TYRO BY

USER MANUAL

Cetus 2S

EN DE NL FR ES

Handheld remote / Receiver sticker	Set sticker

English

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1. Introduction

Please read all instructions in this manual carefully before use

These operating instructions are intended for the technician and the end user. The operating instructions depend on the application, for which the end user is responsible. Keep these operating instructions carefully. Pass on all documents if the product is given to third parties.

Intended use
The (end) user must store the handheld transmitter safely and in such a way that it cannot be used by unauthorized or unqualified persons.

This product is designed for wireless, radio control of machines. Application examples include: winches, pumps, gates, doors, lighting, and electrical control/axle control of trailers for special transportation. For significant other applications, please contact Tyro Remotes to avoid misuse of the product.

Important information
The general conditions of sale, available on request or download at (http://www.tyroremotes.com), are valid at all times. After installation on the own system, the end user is responsible for the certification of the total system in combination with the remote control.

Operating conditions handheld
The handheld transmitter cannot operate at temperatures below -30°C and above 60°C (-22°F to +140°F). Charging the handheld transmitter should only be done between 10°C and 45°C (+50°F to +113°F). For proper and safe operation of the handheld transmitter, it should be charged daily.

Operating conditions receiver
The receiver cannot operate at temperatures below -40°C and above 80°C (-40°F to +176°F).

Performance
The performance of our products depends on several factors. For a detailed explanation please visit:
http://www.tyroremotes.com/tyropedia.

Everything to your satisfaction?
Tyro makes every effort to deliver the products to your complete satisfaction. If this is not the case please contact us. Please observe the following deadlines:
- Visible defects and faults must be reported within 2 working days of receipt.
- Should Tyro Remotes not hear anything 2 weeks after delivery, then the delivery is considered approved.
- If there are other complaints, it is requested to report this to Tyro Remotes as soon as possible, but no later than 2 months after delivery.

Declaration of conformity & certification
The complete declaration of conformity and certification can be found on the last pages of this user manual.

Frequencies
It is important to know what frequency is allowed in the area where the product will be used. Whether or not a particular frequency is allowed depends on national legislation. Using the correct frequency is the responsibility of the end customer.

This frequency table shows which frequencies are allowed in a particular continent. Additional country-dependent product certification may be required.

Frequency table

Frequency	**434 MHz**	**915 MHz**	**2.4 GHz**
Hopping protocol	**LBT + AFA**	**FHSS**	**FHSS**
Modulation type	**GFSK**	**GFSK**	**GFSK**
North America		✓	✓
Central & South America	✓	✓	✓
Brazil	✓		✓
Europe	✓		✓
Africa	✓		✓
Oceania	✓	✓	✓
Asia			✓
Japan			✓
Worldwide			✓

Check which frequency applies to your product by checking the system identification sticker

Hopping protocol explanation

LBT: Listen Before Transmit **AFA: Automatic Frequency Aqility**	With LBT, it first listens to see if the channel is free before sending the message. If the channel is busy, AFA ensures that another free channel is selected.
FHSS: Frequency Hopping Spread Spectrum	FHSS automatically hops across multiple frequency channels to reduce signal interference within a wide frequency spectrum. This allows multiple systems to operate side by side without interference.

2. Safety

Caution: danger of injury or property damage!
To avoid dangerous situations, always observe the following rules:
In case of deviation, ambiguity or doubt about the rules below, always contact Tyro Remotes.

Check before use	Always check before use that all keys and (emergency) stop button* function properly (*if present).
Line of sight	The operator must have a view of the hazard area at all times. Use the remote control only when there is line-of-sight connection to the application.
Care	Never leave the handheld transmitter unattended.
Simulate	After installation of the systems, it should be tested without turning on the main power of the application to prevent damage.
ESD	Always follow ESD guidelines if one may come into contact with internal parts to prevent damage.
Instruction	The end user should always be instructed (by the person in charge of the unit to be operated) on how to use the handheld remote safely in conjunction with the unit to be operated.
Operation	It is not recommended to operate the system with (thick) gloves that do not allow a good feel of the keys.
Lifespan*	*In the case of an ISO 13849-1 PL certified system, regardless of their condition, they must be replaced for safety reasons after 10 years (the expiration date).
Out of range	As an operator with an active system, always stay within range (situation dependent) to avoid risky situations.
Damage	In case of (visible) damage, always send the product to the manufacturer or distributor for repair to avoid risky situations. In case of (visible) damage, always send the product for repair to avoid risky situations.
Installation	Always have the system installed by a licensed electrician.
Annual inspection	The system should be checked annually, see section: Maintenance.
Documentation	Documentation should always be made available to the (end) user, instruction should be given if necessary.
Risk of shutdown	If multiple radio handheld transmitter devices within the range are operating on the same frequency, there is a chance that the system may inadvertently shut down.

Warning: danger of property damage or personal injury!
After a safety shutdown of the system, it should not be put back into operation until the user has ascertained the safety of the operating and operating conditions.

Warning: danger of fire and death!
The battery should not be opened or short-circuited, it may overheat of catch fire. Avoid extreme conditions and temperatures that could affect the battery, as this may cause the battery to leak and release hazardous materials.

3. Transmitter dimensions & weight

Cetus 2S - Regular		Cetus 2S - Safe	
			
Weight:	**515 gram / 1.14 lbs**	**Weight:**	**885 gram / 1.95 lbs**

Keypad version

Cetus 2S - 12F


4. Transmitter description

Cetus 2S

*Actual handheld transmitters may differ

Physical characteristics:

1. Status-LEDs
   - Active-indicator-LED
   - Transmit-indicator-LED
   - Battery-indicator-LED
2. Logo window or display (optional)
3. Function keys
4. ON/OFF-key
5. MENU-key
6. Charging plug, at the bottom
7. Sleeve
8. Identification sticker
9. Screws for battery compartment
10. Magnet
11. Keycord hanging point
12. (Emergency) stop button with protector (optional)

