COMMAND **URBAN**
OPERATIONS MANUAL

spire
RANGES

Command Urban Operations Manual

Version 1.3

Spire Ranges © 2018.

CONTENTS

2 PRODUCT OPERATION (continued)

3 TROUBLESHOOTING / MAINTENANCE

1.1 | COMMAND URBAN™ INTRODUCTION

The Command Urban is a non-turning, cable-driven target retriever system. Targets are controlled individually or synchronized with a Spire master control touch screen and/or wireless remote. Additionally, within commercial ranges, a Point of Sale (time management system) console can be implemented.

The Urban system is engineered for multi-purposed use, making it an ideal target system for all types of facilities and organizations, including commercial, law enforcement, military and indoor / outdoor ranges.

1.2 | MASTER CONTOL CONSOLE INTRODUCTION

If implemented, a Master Control Console allows a rangemaster to manually control drills for an individual position or for all of the positions simultaneously on the range. Reference section 2.2 on page 22 for operational features.

1.3 | POINT OF SALE CONSOLE INTRODUCTION

If implemented, a Point of Sale console efficiently automates management of a range, increasing revenues with better time management of each shooting lane. What this means is once time on the range has been sold and set, the operator does not have to worry about tracking the time for each individual shooting lane. Once time expires on a shooting lane, the carrier will automatically return the target back to the home position and the lane's local control screen will disable, indicating to the user that time is up.

1.4 | IMPORTANT SAFETY INFORMATION ⚠️

Maintenance and use must adhere to the guidelines in this manual. Improper use of any of the equipment can result in poor performance, product damage and even serious physical injury. Properly trained personnel should only operate the equipment within the range. For technical, mechanical and electrical maintenance, it is recommended that a trained professional be consulted. Protective headwear, eyewear and gloves should always be worn when performing any maintenance. Danger risks include, but are not limited to, electric shock, head injuries, limb or body crushing, and eye trauma.

1.5 | WARRANTY OF EQUIPMENT ⚠️

Refer to agreement documents for specific warranty details for your range. Consumables, negligence and improper use of equipment (including firing armor-piercing rounds or calibers not approved for your range's ballistic rating) are excluded from all warranties.

1.6 | SYSTEM COMPONENTS

1.6.1 | Drive Unit

FIGURE 1.6.1 | *Drive Unit*
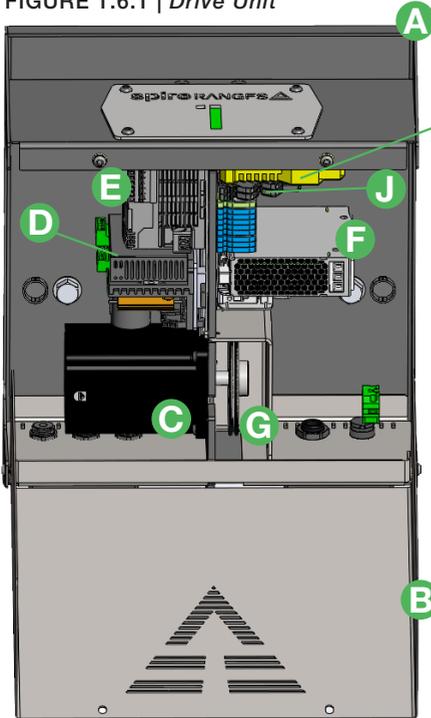
CODE	DESCRIPTION
A	Motor Housing
B	Motor Cover
C	Stepper Motor
D	Driver & Breaking Voltage Circuit
E	PLC
F	Power Supply
G	Pulley
H	Ethernet Switch (Optional)
J	Lighting Relays (Optional)

Technical Specifications

PHYSICAL DIMENSIONS	VALUE
Length × Width × Height	14½ × 17 × 6½ in (317.5 × 247.65 × 165.1 mm)
Weight	38 lb (13.43 kg)

POWER	VALUE
Voltage	110–240 VAC
Unit AMP	3 AMP Running Current
Supply AMP	10 AMP Running Current

TEMPERATURE RATINGS	VALUE
Operating	0–55° C (32–131° F)
Storage	–25–75° C (–13–167° F)

1.6.2 | HMI Touch Screens

FIGURE 1.6.2 | *HMI Screens*
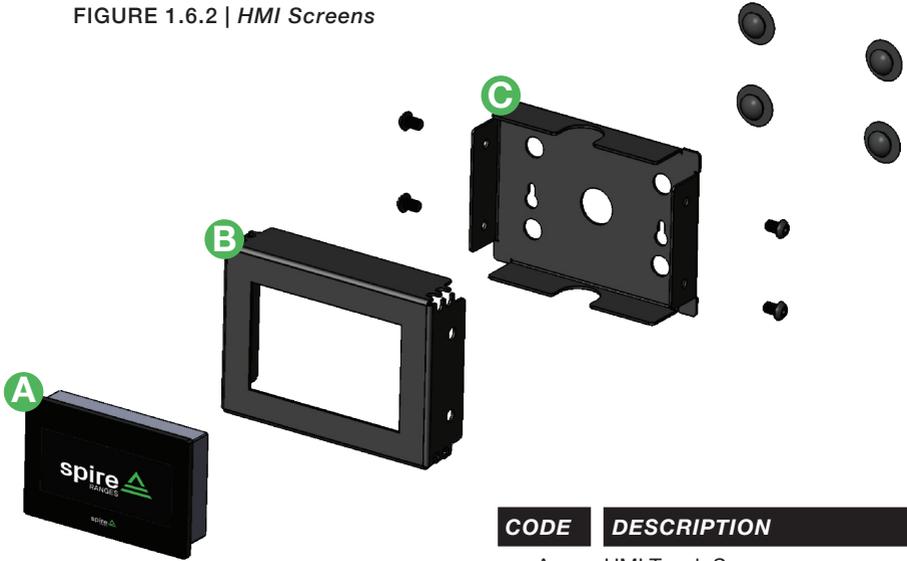
CODE	DESCRIPTION
A	HMI Touch Screen
B	Face Plate
C	Mounting Bracket

Technical Specifications

PHYSICAL DIMENSIONS	VALUE
Lenth × Width × Height	$5\frac{3}{4} \times 4\frac{1}{8} \times 1\frac{1}{2}$ in (146 × 104.7 × 38.1 mm)
Weight	1.8 lb (0.9 kg)

POWER	VALUE
Power Consumption	4.75–5.25 VDC
Voltage	1.1 Watts Max

TEMPERATURE RATINGS	VALUE
Operating	0–55° C (32–131° F)
Storage	–25–75° C (–13–167° F)

1.6.3 | Master Control / Point of Sale Touch Screen

FIGURE 1.6.3 | *HMI Screens*
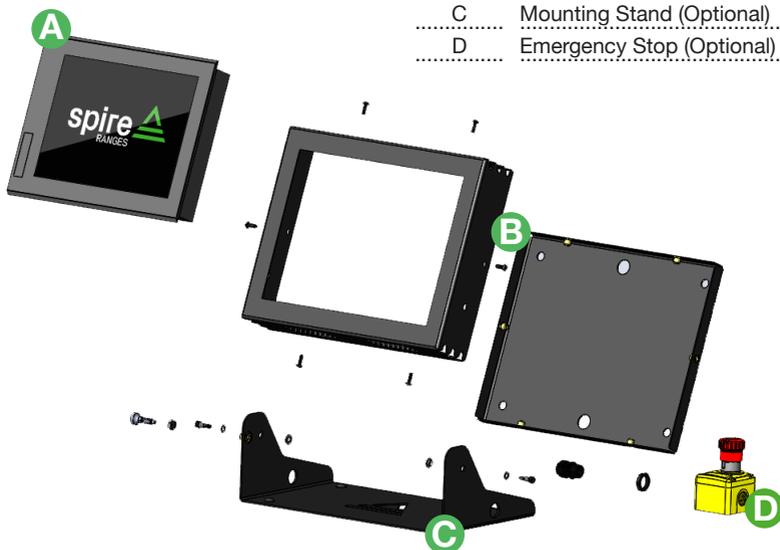
CODE	DESCRIPTION
A	HMI Touch Screen
B	HMI Enclosure Assembly
C	Mounting Stand (Optional)
D	Emergency Stop (Optional)

