

# C7216

## 8 Digit LED Counter

An extremely versatile five-function module with high efficiency LEDs and a red filter. The module can measure frequency from 1 Hz to 10 MHz, period from 400ns to 10s, time intervals from 250ns to 10s, frequency ratio, or just act as a counter. The highly stable quartz crystal oscillator allows a frequency resolution down to 0.1Hz, and a time resolution down to 0.1µS.

- 🕒 10mm (0.4") Digit Height
- 🕒 DIN Cased
- 🕒 Five Operating Modes
- 🕒 Hold & Reset Inputs
- 🕒 Leading Zero Blanking
- 🕒 Quartz Crystal 10MHz Time Base



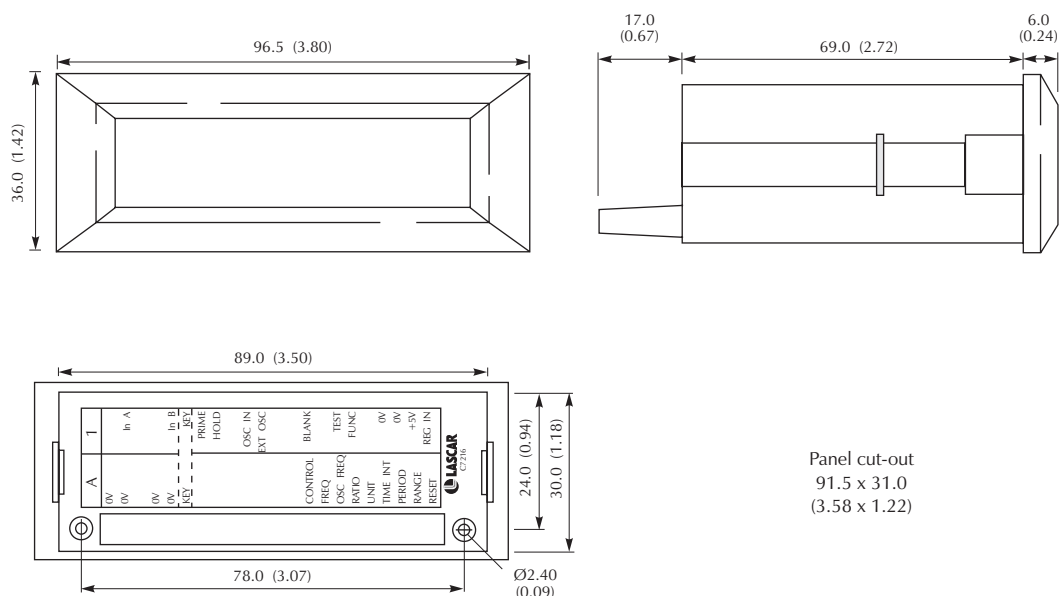
Specification	Min.	Typ.	Max.	Unit
Maximum count			9999999	counts
Accuracy ( $\pm 1$ count) timebase at 20°C		0.5	2	ppm
Display multiplex frequency		500		Hz
Display update time (Ex U/C Mode)	0.2	Function/Range Dependent		sec
Temperature stability of timebase over full temperature range		100		ppm
Operating temperature range			50	°C
Supply voltage	4.75	5	5.5	V
Supply current		100		mA
Supply current with display blanked		35	50	mA
Sensitivity - minimum signal amplitude		200		mV pk to pk
Maximum input signal level swing			10	V
Input impedance $f > 10\text{KHz}$		600		$\Omega$
Maximum frequency input A - Frequency mode		10		MHz
Maximum frequency input A - Period and Time Interval mode	2.5			MHz
Maximum frequency input B	2.5			MHz
Minimum pulse separation A to B in Time Int mode	250			nS

## CONNECTOR SOURCING GUIDE

METHOD

Edge Connector - Lascar Stock No. EC 24 DS

### DIMENSIONS All dimensions in mm (inches)



## PIN FUNCTIONS

Taking any input beyond the power supply rails may result in device damage. All unspecified pins have no connection. All 0V pins are interconnected on the module Printed Circuit Board, so there is no need to externally common every 0V connection to the module.