5. Transmitter specifications

Cetus 2S - Technical specifications

Frequency (+hopping protocol / channels)	434 MHz (LBT+AFA / 8 channels)	915 MHz (FHSS / 50 channels)	2.4 GHz (FHSS / 40 channels)
Frequency range	433.150 - 434.375 MHz	902.500 - 927.000 MHz FCC 915.375 - 927.625 MHz AUS	2402 - 2480 MHz
Antenna	Integrated		
Communication mode	Duplex		
Transmission power	10.0 dBm at 434 MHz, 915 MHz and 2.4 GHz		
Reaction time	Approx. 0.1 second		
Receivers per transmitter	434 MHz, 915 MHz: Max. 10 receivers | 2.4 GHz: Max. 8 receivers		
Certification	ISO 13849-1 PL pending*, CE, FCC, ISED, RCM, RED, ECE-R10 (*with Scorpius 2S)		
Degree of protection	IP65		
Temperature range	-30°C / +60°C | -22°F / +140°F		
Number of function buttons	Keypad with 12 function keys plus menu button + optional (emergency) stop button		
Battery type	3x 1.2Vdc 1500 mAh Ni-MH rechargeable batteries		
Charging time	5 hours		
Operating time	Approx. 40 hours, ca. 10 hours with backlight		

Note: Charge batteries on time
Ni-Mh batteries discharge slowly if not charged on time. With respect to maintaining battery life, we recommend charging the batteries every 2-3 months.

6. Transmitter features

Status-LEDs

The handheld transmitter is equipped with three separate Status-LEDs for the following indications:

- Active-indicator-LED (color green)
- Transmit-indicator-LED (color green)
- Battery-indicator-LED (color red)

Status-LED functionality	
Active indication	
Transmitter is active	Active-indicator-LED is solid green
Transmitter no control (Receiver is disabled or other control is active)	Active-indicator-LED flashes green, slowly (1x per sec.)
Out of range situation	Active-indicator-LED flashes green, fast (5x per sec.)
Transmit indicator	
If a key is pressed, with active handheld transmitter	Transmit indicator-LED flashes green, fast (5x per sec.)
Battery indicator	
If a key is pressed, with active handheld transmitter	Battery-indicator-LED flashes red, slowly (1x per sec.)
Charging (with active transmitter)	Battery-indicator-LED is continuous red
Charging (in stand-by mode)	Battery-indicator-LED is continuous red
Pairing	
System is in “pairing mode”	Status-LEDs light up from left to right
Pairing successfully completed	Active-indicator-LED flashes green, 5 times
Pairing failed	Battery-indicator-LED flashes red, 5 times
Change of function	
Default settings	Green status-LED flashes 1x
Option 1 to be set	Green status-LED flashes 2x
Option 2 to be set	Green status-LED flashes 3x

Logo window or display (optional)

- Without display, a logo sticker is shown here: 44 x 22 mm.
- The display has a resolution of: 97 x 32 pixels.
- On the display, 3 lines of 97 x 8 pixels are freely describable.

Handheld transmitters equipped with a display include the following standard functions:

Transmit power / Range indicator
- The display shows the strength of the radio signal.

Battery indicator
- Indicates how full the battery is.
- Battery animation when the handheld transmitter is charging.

Function keys

- The number of function keys depends on the model.
- These keys are used to control the functions on the receiver.
- The function keys are automatically illuminated when it is dark.
- The keys can be implemented as momentary (ON/OFF) or latching (Key holding function).
- The function keys can be freely programmed, see chapter: 'Changing functions'.
- For an explanation of function key configuration, see chapter: 'Transmitter functions: Function key configuration'
- Function keys that have no function can be disabled and mechanically blocked at the factory.

ON/OFF-key

The Cetus 2S is equipped with a single ON/OFF button.

When the transmitter is switched off
- Press for 2 seconds, transmitter becomes active.

When the transmitter is switched on
- Always active, immediately disables the transmitter and receiver.
- Should the above behavior differ, it is mentioned in the customer-specific manual.
- Only for ISO-13849-1 certified systems and within range, the receiver automatically switches off when the handheld transmitter battery is empty.

MENU-key

The Cetus 2S handheld transmitter is equipped with a 13th function key which in standard configuration is used as MENU-key.
By default, the MENU-key can be used to operate a number of standard functions. A customer-specific menu is optional.

- The MENU-key can be used to activate the keypad and/or display illumination. (See section: Transmitter functions).
- The MENU key is used to activate "pairing mode". (See chapter: Pairing a handheld transmitter to a receiver).
- The MENU key can be used to activate a customer specific menu. If the transmitter is equipped with this, the explanation is in the customer-specific manual.

Sleeve

- As standard, the system is equipped with a rubber protective sleeve.

Charging plug

- Plug for charging the handheld transmitter.

Sleeve (optional)

- Optionally, the handheld transmitter can be equipped with a rubber protective sleeve.

Identification sticker

- The system can be identified using the identification sticker. The sticker includes the serial number, type and kind of system.
- For an explanation of the identification sticker, see the section: 'System Identification'.

Battery compartment

- At the rear of the Cetus 2S is the battery compartment.
- By opening the compartment, the rechargeable batteries can be replaced.
- Additional or replacement batteries can be ordered directly from Tyro.

Magnet

- There is a magnet on the back.
- The magnet allows the hand-held transmitter to be fixed against metal surfaces.

Keycord hanging point

- Hanging point at the bottom of the sleeve so the handheld transmitter can be attached to a keycord.
- This hanging point is only available on the optional sleeve (without an (emergency) stop button).

(Emergency) stop button with protector (optional)

- Push button to immediately stop the system in case of an emergency.
- There are two versions of the stop button:

  • Red emergency stop button, ISO 13849-1 PL certified, part of the Safety Package.
  • Yellow stop button, for non-PL approved systems.

- For an explanation of the operation of the emergency stop function, see chapter: 'Transmitter functions'.
- In the version with (emergency) stop button, the sleeve contains a protector around the button as standard.

7. Transmitter functions

Keyboard and display lighting

- Systems with keyboard foils are standard equipped with keyboard illumination.
- If the system is equipped with a display, it includes display lighting as standard.
- The lighting (both keypad and display) will illuminate for 5 sec. and automatically turns off again if no key is pressed.
- Optionally, the lighting time can be extended or set to continuous-on.