Technical Specifications

PHYSICAL DIMENSIONS	VALUE
Lenth × Width × Height	$12\frac{1}{2} \times 9\frac{3}{4} \times 2$ in (316 × 246 × 52 mm)
Weight	5.3 lb (2.4 kg)

POWER	VALUE
Power Consumption	24 VDC $^+/_-$ 20%
Voltage	37 Watts Max

TEMPERATURE RATINGS	VALUE
Operating	0–55° C (32–131° F)
Storage	–25–75° C (–13–167° F)

1.6.4 | Target Carrier Unit

FIGURE 1.6.4 | *Target Carrier Unit*

CODE	DESCRIPTION		CODE	DESCRIPTION
A	Carriage Wheels		D	Side Covers
B	Aircraft Cable Clamps		E	Ballistic Front Plate
C	Target Clamp		F	Bottom Cover

Technical Specifications

PHYSICAL DIMENSIONS	VALUE
Length × Width × Height	$21\frac{1}{2} \times 5 \times 5\frac{1}{8}$ in (546.1 × 127 × 130.175 mm)
Weight	8.2 lb (3.72 kg)

TEMPERATURE RATINGS	VALUE
Operating	–10–75° C (14–167° F)
Storage	–10–75° C (14–167° F)

> 66 *Excellence is about execution. For you, that requires a reliable range that facilitates exceptional training. For us, that means getting the job done right—the first time.* 99
>
> – SPIRE TEAM PILLARS

1.6.5 | Carrier Track

FIGURE 1.6.5 | *Target Carrier Unit*

CODE	DESCRIPTION
A	C-Channel 4in x 72in
B	C-Channel 4in x 36in
C	Baffle Mounting Tabs (Optional)
D	Pulley Assembly
E	Stop Bracket
F	Rubber Bumper
G	Prox Sensor & Bracket
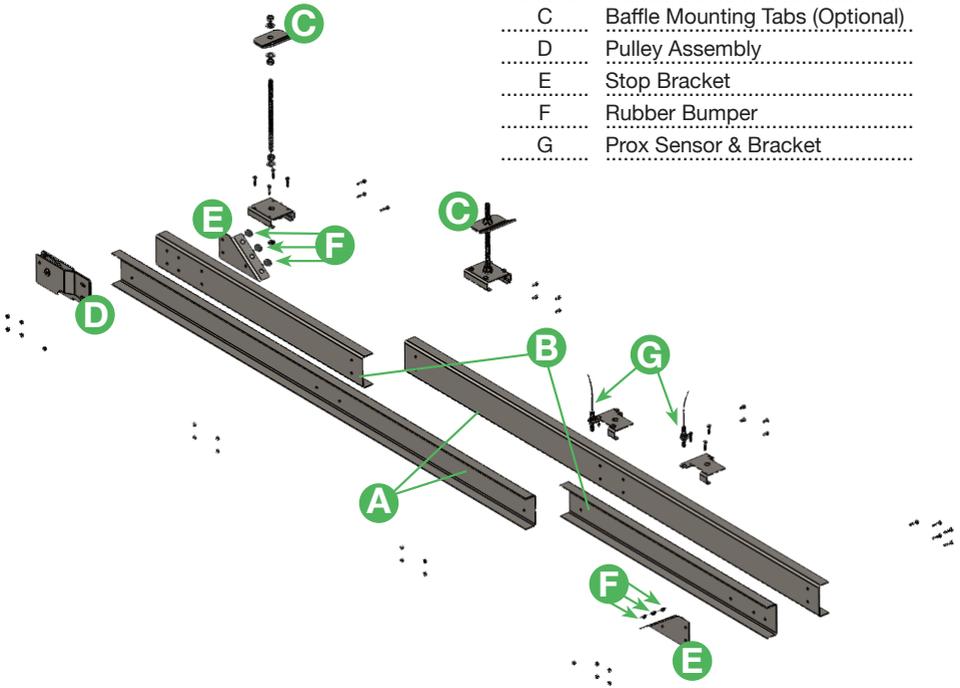
Technical Specifications

PHYSICAL DIMENSIONS	VALUE
Length × Width × Height	4 × 72 or 36 × 1 in (546.1 × 127 × 130.175 mm)
Weight	5.5 lb per linear foot (3.72 kg)

" *From the precision engineering to the site-specific designed installation, we aim to deliver innovative and practical ranges that prepare professionals for when their life depends on their training.* "

– SPIRE TEAM PILLARS

2 │ PRODUCT OPERATIONS

2.1 | INDIVIDUAL TOUCH SCREEN CONTROLS

Follow these guidelines to operate the range's course of fire. Reference operation guidelines and figures within each section.

2.1.1 | WELCOME SCREEN (Navigating to Menu)

A Welcome Screen with Spire logo greets you when the HMI is initially powered on. To access the Menu Screen, reference the following steps and Figure 2.1.1 below.

1. Access the Menu Screen from the Welcome Screen by tapping anywhere on the screen. Reference 👆 in Figure 2.1.1 below for the Welcome Screen.
2. From the Menu Screen, you can access the Operation, Unit of Measurement and Range Configuration screens. Additionally from the Menu Screen, you can power off the keypad. Reference ❷, ❸, ❹ and ❺ in Figure 2.1.1 below.

FIGURE 2.1.1 | Individual Station *Welcome Screen (Navigating to Menu Screen)*

2.1.2 | MENU SCREEN

The Menu Screen allows the rangemaster to select the Operation, Unit of Measurement and Range Configuration screens. Additionally, you can power off the keypad from this screen.

2.1.2.a | Navigating the Menu Screen

1. Select ⬛ *Operation Scree*n to navigate to the Operation Screen to begin a live fire session. Reference 👆1 in Figure 2.1.2 below.
2. Tap 📏 *Unit of Measurement* to select the desired unit of measurement (feet, yards, meters). Reference 👆2 in Figure 2.1.2 below.
3. To adjust range configurations, select 🎚 *Range Config*. Reference 👆3 in Figure 2.1.2 below.
4. To power off the keypad, select ⏻ *Power Off System*. Reference 👆4 in Figure 2.1.2 below.

FIGURE 2.1.2 | *Menu Screen*
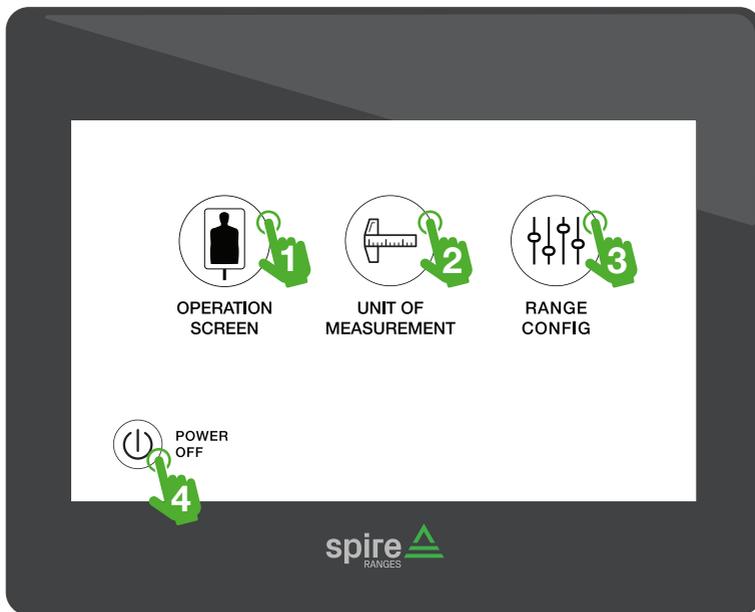
2.1.3 | STATION OPERATION SCREEN
The Operation Screen is the operational screen for a live fire session. Current target distance and the unit of measurement are displayed in the center of the screen with the selected unit of measurement bolded.

