RANGE SYSTEMS™

Model: PTX600 Controller
Operations Manual

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OVERVIEW

The PTX600 Controller is a handheld wireless controller designed to operate compatible Range Systems target systems. It allows an operator to control individual targets or groups of targets, select target positions, create and run training programs, configure target settings, and manage hit-sensing functions.

The PTX600 operates in the 902-928 MHz frequency range using spread-spectrum frequency hopping with an RF output power of 4 mW. Under line-of-sight conditions, operating range is up to 150 meters (approximately 490 feet). Indoor structures, walls, terrain, and other obstructions may reduce the effective operating range.

Controller Battery
The PTX600 is powered by a standard 9-volt alkaline battery. Battery life varies with use and the frequency of transmitted commands. Under normal operating conditions, a new 9-volt alkaline battery provides approximately 40 hours of active operation.

When the controller is powered off and the display is blank, the PTX600 continues to draw a small amount of power. If the PTX600 will be stored or unused for one month or longer, remove the battery to prevent unnecessary battery drain.

OPERATION

Turning the Controller On and Off

When the display is blank, press any key to turn the PTX600 on. The first key-press wakes the controller and is ignored as a command.

The PTX600 does not require a manual power-off procedure. After approximately 100 seconds without a key-press, it automatically turns off to conserve battery power. When powered on again, it returns to the operating state that was active when it shut down.

Safety

WARNING: Make sure all personnel, equipment, and obstructions are clear of the target movement area before sending target commands.

WARNING: Turn target power OFF before mounting or servicing a target holder or target arm.

BASIC TARGET CONTROL

Verifying Target Operation

The bottom line of the PTX600 display should read “TARGET _RUN”. If another screen is displayed, press EXIT until the TARGET RUN screen appears.
Enter the desired target number and press FOE. The target should move to the FOE position. Press EDGE to verify movement to the EDGE position. If the target does not respond as expected, verify target power, target number, and controller communication before continuing.

Run Mode

Run Mode is the normal operating mode. With TARGET _RUN displayed, enter a target number or press ALL to address all targets. Then press FRND, EDGE, FOE, or DOWN to send the desired movement command.
On systems without a twister or bi-directional target arm, FRND, EDGE, and FOE bring the target up, while DOWN lowers the target.

Controlling Target Groups

Targets must first be assigned to groups. In Run Mode, press the RIGHT or LEFT ARROW until TARGET changes to GROUP. Enter the group number and select the desired face. Every target assigned to that group responds to the command.

9-Button Mode

For systems with nine or fewer targets, 9-Button Mode provides one-touch target control. Select 9-Button Mode from the opening menu. Pressing a number key from 1 through 9 toggles the target with the corresponding target number between its up and down states.

MENU NAVIGATION

The Menu System

From the TARGET _RUN screen, press MENU to open the menu system. An arrow appears to the left of the currently selected item.

Use the UP and DOWN ARROW keys to move through menu items. Press ENTER to open the selected item or execute a change. When changing an adjustable setting, use the LEFT ARROW to decrease the value and the RIGHT ARROW to increase it. Press EXIT to return to the previous screen.

Number Entry
Use the numeric keypad to enter target numbers and serial numbers.

If an incorrect target or serial number is entered, type over the existing entry. For example, if target 5 is displayed but target 2 is required, enter 002.

Primary Menu Functions
- 9 TARGET MODE - provides one-touch control of targets 1 through 9.
- PC COMM/SCORES - provides computer connection and hit-score functions.
- SETUP TARGETS - contacts a target and provides access to target settings.
- PROGRAMS - saves, recalls, or deletes keypad-created programs.

NOTE: The exact screens available depend on whether the PTX600 is connected to a target and which function is active.

PROGRAMS

Hold Mode
While in Run Mode, press RUN/HOLD to enter Hold Mode. An asterisk appears in the left column and RUN changes to HOLD. In Hold Mode, commands are stored in memory instead of being transmitted immediately.

