Standard Telemetry Products

Emhiser Research, Inc. designs and manufactures a complete line of airborne and ground-based telemetry equipment designed specifically for harsh military applications. Our tested and proven products are qualified on numerous high profile defense programs.

This catalog contains technical bulletins of many of our more common products. If these products do not meet your exact specifications, give us a call to discuss your requirements.

- Wideband DC Coupled Transmitters and Receivers
- Digital Transmitters and Receivers
- Video Transmitters and Receivers
- Telemetry Transmitters and Receivers
- FSK Transmitters and Receivers

EMHISER RESEARCH, INC.

2705 Old Highway 40 West
P.O. Box 189
Verdi, Nevada 89439-0189

Phone: (775) 345-2705
Fax: (775) 345-2484
E-mail: info@emhiser.com
Web: www.emhiser.com

Ultra High Efficiency Transmitters

In efforts to improve designs to better serve customer needs, Emhiser's design efforts have resulted in an ultra high efficiency (UHE) line of telemetry transmitters with previously unattainable DC-RF conversion efficiency. UHE transmitters are available in miniaturized airborne packages with a variety of power levels, frequency bands, and supply voltage requirements. All Emhiser transmitters are designed for harsh military environments.

Emhiser's ultra high efficiency (UHE) technology enhances the design of our miniature airborne transmitters. For a required output power, our UHE technology decreases current draw and dissipated power requiring fewer, smaller, and lighter batteries and heat sinks. In applications requiring additional link margin or increased data rates, replacing a convention transmitter with an UHE transmitter with twice the output power actually decreases current draw and power dissipation.

If one of our standard UHE products does not meet your specifications, please call us to discuss your requirements.

- S-Band Single Frequency or Channelized
- 5 Watt Output Power
- Digital, Telemetry, or Video Modulation
- AC or DC Modulation Coupling
- +28 ±4 Vdc Supply Voltage

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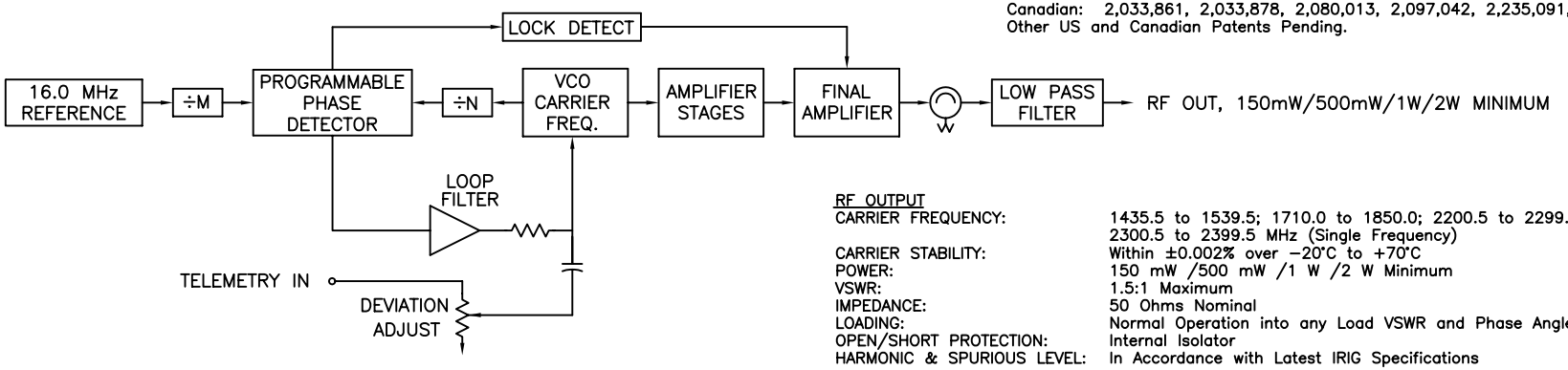
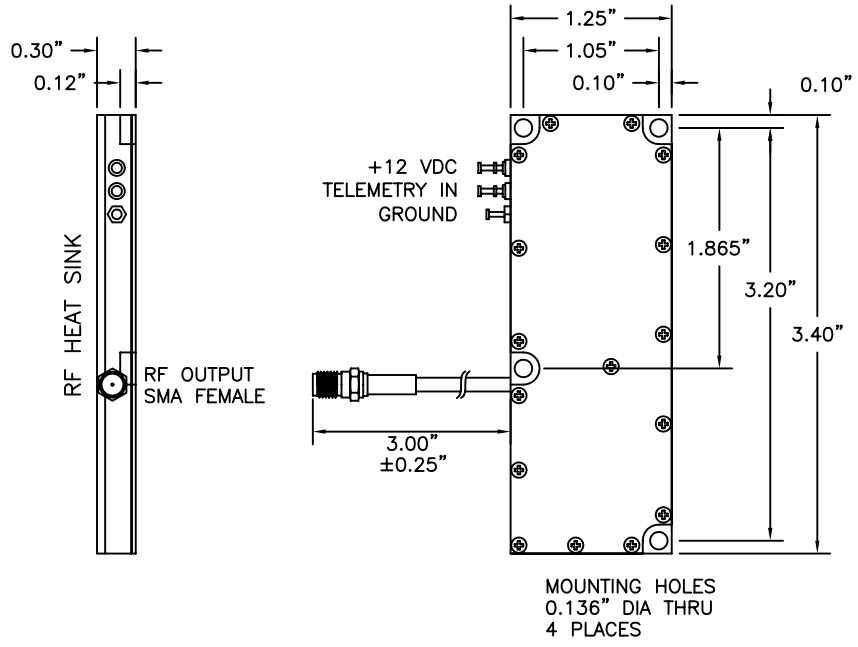
Telemetry Transmitter Model ETT-01DEA Series

1.3 Cubic Inches 150 mW, 500 mW, 1 Watt, or 2 Watts

AC Coupled Single Frequency 12 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.





RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	150 mW /500 mW /1 W /2 W Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

TYPE:	True FM, Positive Sense, AC Coupled
FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+12 +4.5/−1.5 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	

Power	Current
150 Milliwatts	200 Milliamps
500 Milliwatts	400 Milliamps
1 Watt	650 Milliamps
2 Watts	1.0 Amp

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −55°C to +100°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	2 oz. Maximum

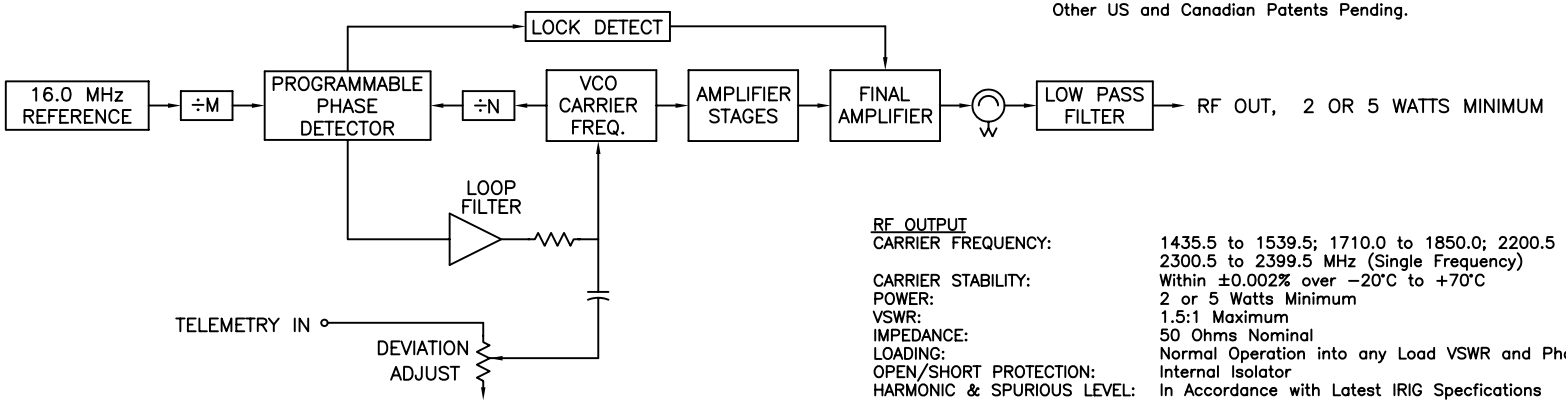
DATE 05 07 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN L3	
APVD	TELEMETRY TRANSMITTER, 150mW/500mW/1W/2W SINGLE FREQUENCY, AC COUPLED 1435.5 TO 2399.5 MHz (4 BANDS)
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETT−01DEA SERIES

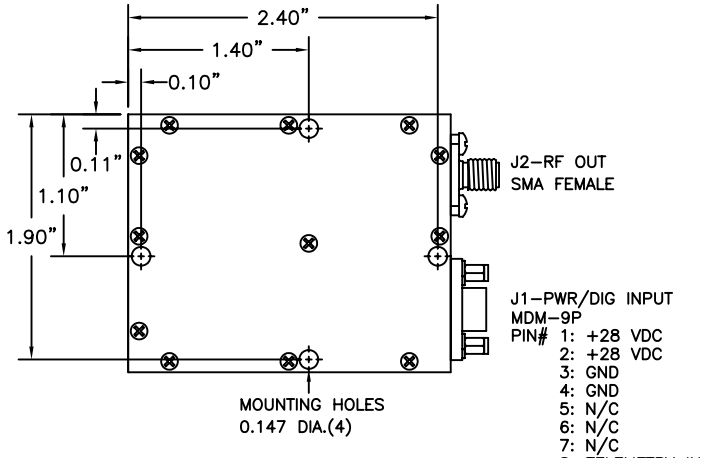
Telemetry Transmitter Model ETT-S3DEA Series

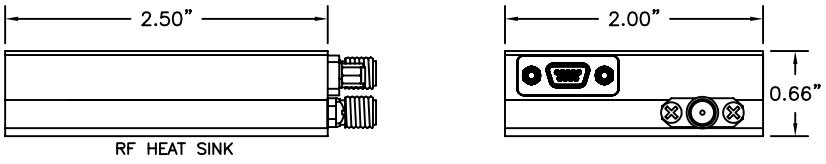
3.3 Cubic Inches 2 or 5 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.







RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specfications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON–LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power Current 2 Watts 650 Milliamps 5 Watts 1.2 amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	3.6 oz. Maximum

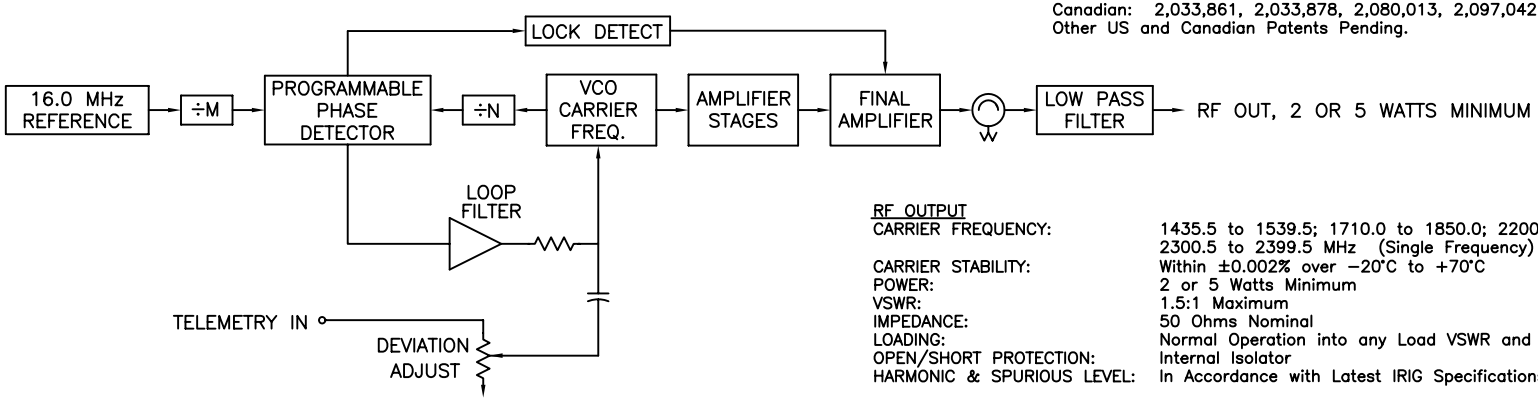
DATE 05 07 08	EMHISER RESEARCH, INC.
DWN L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD	TELEMETRY TRANSMITTER, 2 OR 5 WATTS
QC	SINGLE FREQUENCY, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
CAGE CODE IDENT NO. 60666	MODEL NO. ETT–S3DEA SERIES

Telemetry Transmitter Model ETT-05DEA Series

5 Cubic Inches 2 or 5 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.0; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

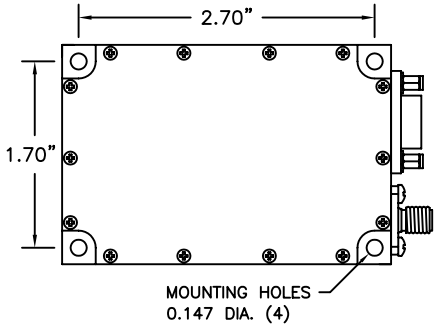
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power Current
	2 Watts 650 Milliamps
	5 Watts 1.2 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

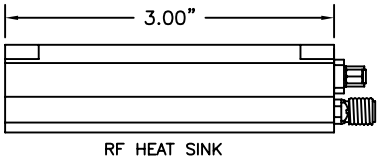
PHYSICAL CHARACTERISTICS

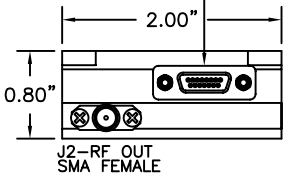
DIMENSIONS:	Per Outline Drawing
WEIGHT:	5.5 oz. Maximum



J1−POWER/TM IN
MDM−15P
MICRO−MINIATURE

PIN #	
1:	N/C
2:	N/C
3:	N/C
4:	N/C
5:	N/C
6:	N/C
7:	N/C
8:	N/C
9:	N/C
10:	TELEMETRY IN
11:	+28 VDC
12:	+28 VDC
13:	N/C
14:	GND
15:	GND



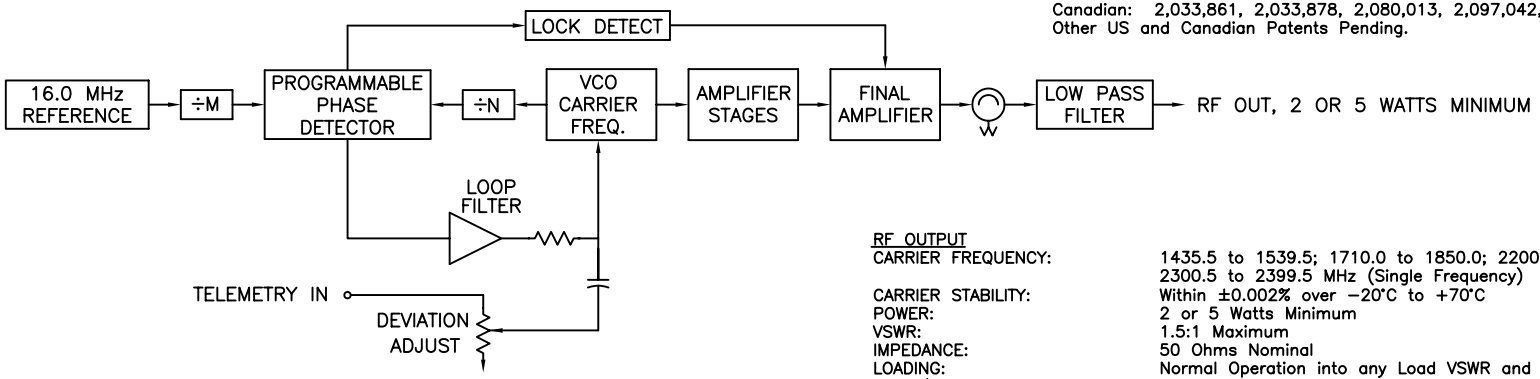


DATE: 05 07 08	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD:	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC:	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2 OR 5 WATTS SINGLE FREQUENCY, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
	MODEL NO. ETT−05DEA SERIES

Telemetry Transmitter Model ETT-06DEA Series

6 Cubic Inches 2 or 5 Watts

AC Coupled Single Frequency 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

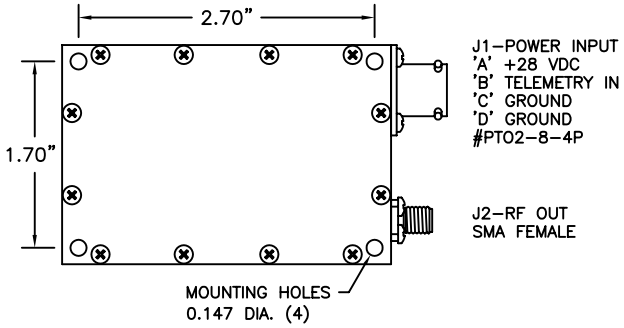
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power Current 2 Watts 650 Milliamps 5 Watts 1.2 Amps

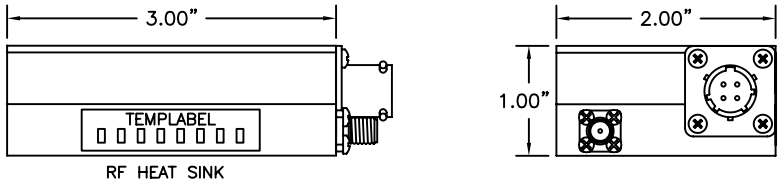
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	9 oz. Maximum





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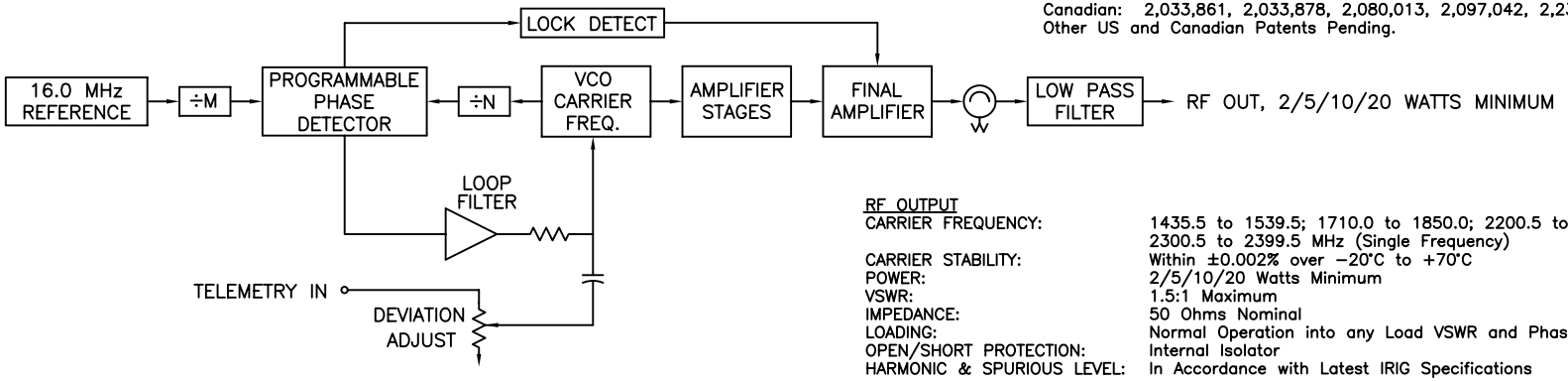
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER, 2 OR 5 WATTS
QC:	SINGLE FREQUENCY, AC COUPLED
CAGE CODE IDENT NO. 60666	1435.5 TO 2399.5 MHZ (4 BANDS)
	MODEL NO. ETT−06DEA SERIES