Description for systems with a separate ON-key and OFF-key

- The keypad and/or display illumination is activated by pressing and holding the ON-key for more than 5 seconds, on an active system.
- The keypad and/or display illumination can be turned off by pressing and holding the MENU-key.
- When the system is turned off, the keypad illumination is also turned off.

Emergency stop function

Handheld transmitters equipped with the optional (emergency) stop button include a physical button on the top of the handheld transmitter to immediately shut down the entire system in an emergency situation.

With both types of stop buttons, the system shuts down immediately when the (emergency) stop button is pressed:

- Red emergency stop button, ISO 13489-1 certified
- Yellow stop button, not ISO PL certified

Using the emergency stop function

In an emergency situation, the emergency stop function can be activated by pressing the (emergency) stop button downward.

(Re)activation of the system

The system can be reactivated by pulling out the (emergency) stop button. The system returns to its default settings after activation. All outputs return to their regular position of normal activation.

The system may be reactivated after an emergency stop only after the unsafe situation has been cleared

Shutdown / Maintenance mode* (For ISO 13849-1 certified systems)

The emergency stop function can be used in addition to emergency situations to safely shut down the entire system. As long as the emergency stop function is activated, the system, and thus the machine, cannot be used or activated.This makes it extra safe when, for example, maintenance is being carried out on a machine.

Out-of-range protection

If the handheld transmitter is out of range of the receiver, the receiver can no longer respond to commands from the handheld transmitter. If the handheld transmitter is activated again within range, the receiver switches on again. The status LED on the handheld transmitter will light up red for several seconds.

To prevent dangerous situations, an out-of-range protection can be set so that the receiver automatically turns off when:

- The handheld transmitter becomes out of range of the receiver.
- The battery of the handheld transmitter is empty.
- Out-of-range protection can be disabled or enabled (not for ISO 13849-1 certified systems).
- With ISO 13849-1 certified systems, out-of-range protection automatically kicks in. Please refer to the chapter: Safety Package.
- To enable or disable out-of-range protection, see chapter: Changing Functions.

Out-of-range indication

Systems transmitters equipped with a status-LED, status-indication-LED, and/or display give a visual indication when the transmitter is out of range.

- When the handheld transmitter is out of range of the receiver, the receiver cannot be switched off or operated.
- When the handheld transmitter comes within range again, the connection will restore itself. The functions can be operated again.

Cetus 2S out-of-range indication

- The active-indicator-LED is solid green when there is connection to the receiver.
- The active-indicator-LED flashes slowly green when there is no longer a connection to the receiver.

Buzzer

The system can be optionally equipped with a buzzer. The buzzer can be programmed to give an active sound at:

- When two keys are pressed simultaneously (continuous tone).
- Battery low indication (short tone, 20x).
- Outside/inside range
- Signal strength (too) low
- At feedback where min/max values are reached

If the system is equipped with a buzzer, the operation is described in the customer-specific manual.

Function key configuration

The characteristics of the function keys can be configured in two ways:
- Function key operation: momentary or latching
- Function key blocking: horizontal or vertical key lock, freely adjustable

The configuration can be at the default settings or set at the factory to a customer-specific configuration.
A configuration can be changed by the user as desired or reset to the default settings via the handheld transmitter.

Function key operation
Function keys can be set to two modes:
- Momentary: key press = ON, key release = OFF
- Latching: key press and release = ON, key press and release again = OFF.

In the standard configuration, the function keys are set to momentary mode (key press = ON) / key release = OFF).

Function key blocking
The simultaneous pressing of several function key combinations can be blocked. (e.g. 2 or 3 function keys simultaneously).
The function key locks can be configured in various ways by the user via the handheld transmitter:

Blocking can be configured in three ways:
- Horizontal (Function keys that are next to each other, e.g. 1&2, 3&4 e.t.c., cannot be used at the same time.
- Vertical (Function keys that are under each other, e.g. 1&3, 2&4 e.t.c., cannot be used at the same time.
- Other combinations can be set at the factory. In theory, any combination is possible.

In the standard configuration, the horizontal function keys cannot be used at the same time.

Changing default function key configuration
To change the function key configuration, see the section: 'Changing functions'.

Systems with customer-specific configuration
See customer-specific manual for operation and allowed function key combinations & function key locks.

Line outputs

A line output becomes active as soon as the handheld transmitter is switched on with the ON button.
This can be used, for example, to turn on the main power of a machine.

- 0, 1 or 2 line outputs can be set.
- The default number of line outputs enabled (0, 1 or 2) , depends on the receiver.
- For the default configuration, see the section: 'Changing functions'.

Primary / Secondary instruction

Several Tyro Remotes handheld transmitters and receivers can be combined with each other in the sense that with 1 handheld transmitter several receivers can be operated or with several handheld transmitters 1 receiver. A so-called 1:n or n:1 configuration. In this type of configuration we speak of primary and secondary devices. A configuration has a maximum of one Primary with several Secondary devices. Two Primary devices cannot work with each other and two Secondary devices cannot work with each other either.

Note: Standard configuration
Factory default configuration is 1 transmitter (Primary) with 1 or more receivers (Secondary).
The combination multiple transmitters on multiple receivers is not possible.

Note: Expanding a configuration
Should the configuration need to be expanded, the Primary and Secondary setting of the devices already in the configuration must be swapped in some cases.

Changing and expanding the Primary / Secondary settings
For changing settings, contact the Tyro Remotes sales/service department to discuss configuration options.

8. Safety package

The systems can be optionally equipped with a Safety Package. Systems equipped with this option include a number of additional safety measures compared to standard systems.

- A red emergency stop button
- Out-of-range protection enabled as standard

The Safety Package can make the system an ISO 13849-1 Performance Level certified system for additional safety. If a set is formed between a PL certified handheld transmitter and receiver. Check the table below to see which systems qualify for this safety certification:

ISO 13849-1 PL certified systems	
Handheld transmitters with PL certification	**Receivers with PL certification**
Pyxis 2S (with optional Safety Package)	Scorpius 2S IP68
Cetus 2S (with optional Safety Package)	Scorpius 2S IP65
Fornax 2S	

Emergency stop button

The stop button at the top of the handheld transmitter is designed to interrupt an action as quickly as possible. This causes all outputs on the receiver to switch off. In systems with a safety package, additional safety is provided, making it an emergency stop button instead of a stop button.