Enter TARGET or GROUP commands in the same manner as Run Mode. Two additional program commands are available: PAUSE and DELAY.

- PAUSE stops program execution until the operator presses ENTER.
- DELAY stops program execution for a fixed period. When DELAY is displayed, enter a value from 1 to 240 seconds and press ENTER.

A program must begin with a TARGET or GROUP command; it cannot begin with PAUSE or DELAY. When programming is complete, press RUN/HOLD again to begin transmitting and executing the stored commands.

Saving and Recalling Programs
Programs created in Hold Mode can be saved before or after they are run. With the program displayed, press MENU, select PROGRAMS, and then select SAVE.

Up to 10 programs can be stored, with up to 125 commands per program. Saved programs are stored in nonvolatile memory and remain available when the controller battery is replaced.

Use the PROGRAMS menu to recall or delete saved programs. An existing program can be overwritten without deleting it first. After recalling a program, press RUN/HOLD to execute it.

Editing Programs

Only programs created using the PTX600 keypad can be edited directly on the controller. Computer-generated programs must be edited using the computer software.

1. Create a program in Hold Mode, or recall a previously saved program from the PROGRAMS menu.
2. With the program displayed, press the UP ARROW to enter Edit Mode.
3. The bottom line of the display will show "<--DEL INS-->". DEL means Delete and INS means Insert. The arrows indicate which key performs each function:
4. LEFT ARROW – DEL (Delete): Deletes the selected command.
5. RIGHT ARROW – INS (Insert): Inserts a new blank line above the selected command.
6. Use the UP and DOWN ARROW keys to scroll through the program and select the command you want to edit.
7. To delete a command, select it and press the LEFT ARROW (DEL).
8. To add a command, select the command where you want the new command inserted and press the RIGHT ARROW (INS). A blank line will be inserted above the selected command.
9. Enter the desired command in the new blank line.

Computer-Generated Programs

Programs containing up to 10,000 commands can be created using the optional Universal Target Controller software and optional Programming Cable, part number HM0811.

To prepare the PTX600 to receive data, select MENU > PC COMM/SCORES > PC CONNECTION. When prompted, press ENTER. The display should show SERIAL COMMUNICATION / EXIT CANCELS.

Do not leave the controller in serial communication mode for extended periods because this mode draws additional battery power. Press EXIT until TARGET _RUN is displayed when communication is complete.

TARGET SETUP

General Information

Compatible target units store configurable operating parameters in nonvolatile memory. These settings remain stored when target power is turned off. The PTX600 can be used to contact a target, view its current settings, and change supported parameters.

Contacting a Target

The PTX600 can contact a target in three ways: Learn Mode, by Serial Number, or by Target Number.

Learn Mode

Begin at the TARGET RUN screen and position yourself within reach of the target power switch.
Turn target power OFF, then press LEARN on the PTX600. The controller remains in Learn Mode for approximately 30 seconds.
Turn the target power ON. The target transmits its serial number and target number to the controller. When the numbers appear, press ENTER. After the target parameters are downloaded, the target setup menu appears.

Contact by Serial Number
From TARGET RUN, press MENU, select SETUP TARGET, then SETUP BY SER#. Enter the target serial number and press ENTER. When the serial number and target number are displayed, press ENTER again to download the target parameters.

Contact by Target Number
From TARGET RUN, press MENU, select SETUP TARGET, then SETUP BY TRG#. Enter the target number and press ENTER. When the serial number and target number are displayed, press ENTER again to download the target parameters.

Utility Menu

DATA PORT:
- Selects whether target data ports are used for control through a custom RS485 network. Available settings are NONE, Port A, Port B, or both. When the target is controlled wirelessly by the PTX600, the default setting is NONE.

LOAD DEFAULTS:
- Restores target parameters to factory defaults. After loading defaults, the target number must be reassigned.

