Model: *Time Machine TX*

Features Of The *Track/Cross-Country Timer :*

Physical features:
- Independent, high precision crystal controlled timebase circuit.
- Small and lightweight with high impact ABS molded plastic enclosure.
- Portable - operated by rechargeable battery.
- 18-key full size keyboard. Full travel keys with tactile feedback.
- 2 line, 32 character LCD alphanumeric display.
- 28 column thermal printer, 1 line/sec print rate.
- 10 timing lane inputs plus an additional select timing lane input.
- Start input, start output, RS232 data, external clock and battery charge ports.
- Battery charge indicator light.
- Two year full warranty - parts and labor.
- Standard accessories include:
  - Battery charger.
  - 9-pin and 25-pin RS232 adapters with 14 foot cable.
  - Multilane adapter (depending on configuration).
  - Carrying case.
  - Up to10 gripswitches (depending on configuration).
  - Two rolls of thermal paper (6400 lines per roll).
  - Instruction manual.

User friendly:
- Easy to use menu driven operation.
- A list of all set-up information and parameters can be printed out.
- Provides warning tone and messages for operator errors and status reports.
- Easy setup procedures. Intelligent system minimizes required inputs from operator.

Memory:
- Stores over 8000 times (and select times in cross-country mode).
- Nonvolatile memory - data can not be lost.
- All set-up information is retained during powerdown & restored at powerup.
- Setup parameters are permanently stored until changed by the operator.
- Dual redundancy backup circuit to assure data retention.
- Displays memory status (amount used & amount available).
- Asserts warning for memory almost full (< 50 available) and memory full.
- Continues printing and transmitting data even if memory becomes full.
- Fool proof method for clearing memory to avoid doing it accidentally.
- Can delete data from either last heat or last event that was entered.
- Can edit BIB# data entered in the cross country mode.

Features Of Time Machine TX (continued):
(Track/Cross-Country Timer)

Multiple Timing modes:
- Provides **3** different modes of operation:
- Stores up to **255** separate events.
- Displays timing mode, event#, and heat# when time clock is reset.

1. **Cross Country (or Road Running) :**
   - Supports cross country timing of up to 99 teams.
     - Can enter, modify or delete team Bib# data
     - Automatically scores cross country meet:
       - Can utilize standardized scoring methods
       - Can utilize user-defined scoring method
   - Provides two different methods of performing Select Timing.
   - Allows 5 digit BIB# inputs including three alpha characters (WMX).
   - Provides ability to merge time data from a selected chute with the BIB#s.
   - Allows complete editing of data to insert, delete or change BIB#s or times.
   - Provides finish places for up to 99,999 finishers.
   - Can preset the time clock to any value between 0.00 and 31:59:59.00 (this also supports "time of day" timing).
   - Selectable up or down count.
   - Allows multiple starts (wave starting) for up to nine independant starts.

2. **Lap Timing/Training:**
   - Used for general purpose "lap timed" events (auto, boat, bicycle, etc).
   - Stores and displays both split times and lap times.
   - Provides lap counter for up to 30 laps (rolls over to "0" upon overflowing).
   - Supports Heats - up to 99 heats per event.
   - Supports up to 3 grip switch inputs per lane.
   - Used to acquire a "computerized" profile of the athletes progress.
   - Allows all timing inputs to be entered from the keyboard, eliminating the need to use multiple grip switches for timing several athletes during training sessions.

3. **Track Meet:**
   - Supports up to 3 grip switch inputs per lane without need for special cable.
   - Automatic increment of heat numbers.
   - Can start timer from remote location over 100 yds away.
   - Optional printout of split times along with lap times for lap timed events or finish times with place numbers for "sprint" events.
   - Supports Heats - up to 99 heats per event.

Features Of Time Machine TX (continued):
(Track/Cross-Country Timer)

Recalling data:
- All recalled data is displayed on the LCD and printed if printer is on.
- Any data may be recalled at any time, even while an event is being timed.
- Can recall event list showing events stored in memory, number of times in the event and the timing mode of the event.

1. **Cross Country:**

    - Can recall team Bib# information.
    - Can recall team scores and rank.
    - Can recall times in time order starting at any given time or place#.
    - Can recall times in lane# order starting at any given time or place#.
    - Can recall select-times independently, including BIB# and place#.
    - Can search for a specific time in memory.
    - Can search for a specific BIB# (race#) with its associated select-time and place#.
    - Can specify event# (or "all" events) and lane# (or "all" lanes) from which data is to be recalled.

2. **Lap Timing/Training:**

    - Provides official finish results based on multiple inputs per lane.
        - Chooses middle time for 3 inputs.
        - Averages times for 2 inputs.
    - Provides individual heat results or overall event results (rankings based on all heats of a given event).
    - Can recall actual times entered (raw data) in time order starting at any given time.
    - Can recall actual times entered (raw data) in lane# order starting at any given time.

