



T20 FRS portable transceiver

User interface Definition

Revision History






Version	Description	Date	Author
1.0	Release	16FEB18	R Hollis
2.0	Added Weather mode activation; Changed product name <u>from</u> T200 <u>to</u> T20.	19FEB18	R. Hollis

T20 User interface definition

The T20 portable transceiver user interface will consist of a 19mm x 13mm (active area) LCD display and 5 silicon rubber pushbuttons. The user will use the keypad and LCD to access all of the radio functions, set or change operation parameters and to operate the radio.

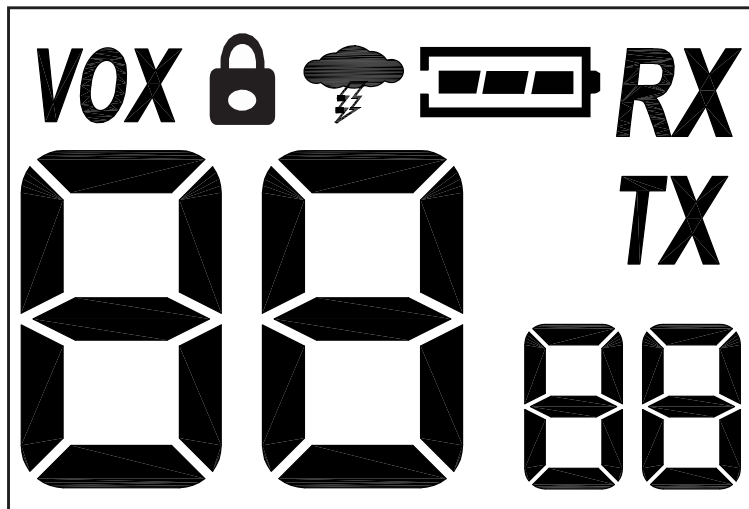
Keypad

The keypad will consist of the following 5 keys:

<u>Key</u>	<u>Function</u>	
	<u>Single press</u>	<u>Long press (3 seconds)</u>
	Menu select	Power <ul style="list-style-type: none"> Power on/off (toggle function – if power is on, the unit will turn off. If power is off, unit will turn on.)
	SCAN <ul style="list-style-type: none"> Scan function on/off (toggle function) 	MON <ul style="list-style-type: none"> Monitor function on/off (toggle function)
	Down ARROW <ul style="list-style-type: none"> In standby, receive or weather mode, this button adjusts volume down. In menu mode (FRS and weather), this button moves the user down through feature selections. 	LOCK <ul style="list-style-type: none"> Locks and unlocks the keypad functions. (toggle function)
	Up arrow <ul style="list-style-type: none"> In standby, receive or weather mode, this button adjusts volume up. In menu mode (FRS and weather), this button moves the user up through feature selections. 	CALL <ul style="list-style-type: none"> Causes radio to transmit call tone on selected channel.
	Push to talk <ul style="list-style-type: none"> Press and hold the PTT button to transmit. In menu mode a single push of the PTT button will save the current setting and exit menu mode. 	There is NO long press function for the PTT button.




Display

The radio will have an LCD for displaying user information as follows:



T20 LCD

LCD segment description

Large 7-segment – 2 digits	Channel number
Small 7 segment – 2 digits	CTCSS code
VOX	Voice Activated microphone indicator
	Indicates locked keypad. (PTT still active)
	Indicates weather radio mode. Flashing if weather alert is active.
RX	Active when radio is receiving
TX	Active when radio is transmitting
	Battery level indicator

Modes of operation

The radio has 5 modes of operation when the unit is powered on.

1. Standby

In Standby Mode, the radio is monitoring the current selected channel and will switch to Receive mode if activity is detected.

2. Receive

In receive mode, the radio has detected activity on the current selected channel and that activity will be heard by the user on the speaker.

3. Transmit

In transmit mode, any audio picked up by the microphone will be broadcast on the current selected channel. Transmit mode is entered one of 2 ways:

- a. When the user presses the PTT button. The radio will stay in transmit mode as long as the PTT button is depressed or until 180 seconds has elapsed. (Releasing the PTT will restart the 180 second timeout.)
- b. If VOX is turned on, any audio detected by the microphone will be broadcast.

4. Scan





In scan mode, the radio will scan all channels (1 – 22) for activity.

5. Weather

In weather mode, the radio will monitor a user selected NOAA weather channel (1-10). If weather alerts are turned on, the radio will periodically check for a weather alert tone (on the selected channel) and automatically switch to Weather mode if an alert tone is detected.

BATTERY LEVEL INDICATION

- The radio will have a **BATTERY LEVEL METER** that shows the battery power level. The greater the number of bars visible, the stronger the battery level.