Telemetry Transmitter Model ETT-09DEA Series

Standard or Ultra High Efficiency 9 Cubic Inches 2, 5, 10, or 20 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

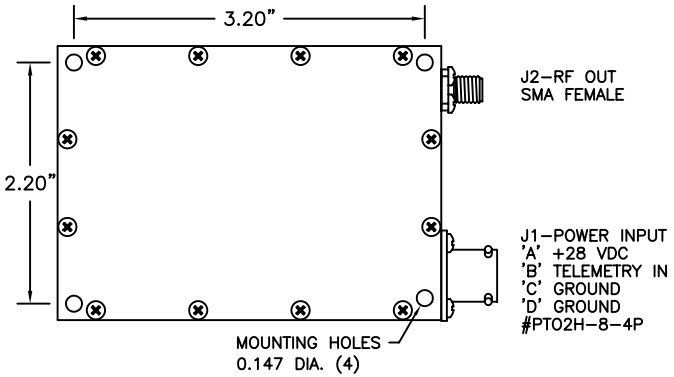
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power — Current
	2 Watts — 650 Milliamps
	5 Watts — 750 Milliamps (Ultra High Efficiency)
	5 Watts — 1.2 Amps
	10 Watts — 2.0 Amps
	20 Watts — 4.0 Amps

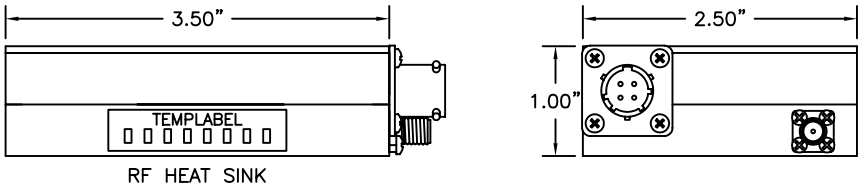
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum





DATE	05 07 08
DWN	L3
APVD	
QC	
CAGE CODE IDENT NO.	60666

EMHISER RESEARCH, INC.
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P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM

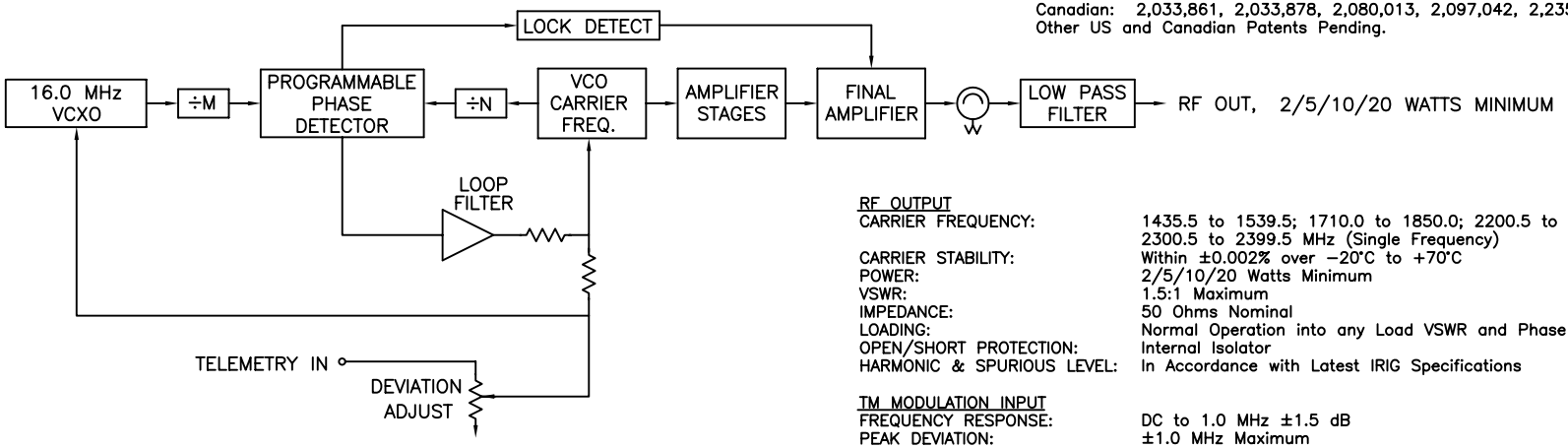
TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS
SINGLE FREQUENCY, AC COUPLED
1435.5 TO 2399.5 MHZ (4 BANDS)

MODEL NO. ETT−09DEA SERIES

Telemetry Transmitter Model ETT-09DED Series

Standard or Ultra High Efficiency 9 Cubic Inches 2, 5, 10, or 20 Watts

DC Coupled Single Frequency 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

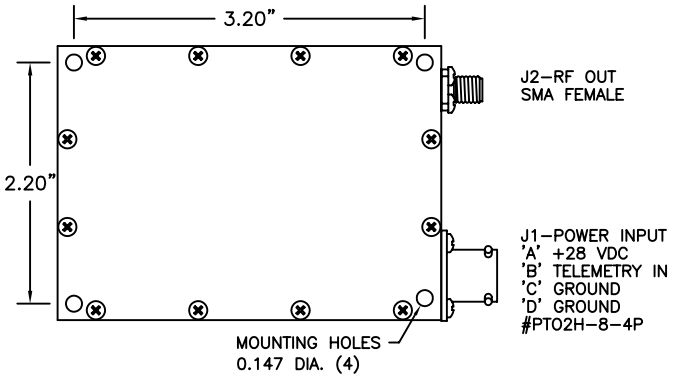
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power — Current
	2 Watts — 650 Milliamps
	5 Watts — 750 Milliamps (Ultra High Efficiency)
	5 Watts — 1.2 Amps
	10 Watts — 2.0 Amps
	20 Watts — 4.0 AMps

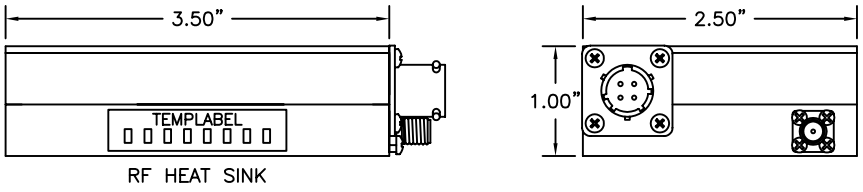
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum for 9 Cubic Inches





DATE	05 07 08
DWN	L3
APVD	
QC	
CAGE CODE IDENT NO.	60666

EMHISER RESEARCH, INC.
2705 OLD HIGHWAY 40 WEST TEL: 775-345-2705
P.O.BOX 189 VERDI, NEVADA FAX: 775-345-2484
89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM

TELEMETRY TRANSMITTER, 2/5−UHE/5/10/20 WATTS
SINGLE FREQUENCY, DC COUPLED
1435.5 TO 2399.5 MHZ (4 BANDS)

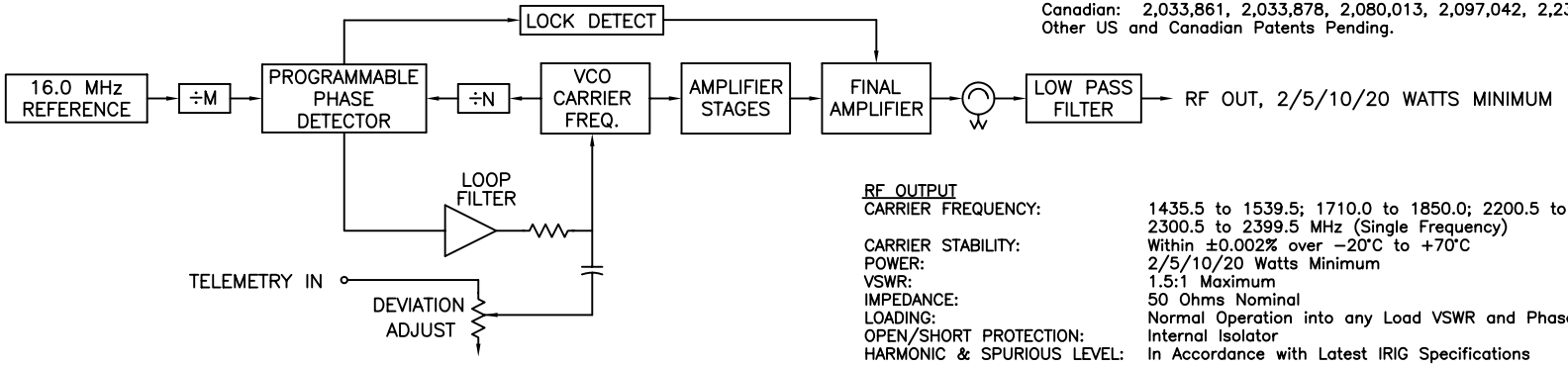
MODEL NO. ETT−09DED SERIES

Telemetry Transmitter Model ETT-11DEA Series

11 Cubic Inches 2, 5, 10, or 20 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE: +28 ±4 VDC: Reverse Polarity Protected

INPUT CURRENT (MAXIMUM):

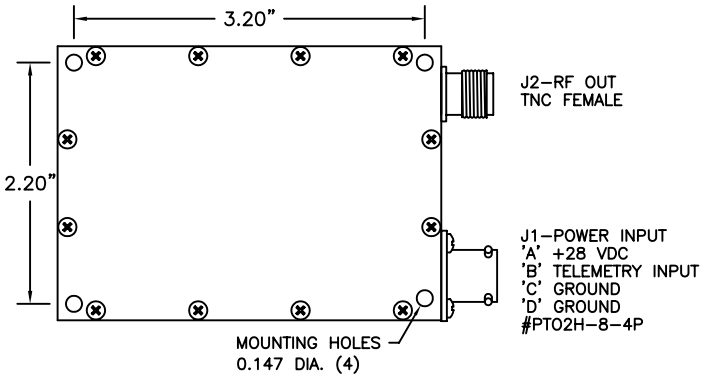
Power	Current
2 Watts	650 Milliamps
5 Watts	750 Milliamps (Ultra High Efficiency)
5 Watts	1.2 Amps
10 Watts	2.0 Amps
20 Watts	4.0 Amps

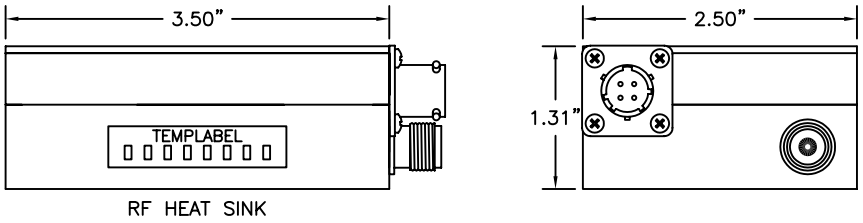
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum





RF HEAT SINK

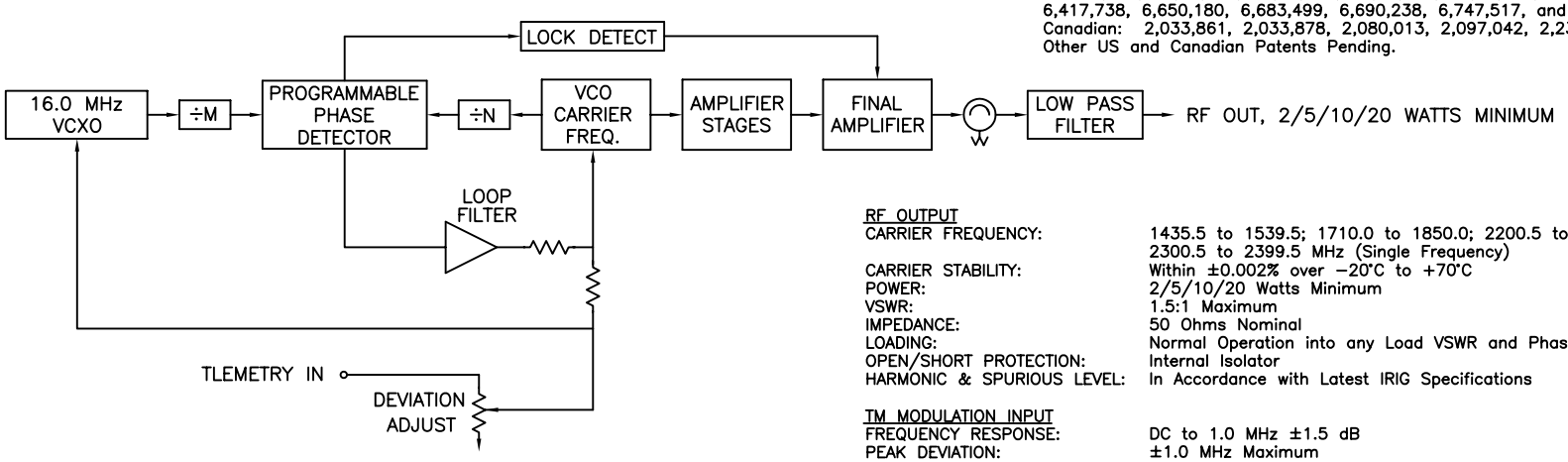
DATE: 05 07 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN: L3	
APVD:	TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS SINGLE FREQUENCY, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETT−11DEA SERIES

Telemetry Transmitter Model ETT-11DED Series

11 Cubic Inches 2, 5, 10, or 20 Watts

DC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

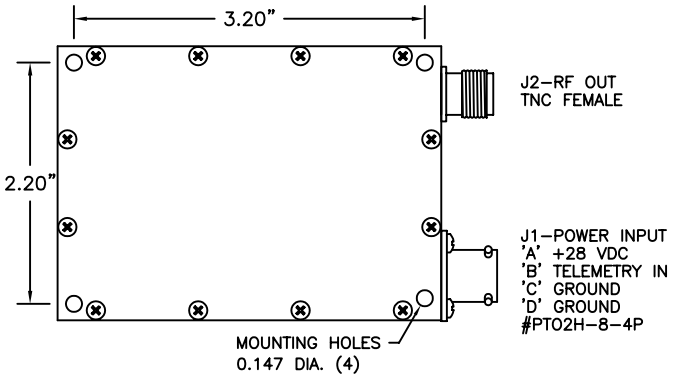
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power / Current
	2 Watts — 650 Milliamps
	5 Watts — 750 Milliamps (Ultra High Efficiency)
	5 Watts — 1.2 Amps
	10 Watts — 2.0 Amps
	20 Watts — 4.0 Amps

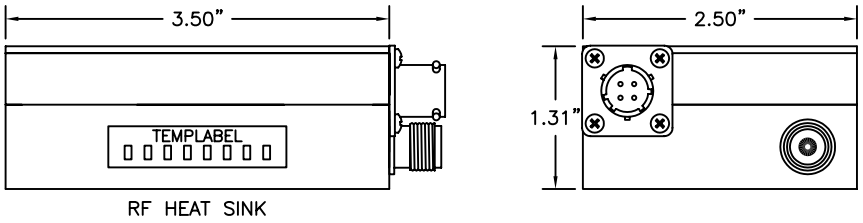
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum





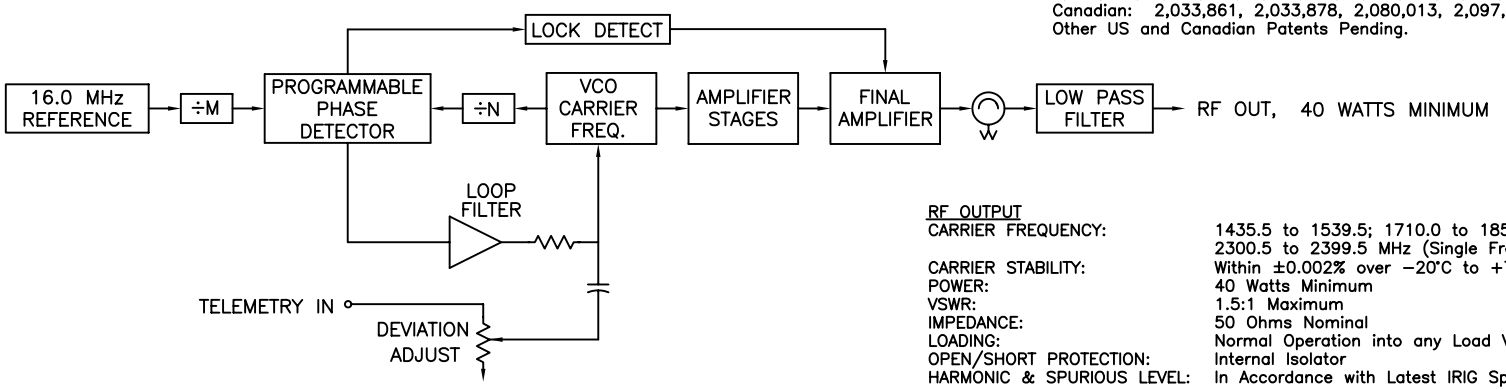
DATE: 05 07 08	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL: 775-345-2705
APVD:	P.O.BOX 189 VERDI, NEVADA FAX: 775-345-2484
QC:	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS SINGLE FREQUENCY, DC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
	MODEL NO. ETT−11DED SERIES

Telemetry Transmitter Model ETT-36DEA Series

36 Cubic Inches 40 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	40 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	

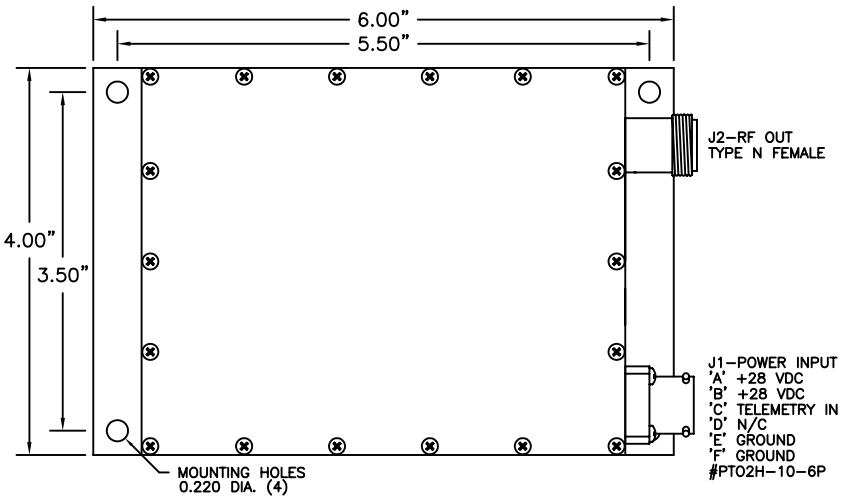
Band	Current
1435.5 to 1539.5 MHz	7.5 A
1710.0 to 1850.0 MHz	7.5 A
2200.5 to 2299.5 MHz	8.0 A
2300.5 to 2399.5 MHz	8.0 A