Note: check that the handheld transmitter is equipped with the correct stop button
Only the red emergency stop button is ISO 13849-1 PL certified and part of the Safety Package.

Out-of-range protection

If the handheld transmitter moves out of receiving range of the receiver, the receiver can no longer respond to commands from the handheld transmitter. To avoid dangerous situations, the receiver automatically shuts off when the handheld transmitter goes out of range. If the battery of the handheld transmitter is dead, the receiver also automatically switches off. If the handheld transmitter is activated again within range, the receiver switches on again. The status LED on the handheld transmitter will light up red for several seconds.

Note: With the yellow stop button, there is no automatically shut-off during out-of-range
When a yellow stop button is used, the receiver does not automatically shut off when out of range. When the handheld transmitter is within range again, the functionalities are automatically restored. The handheld transmitter does not have to be activated again.

9. System identification

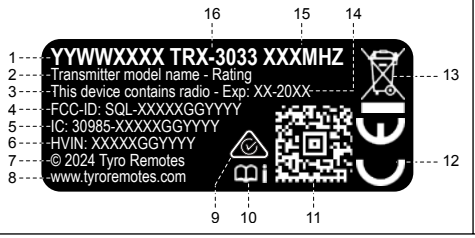
Identification via sticker

The system can be identified by an identification sticker on the handheld transmitter. The actual position of the sticker varies by product type. The figure below explains the contents of the handheld transmitter identification sticker.

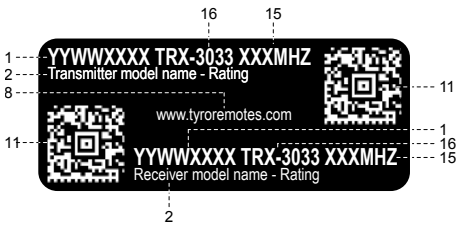
Set sticker

When the system is part of a complete set, consisting of a handheld transmitter and a receiver, a set sticker is also generated.The set sticker can be found on the box and optionally in the front of the manual.

Handheld remote sticker



Set sticker



*Picture for illustration purposes. Actual identification sticker may differ.

Identification sticker explanation			
1.	Serial number, format (P)YYWW###(#). P = Prototype	9.	RCM marking
2.	Product name, specification of type / safe + rating	10.	For more information, refer to the user manual
3.	This product contains radio marking	11.	QR code with serial number
4.	FCC marking and ID number, based on product name and frequency or radio module	12.	CE certification
5.	IC marking and ID number, based on product name and frequency or radio module	13.	WEEE marking
6.	HVIN: hardware identification number, based on the product name and frequency or radio module	14.	Expiration date (ISO 13849-1)
7.	Copyright & Manufacturer	15.	Frequency in MHz or GHz (434, 915 or 2.4)
8.	Website URL for full details	16.	Type number of the PCB (TX-, RX-, TRX + print nr.)

If the identification sticker is poorly readable or missing, there is also an identification sticker on the inside of the handheld transmitter

QR code explanation

On the identification sticker is a scannable QR code. This code displays the relevant information about the system.
For each product, this QR code is uniquely generated based on the system properties.

QR code in this example can be scanned to show a generic sample of the content

Example QR string
When the QR is scanned, a code string becomes visible. This contains the main system properties.

P24011234	**V**12.34.56	**C**12.34.56	**S**12.34.56	**R**12.34.56	**H**12.34	**B**12.34.56	www.tyro.it/rcm
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**

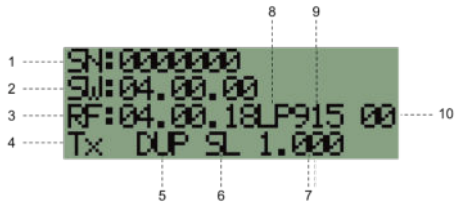
QR code explanation		
1	P	Serial number, format (P)YYWW###(#). P = prototype
2	V	Software version CombiCode
3	C	Software version customer specific module (if present!)
4	S	Safety stack software versie
5	R	Radio software version
6	H	Hardware version
7	B|P	Bus / PLC software version
8	URL	URL optional

Identification via display

In systems with a display, an information screen can be activated. This gives the user an overview of the current system settings.Through the following steps, the information screen can be activated:

- To activate the information screen, the handheld transmitter must be in normal operating mode.
- This can be done by starting the handheld transmitter regularly with the ON-key or ON/OFF-key.
- From normal operating mode, the information screen can be displayed by pressing and holding the OFF-key or ON/OFF-key for 2 seconds.
- This action activates the display of the information screen.
- This display remains active until the OFF key is released.

Display identification example



*Picture for illustration purposes. Actual identification sticker may differ.

Identification via display explanation			
1.	SN: Indicates the serial number. Format (P)YYWW###(#).A code beginning with 'P' means prototype.	9.	SL: Indicates whether the system is primary (PR) or secondary (SE).
2.	SW: Indicates the firmware version of the Combi Code. A code beginning with 'P' means software prototype.	10.	1.000: Displays the protocol type information. (main_protocol.sub_protocol).
3.	RF: Indicates the firmware version of the radio module.	11.	Indicates the type of radio module.
4.	TX: Indicates the type of device: handheld transmitter (TX) / receiver (RX) or transceiver / repeater (TRX).	12.	915: Indicates the frequency of the module. (434/868/915/2.4)
5.	DUP: Indicates whether the system is duplex (Dup) or simplex (Sim).	13.	00: Indicates the set channel number.

10. Pairing a handheld transmitter to the receiver

Please note that all systems are already paired at the factory!
This part can be skipped unless an additional or replacement handheld transmitter needs to be paired on to the receiver!

Note: check primary/secondary setting!
Check that the system is correctly configured with the correct Primary / Secondary settings. It may need to be adjusted.
See section: Handheld Transmitter/Receiver Description: Primary / Secondary.