TARGET VER:
- Displays the target firmware version.

TRGT BATT:
- Displays the target's current battery voltage if applicable. This is a controller function for viewing battery voltage; charging and battery-maintenance instructions are provided in the applicable target-system manual.

Groups
Groups allow multiple targets to respond to a single command. Each target can be assigned to up to four different groups using the GROUP A, GROUP B, GROUP C, and GROUP D settings.

Assigning a Target to a Group
1. From the TARGET RUN screen, press MENU.
2. Select SETUP TARGET and press ENTER.
3. Contact the target using SETUP BY TRG#, SETUP BY SER#, or LEARN.
4. Once the target setup menu appears, select GROUPS and press ENTER.
5. Select GROUP A.
6. Use the LEFT or RIGHT ARROW to select the desired group number.
7. Press ENTER to save the group assignment.
8. If the target needs to belong to additional groups, repeat the process using GROUP B, GROUP C, or GROUP D.
9. Press EXIT until the TARGET RUN screen is displayed.

Repeat this procedure for each target that will be included in the group.

Example: To place Targets 1 through 5 in Group 1, contact each target individually and assign GROUP A = 1. Once all five targets have been assigned, a command sent to Group 1 will operate all five targets simultaneously. Each target can still be controlled individually using its assigned target number.

A target can also belong to multiple groups. For example, a target could be assigned GROUP A = 1 and GROUP B = 3, allowing it to respond to commands sent to either Group 1 or Group 3.

Target Speed

- The TRGT SPEED setting selects target motion speed. HIGH operates at 100% motor speed; LOW operates at 75%.

HIT-SENSING CONTROL (If Equipped)

The PTX600 can configure and manage the hit-sensing functions of compatible Range Systems targets. Physical hit-sensor installation and target-system specifications are covered in the applicable target manual.

Activating Hit Sensing

Contact the target, select HIT SETTINGS, and press ENTER. Use the LEFT or RIGHT ARROW to select BOB or DIE mode, then press ENTER. HIT SENSE and HIT COUNT can then be adjusted as required.

BOB Mode

When the programmed hit count is reached while the target is presented, the target moves to its configured die face and immediately returns to the current face, providing an immediate visual indication.

DIE Mode

When the programmed hit count is reached, the target moves to its configured die face and remains there until another target command is sent.

Hit Sensitivity

HIT SENSE determines the impact level required to register a hit. The adjustable range is 1 through 20. Lower values are more sensitive. The factory default is 3.

Hit Count

HIT COUNT can be set from 1 through 20. This setting determines how many detected hits are required before a BOB or DIE action occurs. The active count resets when the target is cycled down and back up.

Hit Score

Hit Score is accumulated in the target until target power is turned off or the score is cleared by the controller. A target can store up to 225 hits.

EXAMPLE SETUP PROCEDURES

Turn On Hit Sensing in DIE Mode

1. Make sure the target is powered ON.
2. Press MENU.
3. Select SETUP TARGET and press ENTER.
4. Select SETUP BY TRG# and press ENTER.
5. Enter the target number and press ENTER.
6. After contact is made, press ENTER.
7. Select HIT SETTINGS and press ENTER.
8. With HIT MODE selected, use the RIGHT ARROW until DIE is displayed, then press ENTER.
9. Select HIT CNT and use the LEFT or RIGHT ARROW to set the desired number of hits.
10. Press EXIT until the controller returns to the TARGET RUN screen.

Restore Factory Default Settings

1. Contact the target using the Target Setup procedure.
2. Select UTILITY MENU and press ENTER.
3. Select LOAD DEFAULTS and press ENTER.
4. The target number is now unassigned and must be set before normal target-number control can be used.
5. Press EXIT to return to the Target Setup menu.
6. Select TARGET CONTROL and press ENTER.
7. Select TARGET NUMBER, enter the desired target number, and press ENTER.
8. Press EXIT until TARGET _RUN is displayed.