Four preset distances can be set in feet, meters or yards by the rangemaster. Reference page 19 for instructions on how to change preset distances (2.1.5.c) and how to select unit of measurement (2.1.5.b).

2.1.3.a | Sending Carrier Down & Upgrange

1. To send a carrier downrange with a preset distance, tap one of the presets at the bottom-right of the screen. Reference 🖐️1 in Figure 2.1.3.a.
2. Touch (🏠) to bring the target carrier uprange to the home position. Reference 🖐️2 in Figure 2.1.3.a on page 15.
3. To manually input a distance, select (🔢) Reference 🖐️3 in Figure 2.1.3.a on page 15. [After selecting Custom Distance, a popup keypad will appear. Select ENTER to save and for the carrier to move to its new distance. See section 2.1.6 pn page 21 to reference the popup keypad screen.]
4. Once the Custom Distance has been set manually, it functions as a preset button. Reference 🖐️4 in Figure 2.1.3.a on page 15.
5. Press ⋀ ⋁ to move the carrier manually; press and hold for continuous movement. Reference 🖐️5 in Figure 2.1.3.a on page 15.

2.1.3.b | Target Lighting Control

1. If lighing is implemented on your range, select 💡 to turn on / off the target lighting. Reference 🖐️1 in Figure 2.1.3.b-c on page 15.

   💡 indicates lighting is on.   💡 indicates lighting is off.

2.1.3.c | Accessing the Menu Screen from Op Screen

1. Select ☰ to navigate to the Menu Screen. Reference 🖐️2 in Figure 2.1.3.b-c on page15. From the Menu Screen, you can access Unit of Measurement, Range Configuration and the Operation Screen. Additionally from the Menu Screen, you can power off the keypad. See section 2.1.2 on page 13 as a reference for the Menu Screen.

FIGURE 2.1.3.a | *Sending Carrier Down & Uprange*

FIGURE 2.13.b-c | *Target Lighting Control & Accessing Menu Screen*
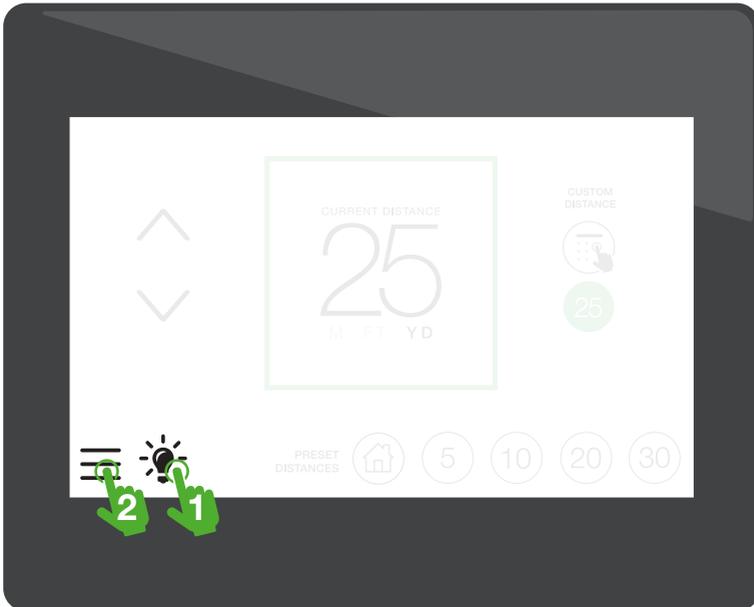
2.1.3.d | Selecting Unit of Measurement from Op Screen

1. Tap **M FT YD** under the current distance; this will take you directly to the Unit of Measurement Screen. Reference 👆 in Figure 2.1.3.d below. See section 2.1.4 on page 17 to reference the Unit of Measurement Screen.

2. Additionally, you can select ☰ *Menu*. Reference 👆 in Figure 2.1.3.d below. From the Menu Screen, you can select 🔲 *Unit of Measurement*. See section 2.1.2 on page 13 to reference the Menu Screen, and then section 2.1.4 on page 17 to reference the Unit of Measurement Screen.

FIGURE 2.1.3.d | *Selecting Unit of Measurement from Op Screen*

2.1.4 | UNIT OF MEASUREMENT SCREEN

From this screen, a user can select the desired unit of measurement for target distance in feet, yards or meters.

2.1.4.a | Selecting Unit of Measurement

1. Tap your desired unit of measurement— FT YD M . The selected unit of measurement button will change to green. Reference 1 in Figure 2.1.4 below.
2. Tap ⤺ to return to the previous screen. Reference 2 in Figure 2.1.4 below.

FIGURE 2.1.4 | *Unit of Measurement Screen*
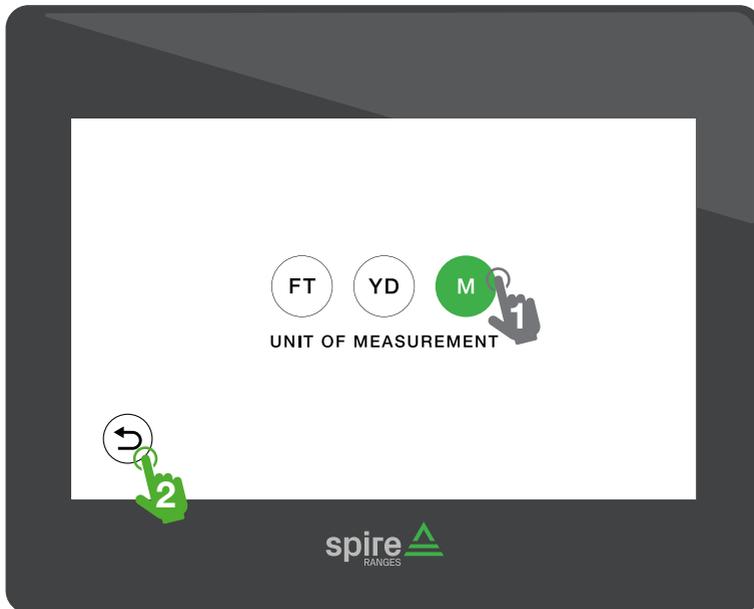
2.1.5 | RANGE CONFIGURATION SCREEN
This screen is password protected. Within the Range Configuration Screen, unit of measurement can be selected, the admin password can be changed, and preset distances and target carrier max / min distances can be set within installation parameters.

2.1.5.a | Accessing Range Configuration Screen
The Range Configuration Screen is accessible through the Menu Screen. See section 2.1.2 on page 12 and 2.1.3.c on page 14 for reference on accessing the Menu Screen.

1. From the Menu Screen, select ⚙ *Range Configuration*. Reference 👆1 in Figure 2.1.5.a below.
2. A popup keypad will appear for you to enter your login password. After entering the password, select ENTER . Reference 👆2 in Figure 2.1.5.a.
3. If a value was entered incorrectly, tap ⌫ *Delete* to delete the most recent value entered or Ⓒ *Clear* to clear the entire value entered. Reference 👆3 and 👆4 in Figure 2.1.5.a below.

   To cancel entering a value at any time and return to the Menu Screen, select ↩. Reference 👆5 in Figure 2.1.5.a below.

