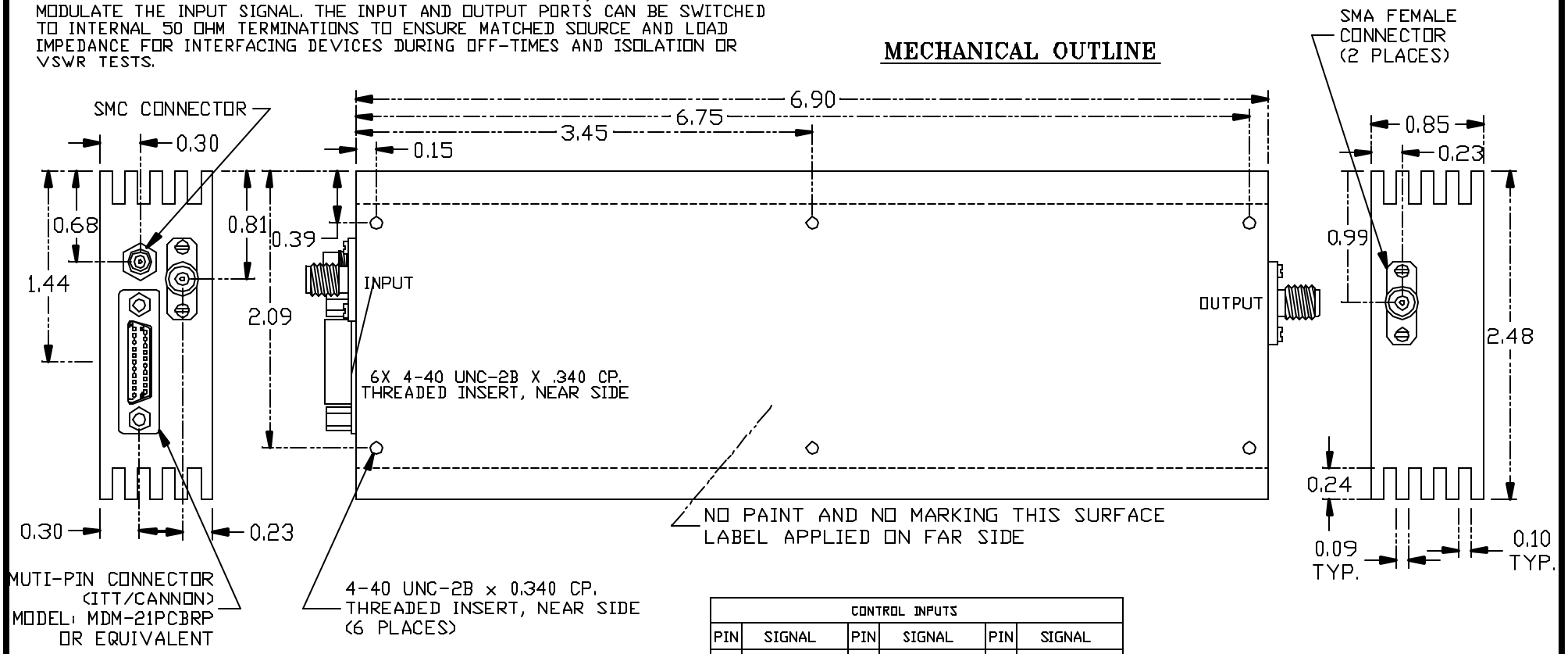
DESCRIPTION

PMI MODEL NUMBER HBDFM-218-BD-DP, IS A HIGH BAND DIRECTION FINDING MODULE FROM 2.0 TO 18.0 GHz, UNI-DIRECTIONAL, MULTI-FUNCTION DEVICE THAT ROUTES THE SIGNAL PRESENT AT THE RF INPUT CONNECTOR THROUGH ONE OF ITS FOUR CHANNELS TO THE RF OUTPUT CONNECTOR, TO AMPLITUDE MODULATE THE INPUT SIGNAL. THE INPUT AND OUTPUT PORTS CAN BE SWITCHED TO INTERNAL 50 OHM TERMINATIONS TO ENSURE MATCHED SOURCE AND LOAD IMPEDANCE FOR INTERFACING DEVICES DURING OFF-TIMES AND ISOLATION OR VSWR TESTS.

