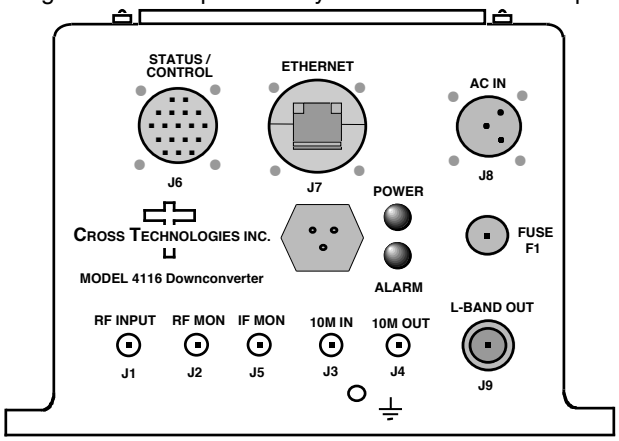
CROSS TECHNOLOGIES, INC.

# DATA SHEET

**REV. E** 8/12/14

## 4116-41-212 Ka-band Block Downconverter, Weather Resistant*

The 4116-41-212 Ka-band Block Downconverter converts 17.7 - 21.2 GHz to 0.95 - 1.95 GHz in four selectable fixed bands. Front panel LEDs provide indication of DC Power and PLL Alarms. The **RF to L-band** gain is **+20 dB.** Connectors are **2.92 mm** for RF In, **RF Monitor,** and **IF** Monitor, SMA for external reference input and output, and Type N (all female) for L-band out. Gain, band select, and internal 10 MHz frequency are controlled by the Ethernet M&C. In AUTO, the 10 MHz reference stays in external if the external level is in the +2 to +8 dBm range. The unit is powered by a 100-240 ±10% VAC power supply, and is in a 8"W X 6"H X 16"D Weather Resistant* enclosure.




***Weather Resistant** enclosures are designed to be water resistant for installation in an outdoor enclosure/antenna hut OR mounted outdoors on an antenna assembly at their specified temperature ranges. They are designed to be located "out in the elements" (water, sleet, snow, etc.) but they are *not* designed to be "submerged under" water.

**Option W21 - Extended Temperature** option ( -30 to +60˚C operating, -40 to -60 ˚C storage) available at an additional cost Contact Cross for quote.

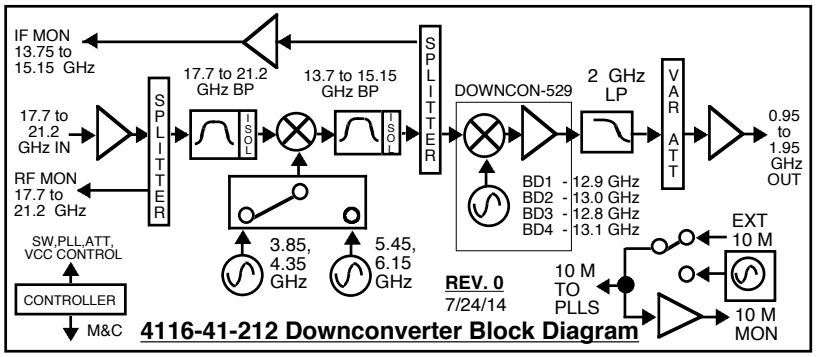
### EQUIPMENT SPECIFICATIONS**

**Input Characteristics**

| | |
|---|---|
| Impedance/Return Loss | 50Ω/14 dB |
| Frequency (GHz) | BAND1 17.7 to 18.7<br>BAND2 18.3 to 19.3<br>BAND3 19.2 to 20.2<br>BAND4 20.2 to 21.2 |
| Noise Figure, Max. | 20 dB **at max. gain ($G_{max}$)** |
| **Optimum Input Level** | **-45 to -10 dBm** |
| **Non-damage input** | **0 dBm at max. gain** |

**Output Characteristics**

| | |
|---|---|
| Impedance/Return Loss | 50Ω/14 dB |
| Frequency | 0.95 to 1.95 GHz |
| Output 1 dB compr. | **+15 dBm min. at max. gain** |



**4116-41-212 Downconverter Block Diagram**

**Channel Characteristics**

| | |
|---|---|
| Gain at Fc | **+20 ±2 dB, (+20 to 0 dB** variable in **0.5 ± 0.5 dB** steps) |
| Image Rejection | > 60 dB, min |
| Spurious, Inband | SIG. REL. <**-50dBC**, -15 to 0dBm out;**2XFo <-45dBC**;SIG. INDEP.,<-60dBm**;.95-1.95 GHz out, $G_{max}$** |
| Spurious, Out of band | <-55 dBm, **signal independent; 0.5-0.95 and from 1.95-2.45 GHz out, $G_{max}$** |
| Intermodulation | <-50 dBC for two carriers at 4 MHz spacing, each at -5 dBm out**, $G_{max}$** |
| Frequency Response | ±2 dB, over RF band; **± 1.5 dB, 120 MHz BW; ± 0.5 dB, 10 MHz BW (also for monitors)** |
| Frequency Sense | Non-inverting |
| RF, **IF Monitor Gain** | **+0 ± 2 dB (±1 dB design goal) above RF In for RF (17.7- 21.2 GHz) and IF (13.75- 15.15 GHz) monitors** |
| RF, **IF Mon P1dB out** | **+0 dBm for RF (17.7- 21.2 GHz) and IF (13.75- 15.15 GHz) monitors** |

**LO Characteristics**

| | |
|---|---|
| LO Frequency | Band Specific**, fixed frequency** |
| Frequency Accuracy | ± 0.05 ppm max over temp internal reference; external reference input |
| 10 MHz level In/Mon | +2 to +8 dBm in; Monitor Output = input level ± 1.0 dB, 50 ohms |

| *Phase Noise @ F (Hz) >* | ***10*** | *100* | *1K* | *10K* | *100K* | *1M* | ***10M*** | ***100M*** |
|---|---|---|---|---|---|---|---|---|
| *dBC/Hz* | ***-32*** | *-65* | *-75* | ***-84*** | *-95* | *-105* | ***-114*** | ***-114*** |

**Controls, Indicators**

| | |
|---|---|
| Gain, Band, 10M Freq. | Gain, band select, and internal 10 MHz frequency via Ethernet M&C or Status/Control Connector. |
| **Power, PLL Alarm** | **Green LED; Red LED, External contact closure** |

| Connectors* | Connector Part # | Mating Connector Part # |
|---|---|---|
| **Status/Control Connector*** | MS3112E14-18S | MS3116F14-18P |
| **Ethernet Connector/RJ45*** | RJF21B | RJF6G |
| **AC Input Connector*** | CL1M1102 | CL1F1101 |

| Additional Connector Specifications* | | |
|---|---|---|
| **RF In, RF Mon, & IF Monitor** 2.92 mm, Type-K (female) 50Ω | **L-Band Mon** Type N (female) 50Ω | **10MHz Connectors** SMA (female) 50Ω |

*All Connectors are Weather Resistant

**Other**

| | |
|---|---|
| Size | 8" Wide X 6" High X 16" Deep Weather Resistant* Enclosure |
| Power | 100-240 ±10% VAC, 47 - 63 Hz, **25** watts max./ FCI Clipper Series CL1M1102 Connector |

**** +0 to +50 degrees C Operating; -30 to +60 degrees C Non-operating; 95% relative humidity, non-condensing;**
Specifications subject to change without notice

Request A Quote