MANUAL-005-V1.0

S-Band Downconverter Pro User Manual V1.0

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1 Specification

1.1 RF Specification

Frequency Range (RF)	1980-2700MHz
RF Input Power (dBm)	Maximum 1mW (0dBm) in low gain
Output P1dB	+20dBm (high gain), +3dBm (low gain)
Output IP3	+33dBm (high gain), +16dBm (low gain)
Output Frequency (IF)	108-828MHz @ 2808MHz LO (Default)
	134-854MHz @ 1846MHz LO
	280-1000MHz @ 1700MHz LO
	150-870MHz @ 2850MHz LO
	180-900MHz @ 1800MHz LO
Gain (Switchable)	18dB nominal (low gain)
	43dB nominal (high gain)
Noise Figure @ 25ºC	3.5dB (high gain)
LO Frequency (MHz) (Switchable)	2808MHz (DEFAULT), 1846MHz, 1700MHz, 2850MHz, 1800MHz
LO Setting Accuracy @ 25ºC	±2.0ppm
LO Frequency Stability (-40…+85ºC)	±1.0ppm
LO Frequency Stability (Aging)	±1.0ppm/year
Phase Noise @ 2808MHz LO	-91dBc/Hz @ 1kHz
	-107dBc/Hz @ 10kHz
	-104dBc/Hz @ 100kHz

1.2 Electrical Specification

Operating Case Temperature Range (ºC)	-20 to +55ºC
Supply Voltage (Volts)	+9V to +36V DC. For best performance when using a cable length of 30m+, please ensure the Rx is running at 12V
Current Consumption (mA at 9Vin)	240mA (Low Gain), 275mA (High Gain)
Power Consumption (Watts)	2.2-2.5W nominal

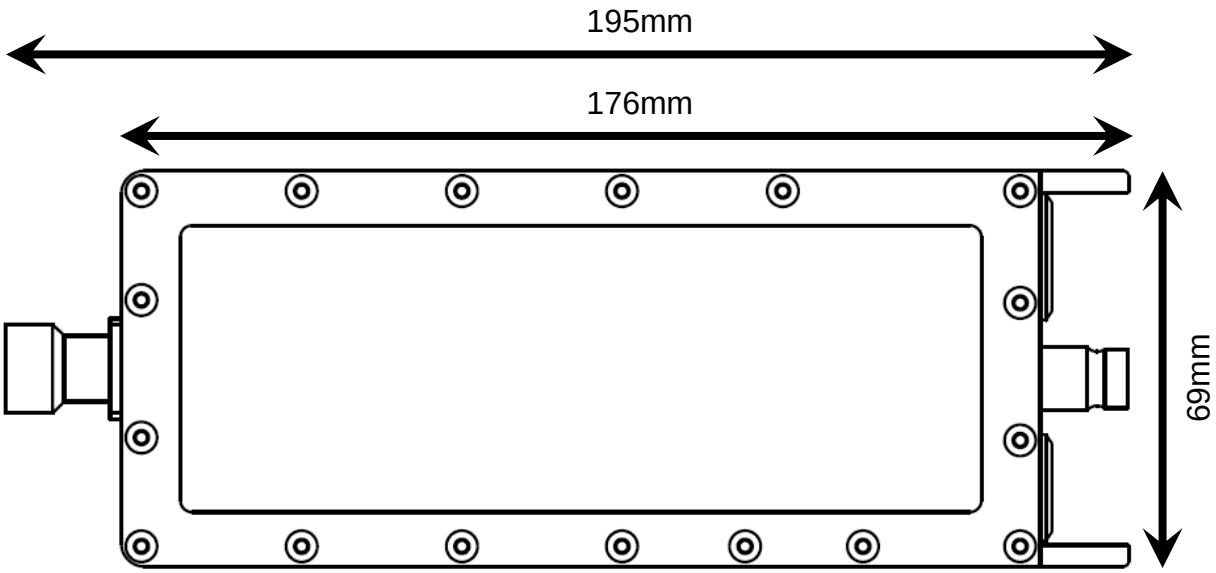
1.3 Connectors

Input Connector and Impedance	N-Type Female, 50Ω
Output Connector and Impedance	BNC Female, 75Ω