FIGURE 2.1.5.a | *Accessing Range Configuration Screen*
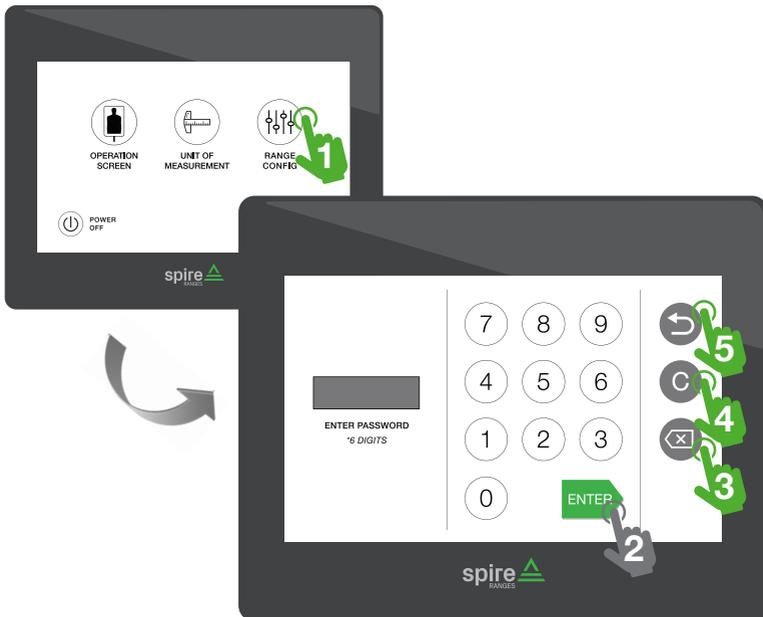
2.1.5.b | Selecting Range's Unit of Measurement

1. Tap (FT) (YD) (M) to select your desired unit of measurement. The selected unit of measurement button will change to green. Reference 🖑₁ in Figure 2.1.5.b-c below.
2. Tap ↺ to return to the menu screen, or select (📱) *Op Screen* to move to the operational screen to begin a live fire session. Reference 🖑₂ and 🖑₃ in Figure 2.1.5.b-c below.
3. Note: Unit of Measurement can also be changed at each individual lane's touch screen.

2.1.5.c | Setting Preset Distances & Max / Min

1. Select a preset button, or Max / Min Distance, on the right side of the screen to edit and set. Reference 🖑₄ in Figure 2.1.5.b-c below.
2. A popup keypad will appear to enter the desired distance; press [ENTER] to save. See section 2.1.6 on page 21 to reference the popup keypad screen.
3. Tap ↺ to return to the menu screen, or select (📱) Op Screen to move to the operational screen to begin a live fire session. Reference 🖑₂ and 🖑₃ in Figure 2.1.5.b-c below.

FIGURE 2.1.5.b-c | *Range Configuration Screen*
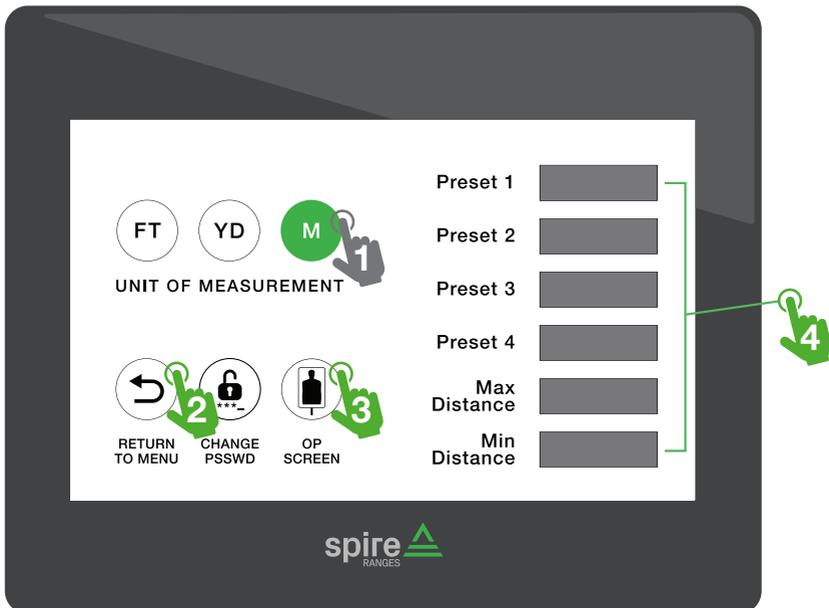
2.1.5.d | Setting a Password

1. From the Range Configuration Screen, select 🔒 *Change Password*. Reference 👆1 in Figure 2.1.5.d below.
2. A popup keypad will appear for you to enter your current password and then your new password. Tap *Current Password* and enter its value; then select *Enter New Password*. Reference 👆2 and 👆3 in Figure 2.1.5.d below.
3. After entering the passwords, select ENTER . Reference 👆4 in Figure 2.1.5.d below. Saving a password will automatically return you to the previous Range Configuration Screen.
4. If a value was entered incorrectly, tap ⌫ *Delete* to delete the most recent value entered or Ⓒ *Clear* to clear the entire value entered. Reference 👆5 and 👆6 in Figure 2.1.5.d below.

   To cancel entering a value at any time and return to the Range Configuration Screen, select ↩. Reference 👆7 in Figure 2.1.5.d below.

FIGURE 2.1.5.d | *Setting a Password*

2.1.6 | NUMERIC KEYPAD INPUT SCREEN

The popup numeric input screen is used on several screens, from entering a custom distance on the Operation Screen to entering preset distances on the Range Configuration Screen.

2.1.6.a | Entering Desired Value

1. Enter the desired value by tapping the numbers from the numeric input keypad. Reference 1 in Figure 2.1.6 below.
2. Once the desired value has been entered, tap ENTER *Enter* to save and return to the previous screen. Reference 2 in Figure 2.1.6 below.
3. If a value was entered incorrectly, tap ⌫ *Delete* to delete the most recent value entered or C *Clear* to clear the entire value entered. Reference 3 and 4 in Figure 2.1.6 below.

   To cancel entering a value at any time and return to the previous screen, select ↩ *Return*. Reference 5 in Figure 2.1.6 below.

FIGURE 2.1.6 | *Numeric Keypad Input Screen*
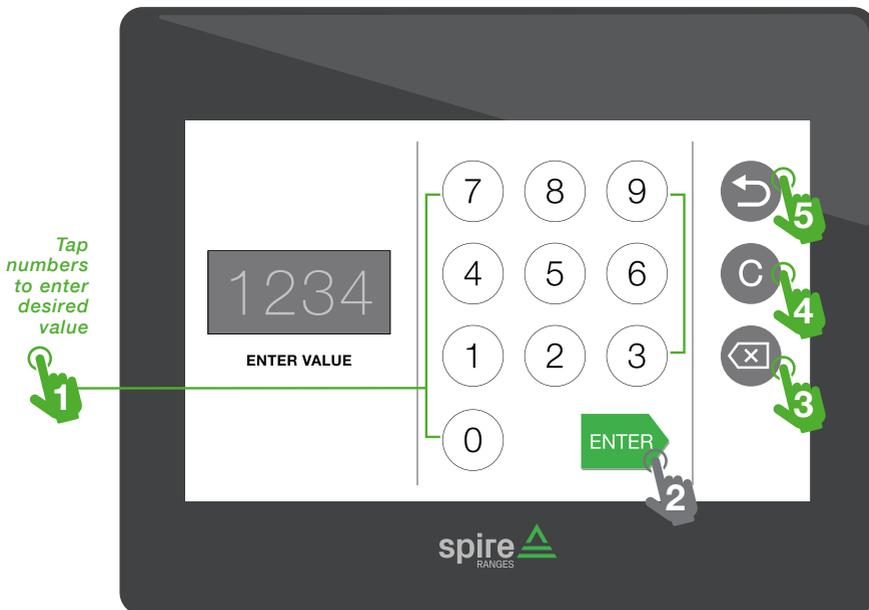
2.2 | MASTER TOUCH SCREEN CONTROL

The Master Control console allows a rangemaster to manually control drills for an individual position or for all of the positions simultaneously on the range. Reference operation guidelines and figures within each section.

2.2.1 | WELCOME SCREEN (Navigating to Menu)

A Welcome Screen with Spire logo greets you when the HMI is initially powered on. To access the Menu Screen, reference the following steps and Figure 2.2.1 below.

1. Access the Menu Screen from the Welcome Screen by tapping anywhere on the screen. Reference 👆 in Figure 2.2.1 below for the Welcome Screen.
2. From the Menu Screen, you can access the Operation and Range Configuration screens. Additionally from the Menu Screen, you can power off the keypad. Reference ❷ , ❸ and ❹ in Figure 2.2.1 below.