To pair a handheld transmitter (new, or additional) to the receiver, proceed as follows:

Put the handheld transmitter in "pairing mode"

Cetus 2S	Put the handheld transmitter in 'pairing mode':
	1. Turn off the handheld transmitter by using the ON/OFF-key. 2. Press and hold function keys 1 and 2 simultaneously while the handheld transmitter is turned on with the ON/OFF-key. 3. The status-LEDs indicate that "pairing mode" is active. (These light up from left to right) 4. The handheld transmitter is now in "pairing mode," the keys can now be released.

Put the receiver in "pairing mode"

Aquarius 2S	Put the receiver in 'pairing mode':	
	1. Locate the black pairing button on the bottom of the receiver. 2. Press and hold the pairing button for 1 second. (See chapter: receiver description) 3. The status-LED will flash red and yellow. 4. The handheld transmitter is now in "pairing mode," the button can now be released.	
Scorpius 2S IP68	**Put the receiver in 'pairing mode':**	
	1. Locate the black pairing button on the bottom of the receiver. 2. Press and hold the pairing button for 1 second. (See chapter: receiver description) 3. The status-LED will flash red and yellow. 4. The handheld transmitter is now in "pairing mode," the button can now be released.	
Scorpius 2S IP65	**Put the receiver in 'pairing mode':**	
	1. Locate the pairing button on the bottom of the receiver. 2. Press and hold the pairing button for 1 second. (See chapter: receiver description) 3. The status-LED will flash red and yellow. 4. The handheld transmitter is now in "pairing mode," the button can now be released.	
Auriga 2S	**Put the receiver in 'pairing mode':**	
	1. Open the housing by loosening the screws on the back plate. 2. Locate the white pairing button inside the housing, on the lower PCB (circuit board). 3. Press and hold the pairing button for 1 second. (See chapter: receiver description) 4. The status-LED on the PCB will flash red and yellow. 5. The handheld transmitter is now in "pairing mode," the button can now be released.	

When both devices are in 'pairing-mode' proceed with the steps in the following table

When both the devices are in ‘pairing mode’

Step	Description
1.	When both the receiver and the handheld transmitter are in "pairing mode," the devices will find each other and can be successfully connected.
2.	When pairing the handheld transmitter to the receiver is successfully completed, the blinking of the status-LEDs will stop and the receiver status-LED will turn off (*if status LED is present).
3.	Pairing the handheld transmitter to the receiver is now complete.
4.	If the pairing was unsuccessful, the status-LED on the handheld transmitter will stop flashing and the buzzer will beep once.
5.	If no receiver is found, the system returns to "normal mode" after 60 seconds. Previously paired receivers remain active.
6.	In a standard configuration, 10 handheld transmitters can be linked per receiver at 434 / 915 MHz models. At 2.4 GHz, 8 handheld transmitter can be paired per transmitter.
8.	If pairing failed because too many handheld transmitters were stored, the pairing memory must first be cleared. (See the section: delete memory).

Delete memory

To clear the memory of the handheld transmitter and/or receiver follow these steps:

Delete memory (receiver)
The following steps apply to all receivers:

1. Locate the black pairing button on the bottom of the receiver.
2. Press and hold the pairing button for 8 seconds.
3. The status-LED will light yellow continuously.
4. When the memory has been successfully erased, the status-LED turns off.
5. After successful deletion, the receiver resets and goes into standby mode.

See chapter: receiver description for locating all keys and buttons

Delete memory (transmitter)
The following steps apply to all handheld transmitters:

1. Turn off the handheld transmitter with the OFF-key.
2. Press and hold function keys 1 and 2 simultaneously for more than 8 seconds while the handheld transmitter is turned on.
3. The function-LEDs or status-LEDs light up.
4. When the memory has been successfully erased the status-LEDs or function-LEDs on the handheld transmitter turns off.
5. Systems equipped with an optional display will show a message.
6. After successful deletion, the handheld transmitter turns off.

See chapter: handheld description for locating all keys and buttons

11. Changing functions

From the factory, the system is set to momentary mode with horizontal function key lock active (see Table 2).
To change functionality, a transmitter must first be programmed on the receiver. In a complete set, this is done at the factory.

With the following steps the functions can be changed.

Note that changes must be set for all keys at once!
This action will change the functionality of the receiver.
Therefore it will have the same effect for all paired handheld transmitters.

Setup-mode (general)

First put the handheld transmitter in setup mode:

Step	Description
1.	Turn the handheld transmitter off by pressing the OFF-key for 1 second.
2.	Put the handheld transmitter in setup mode by holding function keys 1 and 2 while pressing the OFF-key for 5 seconds.
3.	The green status-LED will light up continuously, the handheld transmitter is now in setup mode. Release the function keys.
4.	If no key is pressed for 30 seconds, the handheld transmitter goes out of setup mode again.

Once setup mode is activated, the following can be changed via the steps described in table 1.

Table 1

Function key operation (Momentary / Latching)
Press the function key to be changed until the green status-LED flashes 2x. The function key changes to latching function. (The key lock is still active)
Return to default settings
Press the function key to be changed again. The function key changes to momentary function. The green status-LED flashes once.

Key lock
Table 2 shows which function keys cannot be used at the same time by default (locked) and which can be used together (function keys without locking)
To unlock function keys that are locked by default
Press both function keys until the green status-LED flashes 2x. The key lock changes to no lock.
Activating key lock for function keys that are not locked by default
Press both function keys until the green status-LED flashes 2x. The key lock is activated.
Return to default settings
Press the two function keys again until the green status-LED flashes once. The key lock changes to its original state.

Line output
1 line output
Press the ON-button until the green status-LED flashes 2x.
2 line outputs
Press the ON-button until the green status-LED flashes 3x.
No line outputs
Press the ON-button until the green status-LED flashes 1x.

The table above refers to a green status LED
In the case of the Cetus 2S, this refers to the active-indication LED (LED 1 of the 3 status LEDs)

Out-of-range protection (N/A for Musca 2S and ISO 13849-1 certified systems)
Enable out-of-range protection
Press the ON-key and function key 1 simultaneously until the green status-LED flashes 2x. The function changes to out of range protection enabled.
Return to default settings (out of range protection off)
Press the ON-key and function key 1 again simultaneously until the green status-LED flashes 1x. The function changes to out of range protection disabled.