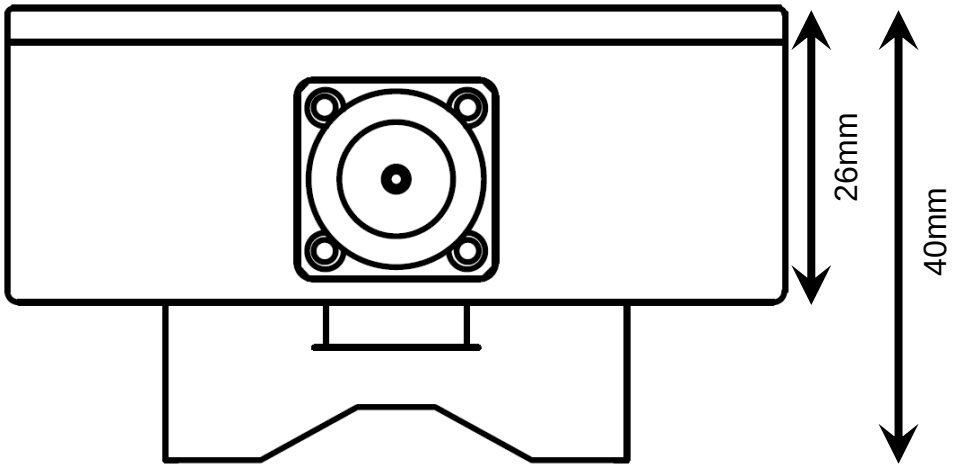
1.4 Mechanical Specification

Dimensions (mm) (LxWxH)	176x69x29mm without bracket
	195x69x39mm with bracket and connectors
Enclosure Material	Milled Aluminium
Enclosure Colour	Black Anodised
Mounting Options	Bracket attached to bottom (see section 5)
Mass (grams)	560grams (with bracket)
	525grams (without bracket)
IP Rating	IP65