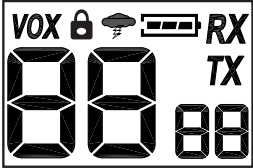
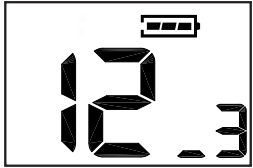
○ 3 Bars = Full Battery	
○ 2 Bars = 2/3 Battery	
○ 1 Bar = 1/3 Battery	
○ No bar = battery low	 (Flashing)

- The **BATTERY LEVEL METER** is visible at all times while the radio is powered on.
(Actual trigger voltages for these 4 levels will be defined in the T200 technical specification.)

User operation:

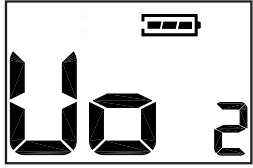
POWER ON/OFF

Press and hold the **MENU/POWER** button for 3 seconds to turn the radio on/off. During Power On, the radio will beep once.

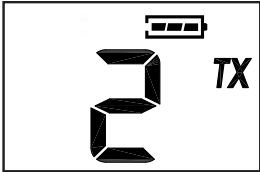
<ul style="list-style-type: none"> The LCD will display all icons for 1 second and the LCD display will indicate the last channel selected. 	
<ul style="list-style-type: none"> After 1 second, the display will show icons <u>based on the last saved settings.</u> (example shows channel 12 with CTCSS of 3, no VOX, no weather alert) 	 <p>Note that a leading 0 is displayed as a single bar. (segment "d")</p>

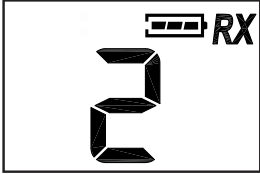
Volume up/down

To increase/decrease the volume level, press and release the **^/CALL** or **v/LOCK** buttons during RX or STANDBY mode

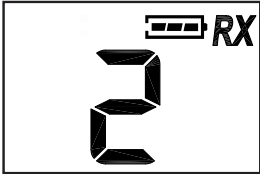
<ul style="list-style-type: none"> The LCD will display Vo on the channel digits and the volume level on the CTCSS digits. The volume level will increment or decrement as the ^/CALL and v/LOCK keys are pressed. 	
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Transmitting and receiving

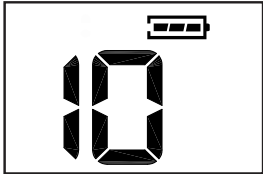
<p>To TRANSMITT</p> <ul style="list-style-type: none"> Press and hold the PTT button. The TX icon will appear continuously on the LCD display while transmitting. 	 <p>Transmitting, channel 2, no CTCSS.</p>
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<p>To RECEIVE</p> <ul style="list-style-type: none"> The radio is ready to receive any time the PTT button IS NOT pressed. The RX icon will appear on the display when the radio is receiving a transmission. The RX icon will go off when there is no receive signal. 	 <p>Receiving, channel 2, no CTCSS.</p>
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MONITOR

<ul style="list-style-type: none"> Press and hold the MON/SCAN button for 3 seconds to enter and exit Monitor Mode 	 <p>The RX icon will be shown constantly while in Monitor mode even when there is no channel activity.</p>
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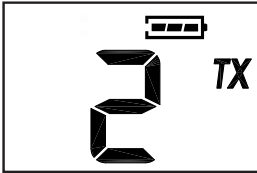
SCAN

<ul style="list-style-type: none"> Press and release the MON/SCAN button to enter and exit scan mode. 	
<ul style="list-style-type: none"> The radio will scan each of the 22 channels at a 1/3 second rate and stop on any active channel for 6 seconds before resuming scan. 	
<ul style="list-style-type: none"> If the PTT button is pressed to transmit on any channel, the scanning function will stop and remain on that channel. 	


SCAN....continued

<ul style="list-style-type: none"> If the ^/CALL or v/LOCK button is pressed while the radio is scanning, the scan direction will change to increasing or decreasing corresponding to which key is pressed. 	
<ul style="list-style-type: none"> If CTCSS is currently set for any channel, that channel will be scanned with the CTCSS code as set. 	
<ul style="list-style-type: none"> To resume scanning, press and release the MON/SCAN button. 	

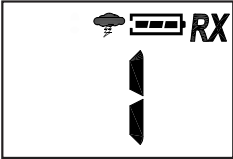
CALL

<ul style="list-style-type: none"> To send a call alert, press and hold the ^/CALL button for 3 seconds. 	 <p>The TX icon will appear while transmitting a call alert.</p>
<ul style="list-style-type: none"> The call tone will be heard on the speaker for confirmation. 	

