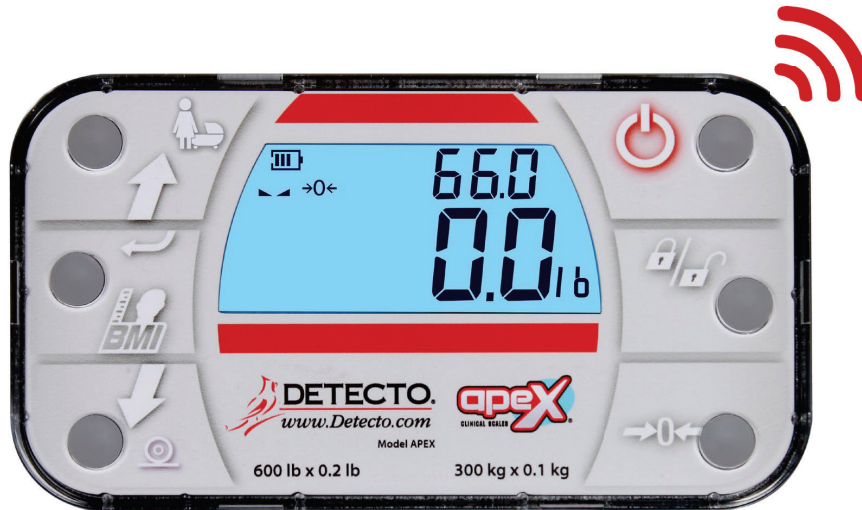




APEX-C
and
APEX-SH-C
Wi-Fi and Bluetooth
Setup and Operation
Manual

INTRODUCTION

This manual is furnished for the apex® Digital Clinical Scales Models apex-C and apex-sh-C which have the Redbird Wi-Fi and Bluetooth Low Energy (BLE) wireless transmitter. It has been supplied in addition to the standard apex Digital Clinical Scales Owner's Manual, 3300-0188-0M, and should be consulted for guidance through setup and operation of the Redbird Wi-Fi and Bluetooth (BLE) wireless transmitter.



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Disclaimer

While every precaution has been taken in the preparation of this manual, the Seller assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from use of the information contained herein. All instructions and diagrams have been checked for accuracy and ease of application; however, success and safety in working with tools depend to a great extent upon the individual accuracy, skill and caution. For this reason, the Seller is not able to guarantee the result of any procedure contained herein. Nor can they assume responsibility for any damage to property or injury to persons occasioned from the procedures. Persons engaging the procedures do so entirely at their own risk.

Contains FCC ID: 2ADHKWINC3400

1. 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.
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. This equipment must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

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WI-FI NETWORKING

The apex® Digital Clinical Scales Models apex-C and apex-sh-C have a wireless transmitter inside the weight indicator enclosure that can be configured for Wi-Fi networking.

Wi-Fi Features

































- Soft Access Point (AP) for setting credentials for Wi-Fi module
- Setup option to select static or dynamic IP address
- Built-in web server to display weight, height, and BMI
- TCP/IP connection for continuous output of weight, height, and BMI

WI-FI SETUP

Enable and Configure Wi-Fi Networking

NOTE: Default Network Settings are: $YFI = OFF$, $BLE = OFF$, and $dHCP = On$.

To enable and configure Wi-Fi networking:

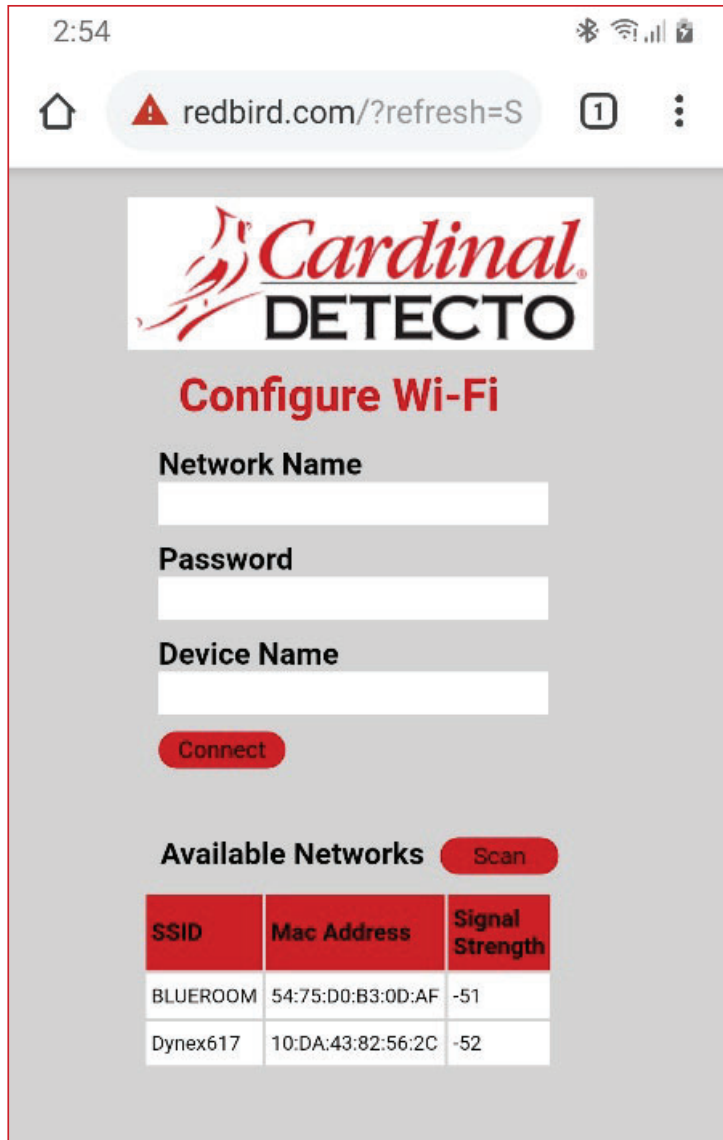
1. Press the  key to turn the scale on.
2. Press and hold the   keys until the display shows the prompt CRP .
3. Press the  key until the prompt YFI is displayed. Use the  or  keys to change the selection to On and press the  key.
4. The prompt will change to $dHCP$. Press the  or  keys until the correct setting is displayed, and then press the  key.
NOTE: Select OFF to use a static IP address or select On to use a dynamic IP address assigned by a DHCP server. Consult your network administrator for the proper selection.
5. The next prompt will be $IP1$, the first octet of the static IP address.
 - a. If $dHCP$ was set to On , press the  key until the prompt YCL is displayed.
 - b. If $dHCP$ was set to OFF , press the  or  key until the correct setting for the first octet of the static IP address is displayed, and then press the  key. For example, if the static IP address is "192.168.0.2", press the  or  key until the display shows 192, and then press the  key. Repeat this procedure for the remaining three octets of the static IP address, $IP2$, $IP3$, and $IP4$.
6. The next prompt will be $Sub1$, the first octet of the network subnet mask.
 - a. If $dHCP$ was set to On , press the  key until the prompt YCL is displayed.
 - b. If $dHCP$ was set to OFF , press the  or  key until the correct setting for the first octet of the network subnet mask is displayed. Press the  key. Repeat this procedure for the remaining three octets of the network subnet mask, $Sub2$, $Sub3$, and $Sub4$.
7. The next prompt will be $Gate1$ for the first octet of the network gateway's IP address.
 - a. If $dHCP$ was set to On , press the  key until the prompt YCL is displayed.
 - b. If $dHCP$ was set to OFF , press the  or  key until the correct setting for the first octet of the network gateway's IP address is displayed. Press the  key. Repeat this procedure for the remaining three octets of the network gateway's IP address, $Gate2$, $Gate3$, and $Gate4$.
8. The display will prompt YCL . This is the prompt to clear the Wi-Fi credentials (SSID and password).
 - a. To clear the credentials, press the  or  key until YES is displayed, and then press the  key. The credentials will be *cleared* and the display will change to show CRP .
 - b. To retain the credentials, press the  or  key until NO is displayed, and then press the  key. The credentials will be *retained* and the display will change to show CRP .
9. Press the  key to turn the scale off and then press it again to turn the scale back on.
10. Proceed to the Configure Wi-Fi Network Module section.