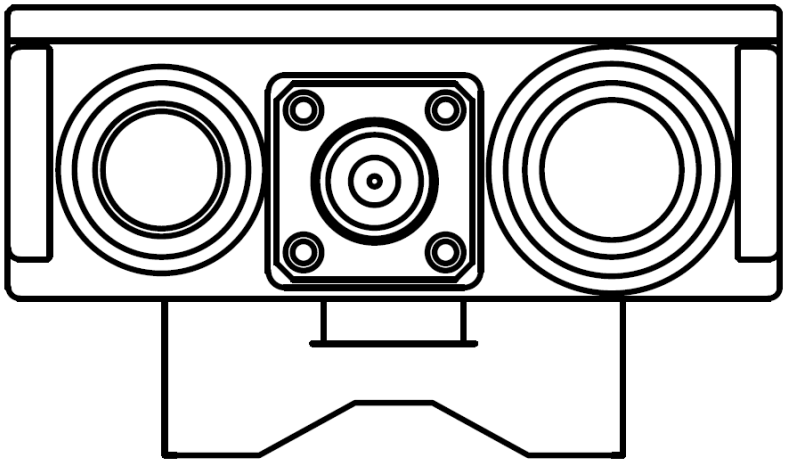
2 Mechanical Information



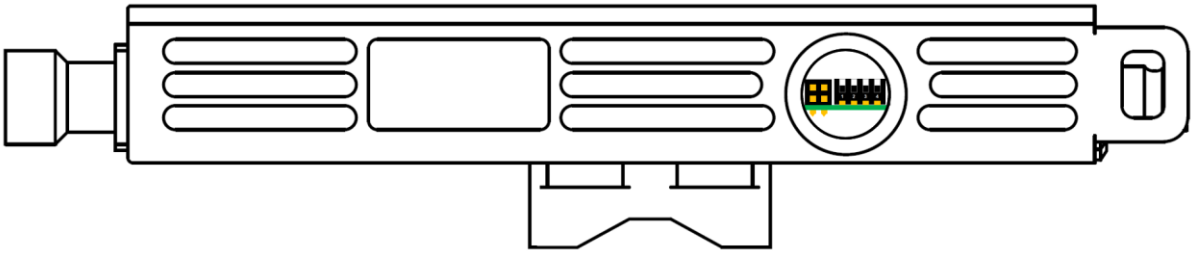
Top – Showing lid fixing screws and rectangular label recess



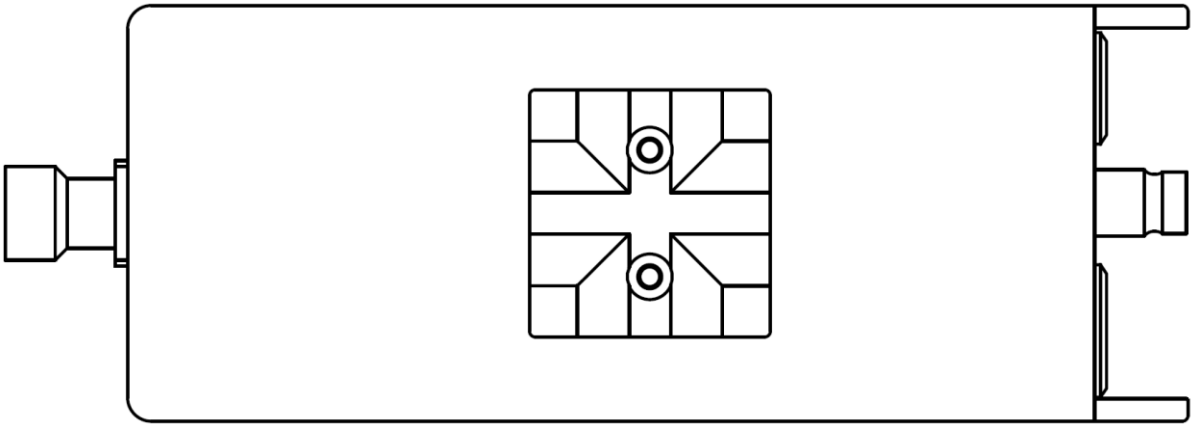
Input End – Showing input connector, N-Type



Output End – gain switch (left), output BNC connector (centre), filter band switch (right)



Side – Showing label recess and bung hole with UART serial interface header and configuration DIP switches



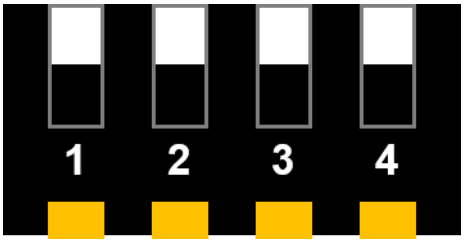
Bottom – Showing mounting bracket attached to the underside

The unit is designed such that there are ‘ears’ on the output connector end to protect the BNC in the event of the unit being dropped. They also serve a second function of giving extra protection from water hitting or resting on the output face.

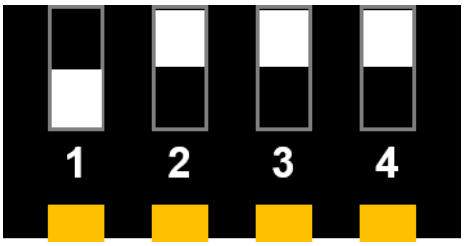
3 Local Oscillator Configuration

3.1 DIP Switches

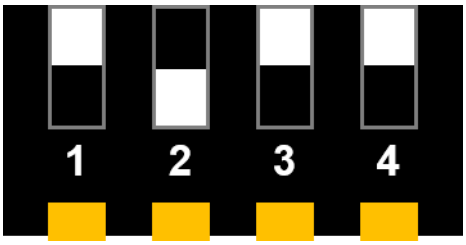
The unit has configuration switches in the form of a 4-way DIP switch arrangement accessible through a hole in the side of the unit by unscrewing the bung. These switches change the state of the unit into 9 different *programs*. The function of each of these switches is described below.



