DC-Digital Network/RS-232/RS-485 Clock/Up Timer/Down Timer/Static Control Protocol
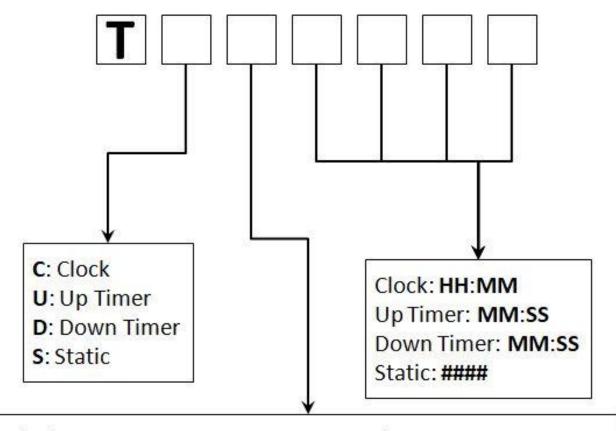
For products where the control mechanism and DC-Digital display product are connected by a Local Area Network, the control can send a command string as a datagram payload of 9 bytes using TCP or UDP to the display IP address and port 23. For products where the control mechanism and DC-Digital display product are connected by a serial cable, the control can send a command string of 9 bytes. The display evaluates the command string as a single field with no delimiters, start bytes or stop bytes, responding only to valid command strings, outlined in the table below with byte values in ASCII. The command string will set the **Function** of the display and **Mode of Operation** as well as provide a **Set Value** and select by **Broadcast Group** and **Channel** which display, or group of displays should respond to the command string.

1st byte	2nd byte	Function	3rd byte	Mode of Operation	4th and 5th byte	6th and 7th byte	8th byte	9th byte
T	C	Time-of-day Clock	0	12-hour, PM	Hours 01-12	Minutes 00-59	**This byte is only required for displays that are addressed** **Broadcast Group A-Z** *** is wildcard for All Groups**	**This byte is only required for displays that are addressed** **Broadcast Channel A-Z** *** is wildcard for All Channels**
			1	12-hour, AM				
			2	24-hour format	0-23			
	U	Count Up Timer	0	Set and Hold Value	Minutes 00-59	Seconds 00-59		
			1	Set and Start Timer				
			2	Pause Timer	Any 4 bytes may be sent.			
			3	Resume Timer				
	D	Count Down Timer	0	Set and Hold Value	Minutes 00-99	Seconds 00-99		
			1	Set and Start Timer without Any End of Period (EOP) Indication				
			2	Pause Timer	Any 4 bytes may be sent.			
			3	Resume Timer				
			4	Set & Start Timer with 3-Second Buzzer and/or Flashing Light at EOP	Minutes 00-99	Seconds 0-99		
			5	Set and Start Timer and Flash Display at EOP				
	S	Static Number Display	0	Number	Digits Left to Right 0-9 : = blank digit			
			1	Numbers with Colon				
			2	Numbers with Decimal				

Examples:

1. `TC01234AB` will set the display in Broadcast Group A and Channel B to function as a Time-of-Day Clock, which will increment in real time, displaying the current time, in 12-hour mode (leading zero is blank) and starting with the time 12:34. Seconds are set to 0. While this is considered p.m., the display makes no distinction between a.m. and p.m.

2. `TC20800**` will set all displays to function as a Time-of-Day Clock, in 24-hour mode (leading zero is shown) and starting with the time 08:00. Seconds are set to 0.

3. `TU10000BA` will set the display in Broadcast Group B and Channel A to function as a Count Up Timer, displaying minutes and seconds as time elapses in real time, up to 59 minutes and 59 seconds (it will roll over and continue counting if left alone) and starting with the time 00:00. An LED dot in the upper left will light while the display is functioning as a Count Up Timer.

4. `TU2xxxx**` will pause all displays that are currently functioning as Count Up Timers. Displays functioning as Time-of-Day Clocks, Count Down Timers and Static Number Displays will not respond. Count Up Timers that are paused will retain the

current elapsed time down to the hundredths of a second. A resume command (`TU3...`) may be issued to start from this value. The timer will continue to display the paused time in minutes and seconds.

5. `TD01234A*` will set all displays in Broadcast Group A to function as a Count Down Timer, displaying a Set Value of 12 minutes and 34 seconds. The timer will remain at `12:34`. A resume command (`TD3...`) may be issued to start from this value. An LED dot in the lower right will light while the display is functioning as a Count Down Timer.

6. `TD18000*A` will set all displays on Channel A in all Broadcast Groups to function as Count Down Timers, displaying minutes and seconds as time remains in real time and starting with the time `80:00`. The timer will remain at `00:00` when 0 minutes and 0 seconds remain. There will be no "End of Period" indication even if the timer is paused and resumed.

7. `TD41000**` will set all displays with the optional hardware to function as Count Down Timers with End of Period (EOP) indication. Displaying minutes and seconds as time remains in real time and starting with the time `10:00`. The timer will remain at 00:00 when 0 minutes and 0 seconds remain. The buzzer will sound for 3 seconds and/or the Light will blink until another command is received. If set using this command, the EOP behavior will remain from set even if the timer is paused and resumed.

8. `TD505000*` will set all the displays in Broadcast Group B to function as a Count Down Timer with the display flashing at End of Period (EOP). The display will show steady minutes and seconds as time remains in real time and starting with the time 05:00. The timer will flash 00:00 when 0 minutes and 0 seconds remain. If started with this command, the EOP behavior will remain from set, even if the timer is paused and resumed.

9. `TS01234AA` will set the display in Broadcast Group A and Channel A to function as a Static Number Display, showing `1234` on the display. The display will remain at this value.

10. `TS2:500AA` will set the display in Broadcast Group A and Channel A to function as a Static Number Display. Showing `5.00` on the display. The left-most digit is blank. The display will remain at this value.

T						

C: Clock
U: Up Timer
D: Down Timer
S: Static

Clock: **HH:MM**
Up Timer: **MM:SS**
Down Timer: **MM:SS**
Static: **####**

Clock
- **0**: PM
- **1**: AM
- **2**: 24-hour

Up Timer
- **0**: Set and Hold
- **1**: Set and Start
- **2**: Pause
- **3**: Resume

Down Timer
- **0**: Set and Hold
- **1**: Set & Start W/o EoP
- **2**: Pause
- **3**: Resume
- **4**: Set & Start W/EoP
- **5**: Set & Start W/Flashing

Static
- **0**: No Colon
- **1**: Colon
- **2**: Middle Decimal