WI-FI SETUP, CONT.

Configure Wi-Fi Network Module

Without Wi-Fi credentials, the Wi-Fi module will enter listening mode, in which it functions as a Wi-Fi access point. The SSID of the AP is in the form of “REDBIRD_WIFI_XX:XX”, where XX:XX is the last 4-digits of the MAC address. Use a Wi-Fi device, such as a Smartphone, tablet, or laptop to connect to the apex scale. If the connection fails, try moving the scale to another location or cycling power to the scale.

When the connection has been made, open a web browser and go to the location **redbird.com**. The “Configure Wi-Fi” page should appear.



2:54

redbird.com/?refresh=S

**Cardinal
DETECTO**

Configure Wi-Fi

Network Name

Password

Device Name

Connect

Available Networks **Scan**

SSID	Mac Address	Signal Strength
BLUEROOM	54:75:D0:B3:0D:AF	-51
Dynex617	10:DA:43:82:56:2C	-52

Click on the **Scan** button to see a list of available Wi-Fi networks.

WI-FI SETUP, CONT.

Configure Wi-Fi Network Module, Cont.










The screenshot shows a mobile web browser interface for the 'Cardinal DETECTO' Wi-Fi configuration page. The page title is 'Configure Wi-Fi'. It contains three input fields: 'Network Name' with the value 'Dynex617', 'Password' with masked characters '*****', and 'Device Name' with the value 'apex scale'. A red 'Connect' button is located below these fields. Below the 'Connect' button is a section titled 'Available Networks' with a 'Scan' button. A table lists two available networks: 'BLUEROOM' with Mac Address '54:75:D0:B3:0D:AF' and Signal Strength '-51', and 'Dynex617' with Mac Address '10:DA:43:82:56:2C' and Signal Strength '-52'.

SSID	Mac Address	Signal Strength
BLUEROOM	54:75:D0:B3:0D:AF	-51
Dynex617	10:DA:43:82:56:2C	-52

Enter the Network Name (SSID), Password, and Device Name (optional) for the network you wish to connect to. Note that the Device Name can be anything. Click on the **Connect** button and the module should try to connect to that network. This may take several seconds. The module will store these network credentials and connect to this network each time the scale is turned on.

Changing the Network Credentials

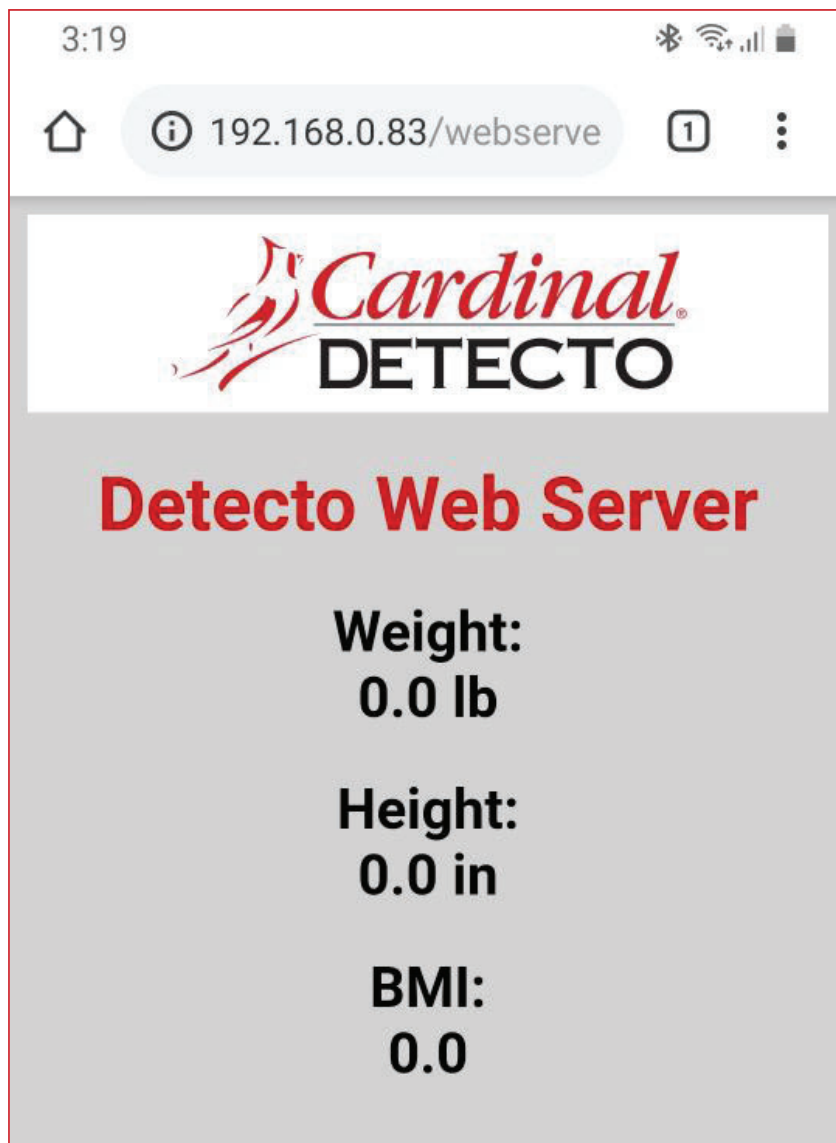
To change the network credentials, perform the following steps:

1. Press the  key to turn the scale on.
2. Press and hold the  key until the display shows the prompt *CLP*.
3. Press the  key until the prompt *Y CL* is showing.
4. Next, press the  or  key until *YES* is displayed, and then press the  key. The credentials will be *cleared* and the display will change to show *CLP*.
5. Press the  key to turn the scale off and then press it again to turn the scale back on.
6. Repeat the steps in the previous paragraph to set the new network credentials.

WI-FI OPERATION

Web Server

While the scale is connected to a network you can access the hosted web page. To view the web page, proceed to the IP address of the Redbird module with “/webserver.html” added to it. For example, if the IP address is “192.168.0.5”, enter **192.168.0.5/webserver.html** and a page like the following should appear.



WI-FI OPERATION, CONT.

TCP/IP Connection

Continuous output is available by TCP/IP connection to the scale's IP address at port 10001.

- The scale will transmit a single set of weight data each time the SMA weight request <LF>W<CR> is received.
- Each time the SMA weight request <LF>R<CR> is received, the scale will transmit weight data continually until another SMA command is received.

SMA format for both command <LF>W<CR> and <LF>R<CR>.

<LF><s><r><n><m><f><xxxxxx.xxx><uuu><CR>

Where:

LF =	Line feed (hex 0A) = Start of response message
s =	Scale Status definition
	Z = Center of Zero <xxxxxx.xxx>= 0.000
	O = Over Capacity <xxxxxx.xxx>= +weight
	U = Under Capacity <xxxxxx.xxx>= -weight
	E = Zero Error (clears when condition clears)
	<space> = None of the above conditions NOTE: For "E" error condition <xxxxxx.xxx>= _____ (center dashes) and "Z", "O", "U" is overridden
r =	Range ("1", "2", "3", etc.) always "1" for single range
n =	Mode of Operation (Gross/Net status)
	G = Gross normal weight
	T = Tare weight (in response to "M" command)
	N = Net normal weight
	g = gross weight in high-resolution
	n = net weight in high-resolution
m =	Motion status
	M = Scale in Motion
	<space> = Scale not in Motion
f =	Future = Reserved for future or custom use
xxxxxx.xxx =	Weight with decimal point if necessary
uuu =	Units = e. g. lb, kg
CR =	Carriage Return (hex 0D) = End of response message

SMA Commands

Once a TCP/IP connection has been made to the apex scale, you can issue SMA commands to it. The apex scale will respond to the SMA commands in the format shown in the Response column of the WI-FI AND BLUETOOTH SMA COMMANDS table on pages 10 and 11 of this manual.