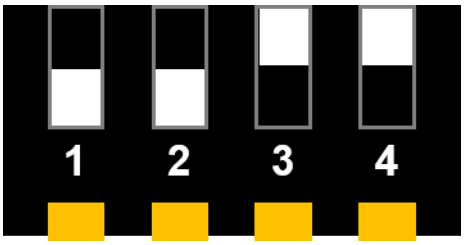
Program #0 – Default State. LO = 2808MHz



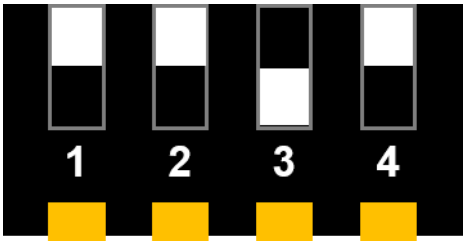
Program #1 – LO = 1846MHz



Program #2 – LO = 1700MHz



Program #3 – LO = 2850MHz



Program #4 – LO = 1800MHz

Truth Table

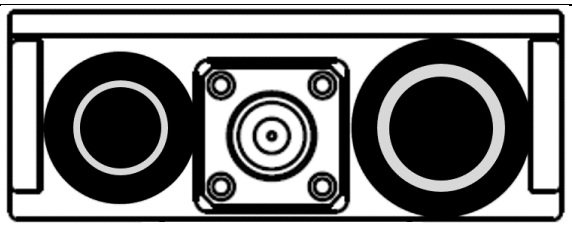
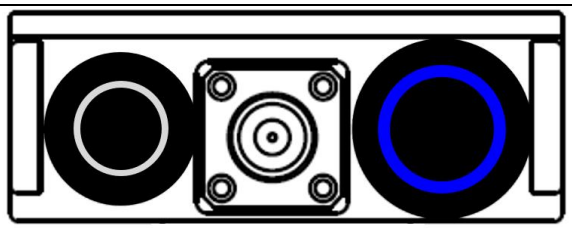
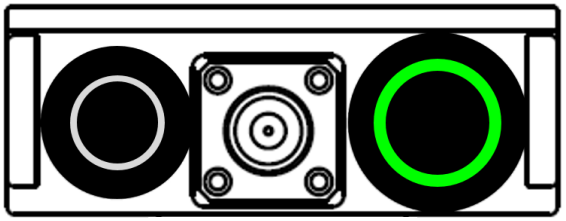
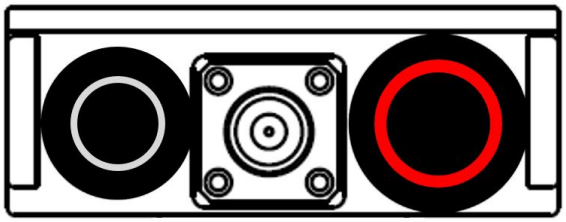
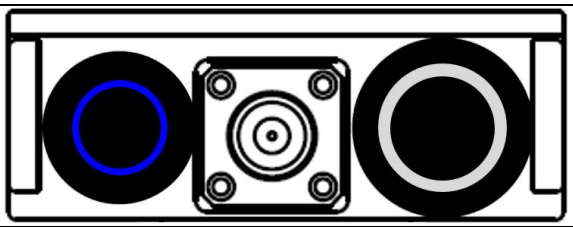
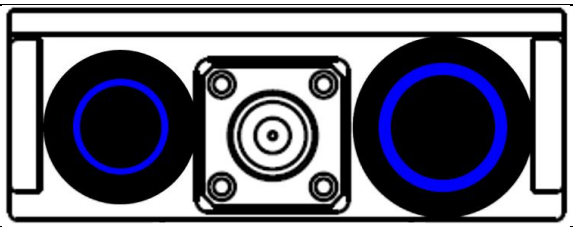
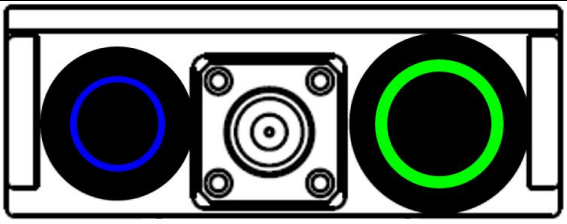
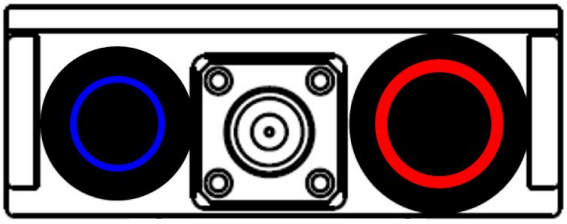
LO Frequency/ 'Program'	DIP Switch Configuration
2808MHz	0000
1846MHz	1000
1700MHz	0100
2850MHz	1100
1800MHz	0010