FIGURE 2.2.1 | Master Console *Welcome Screen (Navigating to Menu Screen)*

2.2.2 | MENU SCREEN

The Menu Screen allows the rangemaster to select the **Operation and Range Configuration** screens. Additionally, you can power off the keypad from this screen.

2.2.2.a | Navigating the Menu Screen

1. Select ⬛ *Operation Scree*n to navigate to the Operation Screen to begin a live fire session. Reference 👆 in Figure 2.2.2 below.
2. To adjust range configurations, select ⚙ *Range Config*. Reference 👆 in Figure 2.2.2 below.
3. To power off the keypad, select ⏻ *Power Off*. Reference 👆 in Figure 2.2.2 below.

FIGURE 2.2.2 | *Menu Screen*

2.2.3 | MASTER OPERATION SCREEN

The Operation Screen is the control screen for a live fire session. Targets can be controlled individually, or synchronized, allowing the range operator to send targets to different distances. Each target's current distance is indicated next to a station's icon. Targets currently downrange are indicated in a darker shade of gray

Target carriers can be sent downrange manually or with preset distances. Reference section 2.2.4.c on page 29 for instructions on how to change preset distances. Preset distances can be set in feet, meters or yards by the rangemaster. The selected unit of measurement is bolded and highlighted in green in the top right corner of the screen. Reference section 2.2.4.b on page 29 for instructions on how to select unit of measurement.

2.2.3.a | Selecting Targets

1. To manually select or unselect targets, tap the individual target lanes. Selected targets will change to green to highlight selection. Reference 👆**1** in Figure 2.2.3.a on page 25.
2. Tap (ALL) (ODD) (EVEN) (NONE) *All, Odd, Even* and *None* to select or unselect multiple targets at once with a preset. Reference 👆**2** in Figure 2.2.3.a on page 25.

   (LIVE) *Live* selects all targets that are currently downrange. Reference **3** in Figure 2.2.3.a on page 25.

2.2.3.b | Sending Carrier Down & Upgrange

1. To send a carrier downrange with a preset distance, select a target or a group of targets, then tap one of the presets. Reference 👆**1** in Figure 2.2.3.b on page 25.
2. Selected targets will change to green to highlight selection. Unselected targets currently downrange, along with their current distance, are indicated in a darker shade of gray. Reference **2** and **3** in Figure 2.2.3.b on page 25.
3. Touch (🏠) to bring target carriers uprange to the home position. Reference 👆**4** in Figure 2.2.3.b on page 25.
4. To send targets to a custom distance, select (📟). A popup keypad will appear to enter the desired distance. Reference 👆**5** in Figure 2.2.3.b on page 25.
5. Once the Custom Distance has been set manually, it functions as a preset button. Reference **6** in Figure 2.2.3.b on page 25.

FIGURE 2.2.3.a | *Selecting Targets*

FIGURE 2.2.3.b | *Sending Carrier Down & Uprange*

2.2.3.c | Target Lighting Control (Turning On / Off)

Target illumination enhances training with lighting scenarios that help trainees sharpen focus under duress. If target illumination is implemented within the range, a lightbulb indicator is located at the top left of the keypad.

To turn on / off lighting scenarios, reference the steps and figure below.

1. To navigate to the Target Lighting Popup, tap ☀ at the top of the Operation Screen. Reference 1 in Figure 2.2.3.c below.
2. Select the desired target lighting; green indicates the lighting control selected. Reference 2 in Figure 2.2.3.c below.
3. To exit the Target Lighting Popup, tap ✕ *Exit*. Certain lighting scenarios will continue to run even after exiting. To completely turn off lighting scenarios, tap again the highlighted selection within the Target Lighting Popup. Reference 3 in Figure 2.2.3.c below.

☀ indicates lighting is on. 💡 indicates lighting is off.

Tactical offers red and blue lights that illuminate the target. *Tactical Strobe Change* alters the lighting pattern of the red and blue tactical lights. *Muzzle Flash* simulates a one-time muzzle flash. *Target Illumination* lights up targets continuously. Reference 3 , 4 , 5 and 6 in Figure 2.2.3.c below.

FIGURE 2.2.3.c | *Target Lighting Control (Turning On / Off)*

2.2.3.d | Selecting Unit of Measurement from Op Screen

1. Tap **M FT YD** at the top right of the screen; this will take you directly to the Unit of Measurement Screen. Reference 🖐 in Figure 2.2.3.d-e below. See section 2.2.4.b on page 29 to reference the Unit of Measurement Screen.

2. Additionally, you can select ☰ *Menu*. Reference 🖐 in Figure 2.2.3.d-e below. From the Menu Screen, you can select (⚙) *Range Configuration*. See section 2.2.2 on page 23 to reference the Menu Screen, and then section 2.2.4.b on page 29 to reference the Range Configuration Screen.

2.2.3.e | Accessing the Menu Screen from Op Screen

1. Select ☰ to navigate to the Menu Screen. Reference 🖐 in Figure 2.2.3.d-e below. From the Menu Screen, you can access Range Configuration and the Operation Screen. Additionally from the Menu Screen, you can power off the keypad. See section 2.2.2 on page 23 as a reference for the Menu Screen.

FIGURE 2.2.3.d-e | *Selecting Unit of Measurement & Accessing Menu Screen from Op Screen*
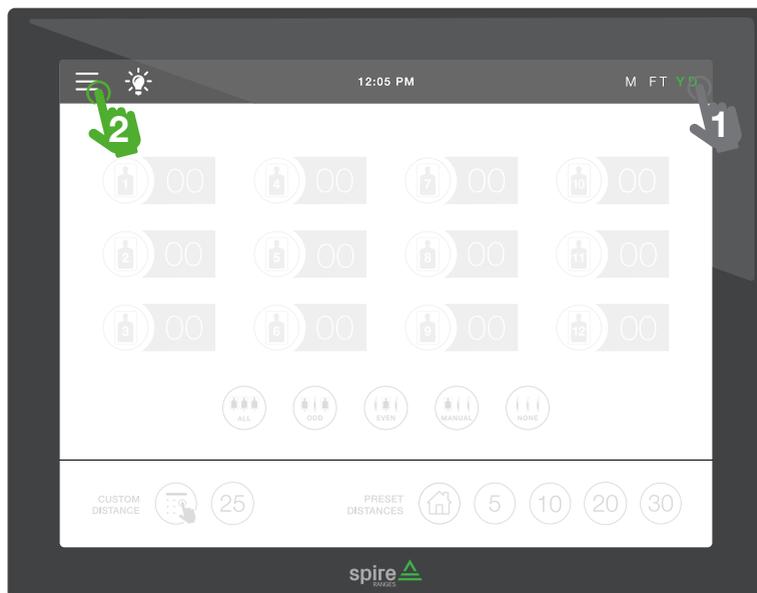
2.2.4 | RANGE CONFIGURATION SCREEN

This screen is password protected. Within the Range Configuration Screen, unit of measurement can be selected, the admin password can be changed, preset distances and target carrier max / min distances can be set within installation parameters, and the time clock can be set.

2.2.4.a | Accessing Range Configuration Screen

The Range Configuration Screen is accessible through the Menu Screen. See section 2.2.2 on page 23 and 2.2.3.e on page 27 for reference on accessing the Menu Screen.

1. From the Menu Screen, select [icon] *Range Configuration*. Reference [1] in Figure 2.2.4.a below.
2. A popup keypad will appear for you to enter your login password. Tap the numeric values desired. After entering the password, select ENTER . Reference [2] and [3] in Figure 2.2.4.a below.
3. If a value was entered incorrectly, tap [X] *Delete* to delete the most recent value entered or [C] *Clear* to clear the entire value entered. Reference [4] and [5] in Figure 2.2.4.a below.

   To cancel entering a value at any time and return to the Menu Screen, select [back]. Reference [6] in Figure 2.2.4.a below.

