DC-Digital Network Multifunction Display Clock/Up Timer/Down Timer/Static Control Protocol

With the control mechanism and DC-Digital display product 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 XX (Port 23 default). 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 <u>byte values in ASCII</u>. 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	Broadcast Group A−Z * is wildcard for All Groups	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				
			2	Pause Timer	Any 4 bytes may be sent.			
			3	Resume Timer				
	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.
7. `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.
8. `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.

ASCII	Dec	Hex	Bin	Oct
*	42	2A	00101010	052
0	48	30	00110000	060
1	49	31	00110001	061
2	50	32	00110010	062
3	51	33	00110011	063
4	52	34	00110100	064
5	53	35	00110101	065
6	54	36	00110110	066
7	55	37	00110111	067
8	56	38	00111000	070
9	57	39	00111001	071
:	58	3A	00111010	072
A	65	41	01000001	101
B	66	42	01000010	102
C	67	43	01000011	103
D	68	44	01000100	104
E	69	45	01000101	105
F	70	46	01000110	106
G	71	47	01000111	107
H	72	48	01001000	110
I	73	49	01001001	111
J	74	4A	01001010	112
K	75	4B	01001011	113
L	76	4C	01001100	114
M	77	4D	01001101	115
N	78	4E	01001110	116
O	79	4F	01001111	117
P	80	50	01010000	120
Q	81	51	01010001	121
R	82	52	01010010	122
S	83	53	01010011	123
T	84	54	01010100	124
U	85	55	01010101	125
V	86	56	01010110	126
W	87	57	01010111	127
X	88	58	01011000	130
Y	89	59	01011001	131
Z	90	5A	01011010	132

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 and Start
    2: Pause
    3: Resume
Static
    0: No Colon
    1: Colon
    2: Middle Decimal