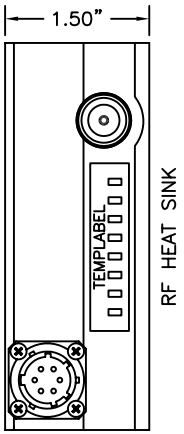
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum





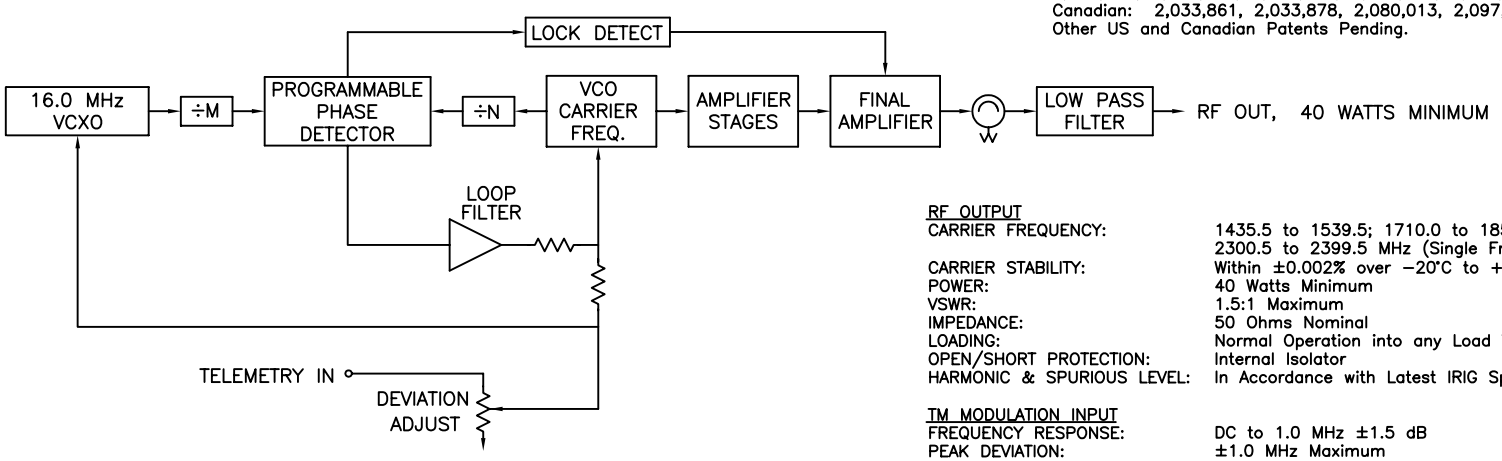
DATE 06 03 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN L3	TELEMETRY TRANSMITTER, 40 WATTS SINGLE FREQUENCY, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
APVD	
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETT−36DEA SERIES

Telemetry Transmitter Model ETT-36DED Series

36 Cubic Inches 40 Watts

DC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	40 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	

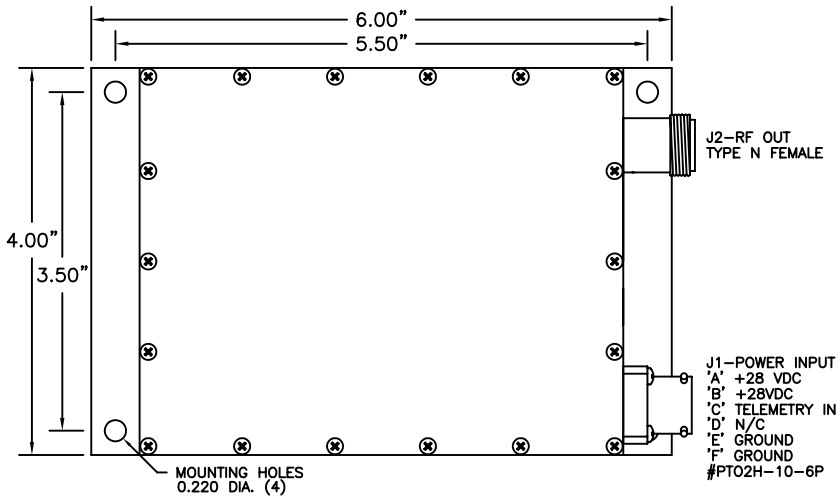
Band	Current
1435.5 to 1539.5 MHz	7.5 A
1710.0 to 1850.0 MHz	7.5 A
2200.5 to 2299.5 MHz	8.0 A
2300.5 to 2399.5 MHz	8.0 A

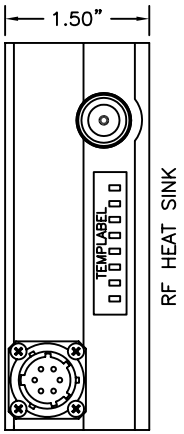
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum





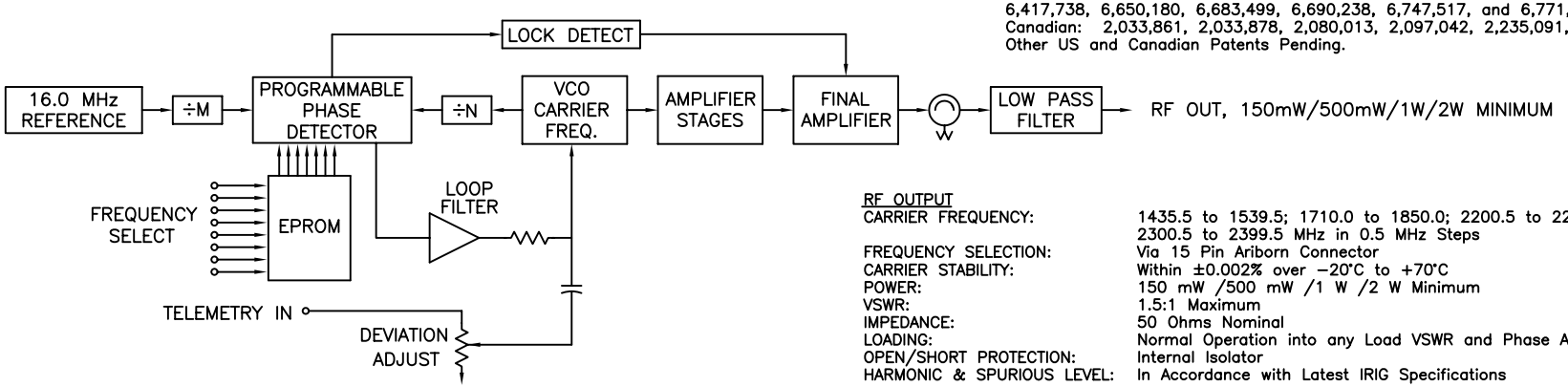
DATE 06 03 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN L3	TELEMETRY TRANSMITTER, 40 WATTS SINGLE FREQUENCY, DC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
APVD	
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETT−36DED SERIES

Telemetry Transmitter Model ETTC-01DEA Series

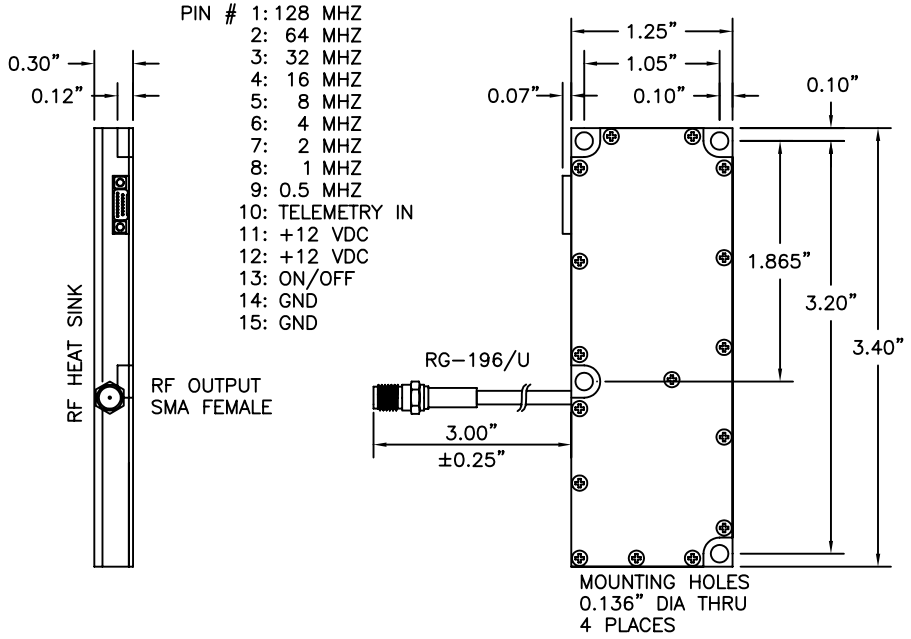
1.3 Cubic Inches 150 mW, 500 mW, 1 Watt, or 2 Watts

AC Coupled Channelized 12 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



POWER/MOD/FREQ SELECT
AIRBORN NM-222-015
-261-THAA-135
PIN # 1: 128 MHZ
2: 64 MHZ
3: 32 MHZ
4: 16 MHZ
5: 8 MHZ
6: 4 MHZ
7: 2 MHZ
8: 1 MHZ
9: 0.5 MHZ
10: TELEMETRY IN
11: +12 VDC
12: +12 VDC
13: ON/OFF
14: GND
15: GND



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz in 0.5 MHz Steps
FREQUENCY SELECTION:	Via 15 Pin Ariborn Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	150 mW /500 mW /1 W /2 W Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

DIGITAL MODULATION INPUT

TYPE:	True FM, Positive Sense, AC Coupled
FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+12 +4.5/-1.5 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power / Current
	150 Milliwatts / 200 Milliamps
	500 Milliwatts / 400 Milliamps
	1 Watt / 650 Milliamps
	2 Watts / 1.0 Amp
ON/OFF CONTROL:	Ground to Transmit

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -55°C to +100°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	2 oz. Maximum

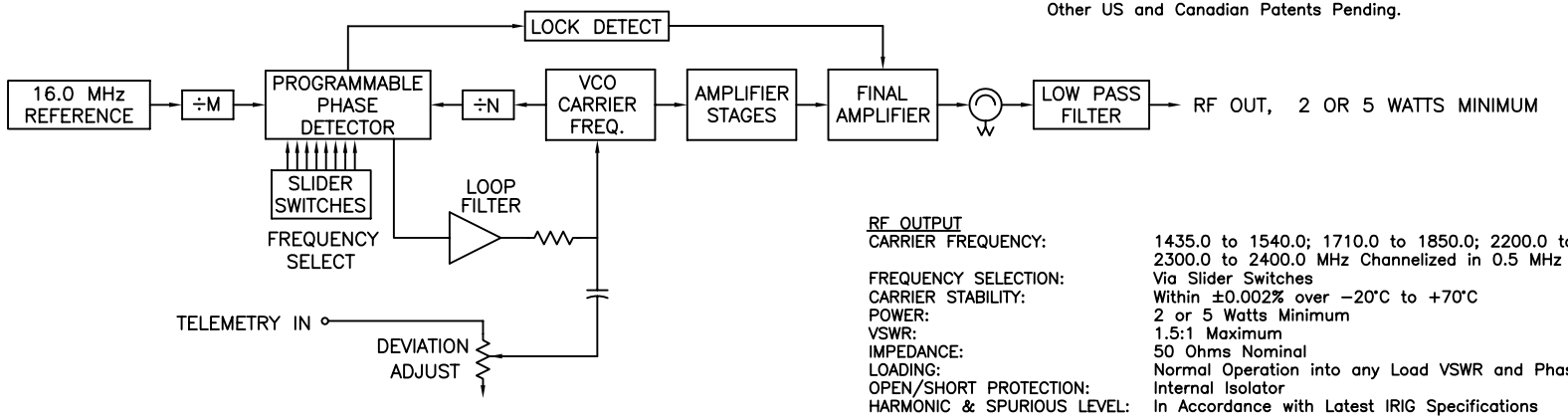
DATE: 05 07 09	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER, 150mW/500mW/1W/2W CHANNELIZED, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-01DEA SERIES

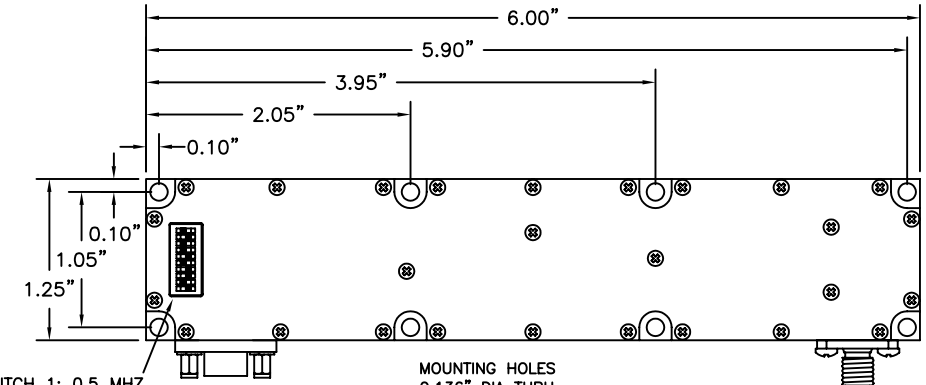
Telemetry Transmitter Model ETTC-L3DEA Series

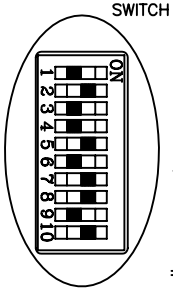
2.5 Cubic Inches 2 or 5 Watts

AC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.

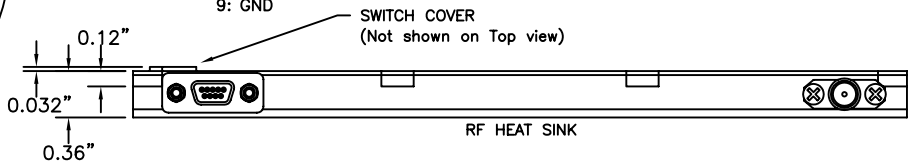






SWITCH 1: 0.5 MHZ
2: 1.0 MHZ
3: 2.0 MHZ
4: 4.0 MHZ
5: 8.0 MHZ
6: 16 MHZ
7: 32 MHZ
8: 64 MHZ
9: 128 MHz
10: 256 MHz

J1–POWER
MDM–9P
PIN# 1: +28 VDC
2: +28 VDC
3: GND
4: GND
5: N/C
6: N/C
7: N/C
8: TELEMETRY IN
9: GND



RF OUTPUT

CARRIER FREQUENCY:	1435.0 to 1540.0; 1710.0 to 1850.0; 2200.0 to 2299.5; 2300.0 to 2400.0 MHz Channelized in 0.5 MHz Steps
FREQUENCY SELECTION:	Via Slider Switches
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON–LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power Current 2 W 650 Milliamps 5 W 1.2 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	2.7 oz. Maximum

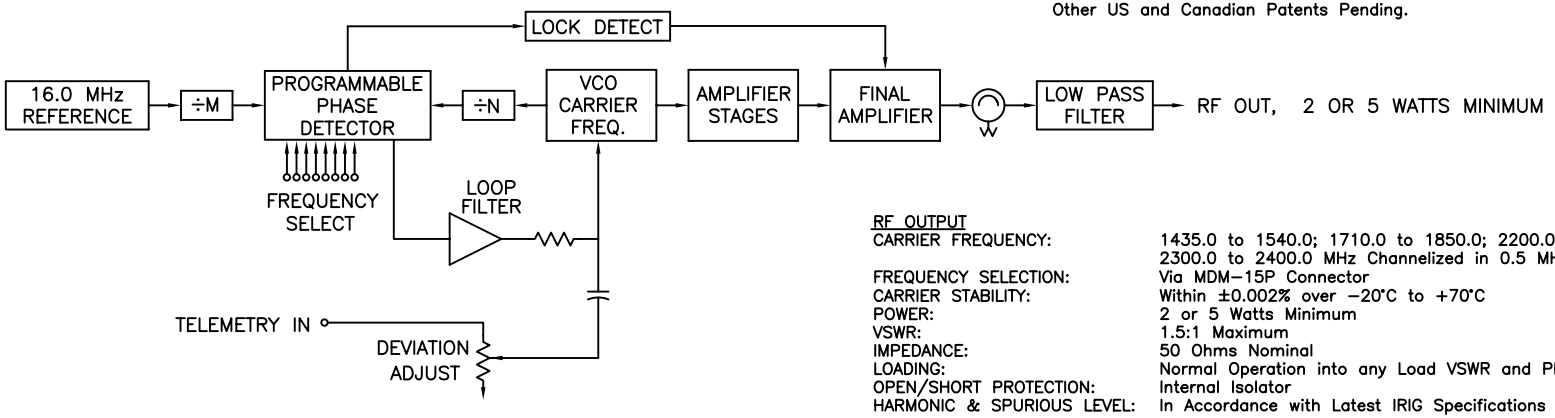
DATE 05 07 09	EMHISER RESEARCH, INC.
DWN L3	2705 OLD HIGHWAY 40 WEST TEL: 775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX: 775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD	TELEMETRY TRANSMITTER, 2 OR 5 WATTS CHANNELIZED, AC COUPLED 1435.0 TO 2399.5 MHZ (4 BANDS)
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC–L3DEA SERIES

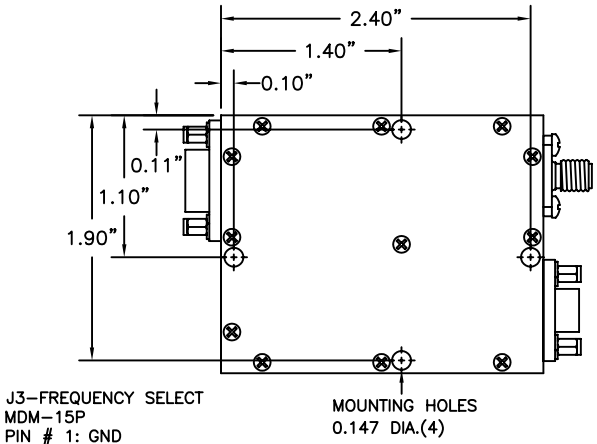
Telemetry Transmitter Model ETTC-S3DEA Series

3.3 Cubic Inches 2 or 5 Watts

AC Coupled Channelized 28 VDC

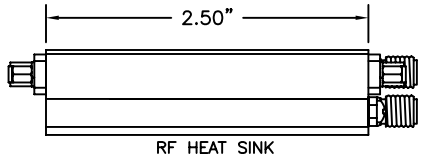
Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.