FIGURE 2.2.4.a | *Accessing Range Configuration Screen*
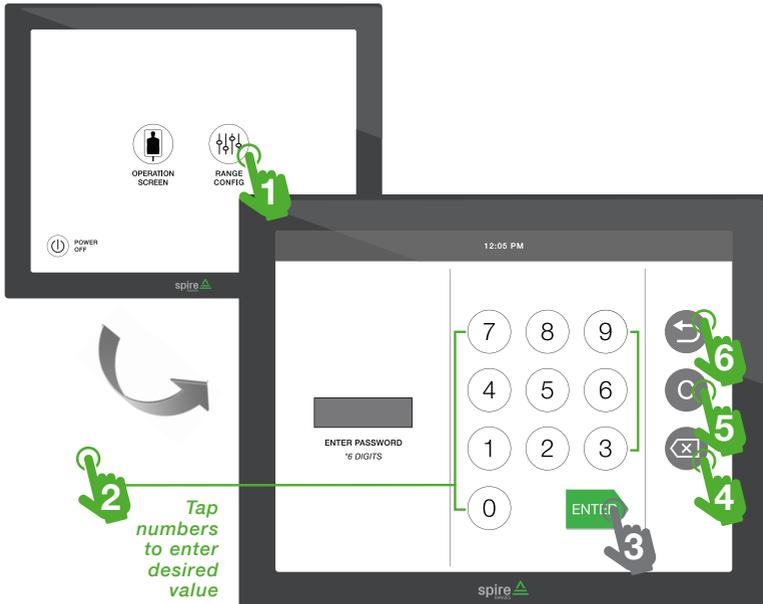
2.2.4.b | Selecting Unit of Measurement

1. Tap (FT) (YD) (M) to select your desired unit of measurement. The selected unit of measurement button will change to green. Reference 👆1 in Figure 2.2.4.b-c below.
2. Tap ↩ to return to the menu screen, or select (📱) *Op Screen* to move to the operational screen to begin a live fire session. Reference 👆2 and 👆3 in Figure 2.2.4.b-c below.
3. Note: preset distances are only input manually and should be adjusted when the unit of measurement is changed.

2.2.4.c | Setting Preset Distances & Max / Min

1. Select a preset button, or Max / Min Distance, on the right side of the screen to edit and set. Reference 👆4 in Figure 2.2.4.b-c below.
2. A popup keypad will appear to enter the desired distance; press ⏎ENTER to save. See section 2.2.5 on page 32 to reference the popup keypad screen.
3. Tap ↩ to return to the menu screen, or select (📱) Op Screen to move to the operational screen to begin a live fire session. Reference 👆2 and 👆3 in Figure 2.2.4.b-c below.

FIGURE 2.2.4.b-c | *Selecting Unit of Measurement and Setting Preset & Max / Min Distances*
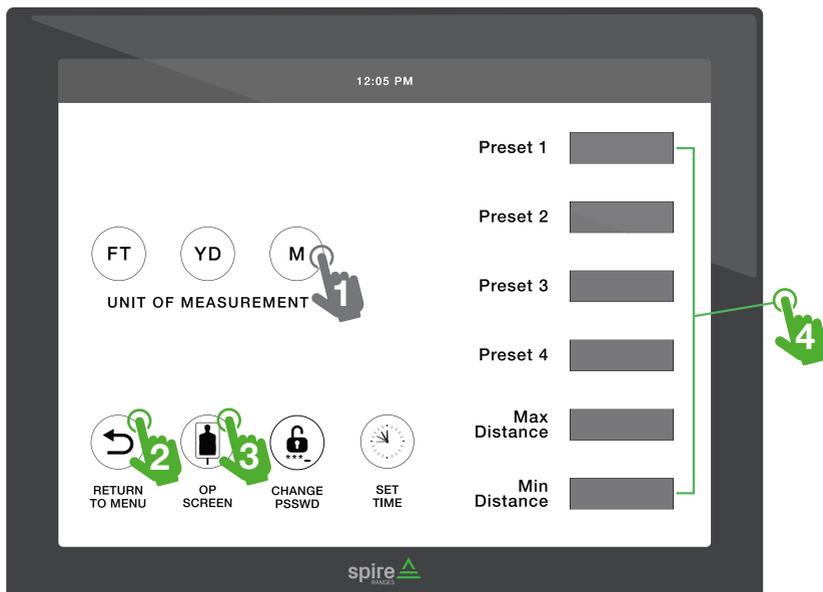
2.2.4.d | Setting a Password

1. From the Range Configuration Screen, select 🔒 *Change Password*. Reference 👆₁ in Figure 2.2.4.d below.
2. A popup keypad will appear for you to enter your current password and then your new password. Tap *Current Password* and enter its value; then select *Enter New Password*. Reference 👆₂ and 👆₃ in Figure 2.2.4.d below.
3. After entering the passwords, select ENTER . Reference 👆₄ in Figure 2.2.4.d below. Saving a password will automatically return you to the previous Range Configuration Screen.
4. If a value was entered incorrectly, tap ⌫ *Delete* to delete the most recent value entered or Ⓒ *Clear* to clear the entire value entered. Reference 👆₅ and 👆₆ in Figure 2.2.4.d below.

   To cancel entering a value at any time and return to the Range Configuration Screen, select ↩. Reference 👆₇ in Figure 2.2.4.d below.

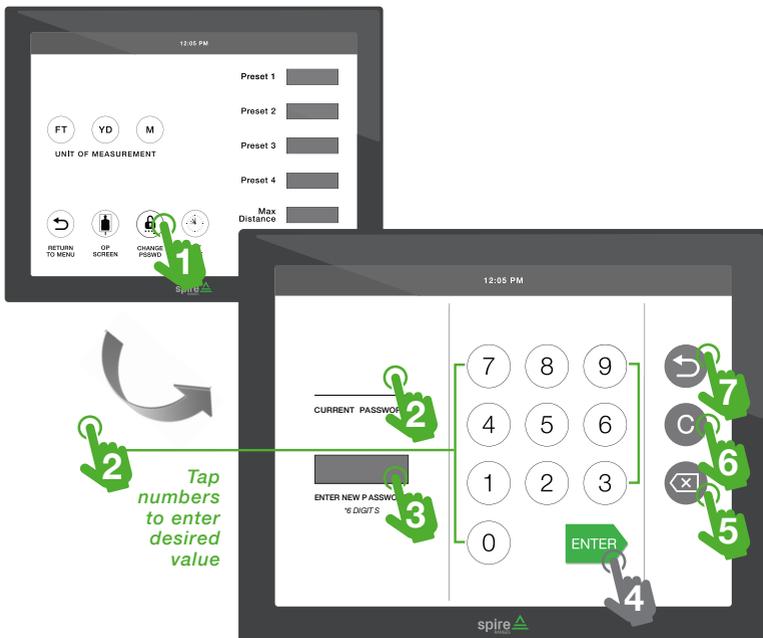**FIGURE 2.2.4.d |** *Setting a Password*

Tap numbers to enter desired value

2.2.4.e | Setting Time

1. From the Range Configuration Screen, select 🕐 *Set Time*. Reference 👆1 in Figure 2.2.4.e below.

2. A popup keypad will appear for you to set the time. Tap the numeric values desired. After entering the time, select ⊗ *Military Time* or the appropriate ☀ ☀ *A.M. / P.M.* if selecting regular time. The selected type of time will be highlighted in green. Reference 👆2 in Figure 2.2.4.e below.

3. After entering the time and selecting the type of time, select ENTER . Reference 👆3 in Figure 2.2.4.e below. Saving the time will automatically return you to the previous Range Configuration Screen.

4. If a value was entered incorrectly, tap ⊗ *Delete* to delete the most recent value entered or Ⓒ *Clear* to clear the entire value entered. Reference 👆4 and 👆5 in Figure 2.2.4.e below.

