, use this packaging to return the battery to us for repair.

13.1 Battery Features

The Triride battery is a 36 V or 48 V lithium battery without memory effect and, depending on model, has a range of approximately 50 km which can vary from 30 km to 60 km and may be less or greater than the indicated range depending on the set speed, user's weight, type of terrain and weather conditions ... (depending on model, speed, user weight, terrain and weather conditions).

Lithium batteries offer greater flexibility of use and allow charging at any time without having to wait for the battery to completely discharge.

TRIRIDE S.R.L. only uses batteries equipped with a suitable safety system and an intelligent battery management system (BMS).

13.2 Battery Discharging

Discharging of the battery, which occurs with normal use of Triride, is protected by an intelligent management system which interrupts power in case of excess current and if one of the battery cells is too low on charge.

13.3 Battery Charging

The Triride battery is charged via a socket on the side of the battery. Only charge the battery using the original charger supplied with Triride. The battery charging time (if used correctly) averages around 4-5 hours.

Both the intelligent charger and the intelligent battery management system interrupt current when the battery is charged.

13.4 Storing the Battery

Generally, lithium batteries have a discharge level of almost zero when stored. However, the intelligent battery management system contains circuits that constantly consume a small quantity of energy, controlling it at all times.

The energy use for this is very low, but if the battery is stored completely discharged, the BMS may function only for a few more weeks, after which time the battery may be permanently damaged and no longer usable.

Therefore, carefully follow these instructions:

- fully charge the battery before long periods of non-usage
- in any case, fully charge the battery at least once every two months
- if the battery does not function following a long period of storage, it should be disposed of for safety reasons.

13.5 Further Safety Information

The lithium batteries used on the Triride may represent a danger, as they have sufficient potential energy to cause a serious accident in cases of improper use or negligence.

TRIRIDE S.R.L. only uses lithium batteries which are considered stable and equipped with safety systems, including an intelligent management system which controls the battery at all times.

In any case:

- only charge the battery under supervision;
- do not charge the battery while sleeping;
- charge the battery away from inflammable objects;
- only use the battery charger supplied with Triride to charge the battery;
- do not charge or leave the battery near heat sources;
- do not charge the battery at temperatures below 0°C;
- always store the battery charged.

13.6 Supplementary Information on Battery Use

Using the battery at low temperatures

Performance of lithium batteries decreases at low temperatures, both in term of power and duration (below 0°C). This is not a danger, but an inconvenience, and the battery should be stored indoors in the case of such weather conditions.

Do not charge the battery at temperatures below 0°C.

Using the battery in high humidity

The battery's casing protects the cells and circuitry against humidity and rain. This protection is sufficient for occasional, limited exposure, but constant, prolonged exposure to weather conditions such as rain and high levels of humidity may cause battery malfunction. Therefore, avoid these conditions and minimise time spent using Triride in rain or snow as much as possible.

Useful life of battery

All batteries have a useful life, but their performance also decreases over time. The speed of deterioration depends on various factors, including temperature, frequency and conditions of use (user weight, driving style, topography and weather conditions).

Depending on these factors, the useful life of a lithium battery can be estimated between 500 to 1000 charging cycles (if treated correctly).

To maximise the useful life of the battery:

- drive smoothly and at a moderate speed
- do not put the battery under excessive and prolonged strain from the motor
- avoid exposing the battery to high temperatures
- avoid leaving the battery unused for long periods

Battery efficiency decreases gradually, and if the battery stops functioning suddenly, there is definitely a technical problem.

TRIRIDE S.R.L. guarantees the battery for one year, as it is a consumable material. In the case of replacement of the battery under guarantee, the new battery will have a guarantee equivalent to the guarantee period remaining on the original battery.

Disposal of batteries

The Triride battery must be appropriately disposed of through a specialised waste management centre. Consult your local waste collection services for indications. You may contact TRIRIDE S.R.L. for any further clarification.

15. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Triride console does not switch on	Battery discharged	Recharge
	The battery is not inserted correctly	Remove and reinstall the battery, locking with the key
	The battery is not turn ON	Before switching on the Display ensure the battery is turned on
Excessive vibration is experienced during use	The fixing screws in the arms may be loose	Tighten the screws
The control console switches on but the device will not start	Incorrect connection of motor to control unit (Error info 03)	Check that the connection is Secure
	Speed level set on zero (0)	Increase the speed level (1-5)

If you do not solve the problem, contact your dealer or the Triride service center.

17. EMC TABLES

Guide and manufacturer's declaration – electromagnetic emissions		
TRIRIDE is designed to function in the electromagnetic environment indicated below. The customer or user of the appliance must guarantee that it is used in such an environment		
Emissions test	**Compliance**	**Electromagnetic environment**
RF CISPR 11 Emissions	Group 1	TRIRIDE uses RF energy only for internal functions. Thus, RF emissions are very low and therefore probably do not cause any interference with nearby electronic appliances
CISPR 11 Emissions	Class B	TRIRIDE is suitable for use in all those environments, including domestic environments and those connected directly with a public grid low-voltage power source that supplies buildings for domestic use.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage/flicker fluctuation emissions IEC 61000-3-3	Not applicable	

Guide and manufacturer's declaration – electromagnetic immunity			
TRIRIDE is designed to function in the electromagnetic environment indicated below. The customer or user of TRIRIDE must guarantee that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment**
Electrostatic discharge (ESD) IEC 61000-4-2	on contact +- 6kV	on contact +- 2;4;6kV	Floors must be wood, concrete or ceramic tiles. If floors are coated in synthetic materials, the relative humidity must be at least 30%.
	in air +- 8kV	in air +- 2;4;6;8kV	
High-frequency magnetic field (50/60Hz) IEC 61000-4-8	3 A/m	30 A/m	Grid-frequency magnetic fields should be at average levels of a typical area in a commercial or hospital environment.

Guide and manufacturer's declaration – electromagnetic immunity			
TRIRIDE is designed to function in the electromagnetic environment indicated below. The customer or user of TRIRIDE must guarantee that it is used in such an environment			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment**
			Portable and mobile RF communications equipment should not be used closer to any part of TRIRIDE, including cables, than the recommended separation distance calculated with the equation applicable to the transmitter frequency. **Recommended distance:**
Radiated RF IEC 61000-4-3	3 V/m from 80 MHz to 2,5 GHz	20 V/m	d= 0,17 √P from 80 MHz to 800 MHz
			d =0,35 √P from 800 MHz to 2.5 GHz
			Where P is the maximum rated output power of the transmitter, in watts (W), according to the manufacturer of the transmitter and D is the recommended distance, in meters (m). Field strengths of fixed RF transmitters determined by an electromagnetic site[a] survey should be lower than the compliance level for each frequency range[b]. Interferences can occur in proximity of appliances marked with the following symbol: 

NOTE 1: At 80 MHz and 800 MHz, the separation distance for higher frequency ranges applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is influenced by the absorption and reflection of structures, objects and people.

[a] Field strengths for fixed transmitters, such as base stations for radio telephones (cordless phones) and land mobile radios, amateur radio equipment, AM FM radio transmitters and TV transmitters can not be predicted theoretically with precision. To assess an electromagnetic environment caused by fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the place where TRIRIDE is used exceeds the applicable compliance level above, the operation of TRIRIDE should be monitored. If abnormal performance is noted, additional measurement may be required as a different orientation or position of the Triride.

[b] The field strength in the frequency range 150 kHz to 80 MHz should be less than 3 V / m

Separation distances recommended between portable and mobile radiocommunication devices and TRIRIDE

TRIRIDE is designed to work in the electromagnetic environment in which RF-irradiated disturbances are controlled. The customer or the user of TRIRIDE can help prevent electromagnetic interference by ensuring a minimum distance between mobile and portable RF communications devices (transmitters) and TRIRIDE, as recommended below, in relation to the maximum output power of the radiocommunication equipment.

Maximum rated output power of the transmitter (W)	Separation distance at transmitter frequency (m)		
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For the transmitters designed for a maximum output power not reported above, the recommended separation distance d in meters (m) can be calculated using the equation applicable to the transmitter frequency, where P is the nominal maximum output power of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is influenced by the absorption and reflection of structures, objects and people.

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Dealer stamp

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