Note:

- All other combinations of switches not illustrated here does not have a function associated with it.
- Switch 4 for UART serial configuration state overrides the other 3 switches.

4 Unit States

There are 2 switches on the output end of the unit. The one on the left as you look at the unit with the lid on top is to control the gain, high and low. The other is to control which of the 3 internal filters is selected. There are 8 different gain and filter combinations the unit can be in.

	
Low Gain. Error State	Low Gain. High Narrowband Filter State
	
Low Gain. Low Narrowband Filter State	Low Gain. Wideband Filter State
	
High Gain. Error State	High Gain. High Narrowband Filter State
	
High Gain. Low Narrowband Filter State	High Gain. Wideband Filter State

4.1 Gain Selection

The unit offers two gain states, high and low, as below.
High gain = 42dB. Low gain = 18dB

4.2 Filter Selection

The unit offers 3 different filter states, as below.

Band	Colour	Frequency
Wideband	Red	1980-2700MHz
Low Narrowband	Green	-
High Narrowband	Blue	-

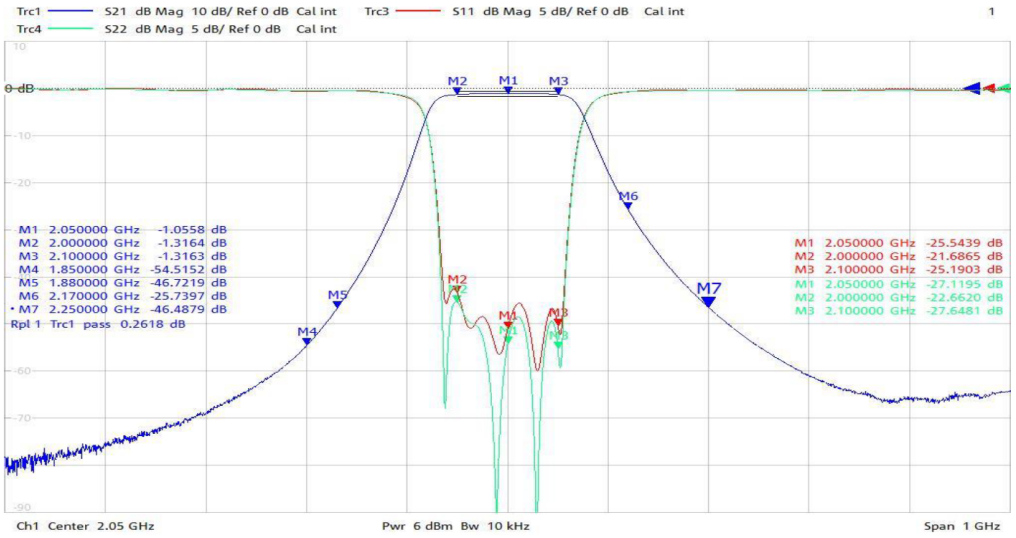
It depends which filters from section 4.3 below the customer wishes to have installed, the low narrowband and the high narrowband might therefore change depending on the choices made.