   To cancel entering a value at any time and return to the Range Configuration Screen, select ↩. Reference 👆6 in Figure 2.2.4.e below.
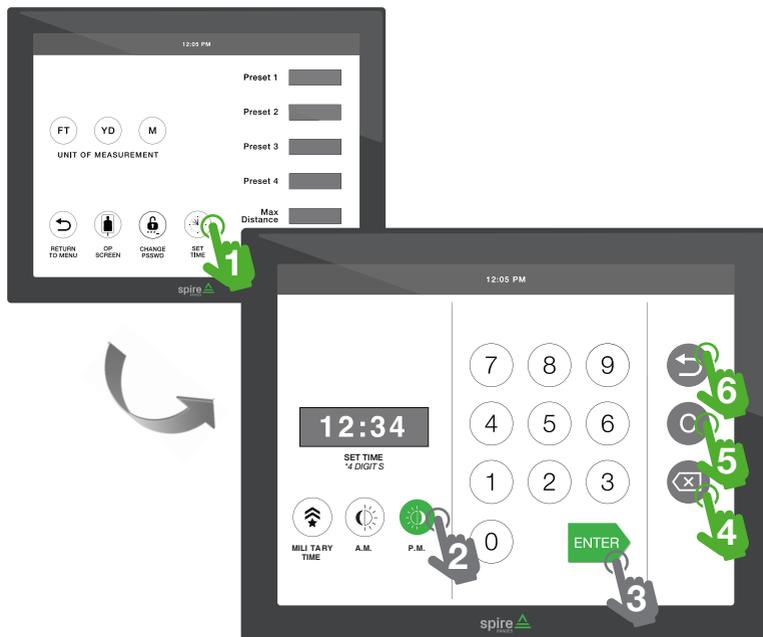
FIGURE 2.2.4.e | *Setting Time*

2.2.5 | NUMERIC KEYPAD INPUT SCREEN

The popup numeric input screen is used on several screens, from entering a custom distance on the Operation Screen to entering preset distances on the Range Configuration Screen.

2.2.5.a | Entering Desired Value

1. Enter the desired value by tapping the numbers from the numeric input keypad. Reference 🔲1 in Figure 2.2.5 below.
2. Once the desired value has been entered, tap ENTER *Enter* to save and return to the previous screen. Reference 🔲2 in Figure 2.2.5 below.
3. If a value was entered incorrectly, tap ⌫ *Delete* to delete the most recent value entered or Ⓒ *Clear* to clear the entire value entered. Reference 🔲3 and 🔲4 in Figure 2.2.5 below.

   To cancel entering a value at any time and return to the previous screen, select ↩ *Return*. Reference 🔲5 in Figure 2.2.5 below.

FIGURE 2.2.5 | *Master Console Numeric Keypad Input Screen*
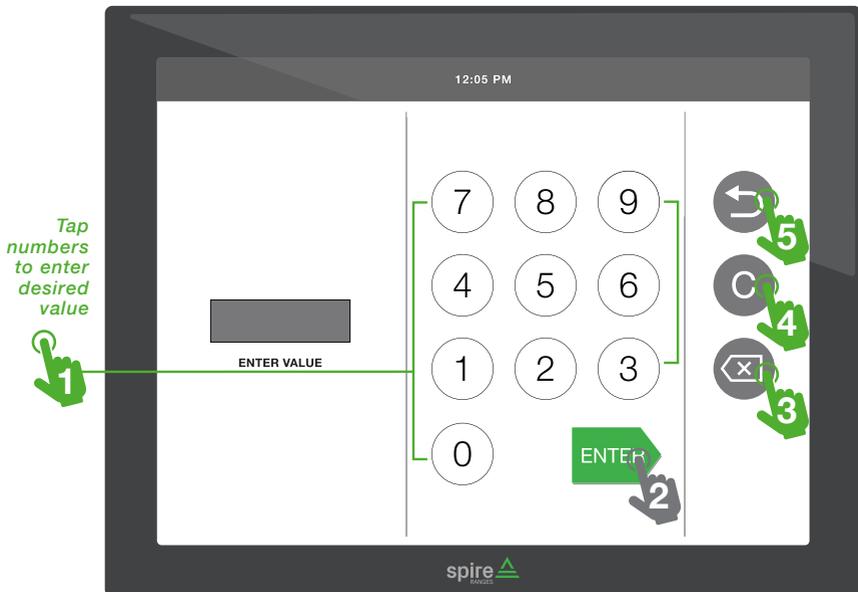
2.3 | DRIVE UNIT OPERATION

The drive unit powers the pulley that moves the carrier down and uprange. Reference the steps and figures below to inspect and perform maintenance on power supply components within the drive unit.

2.3.1 | Powering Drive Unit On / Off

The power switch is located on the track-side of the drive unit. A light indicates if the unit is powered on. Reference ❶ in Figure 2.3.1 below.

FIGURE 2.3.1 | *Powering On / Off Drive Unit*

OFF   ON
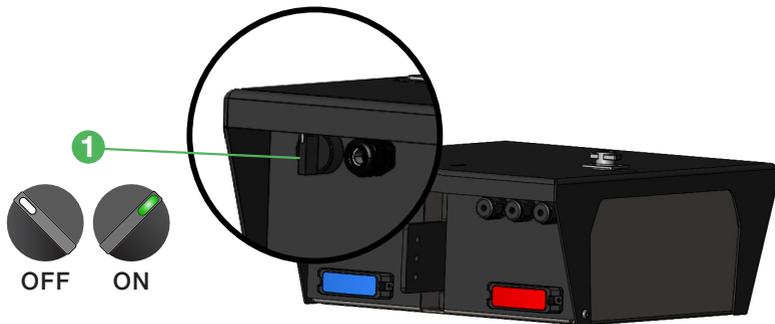
2.3.2 | Reseting Tripped Circuit Breaker

To inspect the driver's circuit breaker, remove the drive cover. Locate the breaker on the right side (if you are facing downrange) within the motor housing. A red light with the switch in the up position will indicate the breaker is tripped. Flip the switch down to reset the driver circuit breaker. A green light will indicate power to the unit. Reference ❶ in Figure 2.3.2 below.

FIGURE 2.3.2 | *Reseting Drive Unit Circuit Breaker*

OFF   ON
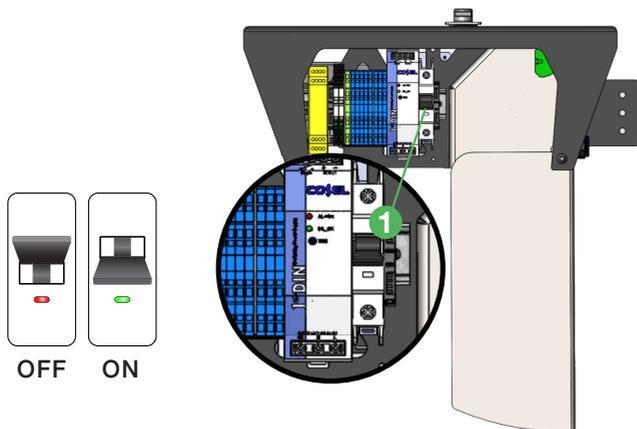
2.4 | TARGET CARRIER UNIT

Follow these guidelines for attaching a target backer to the carrier unit, and then a target to the backer. Reference instructions and Figure 2.4.1 below. For steps on replacing an aircraft cable, reference section 2.4.3 on page 35.

2.4.1 | Attaching Target Backer to Clamp

The target clamp holds the target backer. A target can then attach to the target backer.

1. To fasten a target backer, start by untightening the clamp bolt at the back of the carrier. Reference ❶ in Figure 2.4.1 below.
2. Remove old target backer (if necessary), and insert new target backer into the slot. Reference ❷ in Figure 2.4.1 below. Note that the dotted arrow indicates the direction in which to insert the target backer into the carrier unit's clamp slot.
3. Tighten the clamp once again. Reference ❶ in Figure 2.4.1 below.
4. IMPORTANT! Ensure to not overtighten the clamp bolt.

2.4.2 | Attaching Target to Backer

A user's target attaches to the target backer with staples, clips or another method. Spire will defer to the range operator on which method the range chooses to attach a target to the target backer.

FIGURE 2.4.1 | *Target Clamp*

UNTIGHTEN TIGHTEN

2.4.3 | Attaching Aircraft Cable to Carrier Unit

Occasionally the aircraft cable will need to be replaced. Reference section 3.3 on page 39 for suggested preventive maintenance schedules. See guidelines and Figure 2.4.3 below for steps on how to replace the aircraft cable.