C,D,E,G, 0V	Power supply ground.
H. KEY	Keyway slot in PCB (corresponds to pin 8) to allow correct alignment of edge connector.
R. CONTROL	Control - see pins 13,16, and 18 for details.
S, T, U, V, W, X, Y	Mode/Resolution Select pins - see table
Z. RESET	Connect this pin to ground (0V) to reset the counter.
4. IN A	Input Channel A. This is the main count input. The unit increments on a positive transition. The input is processed as described in the table. Careful triggering level adjustment is required for frequencies approaching 10MHz as the module frequency response begins to tail off.
7. IN B	Input channel B. Secondary count input, used for Frequency Ratio and Time Interval modes only. As for channel A, careful triggering is needed at high frequencies.
8. KEY	Keyway slot in PCB (corresponds to pin H) to allow correct alignment of edge connector.
9. PRIME	Connect to ground (0V) for at least 1ms to prime the module for event measurement when in time interval mode. Failure to prime the module will cause alternate time intervals to be ignored.
10. HOLD	Take this pin high to hold the display. If in Unit Counter mode, subsequent pulses will be counted, and the display will be updated when the Hold pin is allowed to return to 0V. In all other modes, operation of the module is halted, and measurements resume as soon as Hold returns to 0V.
12. OSC IN	This input is for use with an external oscillator, of frequency 10MHz, and of amplitude such that the input to this pin is never taken beyond the power supply rails. If this external oscillator option is used, CONTROL (pin R) should be connected to EXT OSC (pin 13).
13. EXT OSC	Connect to CONTROL (pin R) if an external oscillator is used - see previous pin description.
16. BLANK	Connect to CONTROL (pin R), while activating HOLD, to blank the display. The module will behave as described under the HOLD function heading, though the display will be blanked.
18. TEST	Connect to CONTROL (pin R) to force the display into test mode. This is where all segments are lit (except the most significant decimal point).
19. FUNC	Selects operating mode of the C7216 - See table below
21, 22. 0V	Power supply ground.
23. +5V IN	Power supply positive input.
24. REG IN	Alternative unregulated power supply input suitable for levels from 7.5V to 15V (in normal ambient temperature conditions), for use where no convenient 5V supply exists. The unregulated input should be smoothed, because voltage spikes can adversely affect the modules operation, particularly when operating in conditions approaching the maximum specified performance parameters. If this power supply option is exercised, the +5V input may be used as an output to power additional logic, although no more than 20-30mA of current should be drawn from this pin.

CONNECT FUNC (Pin 19) To Pin...	MODE	DESCRIPTION	CONNECT RANGE (Pin Y) To Pin...	RESOLUTION
FREQ (Pin S)	Frequency	Measures frequency of signal applied to Channel A (Pin 4). Measurement range 10MHz to 1Hz	S U T V	100Hz 10Hz 1Hz 0.1Hz
OSC FREQ (Pin T)	Oscillator Frequency	Measures the frequency of the counter's internal oscillator Measurement range 10MHz to 1Hz	S U T V	100Hz 10Hz 1Hz 0.1Hz
RATIO (Pin U)	Frequency Ratio	Measures the ratio of frequencies $F_a/F_b$ on Channels A (Pin 4) and B (Pin 7) respectively. $F_a$ should be greater than $F_b$ .	S U T V	$F_a/F_b$ $F_a/10F_b$ $F_a/100F_b$ $F_a/1000F_b$
UNIT (Pin V)	Unit Count	Module acts as a counter. Maximum count 99 999 999.	N/A	N/A
TIME INT (Pin W)	Time Interval	Measures the time interval between two pulses on Channels A and B. Channel A pulse must precede Channel B pulse, and the module must be primed (see Pin 9). Measurement range 10ns to 250ns.	S U T V	100ns 10ns 1ns 0.1ns
PERIOD (Pin X)	Period	Measures the period of the signal on Channel A (Pin 4). Measurement range 10s to 400ns (0.1Hz to 2.5MHz). The resolution settings 100ns, 10ns, 1ns, 0.1ns cause the module to take the average of 1, 10, 100, 1000 cycles of the input signal, respectively.	S U T V	100ns 10ns 1ns 0.1ns