FACTORY DEFAULTS AND OPTION RANGES

OPTION	FACTORY DEFAULT	RANGE
Hit Count Sensitivity	3	1 lowest - 20 highest
Hit Mode	OFF	Off, BOB, DIE
Hits to Die	1	1-20
Hit Position	NORMAL	Normal, Reverse, Non-Edge
Die Face	DOWN	Down, Edge, Foe, Friend
Target Number	0	0 = Unassigned; 1-200
Target Speed	HIGH	Low, High
Data Port	NONE	None, Port A, Port B, Both
Group Member A	0	0 = No Group; 1-30
Group Member B	0	0 = No Group; 1-30
Group Member C	0	0 = No Group; 1-30
Group Member D	0	0 = No Group; 1-30

GLOSSARY

9-BUTTON
- One-touch control mode for nine or fewer targets. Targets numbered 1-9 toggle position when the corresponding number key is pressed.

ALL
- Movement command addressing every powered target, regardless of target number.

BOB
- Hit response that moves the target to the DIE FACE and immediately returns it to the current face.

DELAY
- Program command that pauses execution for a fixed length of time.

DIE
- Hit response that moves the target to the DIE FACE and holds that position until another command is received.

DIE FACE
- The face used when a target performs a DIE or BOB action.

DOWN
- Command that moves the target to its down position.

EDGE
- Command that presents the edge of the target.

FOE
- Command that presents an opposition face.

FRND (Friend)
- Command that presents a friendly face.

GROUP
- A set of targets sharing a group number. A target can belong to as many as four groups; group numbers range from 1 to 30.

HIT SCORES
- Accumulated valid hits stored by the target, up to 225, until target power is removed or scores are cleared.

HIT SENSITIVITY
- Setting that determines the impact level required to trigger the hit sensor. Lower values are more sensitive.

HITS TO DIE
- Number of hits required to trigger a DIE or BOB action.

HIT POSITION
- Defines the target orientation in which hit sensing and movement behavior are active: Normal, Reverse, or Non-Edge.

HIT SENSOR
- Thin-film sensor used by compatible targets to detect impact vibration.

HIT MODE
- Determines whether hit sensing is OFF or operates in BOB or DIE mode.

LEARN
- Controller function used to retrieve a target's serial number and target number when the target is powered on while the controller is in Learn Mode.

LOAD DEFAULTS
- Restores factory settings in the contacted target.

PAUSE
- Program command that stops execution until the operator restarts it.

RUN/HOLD
- Controller key used to switch between immediate command transmission and stored-command programming.

SERIAL NUMBER
- Unique, non-changeable number assigned to each target base unit.

TRGT BATT
- Displays target battery voltage.

TARGET NUMBER
- User-defined target address. Valid assigned target numbers range from 1 to 200; 0indicates unassigned.