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	–	ORIGINAL RELEASE JOB# P301002E	02/10/03	

MECHANICAL OUTLINE



CONTROL INPUTS					
PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	B0-LSB-0.25dB	8	B7-MSB-32dB	15	GND
2	B1	9	NC	16	+5 VDC
3	B2	10	NC	17	+12 VDC
4	B3	11	GND	18	+12 VDC
5	B4	12	(EN)I	19	-15 VDC
6	B5	13	F0	20	GND
7	B6	14	F1	21	GND

ENVIRONMENTAL RATINGS

- **AMBIENT TEMPERATURE** — +20°C TO +40°C (OPERATING) / -20°C TO +70°C (STORAGE)
- **HUMIDITY** — 20 TO 50% NON-CONDENSING (OPRATING) / 0 TO 95% NON-CONDENSING (STORAGE)
- **DROP-TEST SURVIVAL HEIGHT** — 0 (OPERATING) / 0 (STORAGE)
- **VIBRATION** — AS EXPERIENCED BY INTERIOR RACK MOUNT EQUIPMENT (OPERATING) / AS EXPERIENCED BY COMMERCIAL LAND AND AIRCRAFT CARGO (STORAGE)
- **ALTITUDE** — 0 TO 10,000 FEET ABOVE MEAN SEA LEVEL (OPERATING) / 0 TO 40,000 FEET ABOVE MEAN SEA LEVEL (STORAGE)
- **HEAT SINK** — +25 TO +35°C MOUNTING SURFACE COMPRISED OF 2 OZ COPPER CLAD FIBER OR 0.062 INCH (1.6 MM) THICH ALUMINUM PLATE (OPERATING)
- **AIR FLOW** — 10 CFM, MINIMUM CONTINUOUS FORCED AIR (OPERATING)
- **WARM-UP TIME** — 10 MINUTES WITH DC POWER APPLIED, RF OFF (OPERATING)

NOTES: 1) DIMENSIONS ARE IN INCHES
2) TOLERANCES: X.XX ±0.01, X.XXX ±0.005

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PART NO.		
APPROVALS		DATE
DRAWN	MJH	02/04/03
CHECKED		
ISSUED		

PLANAR MONOLITHICS INDUSTRIES
FREDERICK, MARYLAND

TITLE: OUTLINE DRAWING
HBDFM-218-BD-DP
HDF DIRECTION FINDING MODULE

SIZE	FSCM NO.	DWG NO.	REV.
A	0ZXZ8	100-6548	–

SCALE N:S — SHEET 2 of 3

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	–	ORIGINAL RELEASE JOB# P301002E	02/10/03	

DESCRIPTION

PMI MODEL NUMBER HBDFM-218-BD-DP, IS A HIGH BAND DIRECTION FINDING MODULE FROM 2.0 TO 18.0 GHz, UNI-DIRECTIONAL, MULTI-FUNCTION DEVICE THAT ROUTES THE SIGNAL PRESENT AT THE RF INPUT CONNECTOR THROUGH ONE OF ITS FOUR CHANNELS TO THE RF OUTPUT CONNECTOR, TO AMPLITUDE MODULATE THE INPUT SIGNAL. THE INPUT AND OUTPUT PORTS CAN BE SWITCHED TO INTERNAL 50 OHM TERMINATIONS TO ENSURE MATCHED SOURCE AND LOAD IMPEDANCE FOR INTERFACING DEVICES DURING OFF-TIMES AND ISOLATION OR VSWR TESTS.

SPECIFICATIONS

- FREQUENCY RANGE ..... 2.0 – 18.0 GHz
- RF INPUT SIGNAL LEVEL RANGE ..... 0 dBm TO +3 dBm TYPICAL, +6 dBm MAXIMUM
- RF INPUT SPECTRAL PURITY ..... INPUT SPURIOUS LEVELS –60 dBc MAXIMUM; INPUT HARMONIC LEVELS –10 dBc MAXIMUM
- RF INPUT SIGNAL–TO–NOISE RATIO ..... 70 dB MINIMUM
- RF OUTPUT POWER LEVEL AND GAIN COMPRESSION ..... POWER OUT = +21 dBm MINIMUM AT ALL FREQUENCIES WITH INPUT POWER = +0 dBm AND ATTENUATION SET AT MINIMUM, GAIN COMPRESSION 0.9 dB MAXIMUM UNDER THESE CONDITIONS
- RF OUTPUT SPECTRAL PURITY ..... –60 dBc MAXIMUM FOR SPURIOUS SIGNALS AND HARMONIC SIGNALS
- NOISE FIGURE ..... 8.5 dB MAXIMUM @ MINIMUM ATTENUATION
- MACRO–GAIN FLATNESS: AMPLITUDE TAPER: ..... 8.0 dB MAXIMUM PEAK–TO–PEAK @ –10 dBm INPUT
- FINE–GRAIN GAIN FLATNESS: ..... 3.0 dB MAXIMUM PEAK–TO–PEAK FOR ANY 40 MHz BANDWITH @ –10 dBm INPUT
- VSWR = 2.0:1 ..... RF INPUT, RF OUTPUT