BLUETOOTH LOW ENERGY (BLE)

The apex® Digital Clinical Scales Models apex-C and apex-sh-C have a wireless transmitter inside the weight indicator enclosure that can be configured for Bluetooth Low Energy (BLE). When possible, BLE standard specifications are used (those that are adopted by the Bluetooth SIG). Custom services were created to request indicator and scale information whose communication protocol was developed by the Scale Manufacturers Association (SMA).





Features Available via BLE

- Device Information Service
 - Manufacturer Name
 - Model Number
 - Software Revision
- Battery Service
 - Battery Level Percentage
- Weight Scale Service
 - Weight Measurement
 - Weight Scale Feature
- Custom Services
 - Detecto SMA Service

Enable Bluetooth (BLE) Networking

NOTE: Default Network Settings are: $YFI = 0FF$, $BLE = 0FF$, and $dHCP = 0n$.

To enable Bluetooth (BLE) networking:


1. Press the  key to turn the scale on.
2. Press and hold the $\Rightarrow 0 \Leftarrow$ keys until the display shows the prompt CRP .
3. Press the  key until the prompt BLE is displayed.
4. Use the \uparrow or \downarrow keys to change the selection to $0n$ and press the  key.
5. Press the  key to turn the scale off and then press it again to turn the scale back on.
6. The scale is now ready to pair with a Bluetooth-capable device.



IMPORTANT! If an attempt is made to turn the Bluetooth (BLE) off when a device is connected to the scale, the display will show the error message BLE (in the smaller upper seven-segment display) and $E - 0FF$ (in the large lower seven-segment display). This message will be shown until a key is pressed. Note that at this time, the Bluetooth (BLE) is still on, only the message has been cleared. In order to turn the Bluetooth (BLE) off, the device must be disconnected from the scale or the scale must be turned Off and back On.

Bluetooth Pairing

To pair a Bluetooth-capable device with the scale, select the name of the scale from the list of available connections: Apex Scale XX:XX:XX:XX:XX:XX. Note that the X's represents the MAC address of the BLE wireless transmitter in the scale weight indicator.

NOTE: If there are multiple apex scales in close proximity, hold down the  key until the scale software revision is shown. The display will then show the event counters, the Redbird (rbr) software revision for the Wi-Fi and Bluetooth (BLE) module, and then scroll the Bluetooth (BLE) advertisement data across the display. Note that the colons between the MAC address will not be shown.

When a stable reading is achieved, and the scale is paired with a Bluetooth-capable device, the reading will transmit when the connected device sends a request to receive data.

INTERFACING TO BLE

Note: 16-bit (4-digit) UUID's are adopted standards. 128-bit (32 digit) UUID's are custom services or characteristics.

Standard Services per Bluetooth SIG

Reference adopted specifications at <https://www.bluetooth.com/specifications/gatt>

Device Information Service (0x180A)

Characteristics	Number	Value(s)	Attributes
Manufacturer Name String	0x2A29	"Detecto"	READ
Model Number String	0x2A24	"Apex-C"	READ
Software Revision String	0x2A28	"1.0.XX" software of scale	READ

Battery Service (0x180F)

Characteristics	Number	Value(s)	Attributes
Battery Level	0x180F	0x00 – 0x64 (uint16), represents 0 – 100 percent	READ

Weight Scale Service (0x181D)

Characteristics	Number	Value(s)	Attributes
Weight Measurement	0x2A9D	<8bit Flag><uint16 weight><uint16 bmi><uint16 ht> Supported Flags: Flag bit0: 0 = SI, 1 = Imperial bit3: 0 = BMI and Height not present 1 = BMI and Height present bit4: 0 = Not below zero* 1 = Below zero* SI: Wt is KG with resolution 0.0005 Ht is meters with resolution 0.001 Imperial: Wt is lbs with resolution 0.01 Ht is inches with resolution 0.1	READ INDICATE
Weight Scale Feature	0x2A9E	NOT YET IMPLEMENTED	

- ★ • If the weight is below zero (0), the weight you will see is zero (0).
- If the weight is below zero (0), bit 4 of Weight Measurement will be set to 1, otherwise bit 4 is set to zero (0).

NOTE: Maximum weight value displayed is 655.35 in both pounds (lb) and kilograms (kg).