KEYPAD LOCK

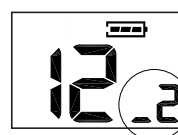
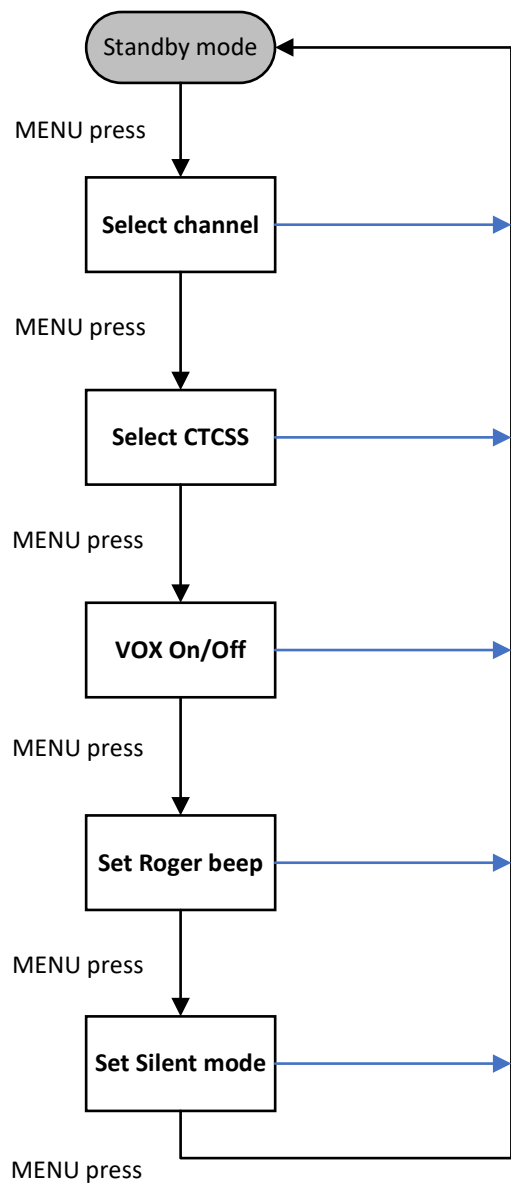
<ul style="list-style-type: none"> To lock the keypad, press and hold the v/LOCK button for 3 seconds. To unlock the keypad, press and hold the v/LOCK button for 3 seconds. 	 <p>The LOCK icon will appear on the display when the keypad is locked.</p>
<ul style="list-style-type: none"> PTT and CALL buttons will still be active. 	

Weather mode

<p>To enter Weather mode, press and hold both the MON/SCAN and ^/CALL buttons at the same time for 3 seconds. After 3 seconds, the radio will enter Weather mode and monitor the last channel set by the user.</p>	<div data-bbox="971 300 1201 457"></div> <p>RX is only active if the selected channel has an audio signal present.</p>
<p>Press PTT to return to the FRS radio function.</p>	

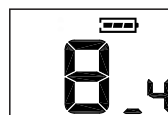
Feature select flowchart

MENU key operation from
FRS **Standby mode**



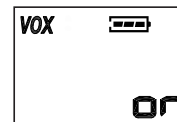
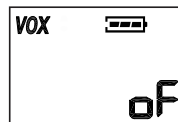
Range of channels is 1 to 22.

Channel number will flash and will increment or decrement when **^/CALL** or **v/LOCK** are pressed.

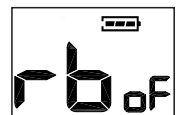


CTCSS number will flash and increment or decrement from of to 38 when **^/CALL** or **v/LOCK** are pressed. Leading zeros will be shown as the bottom segment of the digit.

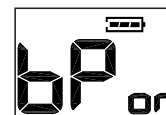
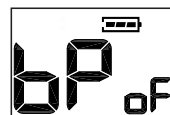
CTCSS number will flash and will increment or decrement when **^/CALL** or **v/LOCK** are pressed.



VOX icon will be on. Smaller 7-segment digits will flash and alternate between of and on as **^/CALL** or **v/LOCK** are pressed.



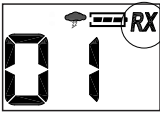
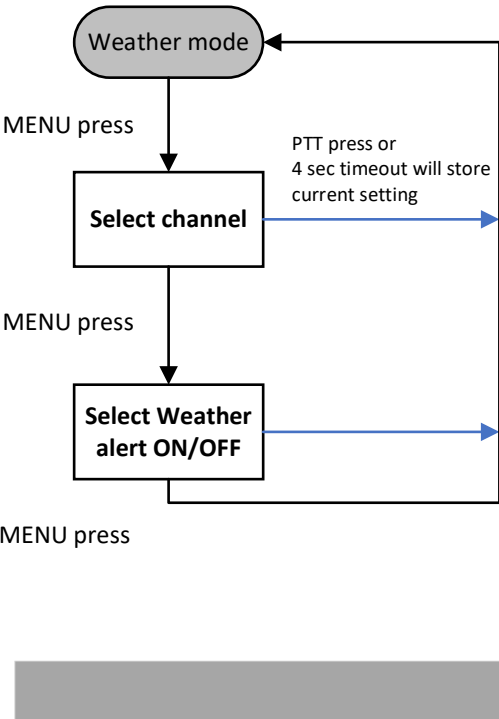
Large 7-segment display will show "rb". Smaller 7-segment digits will flash and alternate between of and on as **^/CALL** or **v/LOCK** are pressed.