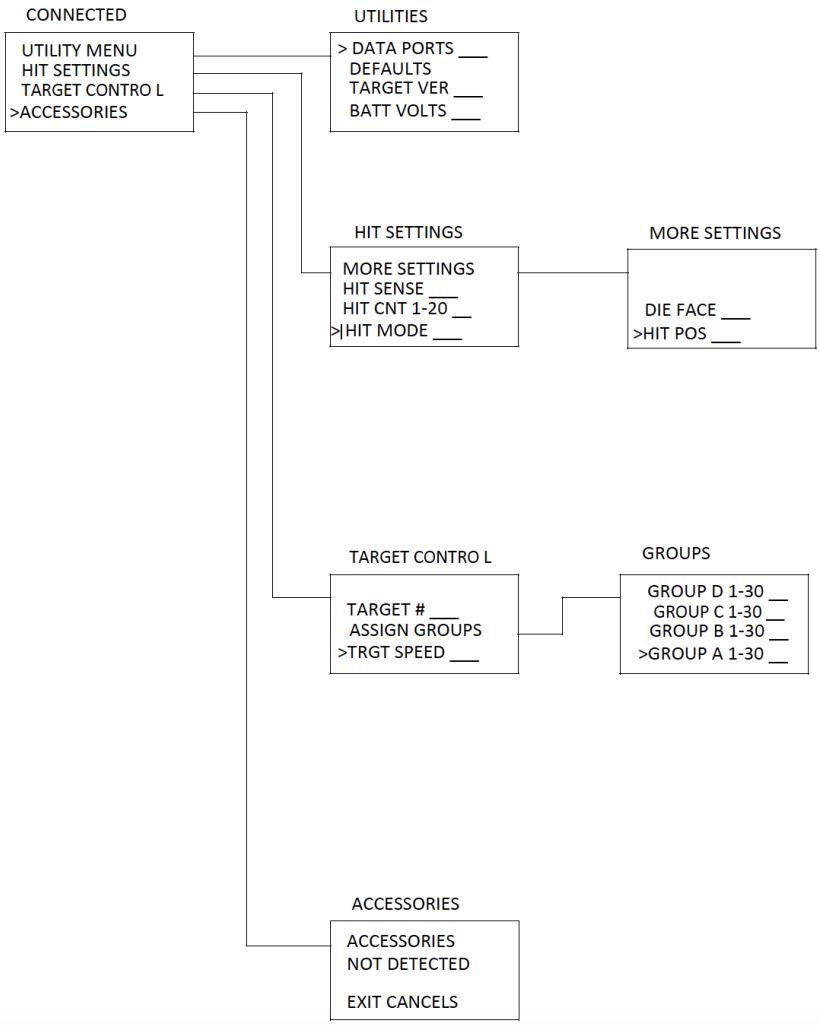
TARGET SPEED
- Target movement speed: HIGH = 100%; LOW = 75%.

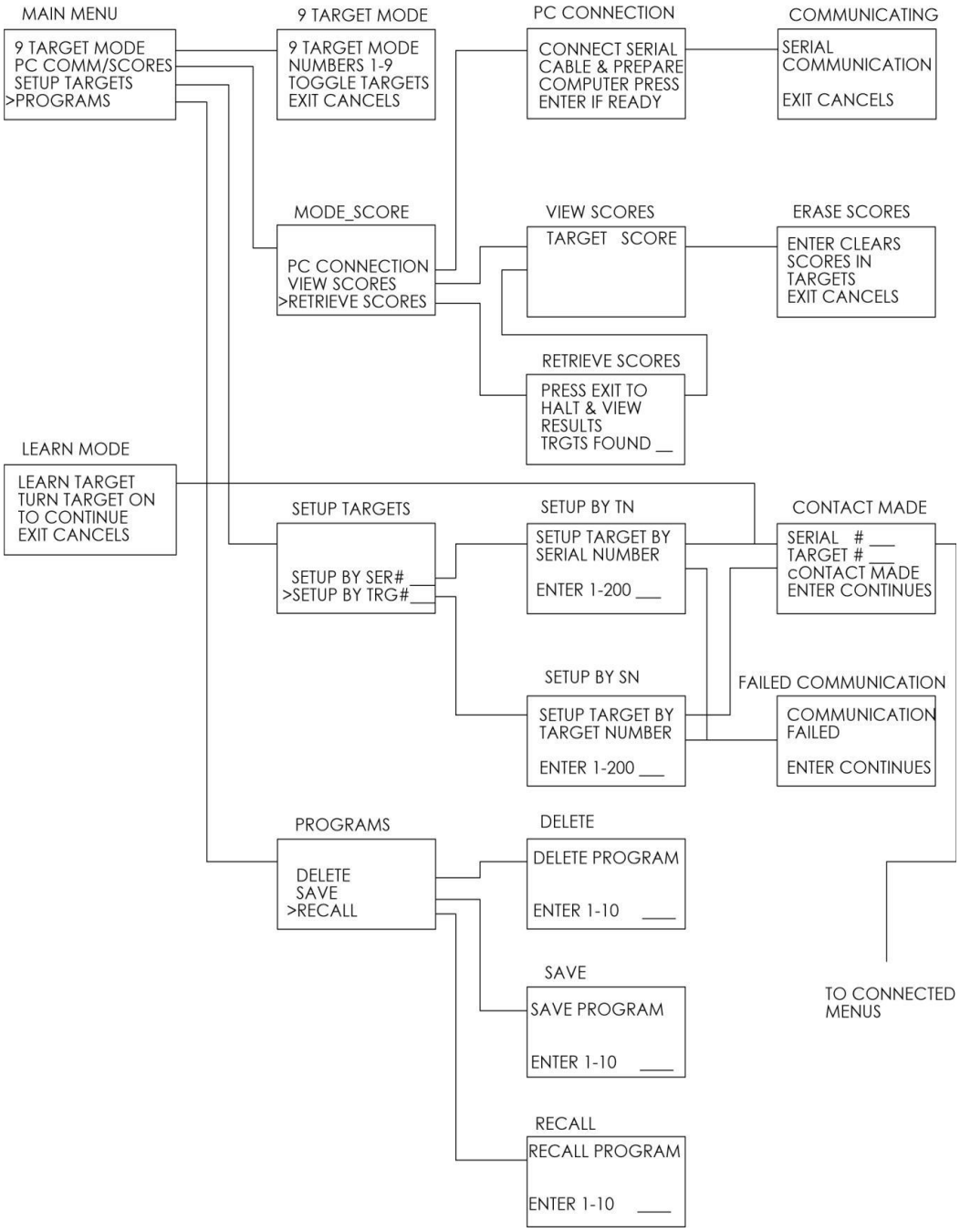
TARGET VERSION
- Firmware version installed in the target control board.