BLUETOOTH INTERFACE STANDARD PROTOCOLS

Bluetooth Characteristic – Weight_Measurement: 0x2A9D

Widely accepted BLE GATT profiles are used to transmit data to other devices/software that have implemented these profiles. Data is passed via BLE using GATT characteristic “Weight Measurement” (0x2A9D) as defined by Bluetooth SIG. Refer to the data table below about Weight Measurement Characteristics.

Weight_Measurement: 0x2A9D

NAMES	FIELD REQUIREMENTS	FORMAT	MIN. VALUE	MAX. VALUE	ADDITIONAL INFORMATION					
Flags	Mandatory	8 bit	N/A	N/A	BIT FIELD					
					Bit	Size	Name	Definition		Requires
								Key	Value	
					0	1	Measurement Units	0	SI (Weight and Mass in Units of Kilogram (kg) and Height in Units of Meter)	C1
								1	Imperial (Weight and Mass in Units of Pound (lb) and Height in Units of inch (in))	C2
					1	1	Time Stamp Present	0	False	
								1	True	
					2	1	User ID Present	0	False	
								1	True	
					3	1	BMI and Height Present	0	False	
								1	True	
					4	1	Below Zero	0	Not Below Zero	
								1	Below Zero	
Weight - SI	C1	uint16	N/A	N/A	Information: Unit is in kilograms with a resolution of 0.005 and is determined when bit 0 of the Flags field is set to 0.					
					Unit: org.bluetooth.unit.mass.kilogram					
					Exponent: Decimal, -3					
					Multiplier: 5					
Weight - Imperial	C2	uint16	N/A	N/A	Information: Unit is in pounds with a resolution of 0.01 and is determined when bit 0 of the Flags field is set to 1.					
					Unit: org.bluetooth.unit.mass.pound					
					Exponent: Decimal, 02.					
Time Stamp	C3		N/A	N/A	Information: Smallest unit in seconds					
					Unit: org.bluetooth.characteristic.date.time					
User ID	C4	uint8	N/A	N/A	The special value of 0xFF (255 Decimal) for User ID represents "unknown user".					
					Information: Unit is unitless with a resolution of 1					
						Key	Value			
						255	Unknown user			
					Unit: org.bluetooth.unit.unitless					
BMI	C5	uint16	N/A	N/A	Exponent: Decimal, 0					
					Information: Unit is unitless with a resolution of 0.1					
					Unit: org.bluetooth.unit.unitless					
Height - SI	C1 C5	uint16	N/A	N/A	Exponent: Decimal, -1					
					Information: Unit is in meters with a resolution of 0.001 and is determined when bit 0 of the Flags field is set to 0.					
					Unit: org.bluetooth.unit.length.meter					
Height - Imperial	C2 C5	uint16	N/A	N/A	Exponent: Decimal, -3					
					Information: Unit is in inches with a resolution of 0.1 and is determined when bit 0 of the Flags field is set to 1.					
					Unit: org.bluetooth.unit.length.inch					
Exponent: Decimal, 0-1										

BLUETOOTH INTERFACESTANDARD PROTOCOLS, CONT.

Custom Services

Detecto SMA Service (0x907a0000-8699-47dd-ab30-d7aad5f83e54)

All custom characteristics have the same base number of the Service UUID 0x907aXXXX-8699-47dd-ab30-d7aad5f83e54 where the XXXX part distinguishes the service.

Characteristics	Sub Number	Value(s)	Attributes
Rx Cmd	0001	SMA string received by scale (up to 20 chars)	WRITE
Tx Cmd	0002	SMA string sent by scale (up to 20 chars)	NOTIFY

SMA Commands

The SMA commands shown in the WI-FI AND BLUETOOTH SMA COMMANDS table on pages 10 and 11 of this manual can be sent using the Detecto SMA Service's Rx Cmd characteristic (0x907a0001-8699-47dd-ab30-d7aad5f83e54).

Responses will put out a notification on the Tx Cmd characteristic (0x907a0002-8699-47dd-ab30-d7aad5f83e54).