4.3 Filter Options

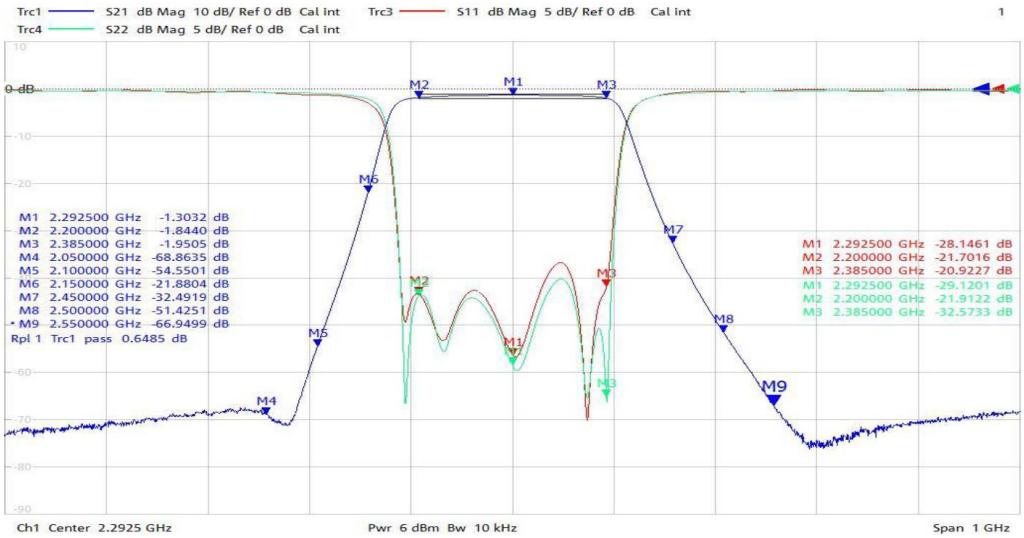
The S-Band Downconverter Pro offers different filters depending on the requirements of the customer. The available filter bands are below.

Option (X)	Part Number	Passband Frequency (MHz)
A	ABFI-2021-BPF-01	2000-2100
B	ABFI-2223-BPF-01	2200-2300
C	ABFI-2224-BPF-01	2200-2400
D	ABFI-2527-BPF-01	2500-2700

The customer may choose up to 2 of the above filters to be installed in their unit(s).