PULSE MODULATOR SWITCH

- CONTROL: ..... TTL LOGIC; "0" = INSERTION LOSS; "1" = ISOLATION
- ISOLATION: ..... 60 dBc MINIMUM
- SWITCHING SPEED
  - RISE TIME ..... 10 nS MAXIMUM (10% RF TO 90% RF)
  - FALL TIME ..... 10 nS MAXIMUM (90% RF TO 10% RF)
- DELAY SYMMETRY: ..... DELAY SYMMETRY BETWEEN ON/OFF TO BE 10 nS MAXIMUM
- P–POD VIDEO GENERATION: ..... –60 dBm MAXIMUM @ PULSING TO TTL '0' FOR 25 nS AT A 2MHz RATE

DF/LEVEL ATTENUATOR

- ATTENUATION RANGE: ..... 64 dB
- NUMBER OF BITS: 8
- LSB: ..... 0.25 dB
- CONTROL: ..... TTL, POSITIVE–TRUE
- RESOLUTION: ..... 0.25 dB (LSB)
- COMMANDS: ..... 0 dB = 00H, 64 dB = FFh
- SWITCHING TIME: ..... 700 nS MAXIMUM TO +/– 1 dB OF FINAL ATTENUATION VALUE
- REPEATABILITY: ..... 0.125 dB MAXIMUM

ATTENUATION FLATNESS AND ACCURACY		
ATTENUATION (dB)	FLATNESS (MAX. +/– dB)	ACCURACY (MAX. +/– dB)
0 – 20	1.0	1.0
20 – 40	2.0	1.5
40 – 60	3.0	2.0
60 – 64	4.0	3.0

SWITCHED FILTERS

- SWITCHING SPEED: ..... 700 nS MAXIMUM
- DC POWER INPUTS:
  - ..... +5 VDC +/– 3% AT 250 MILLIAMPERES MAXIMUM
  - ..... +12 VDC +/– 5% AT 3,333 MILLIAMPERES MAXIMUM
  - ..... –15 VDC +/– 5% AT 250 MILLIAMPERES MAXIMUM
  - ..... DCV RIPPLE: UP TO 250 MILLIVOLTS PEAK–TO–PEAK AT 40 kHz TO 40 MHz

BAND CONTROLS									
LOGIC						LOW SIDE REJ		HIGH SIDE REJ	
(EN)! PIN 12	F1 PIN 14	F0 PIN 13	BAND	PASSBAND (GHz)	Fc (GHz)	FREQ (GHz)	LEVEL (dBc)	FREQ (GHz)–50dBc	FREQ (GHz)–30dBc
0	0	0	1	2.0 – 3.6	2.8	1.8	–20	4.0 – 7.2	7.2–18.5
0	0	1	2	3.5 – 6.1	4.8	2.0 – 3.05	–20	7.0 – 12.2	12.2–18.5
0	1	0	3	6.0 – 10.5	8.25	2.0 – 5.25	–20	12.0 – 18.5	N/A
0	1	1	4	10.4 – 18.0	14.2	2.0 – 5.20	–30	N/A	N/A

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- HUMIDITY ——— 20 TO 50% NON–CONDENSING (OPRATING); 0 TO 65% NON–CONDENSING (STORAGE)
- DROP–TEST SURVIVAL HEIGHT ——— 0 (OPERATING); 0 (STORAGE)
- VIBRATION ——— AS EXPERIENCED BY INTERIOR RACK MOUNT EQUIPMENT (OPERATING); AS EXPERIENCED BY COMMERCIAL LAND AND AIRCRAFT CARGO (STORAGE)
- ALTITUDE ——— 0 TO 10,000 FEET ABOVE MEAN SEA LEVEL (OPERATING); 0 TO 40,000 FEET ABOVE MEAN SEA LEVEL (STORAGE)
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- AIR FLOW ——— 10 CFM, MINIMUM CONTINUOUS FORCED AIR (OPERATING)
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NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

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CONFIDENTIAL AND PROPRIETARY

PART NO.		
APPROVALS	DATE	
DRAWN M.J.H	02/04/03	
CHECKED		
ISSUED		

PLANAR MONOLITHICS INDUSTRIES
FREDERICK, MARYLAND

TITLE
PRODUCT FEATURE
HBDFM–218–BD–DP
HDF DIRECTION FINDING MODULE

SIZE	FSCM NO.	DWG NO.	REV.
A	0ZXZ8	100–6548	–

SCALE N:S SHEET 1 of 3