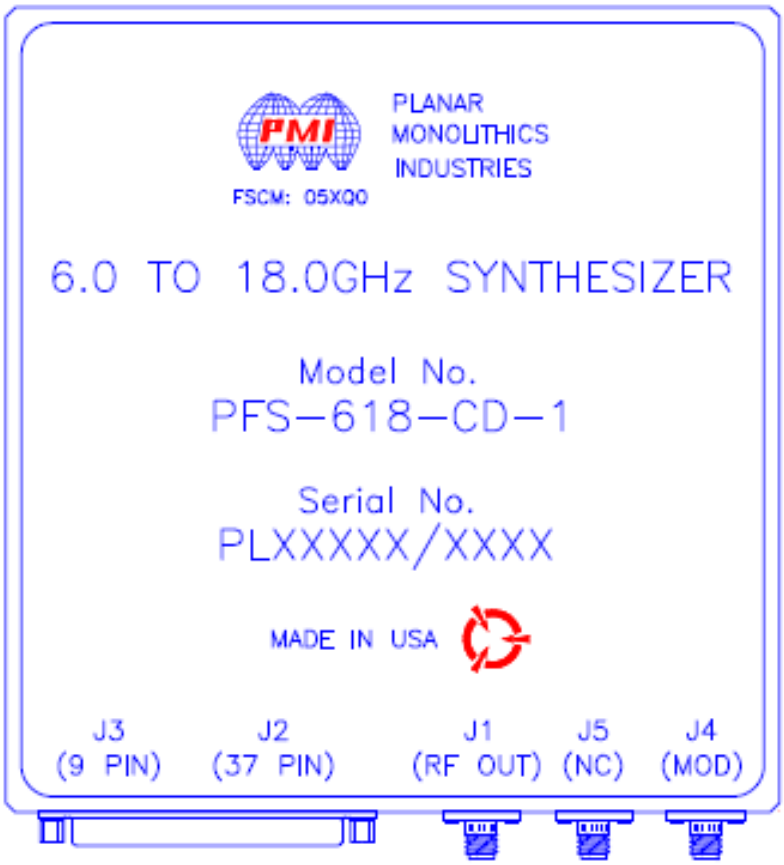
6 – 18 GHz Frequency Synthesizer

PFS-618-CD-1

Operating Instructions



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1) Frequency Control

The Frequency Control Code is constructed of 17 bits (A0 - A16).

The following equation and table describe the frequency code construction.

Output Frequency [MHz] = 6000.0 + 0.1 * Tuning Word [Decimal]

Note: Tuning words above 120000 [Decimal] (18 GHz) are invalid.

Example :

Freq. [MHz]	A16... MSB																...A0 LSB
6000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18000	1	1	1	0	1	0	1	0	0	1	1	0	0	0	0	0	0

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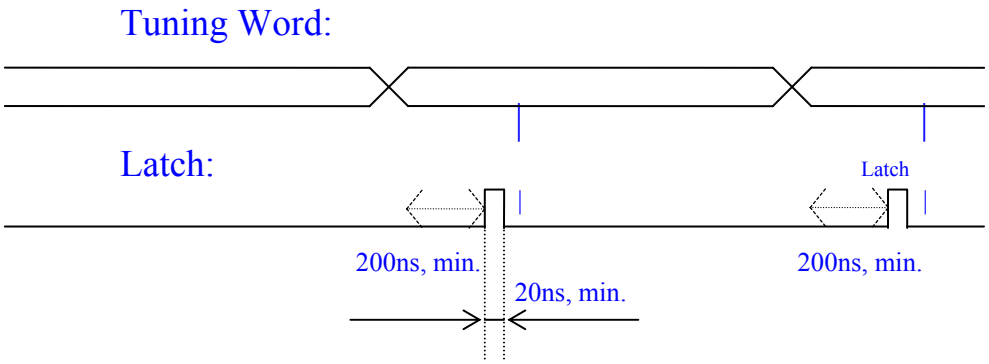
2) Latch

One bit (LE) controls the way data is transferred from the Tuning Word to the output frequency. Applying logic "1" to this input will cause the output frequency to follow the Tuning Word , while applying logic "0" will cause the output frequency to remain latched, irrespective of the Tuning Word. In order to change the output frequency, the latch should be set to logic "1" 200 ns after changing the tuning word for a duration of at least 20 ns. The latch should then be returned to logic "0" to remain latched at the new frequency.

The output frequency will only change on the rising edge of the latch.

Timing Diagram - Latch



3) Modulation Enable (1) / Disable (0)

One bit enables or disables modulation. Applying logic "1" to this input will enable modulation. This pin must be left continuously at logic "1" while modulation is in use.

Once modulation is enabled for a minimum period of 200 ns, the tuning word and latch must be sent to allow the signal on the modulation input (J4) to affect the RF output frequency.

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Similarly, to disable modulation, a logic “0” must be applied to this input. Again, the modulation must be disabled for a minimum of 200 ns prior to sending the latch pulse.

When modulation is not in use, this pin must be held at logic “0” for normal operation.

3) RF Output

J1, SMA female connector is used for the RF output.

4) Modulation Input

J4, SMA female connector is used for the FM modulation port.
Input impedance : 50Ω ± 10%. This input allows a signal from DC to 10 MHz with a maximum of 8 Volts peak-peak.

5) J2 - Pin Assignment

Pin No.	Function	Description	Notes
1	A16	Tuning Word MSB	3
2	A14	Tuning Word	3
3	A12	Tuning Word	3
4	A10	Tuning Word	3
5	A8	Tuning Word	3
6	A6	Tuning Word	3
7	A4	Tuning Word	3
8	N.C.	No Connection	2
9	LE	Latch Enable	3
10	N.C.	No Connection	2
11	GND	Ground	1
12	N.C.	No Connection	2
13	N.C.	No Connection	2
14	N.C.	No Connection	2
15	N.C.	No Connection	2

16	N.C.	No Connection	2
17	A1	Tuning Word	3
18	N.C.	No Connection	2
19	A0	Tuning Word LSB	3
20	A15	Tuning Word	3
21	A13	Tuning Word	3
22	A11	Tuning Word	3
23	A9	Tuning Word	3
24	A7	Tuning Word	3
25	A5	Tuning Word	3
26	A3	Tuning Word	3
27	A2	Tuning Word LSB	3
28	N.C.	No Connection	2
29	GND	Ground	1
30	N.C.	No Connection	2
31	N.C.	No Connection	2
32	N.C.	No Connection	2
33	N.C.	No Connection	2
34	N.C.	No Connection	2
35	MOD	Modulation Enable(1) / Disable(0)	3
36	N.C.	No Connection	2
37	GND	Ground	1

Notes :

1. Pins 11, 29, and 37 should be grounded.
2. Pins 8, 10, 12 through 16, 18, 28, 30 through 34, and 36 shouldn't be connected. (These pins are used in factory for programming purposes only).
3. Logic Levels:

Logic level	Input level
"0"	-0.3 to 0.8 V
"1"	2.0 to 5.0 V

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6) J3 - Pin Assignment

Pin No.	Function	Description
1	+5V	Supply Voltage
2	-12V	Supply Voltage
3	+12V	Supply Voltage
4	+5V (R)	+5V Return (GND)
5	-5V	Supply Voltage
6	-12V (R)	-12V Return (GND)
7	+12V (R)	+12V Return (GND)
8	+12V (R)	+12V Return (GND)
9	+12V	Supply Voltage

Note: Ensure voltages are at their correct levels at the input to the module. The positive supplies are capable of supplying more than 1 amp each, and the wires carrying the current should be rated appropriately.

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