WI-FI AND BLUETOOTH SMA COMMANDS

The format used to send SMA commands to the apex-C and apex-sh-C scales are:

<LF>command<CR>

Where “command” is the ASCII letter(s), or the Hex Rep. listed in the table below. For example, <LF>Z<CR> or 0A5A0D would send the command to zero the scale. Note that the response of each command is listed under the Response column of the table.



Any invalid command sent will return a *question mark* for a response. For example, sending a <LF>XZ<CR> will return 0A 3F 0D (<LF>?<CR>).

Command	Hex Rep.	Response
Z – zero scale	0A5A0D	None. You should see scale zero itself.
D – scale diagnostics	0A440D	0A 20 20 20 20 0D = means there are no errors, EEPROM error will show an E in the second space and C will show in the third space if there is a calibration error. 20 = SPACE
W – request weight	0A570D	0A 5A 31 47 20 20 30 30 30 30 30 2E 30 30 6C 62 0D = Z1G 000000.00lb
H – request high resolution weight	0A480D	0A 5A 31 67 20 20 30 30 30 30 30 2E 30 31 6C 62 0D = Z1g 000000.01lb
A – about scale first line	0A410D	0A 53 4D 41 3A 32 2F 31 2E 31 0D = SMA:2/1.1
B – about scale scroll	0A420D	Each time sent you will get the next line of information until there is no longer any information. 1. 0A 4D 46 47 3A 44 65 74 65 63 74 6F 0D = MFG:Detecto 2. 0A 4D 4F 44 3A 41 70 65 78 2D 43 0D = MOD:Apex-C 3. 0A 52 45 56 3A 58 2E 58 2E 58 58 0D = REV:X.X.XX 5. 0A 45 4E 44 3A 0D = END: 6. If B is sent again you will get the unknown command response until the A command is sent again. 0A 3F 0D = ?
I – scale information	0A490D	0A 53 4D 41 3A 32 2F 31 2E 31 0D = SMA:2/1.1

WI-FI AND BLUETOOTH SMA COMMANDS, CONT.





Command	Hex Rep.	Response
N – scale information scroll	0A4E0D	<p>Each time sent you will get the next line of scale information until there is no longer any information.</p> <p>1. 0A 54 59 50 3A 53 0D = TYP:S</p> <p>2. 0A 43 41 50 3A 20 6C 62 3A 36 30 30 2E 30 3A 32 3A 31 0D = CAP: lb:600.0:2:1, this depends on the settings of the Apex. 600.0 – Capacity, 2 – Interval, & 1 – Decimal</p> <p>3. 0A 43 4D 44 3A 48 52 49 4E 58 0D = CMD:HRINX</p> <p>4. 0A 45 4E 44 3A 0D = END:</p> <p>5. If N is sent again you will get the unknown command response until the I command is sent again. 0A 3F 0D = ?</p>
R – Repeat Displayed Weight Continuously	0A520D	<p>0A 5A 31 47 20 20 30 30 30 30 30 30 2E 30 30 6C 62 0D = Z1G 000000.00lb, you should get this continuously until another SMA command is received.</p>
XB – battery level percentage	0A58420D	<p>0A 38 36 2E 32 35 0D = 86.25</p>

PRINTING ON STABLE WEIGHT

Printing of data when the weight is stable is supported.



ALWAYS assist the patient in stepping on and off the scale platform to ensure they do not fall. **NEVER** leave a patient unattended while they are on the scale platform. Failure to maintain control of the patient at all times can result in serious injury to the patient and/or you.

1. Assist patient onto scale.
2. When weight is stable, the  (STABLE) annunciator will turn on.
3. The weight reading will automatically lock and the annunciator resembling a padlock  will turn on. Note that the amount of time the reading will hold is dependent upon the *HOLD* setting in Setup. **NOTE:** If more time is needed, press the  key to hold the locked weight reading.
4. Press the  key.
5. The scale will then send an output string consisting of the Date, Time, Weight, Height, and BMI with units for weight and height.

Example data string: 05/21/19,09:48,181.1lb,70.9in,25.5



6. Assist patient off the scale.

DISPLAY SCALE WI-FI AND BLUETOOTH SETTINGS

The apex® Digital Clinical Scales Models apex-C and apex-sh-C will display the Wi-Fi and Bluetooth Settings after displaying the Event Counter calibration and configuration counters.