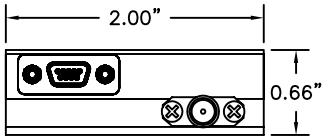




J3–FREQUENCY SELECT
MDM–15P
PIN # 1: GND
2: N/C
3: 128 MHz
4: 32 MHz
5: 8 MHz
6: 2 MHz
7: 0.5 MHz
8: GND
9: N/C
10: N/C
11: 64 MHz
12: 16 MHz
13: 4 MHz
14: 1 MHz
15: N/C

PIN# 1: +28 VDC
2: +28 VDC
3: GND
4: GND
5: N/C
6: N/C
7: N/C
8: TELEMETRY IN
9: GND





RF OUTPUT

CARRIER FREQUENCY:	1435.0 to 1540.0; 1710.0 to 1850.0; 2200.0 to 2299.5; 2300.0 to 2400.0 MHz Channelized in 0.5 MHz Steps
FREQUENCY SELECTION:	Via MDM–15P Connector
CARRIER STABILITY:	Within ±0.002% over –20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON–LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power – Current
	2 Watts – 650 Milliamps
	5 Watts – 1.2 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: –20°C to +70°C; Storage: –54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	3.6 oz. Maximum

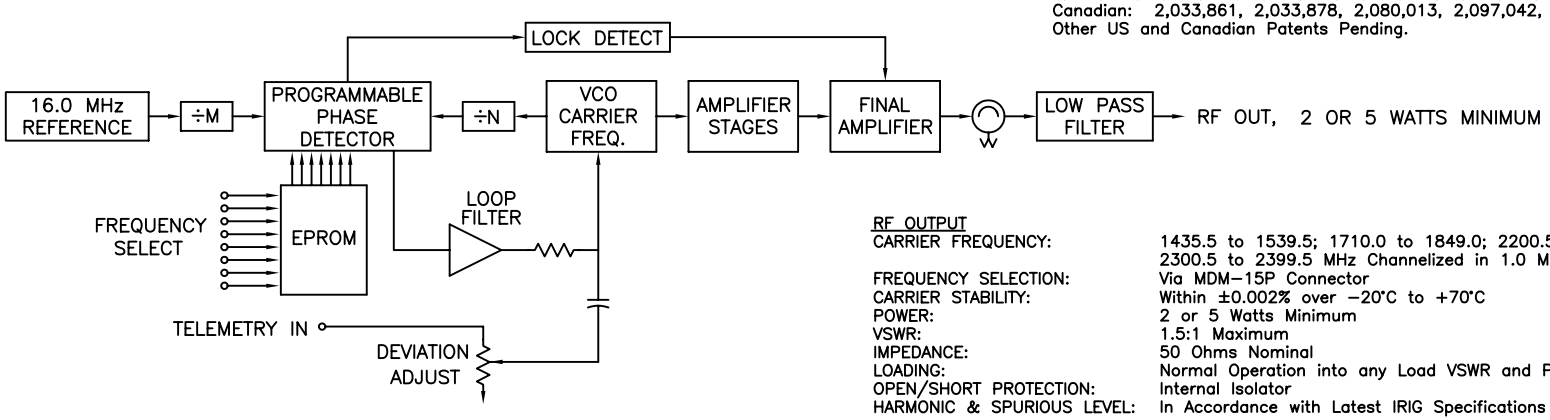
DATE 05 07 09	EMHISER RESEARCH, INC.
DWN L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2 OR 5 WATTS CHANNELIZED, AC COUPLED 1435.0 TO 2400.0 MHZ (4 BANDS)
	MODEL NO. ETTC–S3DEA SERIES

Telemetry Transmitter Model ETTC-05DEA Series

5 Cubic Inches 2 or 5 Watts

AC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1849.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

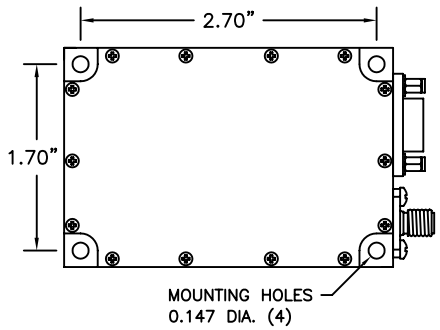
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power Current 2 Watts 650 Milliamps 5 Watts 1.2 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

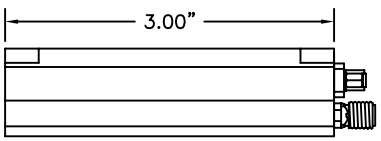
PHYSICAL CHARACTERISTICS

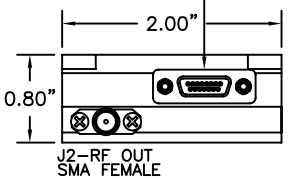
DIMENSIONS:	Per Outline Drawing
WEIGHT:	5.5 oz. Maximum



J1-PWR/TM IN/FREQ SELECT
MDM-15P
MICRO-MINIATURE

PIN #	
1:	BCD 100/GND
2:	BCD 80
3:	BCD 40
4:	BCD 20
5:	BCD 10
6:	BCD 8
7:	BCD 4
8:	BCD 2
9:	BCD 1
10:	TELEMETRY IN
11:	+28 VDC
12:	+28 VDC
13:	N/C
14:	GND
15:	GND





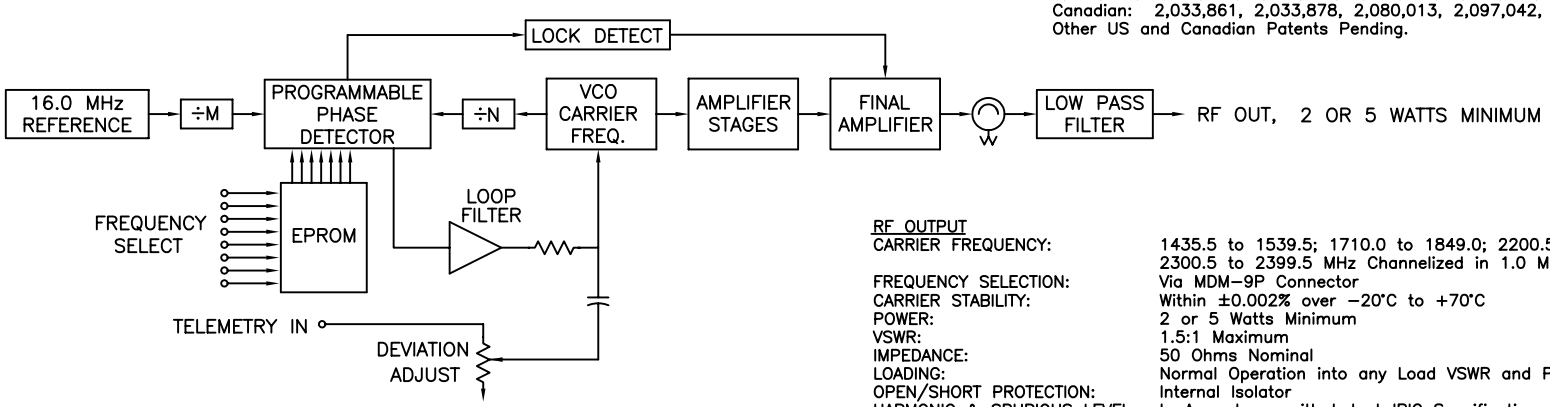
DATE: 06 03 08	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER, 2 OR 5 WATTS CHANNELIZED, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-05DEA SERIES

Telemetry Transmitter Model ETTC-06DEA Series

6 Cubic Inches 2 or 5 Watts

AC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1849.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM-9P Connector
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2 or 5 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

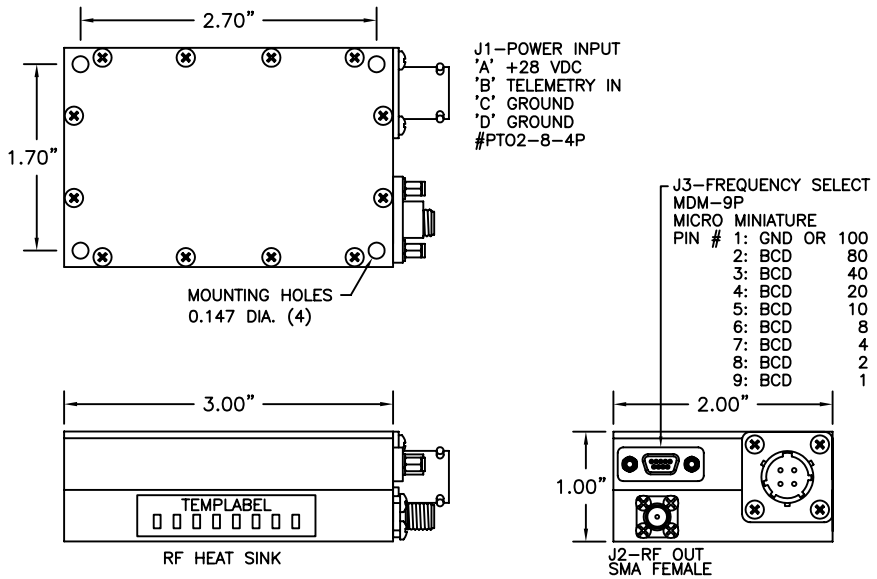
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power Current
	2 Watts 650 Milliamps
	5 Watts 1.2 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	9 oz. Maximum



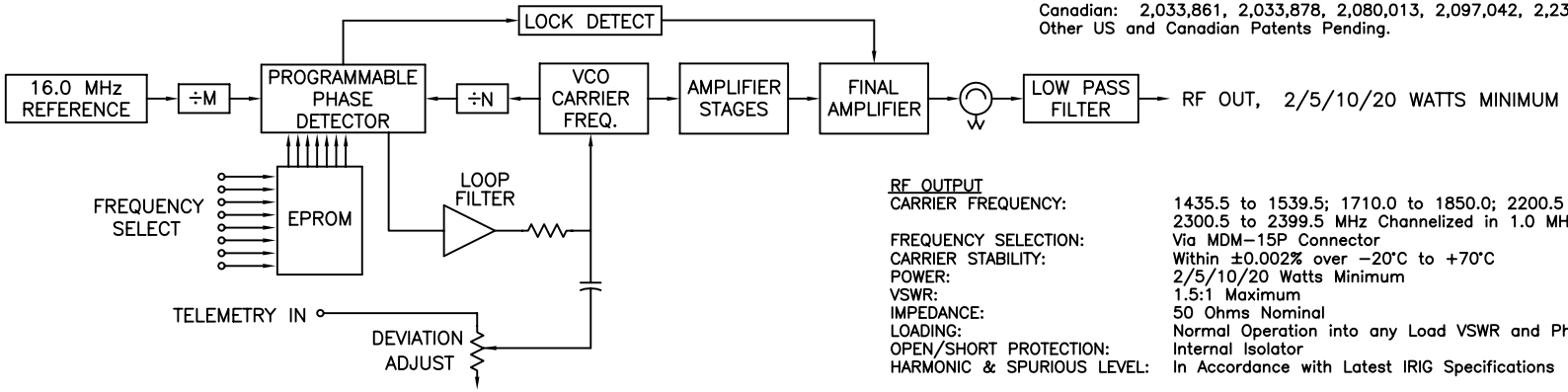
DATE: 06 03 08	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER, 2 OR 5 WATTS CHANNELIZED, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-06DEA SERIES

Telemetry Transmitter Model ETTC-09DEA Series

Standard or Ultra High Efficiency 9 Cubic Inches 2, 5, 10, or 20 Watts

AC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM–15P Connector
CARRIER STABILITY:	Within ±0.002% over –20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON–LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	

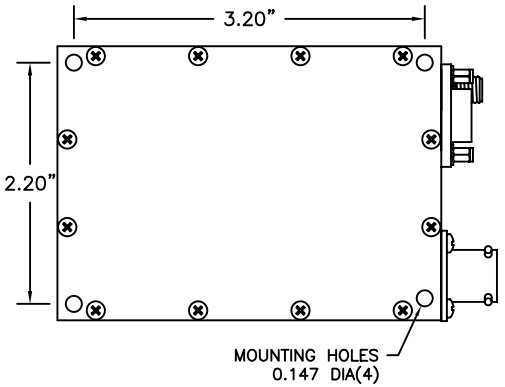
Power	Current
2 Watts	650 Milliamps
5 Watts	800 Milliiamps (Ultra High Efficiency)
5 Watts	1.2 Amps
10 Watts	2.0 Amps
20 Watts	4.0 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: –20°C to +70°C; Storage: –54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

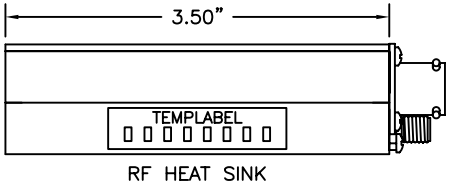
DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum



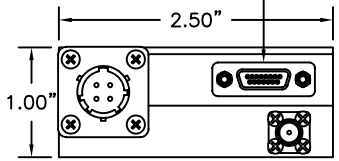
J1–POWER INPUT
'A' +28 VDC
'B' TELEMETRY IN
'C' GROUND
'D' GROUND
#PTO2H–8–4P

J3–FREQUENCY SELECT
MDM–15P

PIN # 1:	GND
2:	N/C
3:	N/C
4:	BCD 100 or N/C
5:	BCD 80
6:	BCD 40
7:	BCD 20
8:	BCD 10
9:	BCD 8
10:	BCD 4
11:	BCD 2
12:	BCD 1
13:	N/C
14:	GND
15:	GND



RF HEAT SINK



J2–RF OUT
SMA FEMALE

DATE	05 07 10
DWN	L3
APVD	
QC	
CAGE CODE IDENT NO.	60666

EMHISER RESEARCH, INC.
2705 OLD HIGHWAY 40 WEST TEL: 775-345-2705
P.O.BOX 189 VERDI, NEVADA FAX: 775-345-2484
89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM

TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS
CHANNELIZED, AC COUPLED
1435.5 TO 2399.5 MHZ (4 BANDS)

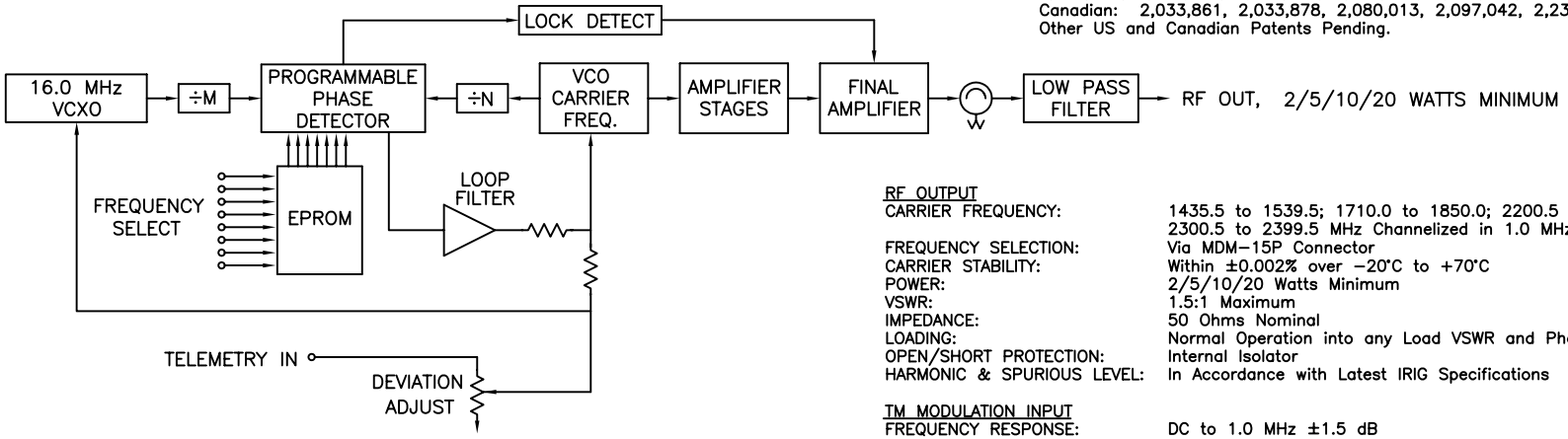
MODEL NO. ETTC–09DEA SERIES

Telemetry Transmitter Model ETTC-09DED Series

Standard or Ultra High Efficiency 9 Cubic Inches 2, 5, 10, or 20 Watts

DC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1850.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM–15P Connector
CARRIER STABILITY:	Within ±0.002% over –20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON–LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

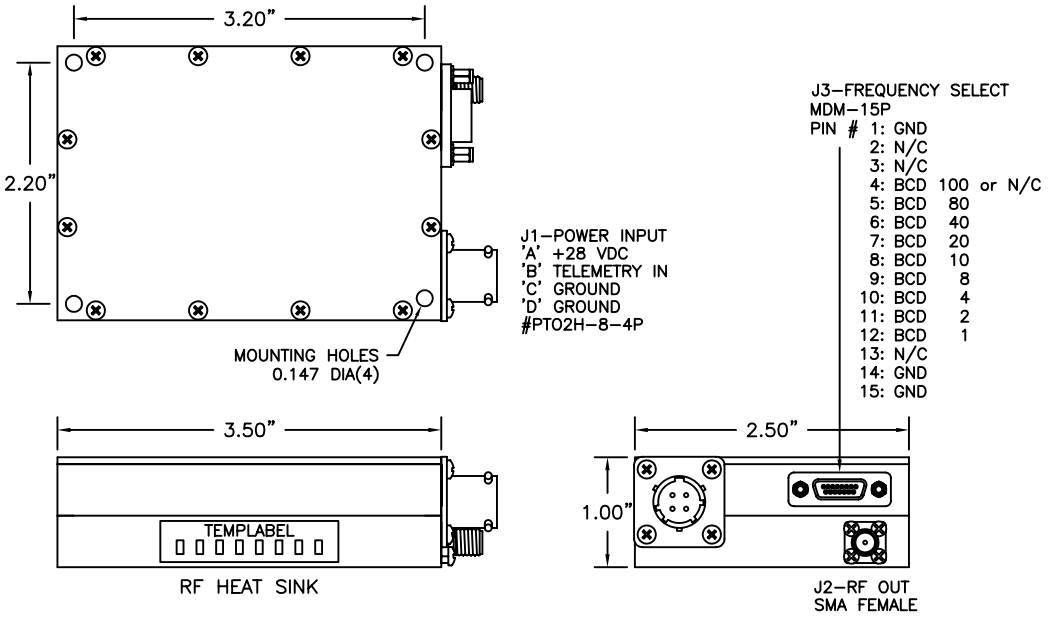
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power – Current
	2 Watts – 650 Milliamps
	5 Watts – 800 Milliamps (Ultra High Efficiency)
	5 Watts – 1.2 Amps
	10 Watts – 2.0 Amps
	20 Watts – 4.0 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: –20°C to +70°C; Storage: –54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum



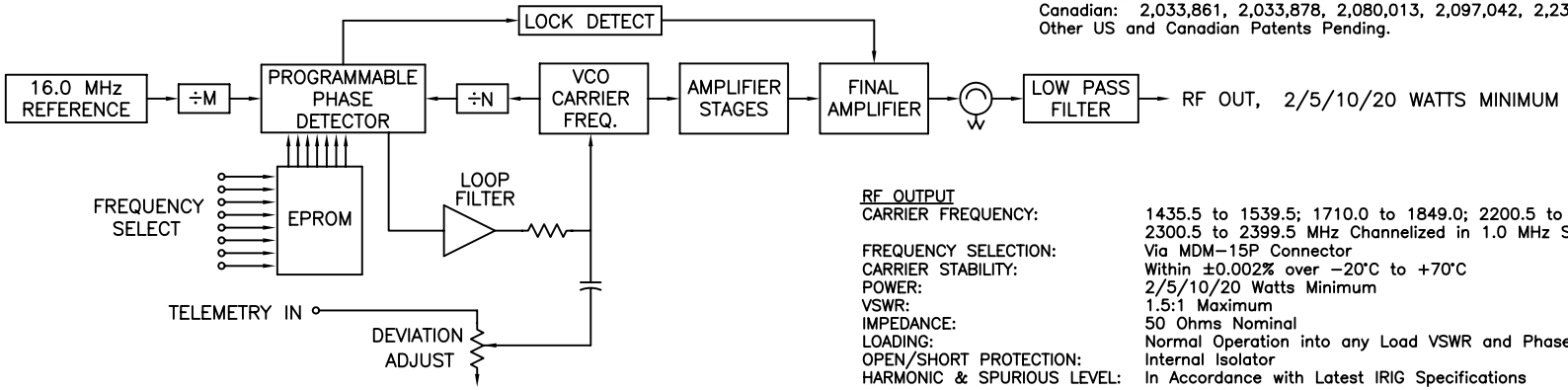
DATE: 05 07 10	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS CHANNELIZED, DC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC–09DED SERIES

Telemetry Transmitter Model ETTC-11DEA Series

Standard or Ultra High Efficiency 11 Cubic Inches 2, 5, 10, or 20 Watts

AC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1849.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE: +28 ±4 VDC: Reverse Polarity Protected

INPUT CURRENT (MAXIMUM):

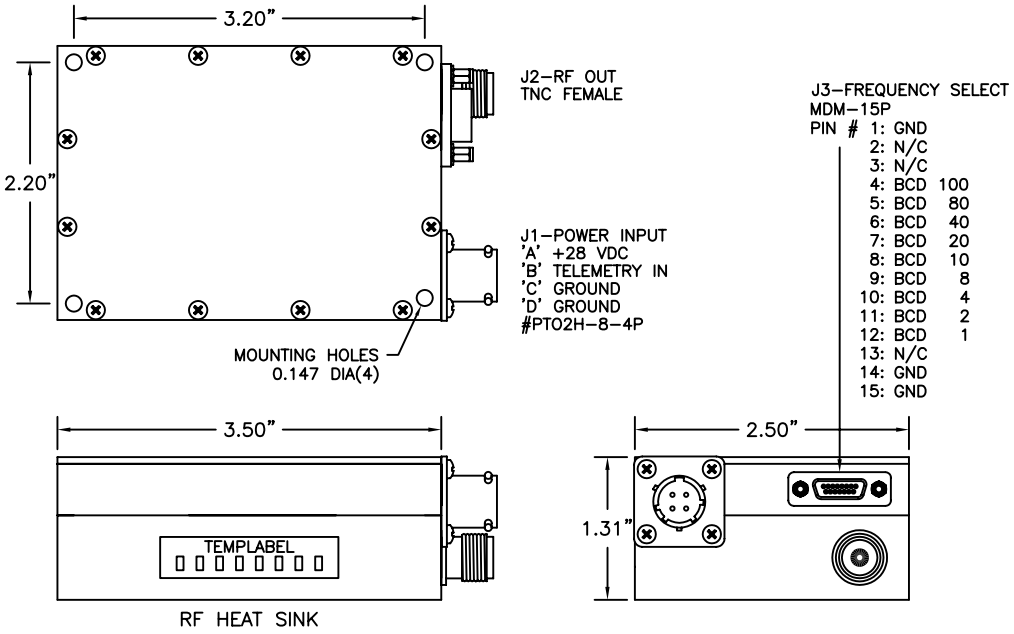
Power	Current
2 Watts	650 Milliamps
5 Watts	800 Milliamps (Ultra High Efficiency)
5 Watts	1.2 Amps
10 Watts	2.0 Amps
20 Watts	4.0 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum



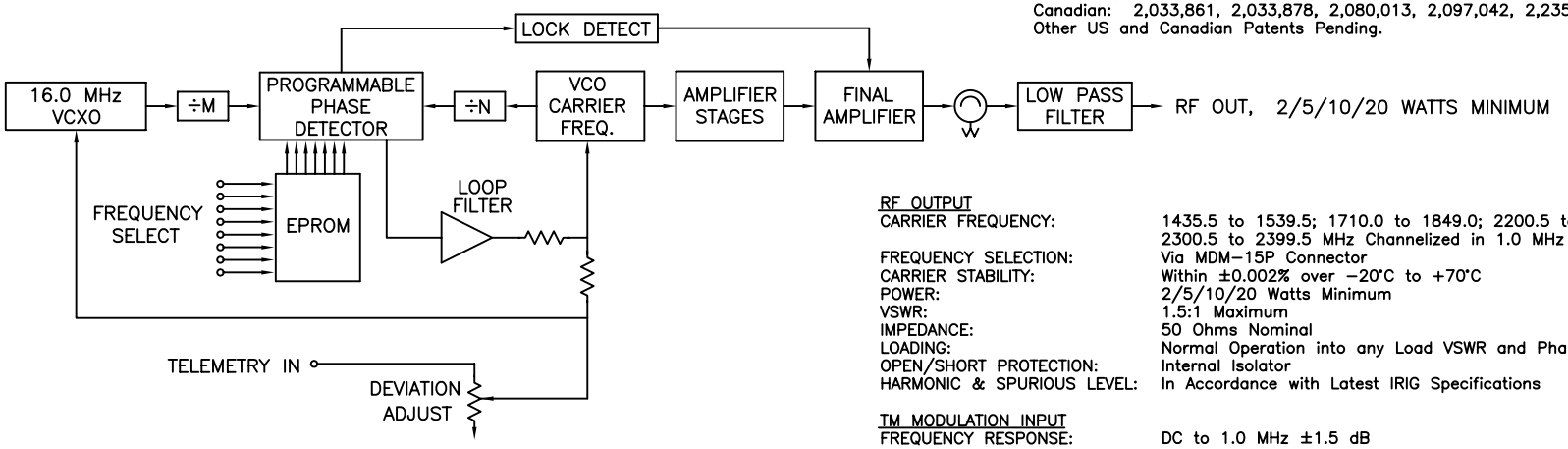
DATE: 05 07 10	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN: L3	
APVD:	TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS CHANNELIZED, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-11DEA SERIES

Telemetry Transmitter Model ETTC-11DED Series

Standard or Ultra High Efficiency 11 Cubic Inches 2, 5, 10, or 20 Watts

DC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1849.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	2/5/10/20 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1850.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE: +28 ±4 VDC: Reverse Polarity Protected

INPUT CURRENT (MAXIMUM):

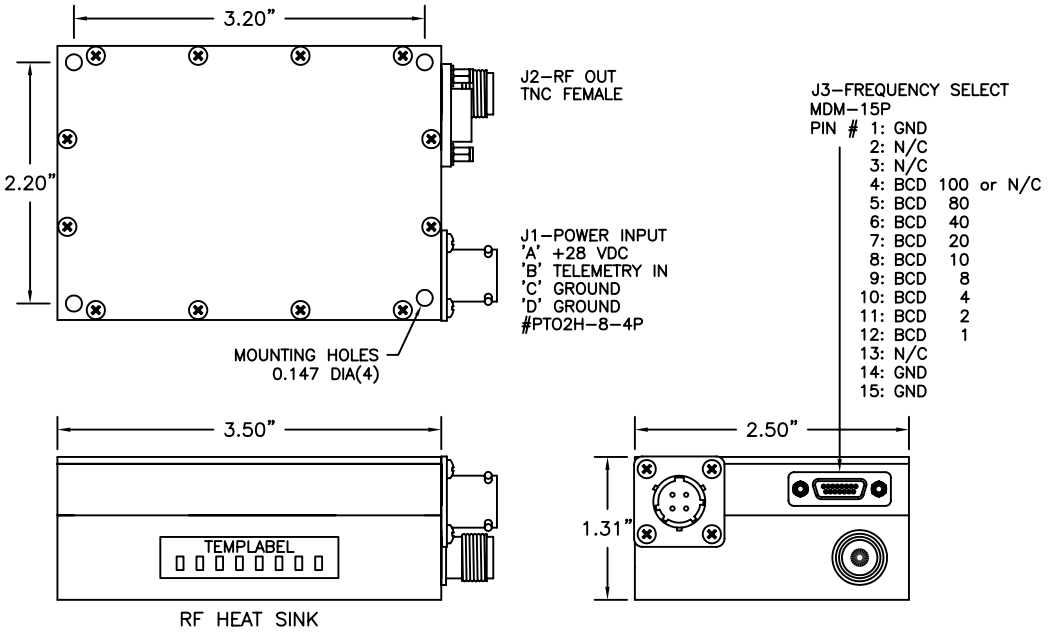
Power	Current
2 Watts	650 Milliamps
5 Watts	800 Milliamps (Ultra High Efficiency)
5 Watts	1.2 Amps
10 Watts	2.0 Amps
20 Watts	4.0 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum

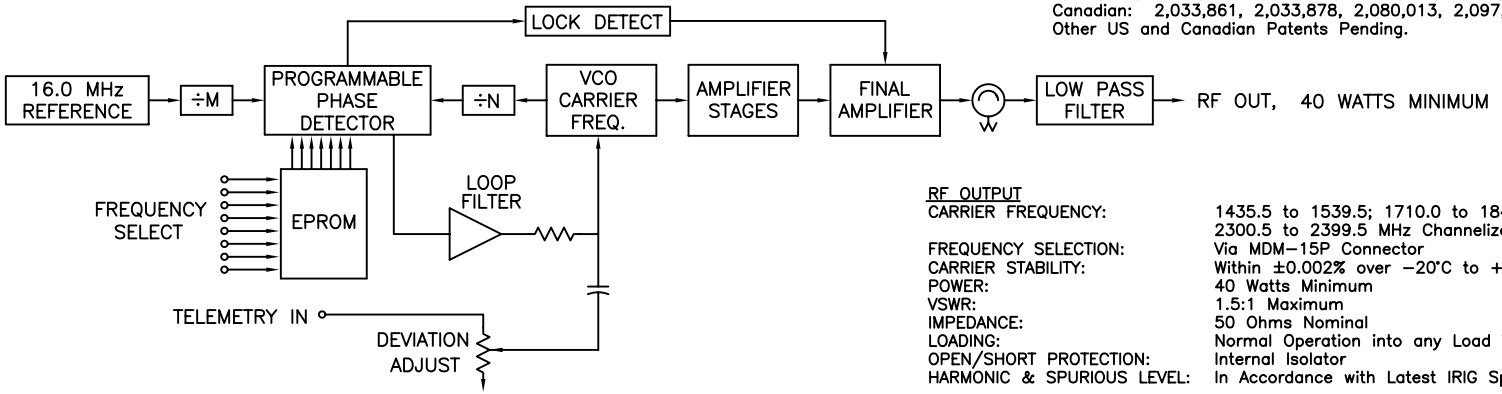


DATE: 05 07 10	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN: L3	
APVD:	TELEMETRY TRANSMITTER, 2/5-UHE/5/10/20 WATTS CHANNELIZED, DC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-11DED SERIES

Telemetry Transmitter Model ETTC-36DEA Series

36 Cubic Inches 40 Watts

AC Coupled Channelized 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1849.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	40 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory Set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 1849.0; 2200.5 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

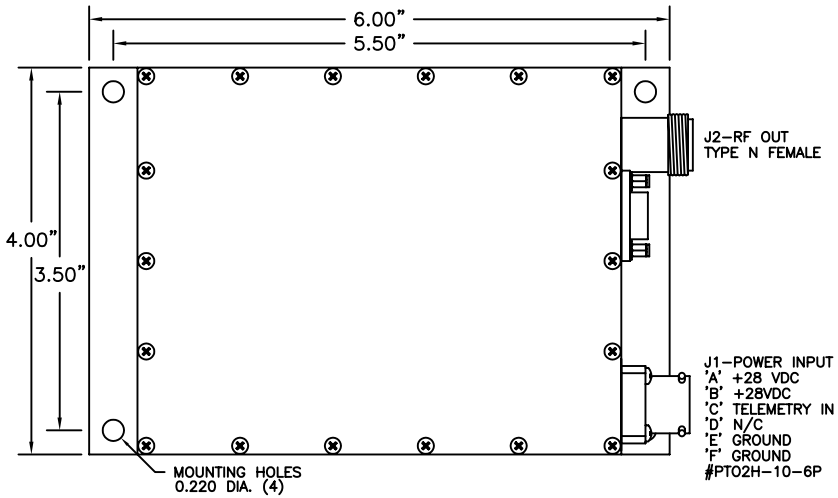
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Band / Current
	1435.5 to 1539.5 MHz 7.5 A
	1710.0 to 1849.0 MHz 7.5 A
	2200.5 to 2299.5 MHz 8.0 A
	2300.5 to 2399.5 MHz 8.0 A

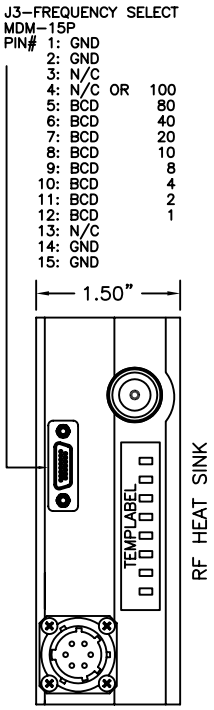
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum



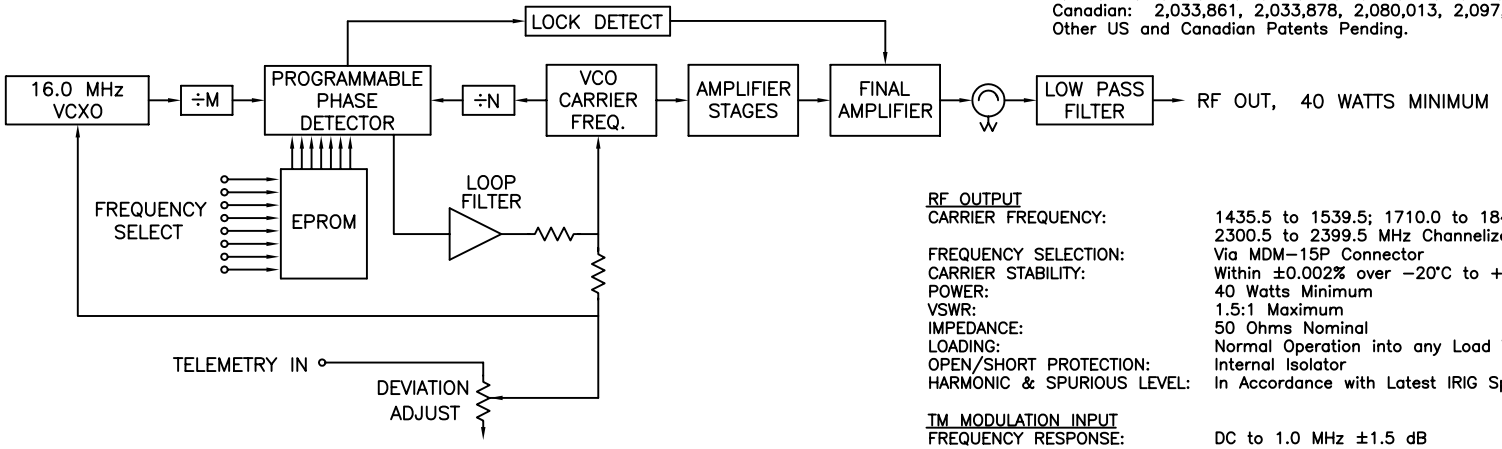


DATE 06 03 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN L3	TELEMETRY TRANSMITTER, 40 WATTS CHANNELIZED, AC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
APVD	
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-36DEA SERIES

Telemetry Transmitter Model ETTC-36DED Series

36 Cubic Inches 40 Watts

DC Coupled Channelized 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	1435.5 to 1539.5; 1710.0 to 1849.0; 2200.5 to 2299.5; 2300.5 to 2399.5 MHz Channelized in 1.0 MHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	40 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	Internal Isolator
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 1.0 MHz ±1.5 dB
PEAK DEVIATION:	±1.0 MHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±750 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±500 KHz/1V RMS @ 1435.5 to 1539.5 MHz; ±750 KHz/1V RMS @ 1710.0 to 2399.5 MHz
HARMONIC DISTORTION:	1.0% Maximum for ±750 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	10 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE: +28 ±4 VDC: Reverse Polarity Protected

INPUT CURRENT (MAXIMUM):

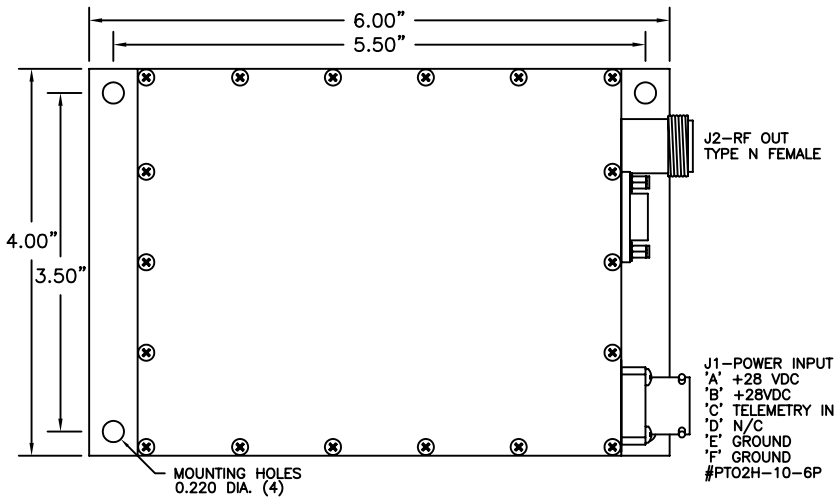
Band	Current
1435.5 to 1539.5 MHz	7.5 A
1710.0 to 1849.0 MHz	7.5 A
2200.5 to 2299.5 MHz	8.0 A
2300.5 to 2399.5 MHz	8.0 A