Large 7-segment display will show "bp". Smaller 7-segment digits will flash and alternate between of and on as **^/CALL** or **v/LOCK** are pressed.

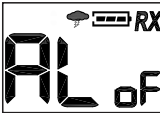
During feature selection, the MON/SCAN key is inactive.

MENU key operation
from **Weather mode**



Channel number will flash and will increment or decrement when **^/CALL** or **v/LOCK** are pressed.

Range of channels is 1 to 10. Leading zero is displayed.



Small 7-segment display will alternate between of and on when **^/CALL** or **v/LOCK** are pressed.



The weather icon will flash in all modes when weather alerts are "on".

FCC Warning

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.

RF Exposure complianceStatement and operating instructions

The device has been tested against the SAR limit (1.6W/kg). The highest SAR value reported under this standard during product certification for use at the Face up is 0.097W/kg and when properly worn on the body is 0.117W/kg. This device was tested for typical operations.

The device only supports simplex-mode and transmitting is no more than the rated duty cycle factor of 50% of the time. For hand-held operation, the radio should be held at least 25mm from the user's face. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with RF exposure requirements, and should be avoided. Use only the supplied or an approved antenna.

Channel List

Channel	Frequency	Model	Channel	Frequency	Model
1	462.5625	FRS	12	467.6625	FRS
2	462.5875	FRS	13	467.6875	FRS
3	462.6125	FRS	14	467.7125	FRS
4	462.6375	FRS	15	462.5500	FRS
5	462.6625	FRS	16	462.5750	FRS
6	462.6875	FRS	17	462.6000	FRS
7	462.7125	FRS	18	462.6250	FRS
8	467.5625	FRS	19	462.6500	FRS
9	467.5875	FRS	20	462.6750	FRS
10	467.6125	FRS	21	462.7000	FRS
11	467.6375	FRS	22	462.7250	FRS

ISED WARNING:

This device complies with Innovation, Science and Economic Development Canada licence-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.

Le présent areil est conforme aux CNR d' l'innovation, la science et le développement économique Canada licables aux areils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'areil 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.

Important

FCC/ISED RF Exposure Requirements: For body-worn operation, this radio has been tested and meets the FCC /ISED RF exposure guidelines when used with Cobra accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC/ISED RF exposure guidelines. Use only the supplied antenna. Unauthorized antennas, modifications or attachments could damage the transmitter and may violate FCC/ISED regulations.

Exigences de la FCC /ISED concernant l'exposition aux champs électro-magnétiques RF (radiofréquences): En ce qui concerne le fonctionnement de l'appareil porté sur le corps de l'utilisateur, les tests effectués ont permis de vérifier que cet émetteur-récepteur satisfait aux directives FCC/ISED limitant l'exposition aux champs électro-magnétiques RF lorsqu'il est utilisé avec les accessoires Cobra fournis ou conçus pour ce produit; l'utilisation d'autres accessoires peut ne pas garantir le respect des critères des directives FCC/ISED limitant l'exposition aux champs électro-magnétiques RF. Utiliser l'appareil uniquement avec l'antenne fournie. L'emploi d'une antenne non homologuée ou modifiée, ou d'accessoires non autorisés, pourrait faire subir des dommages à l'appareil, et peut violer les prescriptions de la réglementation FCC/ISED.

Position normale:

Hold the transmitter approximately 1 inches from your face and speak in a normal voice, with the antenna pointed up and away.

Tenir l'émetteur à environ 2.5 cm (1 po) de la bouche et parler normalement, l'antenne étant éloignée et dirigée vers le haut.

Channel List

Channel	Frequency	Model	Channel	Frequency	Model
1	462.5625	FRS	12	467.6625	FRS
2	462.5875	FRS	13	467.6875	FRS
3	462.6125	FRS	14	467.7125	FRS
4	462.6375	FRS			
5	462.6625	FRS			
6	462.6875	FRS			
7	462.7125	FRS			
8	467.5625	FRS			
9	467.5875	FRS			
10	467.6125	FRS			
11	467.6375	FRS			