Refer to the apex Digital Clinical Scale Owner's Manual, 3300-0188-0M for information on the Event Counter.

To display the Wi-Fi and Bluetooth Settings, follow the steps below:

1. With no weight on the scale, press and hold the  key for approximately 5 seconds.
2. The display will show height for a short period of time, and then change to the show the software revision of the scale for a few seconds.
3. Release the  key.
4. The display will change to show the Calibration Counter (CAL) for approximately two seconds and then the Configuration Counter (CFG) for approximately two seconds.
5. Next, the Redbird (rbr) software revision for the Wi-Fi and Bluetooth (BLE) module will be displayed.
6. If Wi-Fi is enabled (WiFi = On), the following will be shown:
 - a. The Wi-Fi status Connected or Disconnected (connect or disconnect) will be displayed.
 - b. The four octets¹ of the static IP address for the scale will be shown.
 - c. The network name (SSID) will be shown.
7. After that, the Bluetooth (BLE) advertisement data Apex Scale XX:XX:XX:XX:XX:XX will scroll across the display. Note that the X's represents the MAC address and that the colons between the MAC address will not be shown.

NOTE: The factory setting for Bluetooth (BLE) is On (BLE = On). If Bluetooth (BLE) has been disabled (BLE = Off), the Bluetooth (BLE) advertisement will not be displayed.
8. After a short amount of time, the display will change back to showing live weight and return to normal operation.

¹ If the Wi-Fi is Disconnected (disconnect), and a scan of the Wi-Fi networks shows "REDBIRD_WIFI_XX:XX" AP, then the Wi-Fi module is in listening mode. Refer to the **Configure Wi-Fi Network Module** section for the procedure to set the Wi-Fi credentials.

STATEMENT OF LIMITED WARRANTY

Detecto Scale warrants its equipment to be free from defects in material and workmanship as follows: Detecto warrants to the original purchaser only that it will repair or replace any part of equipment which is defective in material or workmanship for a period of two **(2) years from date of shipment**. Detecto shall be the sole judge of what constitutes a defect.

During the **first ninety (90) days** Detecto may choose to replace the product at no charge to the buyer upon inspection of the returned item.

After the first ninety (90) days, upon inspection of the returned item, Detecto will repair or replace it with a remanufactured product. The customer is responsible for paying for the freight both ways.

This warranty does not apply to peripheral equipment not manufactured by Detecto; this equipment will be covered by certain manufacturer's warranty only.

This warranty does not include replacement of expendable or consumable parts. This does not apply to any item which has deteriorated or damaged due to wear, accident, misuse, abuse, improper line voltage, overloading, theft, lightning, fire, water or acts of God, or due to extended storage or exposure while in purchaser's possession. This warranty does not apply to maintenance service. Purchased parts will have a ninety (90) day repair or replacement warranty only.

Detecto may require the suspect product to be returned to the factory; item(s) must be properly packed and shipping charges prepaid. A return authorization number must be obtained for all returns and marked on the outside of all returned packages. Detecto accepts no responsibility for loss or damage in transit.

STATEMENT OF LIMITED WARRANTY

Conditions Which Void Limited Warranty

This warranty shall not apply to equipment which:

- A.) Has been tampered with, defaced, mishandled or has had repairs and modifications not authorized by Detecto.
- B.) Has had serial number altered, defaced, or removed.
- C.) Has not been grounded according to Detecto's recommended procedure.

Freight Carrier Damage

Claims for equipment damaged in transit must be referred to the freight carrier in accordance with freight carrier regulations.

This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of the product. Detecto will not be liable for consequential damages of any nature, including but not limited to, loss of profit, delays or expenses, whether based on tort or contract. Detecto reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate improvements in equipment previously manufactured.

The foregoing is in lieu of all other warranties, express or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Detecto products installed in the forty-eight (48) contiguous continental United States.



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08/27/2014
Printed in USA
D268-WARRANTY-DET-A



Printed in USA

3300-0320-0M Rev D 02/20



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