TWISTER
- Optional arm that rotates 180 degrees to present FRND, EDGE, and FOE faces.

PTX200/600/2000 MENU TREE

CONNECTED TO TARGET




MAIN MENU
9 TARGET MODE
PC COMM/SCORES
SETUP TARGETS
>PROGRAMS
9 TARGET MODE
9 TARGET MODE
NUMBERS 1-9
TOGGLE TARGETS
EXIT CANCELS
PC CONNECTION
CONNECT SERIAL
CABLE & PREPARE
COMPUTER PRESS
ENTER IF READY
COMMUNICATING
SERIAL
COMMUNICATION
EXIT CANCELS
MODE_SCORE
PC CONNECTION
VIEW SCORES
>RETRIEVE SCORES
VIEW SCORES
TARGET SCORE
ERASE SCORES
ENTER CLEARS
SCORES IN
TARGETS
EXIT CANCELS
RETRIEVE SCORES
PRESS EXIT TO
HALT & VIEW
RESULTS
TRGTS FOUND __
LEARN MODE
LEARN TARGET
TURN TARGET ON
TO CONTINUE
EXIT CANCELS
SETUP TARGETS
SETUP BY SER#
>SETUP BY TRG#__
SETUP BY TN
SETUP TARGET BY
SERIAL NUMBER
ENTER 1-200 ___
CONTACT MADE
SERIAL # ___
TARGET # ___
cONTACT MADE
ENTER CONTINUES
SETUP BY SN
SETUP TARGET BY
TARGET NUMBER
ENTER 1-200 ___
FAILED COMMUNICATION
COMMUNICATION
FAILED
ENTER CONTINUES
PROGRAMS
DELETE
SAVE
>RECALL
DELETE
DELETE PROGRAM
ENTER 1-10 ____
SAVE
SAVE PROGRAM
ENTER 1-10 ____
RECALL
RECALL PROGRAM
ENTER 1-10 ____
TO CONNECTED
MENUS