1. Remove carrier unit's side covers; run the cable from the top over the pulleys, and then through the front and rear of the carrier unit. Reference ❶ in Figure 2.4.3 below.
2. Locate cable clamps within the center of the carrier unit; remove them to ease threading of cable. Reference ❷ and ❸ in Figure 2.4.3 below.
3. Thread the cable through the opening of each clamp and out the top holes. Reinstall clamps within the unit. Reference ❹ in Figure 2.4.3 below.
4. Once reinstalled, tension the cable by pushing the spring bolt to half way and pull the cable taut. Reference ❺ and ❻ in Figure 2.4.3 below.
5. Secure excess cable with a wire tie to avoid friction and noise from the cable rubbing against the track and carrier. Reference ❼ in Figure 2.4.3 below.
6. Cut off excess cable, leaving approximately one inch of the cable extending from each clamp to prevent unravelling. Reference ❽ in Figure 2.4.3 below.

FIGURE 2.4.3 | *Aircraft Cable Attachment*

3 | TROUBLESHOOTING

Given below are possible causes and solutions for system problems. Within the Possible Causes and Solutions sections, you will find sequential steps that can help troubleshoot a problem. If a problem persists after following these troubleshooting guidelines, please immediately contact the manufacturer for additional support.

3.1 | DRIVE UNIT & HMI TOUCH SCREEN

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
3.1.1 | No Power to the Drive Unit	(1) Unit is switched off.	Inspect to verify unit is on; a lighted switch indicates when the drive unit is switched on and there is power to the unit. Reference 2.3.1 on page 33.
	(2) Power cord to wall receptacle connection error.	Inspect the wall receptacle to verify that the power cord is completely plugged in if not hardwired.
	(3) Tripped drive unit circuit breaker.	Reset circuit breaker by switching to on. Reference section 2.3.2 on page 33.
	(4) Tripped building breaker.	Inspect building's power breaker box. Reset tripped breaker. Consult electrician for assistance.
3.1.2 | Drive Unit Has Power but Is Nonresponsive	(1) Motor error.	Cycle power for 5 seconds.
	(2) Drive fault. Reference **D** in Figure 1.6.1 on page 7 to locate the driver.	Inspect under the drive controller and PLC for a red flashing light, which indicates drive fault. If problem persists, contact Spire for technical support: 800-761-1231.
3.1.3 | Nonresponsive HMI Touch Screen	(1) HMI screen error.	Turn the drive unit off for 5 seconds to manually reset.
	(2) Wire connection error. Reference **E** in Figure 1.6.1 on page 7 to locate the PLC port.	Check underneath the PLC for a red flashing light, which indicates a wire communication error. Reconnect HMI cable to the PLC communication port.
	(3) HMI / PLC fault.	Contact Spire for technical support: 800-761-1231.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
3.1.4	Nonresponsive Point of Sale (POS) or Master Control Console	(1) HMI screen error.	Turn the drive unit off for 5 seconds to manually reset.
	(2) Wire connection error. Reference **E** in Figure 1.6.1 on page 7 to locate the PLC port.	Check underneath the PLC for a red flashing light, which indicates a wire communication error. Reconnect HMI cable to the PLC communication port.
	(3) Tripped building breaker.	Inspect building's power breaker box. Reset tripped breaker. Consult electrician for assistance.
	(4) HMI / PLC fault.	Contact Spire for technical support: 800-761-1231.

3.2 | TARGET CARRIER UNIT

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
3.2.1	Nonresponsive Carrier Unit	(1) Drive unit error.	Turn the drive unit off for 5 seconds to manually reset.
	(2) Aircraft cable fault. Reference 2.4.3 on page 35 for steps on how to attach a new cable to the carrier unit.	(1) Inspect aircraft cable for a break or tear. (2) Inspect both pulleys to ensure that the aircraft cable is riding properly on the pulleys. (3) Verify that the cable tension is snug. (4) Replace as necessary.
	(3) Debris obstruction.	Shut power off to the drive unit. Manually push the carrier to make sure it can move. If it cannot move, there is an obstruction. Remove obstruction and manually return carrier to home position.
	4) Drive fault. Reference **D** in Figure 1.6.1 on page 7 to locate the driver.	Inspect under the drive controller for a red flashing light, which indicates drive fault. Contact Spire for technical support: 800-761-1231.
	(5) Carrier unit fault.	Contact Spire for technical support: 800-761-1231.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
3.2.2 | Abnormal and/or Excessive Noise from Carrier Unit, or Carrier Stops Abruptly or Prematurely	(1) Debris is on the track.	Remove any debris.
	(2) Track is damaged.	(1) Inspect the top and bottom of the track's flanges for damage. (2) Use hand tools (e.g., C-clamp, vise grips, adjustable wrench, etc.) as necessary to remove damage to the track. (3) Replace damaged sections of track as necessary. *Please note that the top surface of the bottom track flanges is the critical surface area to maintain as smooth as possible.*
	(3) Carriage wheels are worn or damaged. Reference (A) in Figure 1.6.4 on page 10 to locate the carriage wheels.	(1) Inspect wheels to assess wear or damage; replace if necessary. (2) Ensure that all bolts are tightened to 12 foot-pounds of torque.
3.2.3 | Carrier Unit Fails to Decelerate Returning to Home Position, Hitting End-Stop with Excessive Force	(1) Proximity sensor error. Reference (G) in Figure 1.6.5 on page 11 to locate proximity sensors.	(1) Test proximity sensors by sending the carrier unit downrange. Place a steel-based tool just below the proximity sensor. Verify that the proximity sensor light flashes on and that the carrier unit stops appropriately. (2) Inspect spacing between carrier unit and proximity sensor switch; spacing should not exceed 1/8in (4mm). (3) With carrier still stopped downrange, shut power off to unit, and then manually push carrier to return it to the home position. Turn the drive unit back on.
	(2) Proximity sensor fault.	If light does not illuminate, but there is power to the unit, contact Spire for technical support: 800-761-1231.
3.2.4 | Carrier Unit Fails to Decelerate Moving Downrange, Hitting End-Stop with Excessive Force	(1) Programming issue.	The Max Distance programming needs to be adjusted according to the range's specs. Reference Product Operations section Setting Max / Min Target Distance 2.1.5.c on page 19 [local control console] and 2.2.4.c on page 29 [master control console].
Cont. on next pg.......		

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
3.2.4 | (Continued) Carrier Unit Fails to Decelerate Moving Downrange, Hitting End-Stop with Excessive Force	(2) Drive unit error.	Contact Spire for technical support: 800-761-1231.
3.2.5 | Target Backer Fails to Insert into Clamp	(1) Target backer is too thick.	Ensure that the target backer is not thicker than 3/8in (6mm).
	(2) Clamp not depressed fully.	Ensure that clamp is fully opened.

3.3 | SYSTEM PREVENTIVE MAINTENANCE

It is recommended that the following inspections and preventive maintenance be performed quarterly to ensure maximum longevity of your range's targetry system.

UNIT	PREVENTIVE MAINTENANCE
Aircraft Cable	Inspect aircraft cable to make sure it's not fraying and that the tension is snug. Replace as necessary.
Carrier Unit Track	(1) Inspect the top of the track to ensure that no debris is jammed in it, or wedged between the track hanger and the track. Remove debris as necessary.
	(2) Inspect under the proximity sensor switch bracket and make sure that no debris is jammed in it. Remove debris as necessary.
	(3) Inspect the top and bottom of the track for damage. Smooth out damage with hand tools as necessary. See Troubleshooting 3.2.2 (2) on page 38 for more information.
Carrier Unit Wheels	Shut power off to the drive unit. Manually move the carrier to check how smoothly it moves down the track. Return the carrier to the home position and turn the drive unit back on. Replace wheels as necessary.
System Usage	If the range is used on a daily basis, the system can remain on. If the range is not used for more than a week, it is recommended that the system be shut down, and then restarted when in operation.

FOR WHEN IT
MATTERS
MOST

TRAIN THE BEST.™