Send the customized configuration to the receiver

Step	Description
1.	Press the OFF-button on the handheld transmitter (within 30 seconds). The status-LED on the receiver flashes yellow 4x.
2.	The configuration has been paired to the receiver. The handheld transmitter is now out of setup mode and off (the green status LED on the handheld transmitter is off).
3.	The configuration has been paired to the receiver and the handheld transmitter is now out of setup mode and off (the green status LED on the handheld transmitter is off).

Table 2: General version

Depending on the receiver, there are default settings and configurable options.
Check in advance which receiver is paired to the handheld transmitter for the correct settings!

Default settings Aquarius 2S receiver			
Keys (general)	**Default settings (1x flashing)**	**Option to be set (2x flashing)**	**Option to be set (3x flashing)**
Momentary / Latching			
Function key 1	Momentary	Latching	-
Function key 2	Momentary	Latching	-
Function key ..	Momentary	Latching	-
Horizontal key blocking			
Function key 1 & 2	Mutually blocked	No blocking	-
Function key 3 & 4	Mutually blocked	No blocking	-
Function key .. & ..	Mutually blocked	No blocking	-
Vertical key blocking			
Function key 1 & 3	No blocking	Mutually blocked	-
Function key 2 & 4	No blocking	Mutually blocked	-
Function key .. & ..	No blocking	Mutually blocked	-
Line outputs			
Line output 1 & 2	Line outputs OFF	1 line output ON	2 line outputs ON
Out of range protection* (Only applicable for rechargeable handheld transmitters)			
ON-key & function key 1	OFF	ON	-
Return to default settings			
To reset the receiver to default settings, put the transmitter into setup mode and skip the changes in Table 1. Then send the unchanged setup to the receiver by pressing the OFF-key.			

Table 2: General version

Default settings Auriga 2S receiver			
Keys (general)	**Default settings (1x flashing)**	**Option to be set (2x flashing)**	**Option to be set (3x flashing)**
Momentary / Latching			
Function key 1	Momentary	Latching	-
Function key 2	Momentary	Latching	-
Function key ..	Momentary	Latching	-
Horizontal key blocking			
Function key 1 & 2	Mutually blocked	No blocking	-
Function key 3 & 4	Mutually blocked	No blocking	-
Function key .. & ..	Mutually blocked	No blocking	-
Vertical key blocking			
Function key 1 & 3	No blocking	Mutually blocked	-
Function key 2 & 4	No blocking	Mutually blocked	-
Function key .. & ..	No blocking	Mutually blocked	-
Line outputs			
Line output 1 & 2	1 line output ON	2 line outputs ON	Line outputs OFF
Out of range protection* (Only applicable for rechargeable handheld transmitters)			
ON-key & function key 1	ON	OFF	-
Return to default settings			
To reset the receiver to default settings, put the transmitter into setup mode and skip the changes in Table 1. Then send the unchanged setup to the receiver by pressing the OFF-key.			

12. Resolving problems

If the system is not working properly check the following points:

The receiver does not respond to a command on the handheld transmitter

The receiver has no power supply.
Check that the receiver is properly connected and that the fuse is intact. *Please note that not every receiver has a removable fuse.
The handheld transmitter is out of range of the receiver.
Make sure that the handheld transmitter is within range of the receiver and that there are no large (metal) objects between the handheld transmitter and the receiver, or the receiver's antenna. If necessary, an SMA antenna extension cable can be used to mount the receiver antenna in a different location.
The handheld transmitter is not paired to the receiver.
Follow the steps in the section, "Pairing a handheld transmitter to the receiver," to pair the handheld transmitter to the receiver.
Key lock is active.
Multiple keys may be pressed at the same time. This may prevent certain functions from being activated or blocked.
Key protection is active.
Check whether the hand transmitter is equipped with active key protection. The operation is listed in the handheld transmitter manual in chapter: Handheld transmitter functions.

The handheld transmitter does not function

The handheld transmitter does not turn on when the ON-key is pressed.
The battery may be dead, recharge or replace the battery. Make sure no other buttons are pressed other than the ON button. For a handheld transmitter with an (emergency) stop button, the (emergency) stop button may be pressed, pull out the (emergency) stop button.
The handheld transmitter is out of range of the receiver.
Make sure the handheld transmitter is within range of the receiver and that there are no large (metal) objects between the handheld transmitter and the receiver, or the receiver's antenna.
The handheld transmitter does not switch on when the (emergency) stop button is pulled out
If this is not the case, the handheld transmitter is defective and the system should be submitted for repair. (*Only if the handheld transmitter is equipped with an (emergency) stop button).

The range is limited

The range is too limited.
If necessary, an SMA antenna can be installed at another location using an antenna extension cable to the receiver.
The receiver is not properly positioned.
Check that the receiver is not shielded by metal objects or sheet metal. The receiver should be positioned as high as possible. Refer to the guidelines in section "Range Optimization" in the receiver manual. Check that the antenna is tightly twisted onto the receiver's SMA connector.

Range

The maximum range is always an indication based on a line-of-sight measurement without interference. Range cannot be guaranteed because it is always subject to variable environmental factors. In particular, shielding, reflections and shadows can limit the range.

Objects present between the handheld transmitter and the receiver, especially metal and reinforced concrete or absorbing objects such as trees, water or snow, have an unpredictable influence on the range. In general, range is optimal when there is a line-of-sight connection between the handheld transmitter and the receiver.

For more information on range and reach, see http://www.tyroremotes.com/tyropedia

Frequencies

Check that no wireless equipment is operating on the same frequency in the vicinity of the receiver; this may adversely affect system operation and range.

13. Maintenance

Note: This section only applies to ISO 13849-1 PL certified systems

Maintenance Checklist

To ensure that the system continues to function optimally over its lifetime, it is essential that annual maintenance will be performed. The checklist below should therefore be performed annually:

Check the system annually for the items listed below:

1. Visible damage to any of the devices, if so submit the set for repair.
2. Check that the system is still properly connected, if not repeat the check in the "System Assembly" section, in the receiver user manual (RX) .
3. Check the operation of the system by verifying that the system goes to a safe state when the safety inputs are made inactive. If not, submit the set for repair.
4. Check if the expiration date of the unit has expired, if so, the unit should no longer be used.