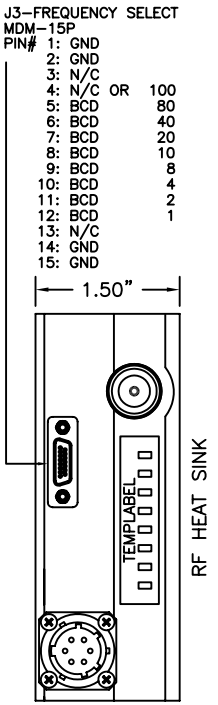
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum





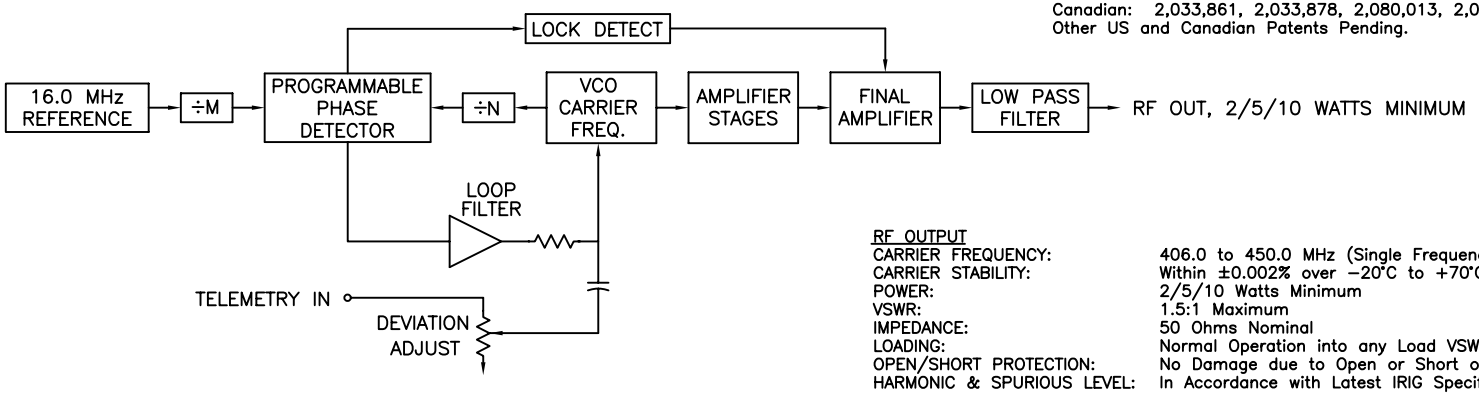
DATE 06 03 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN L3	TELEMETRY TRANSMITTER, 40 WATTS CHANNELIZED, DC COUPLED 1435.5 TO 2399.5 MHZ (4 BANDS)
APVD	
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-36DED SERIES

Telemetry Transmitter Model ETT-09B2A Series

9 Cubic Inches 2, 5 or 10 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 450.0 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

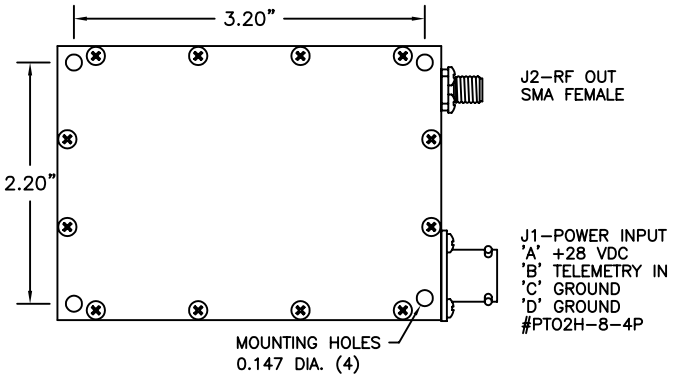
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (Maximum):	Power Current
	2 Watts 600 Milliamps
	5 Watts 1 Amp
	10 Watts 1.5 Amps

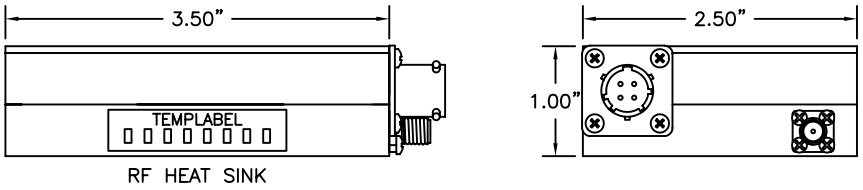
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum





DATE	05 07 08
DWN	L3
APVD	
QC	
CAGE CODE IDENT NO.	60666

EMHISER RESEARCH, INC.
2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM

TELEMETRY TRANSMITTER, 2/5/10 WATTS
SINGLE FREQUENCY, AC COUPLED
406.0 to 450.0 MHZ

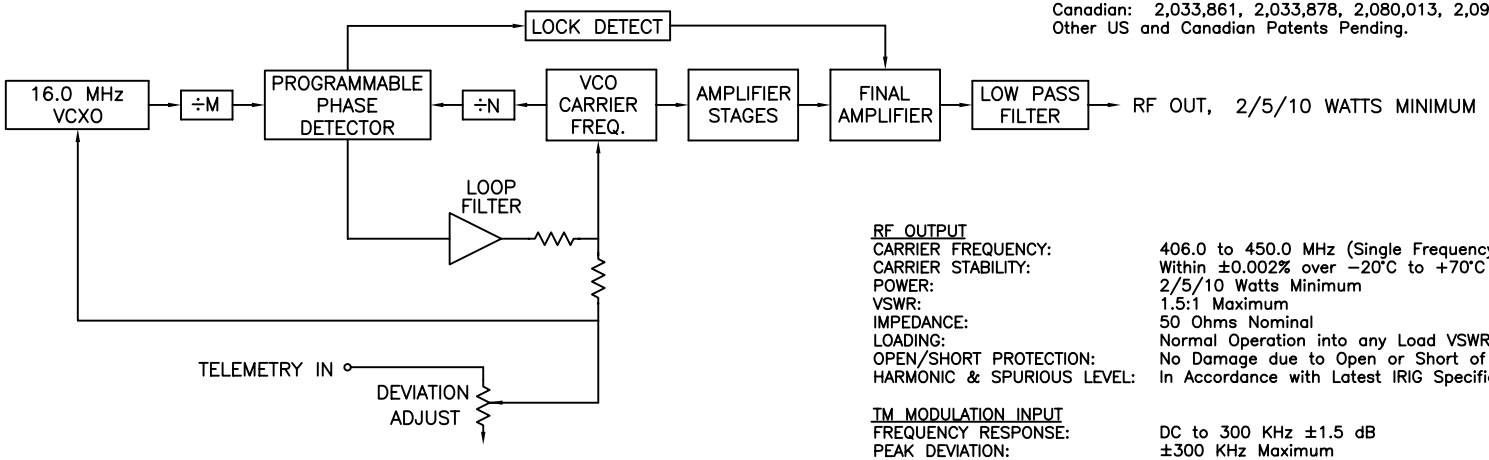
MODEL NO. ETT−09B2A−SERIES

Telemetry Transmitter Model ETT-09B2D Series

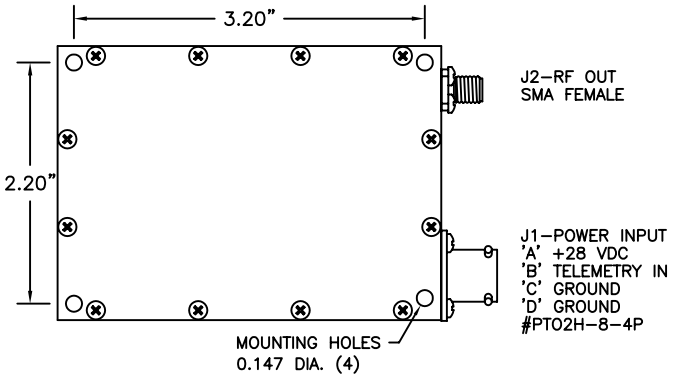
9 Cubic Inches 2, 5, or 10 Watts

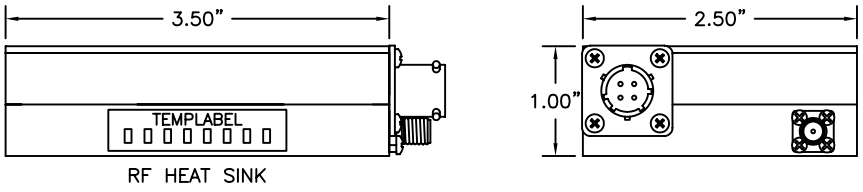
DC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT	
CARRIER FREQUENCY:	406.0 to 450.0 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications
TM MODULATION INPUT	
FREQUENCY RESPONSE:	DC to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum
POWER REQUIREMENTS	
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (Maximum):	Power Current
	2 Watts 600 Milliamps
	5 Watts 1 Amp
	10 Watts 1.5 Amps
ENVIRONMENTAL SPECIFICATIONS	
TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation
PHYSICAL CHARACTERISTICS	
DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum





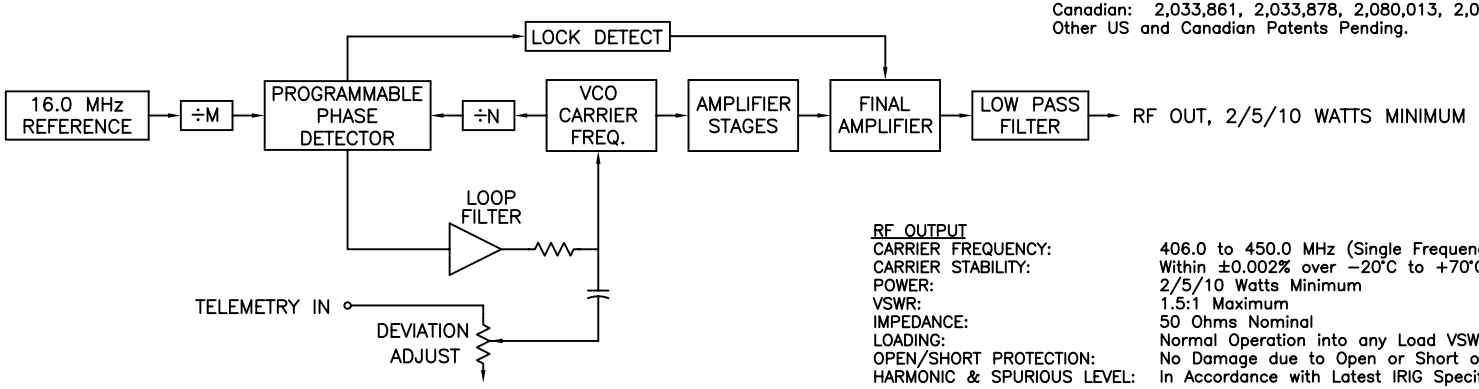
DATE 05 07 08	EMHISER RESEARCH, INC.
DWN L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2/5/10 WATTS SINGLE FREQUENCY, DC COUPLED 406.0 to 450.0 MHZ
	MODEL NO. ETT−09B2D−SERIES

Telemetry Transmitter Model ETT-11B2A Series

11 Cubic Inches 2, 5, or 10 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 450.0 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

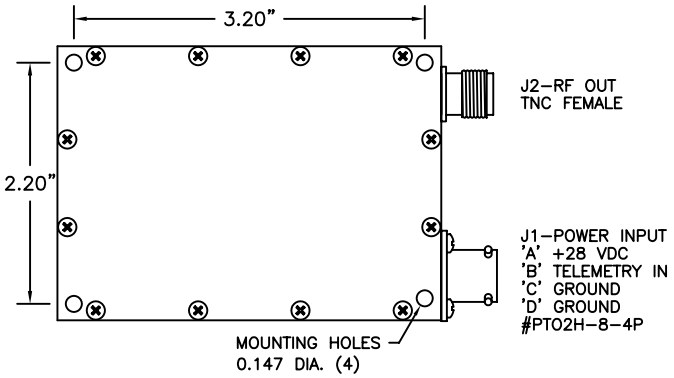
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (Maximum):	Power / Current
	2 Watts / 600 Milliamps
	5 Watts / 1 Amp
	10 Watts / 1.5 Amps

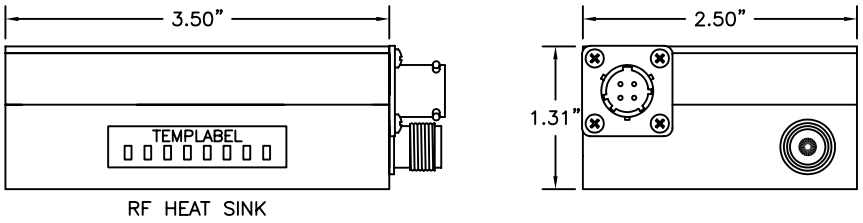
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum



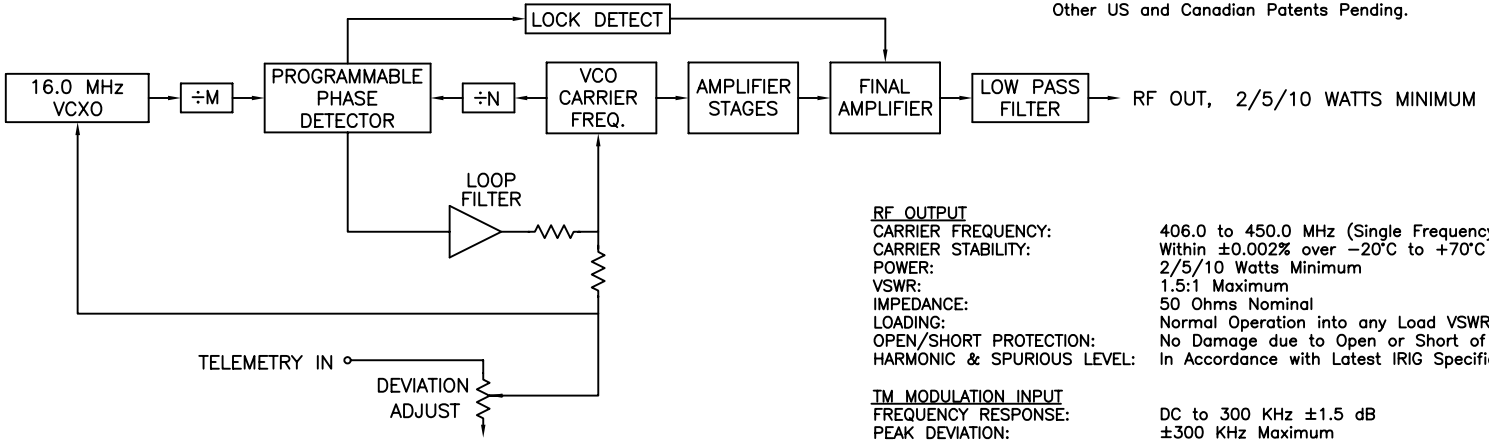


DATE: 05 07 08	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD:	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC:	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2/5/10 WATTS SINGLE FREQUENCY, AC COUPLED 406.0 to 450.0 MHZ
	MODEL NO. ETT−11B2A−SERIES

Telemetry Transmitter Model ETT-11B2D Series

9 Cubic Inches 2, 5, or 10 Watts

DC Coupled Single Frequency 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 450.0 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE: +28 ±4 VDC: Reverse Polarity Protected

INPUT CURRENT(Maximum):

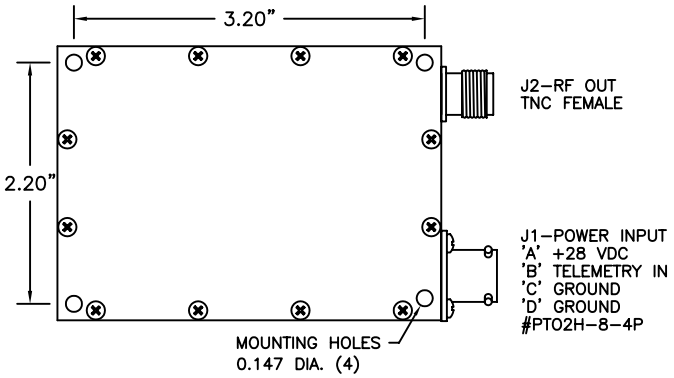
Power	Current
2 Watts	600 Milliamps
5 Watts	1 Amp
10 Watts	1.5 Amps

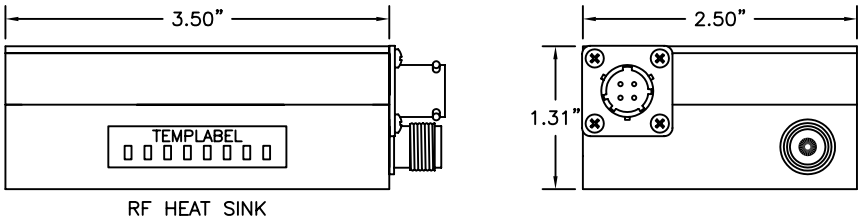
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum





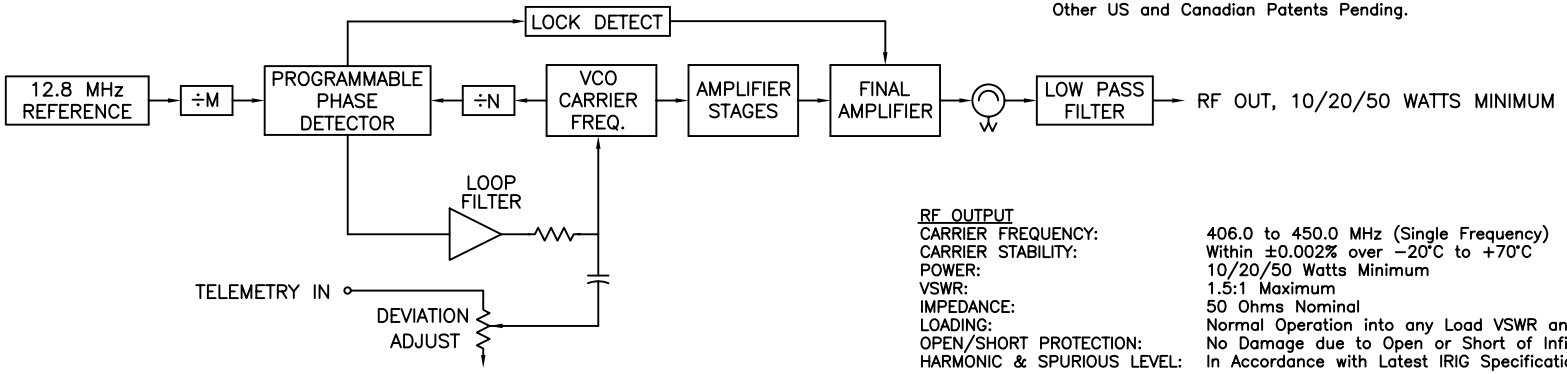
DATE: 05 07 08	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER 2/5/10 WATTS
QC:	SINGLE FREQUENCY, DC COUPLED 406.0 TO 450.0 MHZ
CAGE CODE IDENT NO. 60666	MODEL NO. ETT−11B2D−SERIES