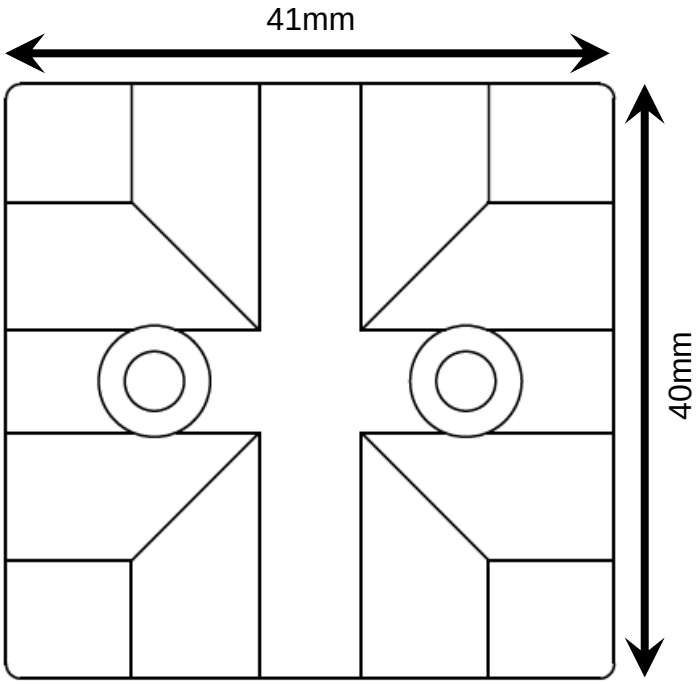
Narrowband View of 2.0-2.1GHz Filter



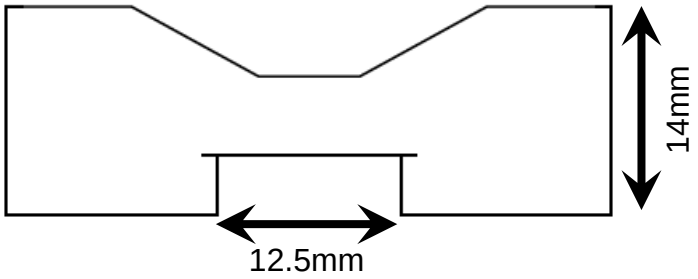
Narrowband View of 2.2-2.4GHz Filter

5 Mounting Bracket

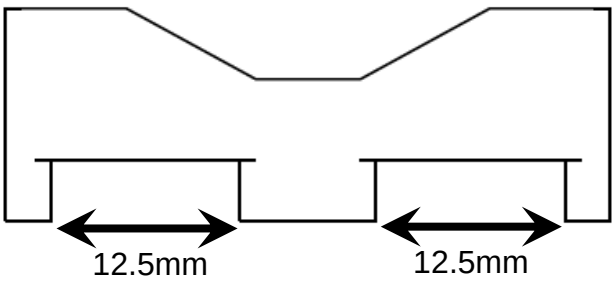
The mounting bracket is designed such that jubilee clips, cable ties or other such accessory can be used to attach the downconverter to a post or pole with a diameter between 30-100mm.



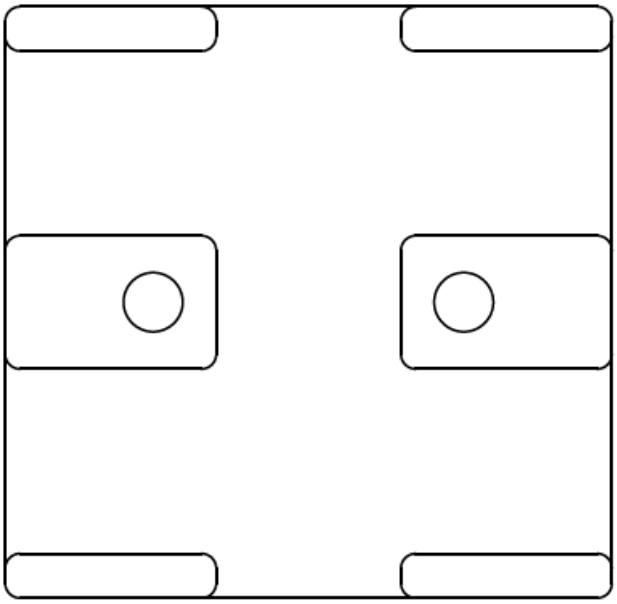
Top. Showing contours and the two countersunk mounting holes to attach to the downconverter



Side. Showing a recess for attachment to a pole or post by means of cable ties or jubilee clips



Side. Showing two recesses for attachment to a pole or post by means of cable ties or jubilee clips



Bottom. Showing the mounting points and channels for cable ties, jubilee clips or other means of attaching to a post/pole