Features Of Time Machine TX (continued):
(Track/Cross-Country Timer)

3. **Track Meet:**

- Provides finish results based on official rules:
    - NCAA, NF, FINA, etc.
- Truncates 1/100 second off time and rounds up to provide 1/10 second precision (based on Manual Timing rules).
- Provides finish results from multiple inputs per lane:
    - Chooses middle time for 3 grip switch inputs.
    - Chooses slower time for 2 grip switch inputs.
- Can detect automatic start/finish transducers
- Provides individual heat results for "Last Heat" or "All Heats".
- Provides "Overall Event" results based on all heats of a given event.
- Provides "Event Seeding" results with rankings based on the number of qualifiers per heat:
    - Operator simply enters the number of qualifiers per heat along with the "extra" times required to fill vacant positions.
    - This feature is used to easily identify the athletes who will compete in semifinal or final heats of a given event. It makes "forming heats" a simple process.
    - Additional results are provided for seeding vacant competition slots. These results are drawn from the remaining lot (unrecalled finishes) and the number required is input by the operator.
- Can recall actual times entered (raw data) in time order.
- Can recall actual times entered (raw data) in lane# order.

Features Of Time Machine TX (continued):
(Track/Cross-Country Timer)

Computer interface:
- Is supported by popular race scoring programs.
- Selectable transmission of data to computer by lane# or event#.
- Retransmit data to computer starting at any given time or specified place#.
- RS232 compatible serial interface; baud rate selectable from 1200-9600, parity selectable for odd, even or none, 7 or 8 bit data word.
    - Setups are permanently saved until changed by operator.
    - Outputs in standard ASCII format. Output is compatible with standard communication programs (such as Procomm) and can be imported to standard spreadsheet programs (such as Excel).
    - Provides both software XON/XOFF and hardware handshake data flow control. Also provides an XOFF "time out" feature.
    - Can display a "status window" during transfers showing data count, XON status, and Handshake status - available for monitoring & troubleshooting.
- Can be remotely controlled by a computer. Host computer can send commands to:
    - Set the time clock, start it counting up or down and stop it.
    - Retransmit data specifying a starting time and which data in memory should be transmitted.
    - Halt retransmission of data.
    - Change the current event number and/or heat number.

Other interfaces:
- Provides an external clock interface to send time clock data out serially.
    - Can preset the time, start or stop the external display clock.
- Time clock can be started by an independent external starting system.
- Provides start pulse output to drive a starting horn or any other peripheral.

Special features:
- **Set-Up Parameters –** A list of all current Set-Up information can be printed out. All setups are saved when powered down.
- **Programmable lane numbers -** All grip switch inputs can easily be programmed to any lane number between 1 and 99.
- **Function key lockout -** To help prevent keystroke errors, the function keys are "locked out" when time clock is running. Keys can be "unlocked" by pressing CLEAR key within 2 seconds prior to pressing one of the function keys.
- **Synchronizing multiple timers -** Can start and synchronize the clock on another Time Machine by making a 5 second connection between them.
- **Performs self diagnosis -** Identifies and reports potential problems and failures.
- **Standard cabling -** Can use standard readily available telephone cables and extensions. Gripswitch cables may be extended several hundred feet.
- **Allows several printout choices -** User has several options available in selecting which data is to be printed and how it will be formatted. Can also start and stop printer at any time, it will always continue where it left off when started.
- **Jammed printer detection -** Detects a "jammed" printer condition and provides warning message. When jammed, the printing is temporarily put on hold until fixed and then continues where it left off. Any data may be reprinted at any time.

Features Of Time Machine TX (continued):
(Track/Cross-Country Timer)

Power system:
- Uses rechargeable sealed lead-acid battery for more predictable performance.
- Battery will last 20+ hours with printer off and 4-5 hours with continuous printing.
- Printer will automatically be disabled when battery is too low, allowing timer to continue functioning for at least 2 hours more.
- Warning is asserted when battery becomes low.
- Battery level can be viewed at any time from a "panel meter" display.
- Battery charge light indicates when battery is fully charged and if there is a problem with the battery or charger.
- May be used while charger is plugged in to allow unlimited operation of timing and printing functions.

Specifications

Model: *Time Machine TX*

Dimensions & Weight:
10" wide x 6.5" deep x 2.5" high; 2.5 lbs.

Construction:
Enclosed in high impact ABS molded plastic.

Time Base:
Accuracy: +/- 0.0002% (+/- 0.17 sec/24hrs at 70 deg F).
Stability: +/- 0.003% (+/- 2.6 sec/24hrs from -4 deg F to +158 deg F).
Resolution: 1/100th of a second.

Parameter Ranges:

Time clock:	31hours, 59 minutes, 59.99 seconds - cross country mode.
	7 hours, 59 minutes, 59.99 seconds - all other modes.
Lap Times:	31 minutes, 59.99 seconds.
Events:	1 to 255.
Heats:	1 to 99 per event.
Programmable Lane#:	1 to 99.
Race# (BIB#):	1 to 99,999 as well as "W", "M" or "X" alpha characters.
Lap#:	1 to 30 (rolls over upon overflowing).
Memory Capacity:	8051 Primary Times or Select Times - cross country mode.
	8051 Split Times or Finishes + 8051 Lap Times - all other modes.

Display:
32 character, 2 line alphanumeric Liquid Crystal Display, tilted at a 20 deg angle for easy viewing. Contrast adjustment is provided.

Keyboard:
18-button full-size keyboard utilizing full travel "computer style" keys with tactile feedback.

Printer:
28 column thermal printer with 1 line/second print rate; thermal paper required, 6400 lines/roll. Separate printer on/off switch is provided along with a paper advance button.

Input/Output Ports:
Battery charger input, dual colored charge indicator light, start input, start output, full duplex RS232 input/output, display clock output and 10-lane multilane input.