Telemetry Transmitter Model ETT-36B2A Series

36 Cubic Inches 10, 20, or 50 Watts

AC Coupled Single Frequency 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 450.0 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	10/20/50 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

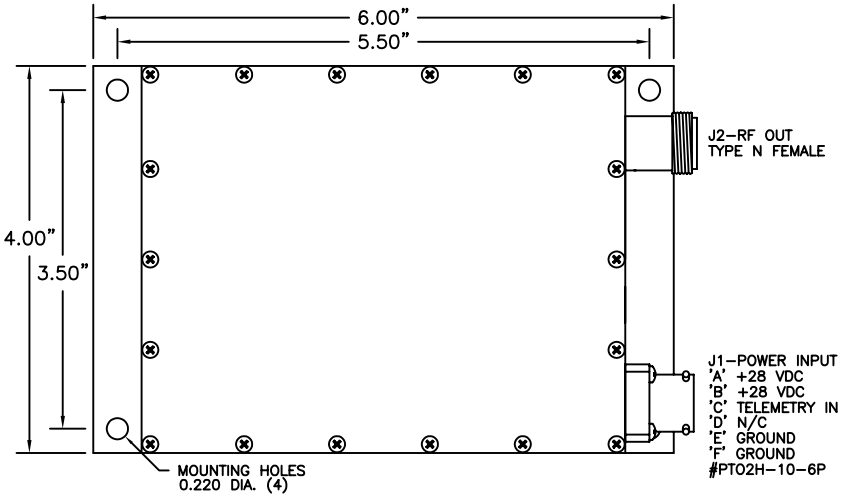
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected	
INPUT CURRENT (MAXIMUM):	Output Power	Input Current
	10 Watts	1.5 Amps
	20 Watts	2.6 Amps
	50 Watts	6.5 Amps

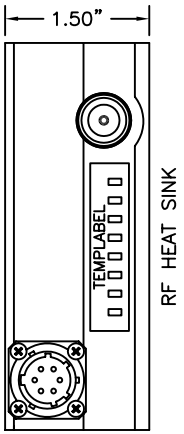
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum



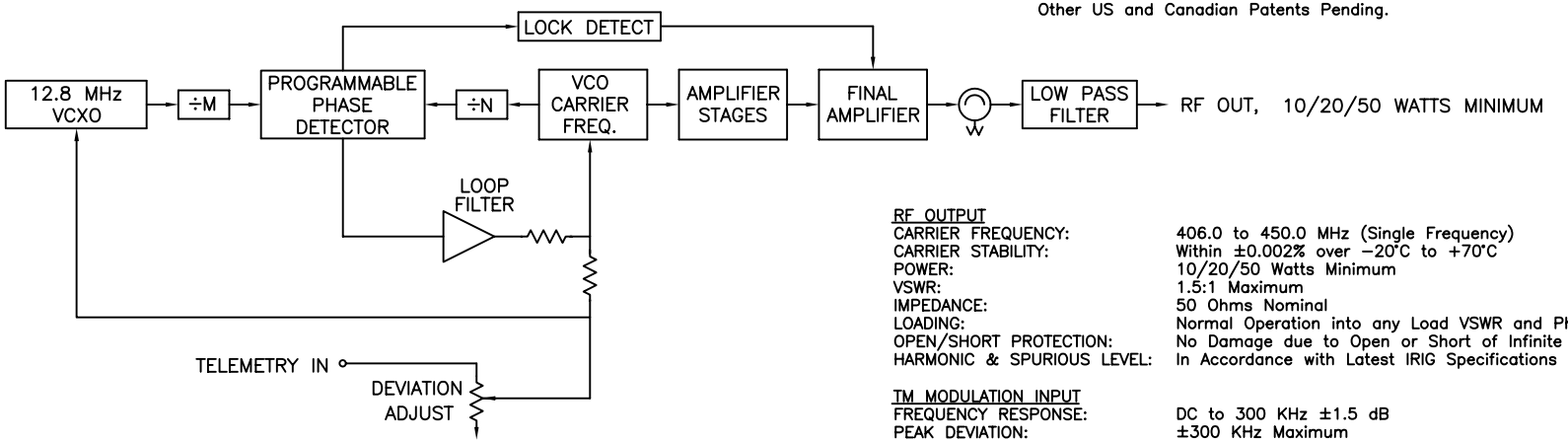


DATE 06 03 08	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN L3	
APVD	TELEMETRY TRANSMITTER, 10/20/50 WATTS SINGLE FREQUENCY, AC COUPLED 406.0 to 450.0 MHZ
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETT-36B2A-SERIES

Telemetry Transmitter Model ETT-36B2D Series

36 Cubic Inches 10, 20, or 50 Watts

DC Coupled Single Frequency 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 450.0 MHz (Single Frequency)
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	10/20/50 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON−LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

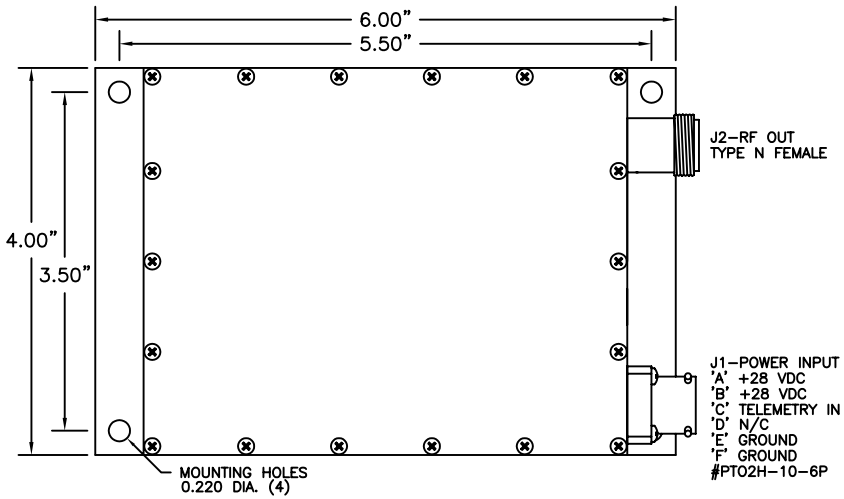
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Output Power / Input Current
	10 Watts 1.5 Amps
	20 Watts 2.6 Amps
	50 Watts 6.5 Amps

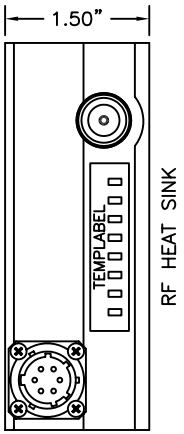
ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum





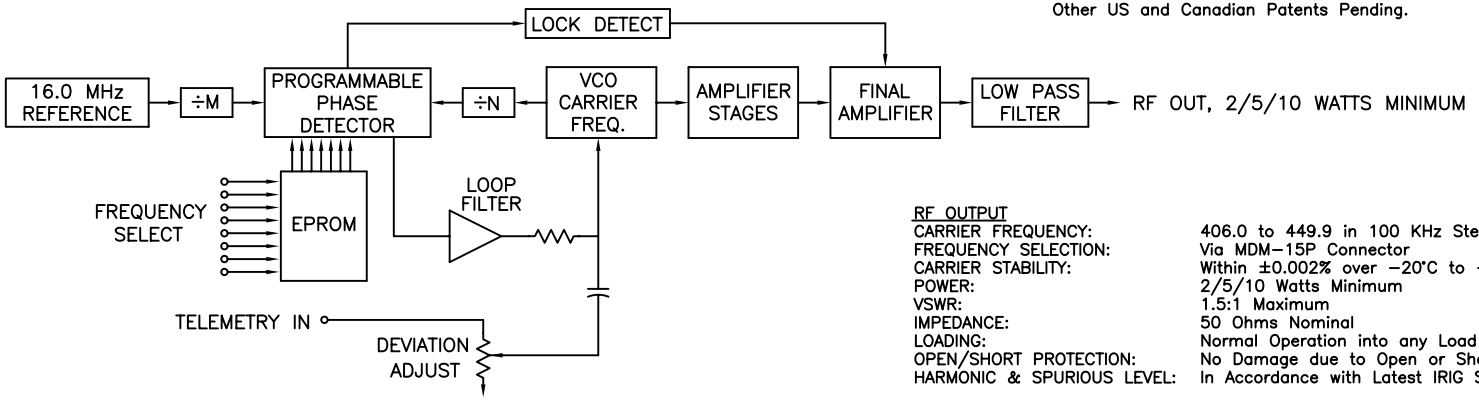
DATE 06 03 08	EMHISER RESEARCH, INC.
DWN L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 10/20/50 WATTS SINGLE FREQUENCY, DC COUPLED 406.0 to 450.0 MHZ
	MODEL NO. ETT−36B2D−SERIES

Telemetry Transmitter Model ETTC-09B2A Series

9 Cubic Inches 2, 5, or 10 Watts

AC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 449.9 in 100 KHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

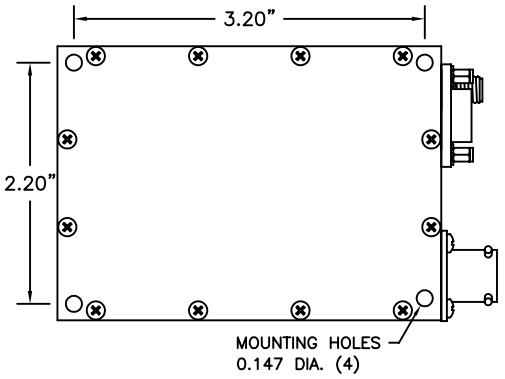
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (Maximum):	Power / Current
	2 Watts / 600 Milliamps
	5 Watts / 1 Amp
	10 Watts / 1.5 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

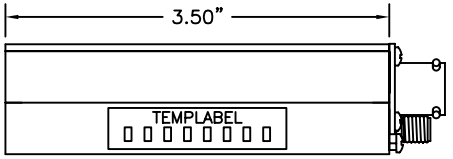
DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum



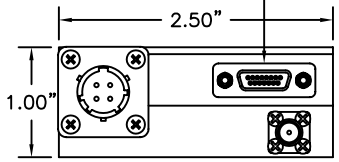
J1-POWER INPUT
'A' +28 VDC
'B' TELEMETRY IN
'C' GROUND
'D' GROUND
#PT02H-8-4P

J3-FREQUENCY SELECT
MDM-15P
MICRO MINIATURE

PIN#		
1:	GND	
2:	GND	
3:	BCD	40
4:	BCD	20
5:	BCD	10
6:	BCD	8
7:	BCD	4
8:	BCD	2
9:	BCD	1
10:	BCD	0.8
11:	BCD	0.4
12:	BCD	0.2
13:	BCD	0.1
14:	GND	
15:	GND	



RF HEAT SINK



J2-RF OUT
SMA FEMALE

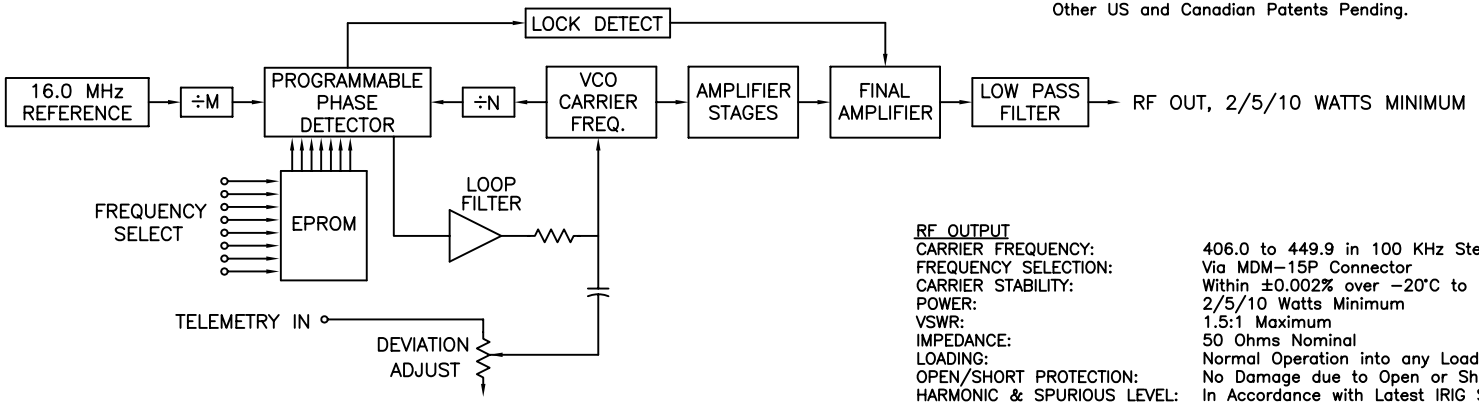
DATE: 05 07 10	EMHISER RESEARCH, INC. 2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
DWN: L3	TELEMETRY TRANSMITTER, 2/5/10 WATTS CHANNELIZED, AC COUPLED 406.0 TO 449.9 MHZ
APVD	
QC	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-09B2A-SERIES

Telemetry Transmitter Model ETTC-09B2D Series

9 Cubic Inches 2, 5, or 10 Watts

DC Coupled Channelized 28 VDC

Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 449.9 in 100 KHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

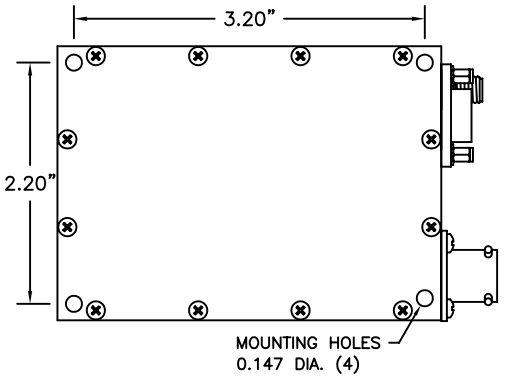
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (Maximum):	Power / Current
	2 Watts / 600 Milliamps
	5 Watts / 1 Amp
	10 Watts / 1.5 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

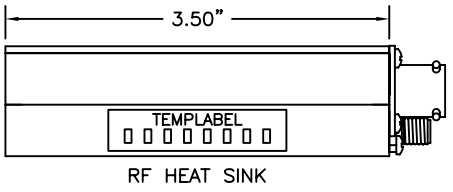
DIMENSIONS:	Per Outline Drawing
WEIGHT:	12 oz. Maximum



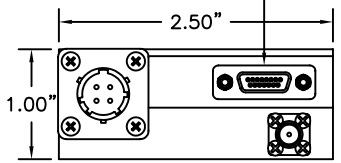
J1-POWER INPUT
'A' +28 VDC
'B' TELEMETRY IN
'C' GROUND
'D' GROUND
#PT02H-8-4P

J3-FREQUENCY SELECT
MDM-15P
MICRO MINIATURE

PIN#		
1:	GND	
2:	GND	
3:	BCD	40
4:	BCD	20
5:	BCD	10
6:	BCD	8
7:	BCD	4
8:	BCD	2
9:	BCD	1
10:	BCD	0.8
11:	BCD	0.4
12:	BCD	0.2
13:	BCD	0.1
14:	GND	
15:	GND	



RF HEAT SINK



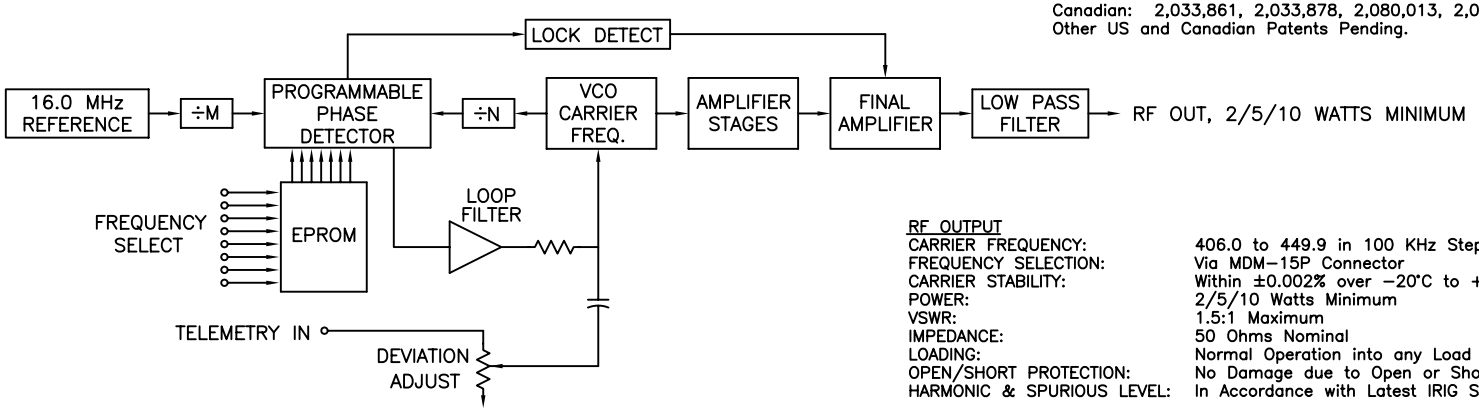
J2-RF OUT
SMA FEMALE

DATE: 05 07 10	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD:	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC:	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2/5/10 WATTS CHANNELIZED, DC COUPLED 406.0 TO 449.9 MHZ
	MODEL NO. ETTC-09B2D-SERIES