Year 1, after checking sign off here:		Year 6, after checking sign off here:	
Year 2, after checking sign off here:		Year 7, after checking sign off here:	
Year 3, after checking sign off here:		Year 8, after checking sign off here:	
Year 4, after checking sign off here:		Year 9, after checking sign off here:	
Year 5, after checking sign off here:		Year 10, replace the complete set	REPLACE COMPLETE SET

Lifespan

A product version with an ISO 13849-1 PL certificate has a lifetime of up to 10 years, depending on use and maintenance. Each PL-certified product has an expiration date after which the product may no longer be used. This date is shown on the identification sticker at "exp. date". If the system is repaired, the expiration date remains the same. The stated lifetime comes from Performance Level certification (ISO 13849-1) and is not a form of warranty for planned product phase-out or quality assurance.

14. Service

If a Tyro Remotes remote controller is defective or in need of maintenance, the entire system (handheld transmitter and receiver) should be sent to Tyro Remotes for repair. For smooth handling, we ask that you complete the service form online and print out the confirmation email and send it with the system. The service form can be completed at http://www.tyroremotes.com/support/ . Should there be any costs associated with the repair, this will always be notified in advance.

Cleaning and maintenance:

- Do not use chemical cleaners or abrasives for cleaning, this may damage the control panel.
- It is recommended to use a damp cloth with light soapy water.
- In case of stubborn contamination contact Tyro Remotes, how best to remove the contamination.
- Never immerse the device in water or other liquids. Doing so may damage the device.
- Ensure that no moisture or liquid penetrates the device.

Sales conditions and certification

All deliveries are made according to the general conditions of sale. This document can be requested from us, or downloaded from the website (http://www.tyroremotes.com). The products of Tyro Remotes are certified for many applications. These certificates can be requested from us. When mounting on an own system, the applicable machine directives belonging to the appropriate application must be taken into account. If a proprietary machine is equipped with Tyro Remotes remote control as standard, certification of the entire system - including remote control - is on your own responsibility.

Warning!
Tyro Remotes is not responsible for possible personal, material and consequential damages resulting from improper use of this product in violation of the terms and instructions contained in this user manual.

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Manufacturer details

Tyro Products B.V.

Headquarters	
Address	Bedrijvenpark Twente 299
Postal code	7602 KK
City, Country	Almelo, The Netherlands
Phone number	+31 546 588 790
Website	www.tyroremotes.com

Production & Service	
Address	Minkovická 696
Postal code	46312
City, Country	Liberec, Czech Republic

16. Declaration of Conformity

CE declaration

TYRO BY CATTRON

TYRO PRODUCTS B.V.

Headquarters
Bedrijvenpark Twente 299
NL-7602 KK Almelo
The Netherlands
KVK: 08126497

Production & Service
Minikovická 896
463 12 Liberec
Czech Republic
VAT: CZ686638723

Declaration of incorporation of partly completed machinery

In accordance with Annex IIA from the Machinery Directive 2014/42/EG

TX-models:	TX-4042 Musca 2S	**RX-models:**	RX-4042 Aquarius 2S
	TX-3033 Pyxis 2S		RX-3033 Auriga 2S
	TRX-3033 Cetus 2S		
	TX-3033 Pollux 2S		

Tyro Remotes declares that a radio remote control system consisting of a transmitting unit listed from **TX-models** and a receiving unit listed from **RX-models** is in compliance with:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- Radio Equipment Directive 2014/53/EG
- All relevant and essential health and safety requirements mentioned in appendix I of the Machinery Directive 2006/42/EG

The following harmonized standards and, where appropriate, technical standards, guidelines and specifications are used:

• EN 301 489-1/3:2019/2017/2023	Electro Magnetic Compatibility (EMC)
• EN 300 220-1/2:2017/18	Radiospectrum Matters (ERM)
• EN 62368-1:2014	IT Equipment, Safety Part 1: General Demands
• EN 13849-1/2:2015/2012	Performance Level (PL)&Validation, certified as PL:c
• UN Agreement R10	Vehicle type approval regarding electromagnetic compatibility

The radio remote control system shall not be put into service until the system in which it is installed has been tested with the essential health and safety requirements of the Machinery Directive Annex I. Compliance with the applicable guidelines apply only if installed and maintained as shown in the manual that comes with each new product.

Almelo, March 7th 2024

GJA Nijkrake, Engineering & Certificeringen

EG type nr:
(currently in progress)

CE

Rabobank, Nederland
IBAN: NL38 RABO 0311 6406 80
BIC/SWIFT: RABONL2U

Commerzbank, Deutschland
IBAN: DE78 2674 0044 0583 0021 00
BIC/SWIFT: COBADEFF267

CIC Banque, France
IBAN: FR76 3002 7175 3300 0200 2800 144
BIC/SWIFT: CMCIFRPP
Code Banque: 30027, Code Guichet: 17533, Clé: 44

Tyro Remotes • +31 (0) 546 588 790 • info@tyroremotes.eu • www.tyroremotes.eu

Verklaring van inbouw van niet voltooide machines, *In overeenstemming met bijlage IIA van de machinerichtlijn 2014/42/EG*
Tyro Remotes verklaart dat een radioafstandsbedieningssysteem dat bestaat uit een zendeenheid die is opgenomen in de lijst van TX-modellen en een ontvangende eenheid die is opgenomen in de lijst van RX-modellen, voldoet aan:

- Laagspanningsrichtlijn 2014/35/EU
- EMC-richtlijn 2014/30/EU
- Richtlijn radioapparatuur 2014/53/EG
- Alle relevante en essentiële veiligheids- en gezondheidseisen vermeld in bijlage I van de Machinerichtlijn 2014/42/EG

De volgende geharmoniseerde normen en, waar van toepassing, technische normen, richtlijnen en specificaties worden gebruikt:

- EN 301 489-1/3:2019/2017/2023 Elektromagnetische compatibiliteit (EMC)
- EN 300 220-1/2:2017/18 Radiospectrumkwesties (ERM)
- EN 62368-1:2014 IT-apparatuur, Veiligheid Deel 1: Algemene eisen
- UN-overeenkomst R10 Voertuigtypegoedkeuring met betrekking tot elektromagnetische compatibiliteit

Het radioafstandsbedieningssysteem mag niet in gebruik worden genomen voordat het systeem waarin het is geïnstalleerd, is getest met de essentiële veiligheids- en gezondheidseisen van de Machinerichtlijn Bijlage I. Naleving van de geldende richtlijnen is alleen van toepassing als het systeem wordt geïnstalleerd en onderhouden zoals aangegeven in de handleiding die bij elk nieuw product wordt geleverd.

