

LCD FREQUENCY COUNTER MODULE

FEATURES:

- 5 digit display, 0.35 in. (9mm) digit height
- 26 selectable IF offsets
- AM (MW/LW): 6 frequencies
- SW : 4 frequencies
- FM : 16 frequencies
- Zero offset for ordinary frequency counter
- MW, SW, FM, KHz and MHz annunciators
- CMOS and LCD ideal for low power applications
- Prescaler for SW and FM operation available
- Incandescent backlight

GENERAL DESCRIPTION

The PC177 is a liquid crystal display radio frequency counter. All active components, crystal oscillator and LCD are contained within the module.

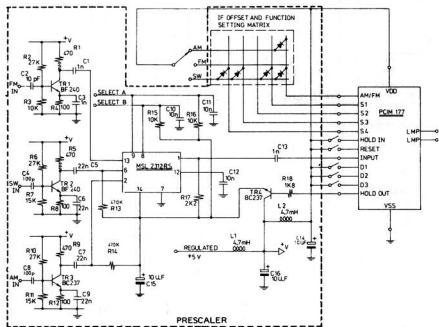
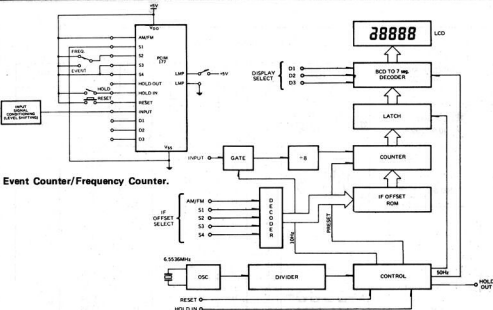
26 radio intermediate frequency offsets are selectable for use throughout the world. A zero offset is selectable for ordinary frequency counter application.

APPLICATIONS

- Digital frequency readout for radio/ TV etc
- Frequency counter
- Event counter



FC177 Block Diagram



OPERATING SPECIFICATIONS

Absolute maximum rating (referenced to V_{SS})

Item	Symbol	Condition	Rating	Unit
Power supply voltage	V _{DD}	T _a = 25°C	-0.3 to 7	V
Input voltage	V _I	T _a = 25°C	-0.3 to V _{DD}	V
Storage temperature	T _{stg}	—	-10 to 60	°C

Operating range

Item	Symbol	Condition	Rating	Unit
Power supply voltage	V _{DD}	—	4.75 to 7	V
Operating temperature	Top	—	0 to 50	°C

DC characteristics (V_{DD} = 5V ± 5%, T_a = 0 to 50°C)

Item	Symbol	Condition	MIN	TYP	MAX	Unit
High input voltage	V _{IH}	—	3.6	—	—	V
Low input voltage	V _{IL}	—	—	—	0.8	V
Holdout output high	V _{OH}	I _O = -40μA	4.2	—	—	V
Holdout output low	V _{OL}	I _O = 1.6mA	—	—	0.4	V
Holdout output current	I _{OH} /I _{OL}	V _O = 2.5V/V _O = 0.4V	-0.2/1.6	—	—	mA
Dynamic current consumption	I _{DD}	f = 6.5536MHz, no load	—	—	4	mA

Maximum operating frequency (V_{DD} = 5V ± 5%, T_a = 0 to 50°C)

Maximum operating frequency (V _{DD} = 3.3V, I _A = 0 to 50 mA)						
Item	Symbol		MIN	TYP	MAX	Unit
INPUT	f(IN)	V _I = 1Vp-p Capacitor Coupling	—	—	5	MHz

DEFINITION OF TERMINALS

V_{DD} Positive voltage to module.

V_{SS} Negative voltage to module.

INPUT Input from the local oscillator of a radio. No prescaler is required for LW or MW. An external 1 to 10 and 1 to 100 prescaler is required for SW and FM respectively. Capacitor coupling is required if the input is 3.6 volts peak to peak or less for V_{DD} = 5 volts.

AM/FM, S1, S2, S3, S4 (Internal resistor pulldown to V_{SS})

Inputs for selecting the operating mode and IF offset, see Table 1.

D1, D2, D3 (Internal resistor pulldown to V_{SS})

Inputs for selecting the display format, see Table 2.

HOLD IN (Internal resistor pulldown to V_{SS})

When at V_{SS} or open, the display follows the INPUT. When connected to V_{DD}, the display is fixed within 300ms and ignores the INPUT.

HOLD OUT

This output is used to reduce power consumption of a prescaler. HOLD OUT goes from V_{DD} to V_{SS} within 300 ms after HOLD IN has gone from V_{SS} to V_{DD}.

RESET (Internal resistor pulldown to V_{SS})

When in AM, FM or SW mode, connection to V_{DD} displays the contents of the IF offset ROM (read only memory).

When in the frequency counter or event counter mode, connection to V_{DD} resets the counter.

LMP

Two inputs are provided to power the 5 volt incandescent lamp.

TABLE 1: DISPLAY FORMAT

DISPLAY MODE (RANGE)	EXAMPLE OF DIGITAL DISPLAY	SELECT INPUT					IF OFFSET VALUES	UNIT
MW (0.0-3999.9)		AM/FM	S1	S2	S3	S4	-455 -260 -450 -261 -468 -470	KHz
		H	L	L	L	L		
		H	L	H	L	L		
		H	L	L	H	L		
		H	L	H	H	L		
SW (00.000-39.999)		H	L	L	L	L	-0.455 -0.468 -2.0 -10.7	MHz
		H	H	H	L	L		
		H	H	L	H	L		
		H	H	H	H	L		
		L	L	L	L	L		
FM (0.00-399.99)		L	H	L	L	L	+10.7 +10.63 -10.7 +10.66 +10.74 +10.77 -10.63 -10.65 -10.66 -10.67 -10.68 -10.71 -10.74 -10.75 -10.77 -10.78	MHz
		L	H	L	L	L		
		L	L	H	L	L		
		L	L	L	L	L		
		L	H	H	L	L		
		L	L	L	L	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
		L	L	L	H	L		
FREQUENCY COUNTER (0.0-3999.9)		H	L	L	H	H	—	KHz
COUNTER * (0-3999.9)		H	L	H	H	H	—	—

*DISPLAY SHOWS 1/8 OF INPUT ONLY.

TABLE 2: DISPLAY FORMAT SELECTION

("L"=open or V_{SS}; "H"=V_{DD})

SELECT terminals			Display digits	Display contents
D ₁	D ₂	D ₃		
L	L	L	5-digit	Normal display
H	L	L		(1) 0 display for the 2nd to 5th digits for AM or SW. (2) 2nd digit displays 1,3,5,7 and 9 with the last digit displaying 0 for FM.
L	H	L	4-digit	The last digit displays 0.
L	H	H		Normal display
H	L	H		(1) The last digit displays 0 for AM. (2) The last digit displays 1,3,5, or 9 for FM.