Telemetry Transmitter Model ETTC-11B2A Series

11 Cubic Inches 2, 5, or 10 Watts

AC Coupled Channelized 28 VDC



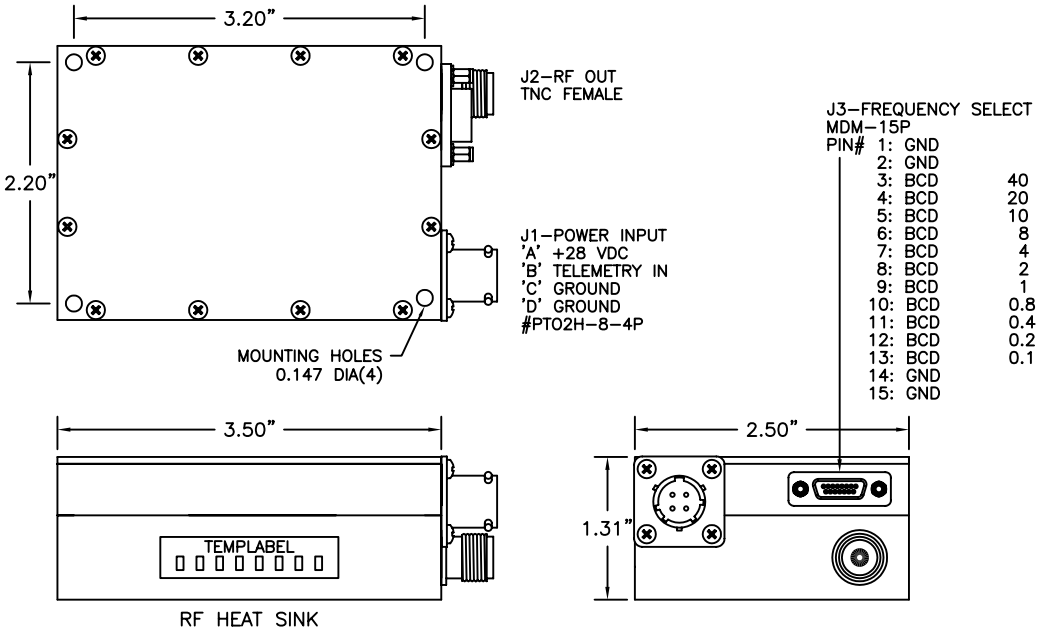
RF OUTPUT	
CARRIER FREQUENCY:	406.0 to 449.9 in 100 KHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over −20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT	
FREQUENCY RESPONSE:	100 Hz to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS	
INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (Maximum):	Power — Current
	2 Watts — 600 Milliamps
	5 Watts — 1 Amp
	10 Watts — 1.5 Amps

ENVIRONMENTAL SPECIFICATIONS	
TEMPERATURE:	Operating: −20°C to +70°C; Storage: −54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS	
DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum

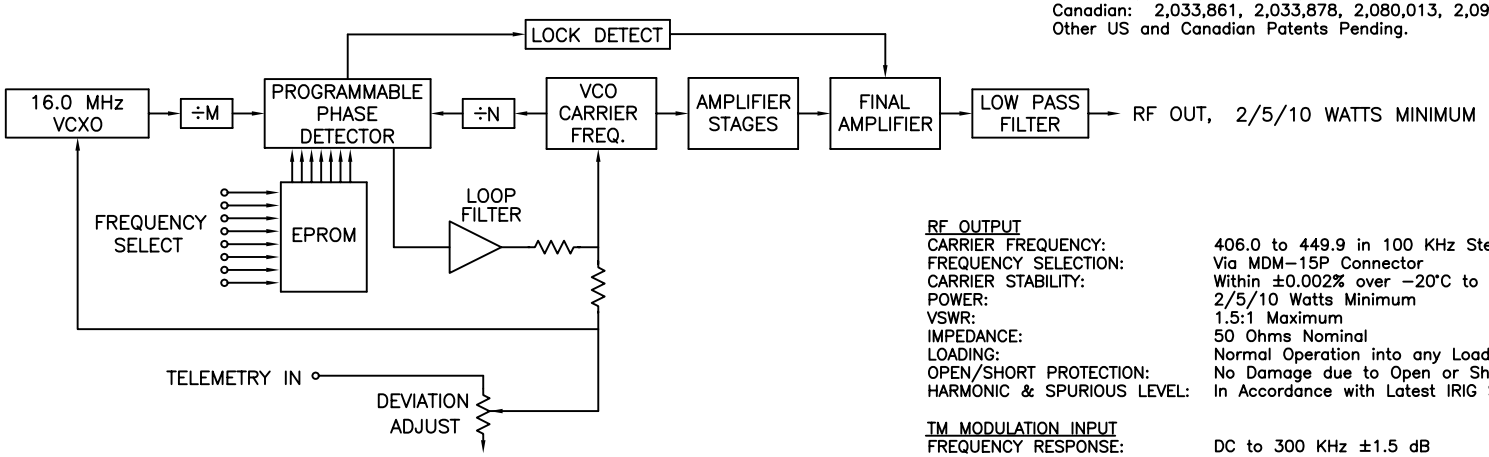


DATE: 05 07 10	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD:	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC:	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 2/5/10 WATTS CHANNELIZED, AC COUPLED 406.0 TO 449.9 MHZ
	MODEL NO. ETTC-11B2A-SERIES

Telemetry Transmitter Model ETTC-11B2D Series

11 Cubic Inches 2, 5, or 10 Watts

DC Coupled Channelized 28 VDC



RF OUTPUT

CARRIER FREQUENCY:	406.0 to 449.9 in 100 KHz Steps
FREQUENCY SELECTION:	Via MDM-15P Connector
CARRIER STABILITY:	Within ±0.002% over -20°C to +70°C
POWER:	2/5/10 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	DC to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON-LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE: +28 ±4 VDC: Reverse Polarity Protected

INPUT CURRENT (Maximum):

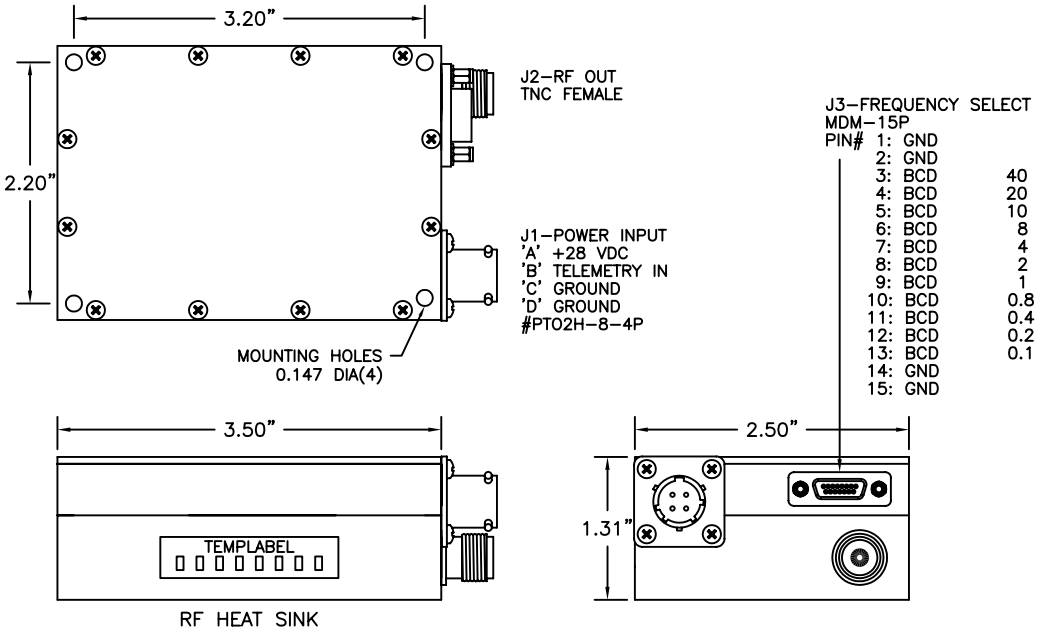
Power	Current
2 Watts	600 Milliamps
5 Watts	1 Amp
10 Watts	1.5 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: -20°C to +70°C; Storage: -54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	14 oz. Maximum



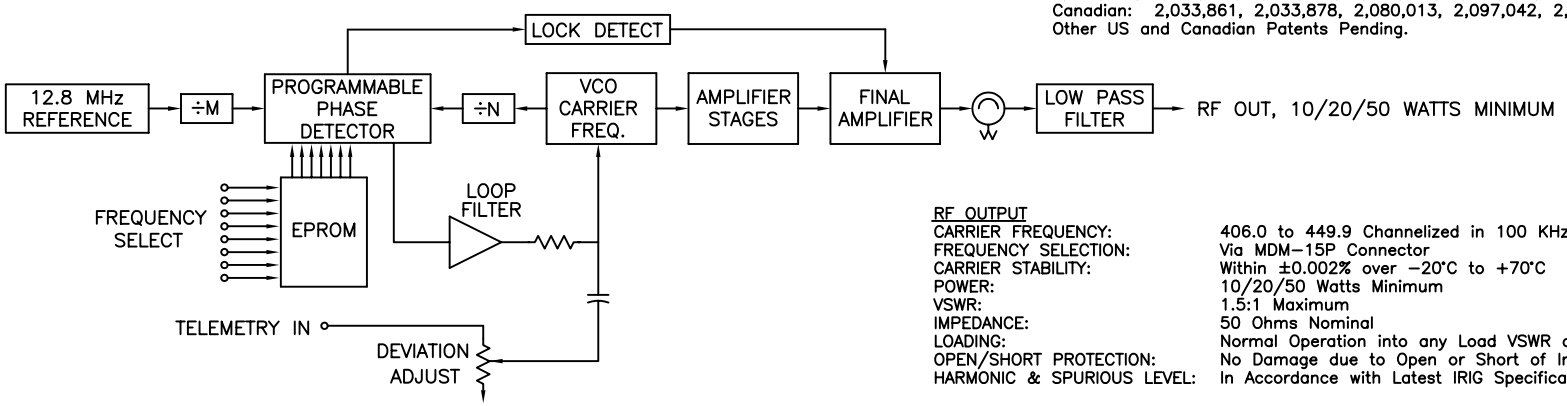
DATE: 05 07 10	EMHISER RESEARCH, INC.
DWN: L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705 P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484 89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
APVD:	TELEMETRY TRANSMITTER, 2/5/10 WATTS CHANNELIZED, DC COUPLED 406.0 TO 449.9 MHZ
QC:	
CAGE CODE IDENT NO. 60666	MODEL NO. ETTC-11B2D-SERIES

Telemetry Transmitter Model ETTC-36B2A Series

36 Cubic Inches 10, 20, or 50 Watts

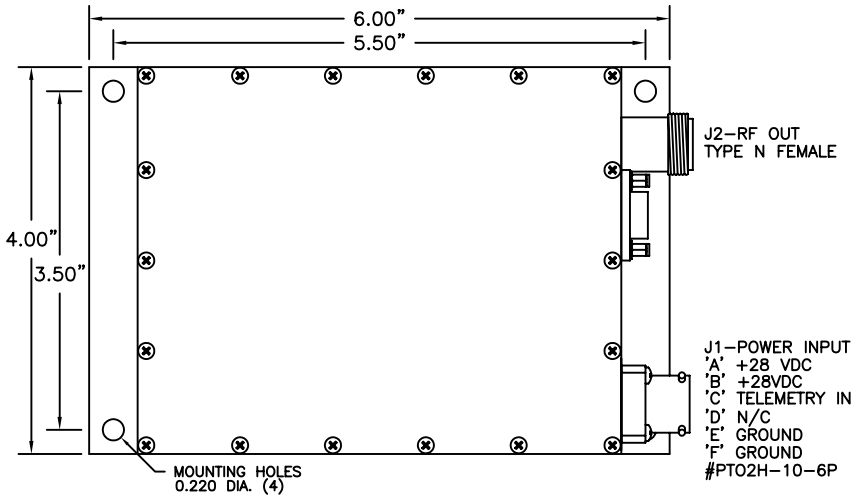
AC Coupled Channelized 28 VDC

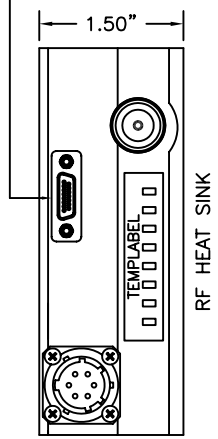
Protected by One or More of the following Patents:
US: 5,091,706, 5,097,230, 5,311,152, 5,497,509, 5,802,462, 6,404,292, 6,411,237, 6,417,738, 6,650,180, 6,683,499, 6,690,238, 6,747,517, and 6,771,133.
Canadian: 2,033,861, 2,033,878, 2,080,013, 2,097,042, 2,235,091, and 2,308,209.
Other US and Canadian Patents Pending.



J3–FREQUENCY SELECT
MDM–15P

PIN#		
1:	GND	
2:	GND	
3:	BCD	40
4:	BCD	20
5:	BCD	10
6:	BCD	8
7:	BCD	4
8:	BCD	2
9:	BCD	1
10:	BCD	0.8
11:	BCD	0.4
12:	BCD	0.2
13:	BCD	0.1
14:	GND	
15:	GND	





RF OUTPUT

CARRIER FREQUENCY:	406.0 to 449.9 Channelized in 100 KHz Steps
FREQUENCY SELECTION:	Via MDM–15P Connector
CARRIER STABILITY:	Within ±0.002% over –20°C to +70°C
POWER:	10/20/50 Watts Minimum
VSWR:	1.5:1 Maximum
IMPEDANCE:	50 Ohms Nominal
LOADING:	Normal Operation into any Load VSWR and Phase Angle
OPEN/SHORT PROTECTION:	No Damage due to Open or Short of Infinite Duration
HARMONIC & SPURIOUS LEVEL:	In Accordance with Latest IRIG Specifications

TM MODULATION INPUT

FREQUENCY RESPONSE:	100 Hz to 300 KHz ±1.5 dB
PEAK DEVIATION:	±300 KHz Maximum
DEVIATION NON–LINEARITY:	1.0% Maximum BSL for ±300 KHz Deviation
DEVIATION SENSITIVITY:	Factory set at ±300 KHz/1V RMS
HARMONIC DISTORTION:	1.0% Maximum for ±300 KHz Deviation
INCIDENTAL AM:	5% Maximum
INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	Power – Current
	10 Watts – 1.5 Amps
	20 Watts – 2.6 Amps
	50 Watts – 6.5 Amps

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE:	Operating: –20°C to +70°C; Storage: –54°C to +125°C
VIBRATION:	14 G's, Random, Standard Haystack, 20 Hz to 2 KHz, 3 Axes
SHOCK:	1/2 Sine, 100 G's Pk, 11 mS, 3 Axes
ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
HUMIDITY:	To 95% at any Temperature forming Frost or Condensation

PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum

DATE 06 03 08	EMHISER RESEARCH, INC.
DWN L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
APVD	P.O.BOX 189 VERDI, NEVADA FAX:775-345-2484
QC	89439-0189 U.S.A. EMAIL: INFO@EMHISER.COM
CAGE CODE IDENT NO. 60666	TELEMETRY TRANSMITTER, 10/20/50 WATTS CHANNELIZED, AC COUPLED 406.0 TO 449.9 MHZ
	MODEL NO. ETTC–36B2A–SERIES

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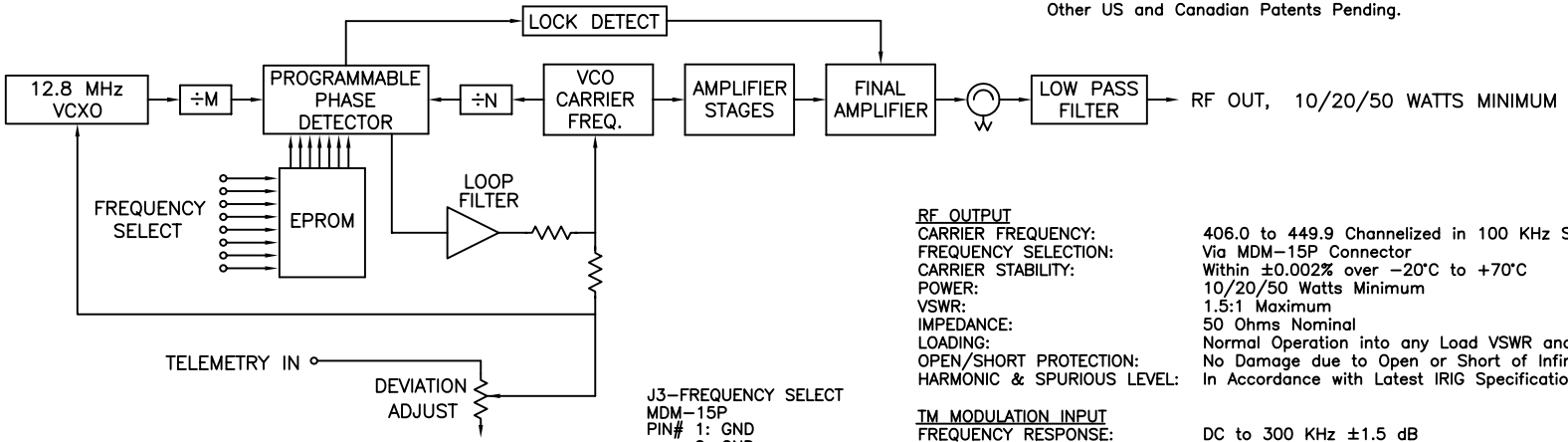

J3–FREQUENCY SELECT
MDM–15P

PIN#		
1:	GND	
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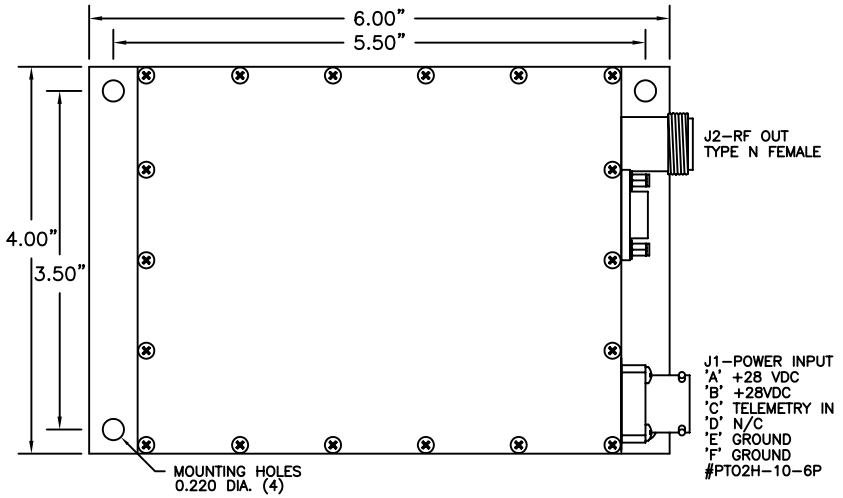
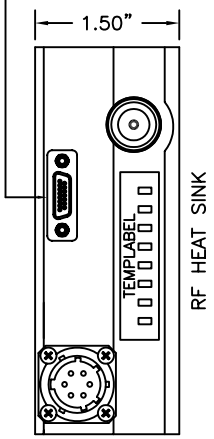
5:	BCD	10
6:	BCD	8
7:	BCD	4
8:	BCD	2
9:	BCD	1
10:	BCD	0.8
11:	BCD	0.4
12:	BCD	0.2
13:	BCD	0.1
14:	GND	
15:	GND	





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INCIDENTAL FM:	5 KHz RMS Maximum
INPUT IMPEDANCE:	10 KOhms Minimum

POWER REQUIREMENTS

INPUT VOLTAGE:	+28 ±4 VDC: Reverse Polarity Protected
INPUT CURRENT (MAXIMUM):	

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ACCELERATION:	100 G's, 3 Axes
ALTITUDE:	Unlimited
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PHYSICAL CHARACTERISTICS

DIMENSIONS:	Per Outline Drawing
WEIGHT:	28 oz. Maximum

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DWN L3	2705 OLD HIGHWAY 40 WEST TEL:775-345-2705
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	MODEL NO. ETTC–36B2D–SERIES