Einbauerklärung für unvollständige Maschinen, *In Übereinstimmung mit Anhang IIA der Maschinenrichtlinie 2014/42/EG*
Tyro Remotes erklärt, dass ein Funkfernsteuerungssystem, bestehend aus einer Sendeeinheit, die als TX-Modelle aufgeführt ist, und einer Empfangseinheit, die als RX-Modelle aufgeführt ist, den Anforderungen entspricht:

- Niederspannungsrichtlinie 2014/35/EU
- EMV-Richtlinie 2014/30/EU
- Funkanlagen-Richtlinie 2014/53/EG
- Alle relevanten und grundlegenden Gesundheits- und Sicherheitsanforderungen, die in Anhang I der Maschinenrichtlinie 2014/42/EG aufgeführt sind

Die folgenden harmonisierten Normen und gegebenenfalls technischen Normen, Leitlinien und Spezifikationen werden verwendet:

- EN 301 489-1/3:2019/2017/2023 Elektromagnetische Verträglichkeit (EMV)
- EN 300 220-1/2:2017/18 Funkspektrumangelegenheiten (ERM)
- EN 62368-1:2014 IT-Einrichtungen, Sicherheit - Teil 1: Allgemeine Anforderungen
- UN-Konvention R10 Fahrzeugtypgenehmigung hinsichtlich elektromagnetischer Verträglichkeit

Die Funkfernsteuerungsanlage darf erst dann in Betrieb genommen werden, wenn die Anlage, in die sie eingebaut ist, auf die grundlegenden Sicherheits- und Gesundheitsanforderungen der Maschinenrichtlinie Anhang I geprüft wurde. Die Einhaltung der geltenden Richtlinien ist nur dann gegeben, wenn das System gemäß den Angaben in der mit jedem neuen Produkt gelieferten Anleitung installiert und gewartet wird.

Déclaration d'incorporation d'une quasi-machine, *Conformément à l'annexe IIA de la directive Machines 2014/42/CE*
Tyro Remotes déclare qu'un système de télécommande radio composé d'une unité émettrice répertoriée comme modèles TX et d'une unité réceptrice répertoriée comme modèles RX est conforme à :

- Directive basse tension 2014/35/EU
- Directive CEM 2014/30/EU
- Directive sur les équipements radioélectriques 2014/53/CE
- Toutes les exigences pertinentes et essentielles en matière de santé et de sécurité énumérées à l'annexe I de la directive relative aux machines 2014/42/CE.

Les normes harmonisées suivantes et, le cas échéant, les normes techniques, les lignes directrices et les spécifications sont utilisées :

- EN 301 489-1/3:2019/2017/2023 / Compatibilité électromagnétique (CEM)
- EN 300 220-1/2:2017/18 / Questions relatives au spectre radioélectrique (ERM)
- EN 62368-1:2014 Équipements informatiques, Sécurité - Partie 1 : Exigences générales
- Convention de l'ONU R10 Homologation de type de véhicule concernant la compatibilité électromagnétique

Le système de radiocommande ne doit pas être mis en service tant que le système dans lequel il est installé n'a pas été testé par rapport aux exigences essentielles de santé et de sécurité de l'annexe I de la directive Machines. La conformité aux directives applicables n'est possible que si le système est installé et entretenu comme indiqué dans le manuel fourni avec chaque nouveau produit.

Declaración de incorporación de una cuasi máquina, *De conformidad con el anexo IIA de la Directiva sobre máquinas 2014/42/CE*
Tyro Remotes declara que un sistema de control remoto por radio compuesto por una unidad transmisora enumerada como modelos TX y una unidad receptora enumerada como modelos RX cumple con:

- Directiva de baja tensión 2014/35/UE
- Directiva CEM 2014/30/UE
- Directiva sobre equipos radioeléctricos 2014/53/CE
- Todos los requisitos esenciales y pertinentes en materia de salud y seguridad enumerados en el anexo I de la Directiva sobre máquinas 2014/42/CE

Se utilizan las siguientes normas armonizadas y, en su caso, normas técnicas, directrices y especificaciones:

- EN 301 489-1/3:2019/2017/2023 Compatibilidad electromagnética (CEM)
- EN 300 220-1/2:2017/18 Cuestiones relativas al espectro radioeléctrico (ERM)
- EN 62368-1:2014 Equipos informáticos, Seguridad - Parte 1: Requisitos generales
- Convención de la ONU R10 Homologación de tipo de vehículo en materia de compatibilidad electromagnética

El sistema de radiocontrol remoto no debe ponerse en servicio hasta que el sistema en el que está instalado haya sido probado con respecto a los requisitos esenciales de salud y seguridad del Anexo I de la Directiva de Máquinas. El cumplimiento de las directivas aplicables sólo es aplicable si el sistema se instala y mantiene como se indica en el manual suministrado con cada producto nuevo.

FCC statement

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 to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

RF Exposure Information
The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

ISED statement: Portable (Transmitter)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interferences
2. This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

The device has been evaluated to meet general RF-exposure requirement. This equipment should be installed and operated with a minimum distance of 0mm between the radiator & your body.

Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada.

L'exploitation est soumise aux deux conditions suivantes:

1. Cet appareil ne doit pas provoquer d'interférences.
2. Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

L'appareil numérique du ciem conforme canadien CAN ICES-3 (B)/NMB-3(B).

Cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 2.5 du cnr - 102 et conformité avec rss 102 de l'exposition aux rf, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs rf et la conformité.
Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

L'appareil a été évalué pour répondre aux exigences générales d'exposition aux RF. Cet équipement doit être installé et utilisé à une distance minimale de 0 mm entre le radiateur et votre corps.