

Block Up Converter

6900 series

Codan's L-Band IF input 6900 series Ku-Band Block Up Converters (BUCs) offer a wide range of distinctive advantages and enhanced features for satellite communications systems. Available in a variety of models, the 6900 series BUCs provide industry-leading technical performance.

KEY FEATURES

Configuration

The 6900 series compact L-Band IF input Block Up Converters (BUCs) are available in a range of RF output powers.

Durability

The 6900 series are designed and tested to meet their performance specifications over an ambient temperature range of -40°C to +55°C and up to 100% relative humidity, ensuring long term survival in extreme conditions. Field experience for Codan BUCs shows that MTBFs of greater than 100,000 hours can be expected.

RF performance

RF performance is superior, particularly: intermodulation performance, gain stability over temperature and flatness across the IF band. The 6900 series also boast industry leading spurious and harmonics specifications. Guaranteed RF performance ensures expensive system link margins do not have to be used to cope with RF transceiver variations.

CE compatible

While CE certified versions are available, all BUCs are designed to ensure that the customer can easily achieve CE certification at a system level for a transmission system in the EU.

All Codan BUCs are tested to the following standards:

EMI/EMC Directive

- EN 301 489 – 1 (as per Article 3.1b in the RTT&E Directive)
- EN 301 489 – 12 (as per Article 3.1b in the RTT&E Directive)

LV Directive

- EN60950 (as per Article 3.1a in the RTT&E Directive)
- CR 1999/519/EC and ICNIRP Guidelines

Power

Codan BUCs all feature low power consumption and low temperature rise, ensuring internal components do not suffer undue stress. DC-powered BUCs are powered either via the transmit IF cable or optional external DC power connector.

AC-powered BUC modules are AC mains powered via an external connector.

Internal protection

Internal protection against high temperature and short or open circuit RF output is standard. Input voltage detection ensures reliable shutdown and restart under brownout or blackout conditions.

External protection

The BUCs are completely protected from the elements, are without external user controls and are fully sealed, and pressure tested to 34 kPa (5 psi). Particle and moisture penetration is rated to IP67. High quality paint is used to protect the modules from corrosion.



Ku-Band Low power Block Up Converter

ADVANCED FEATURES

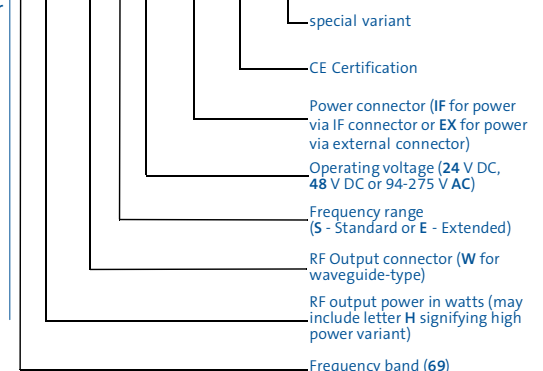
Enhanced monitor and control

All operating functions can be controlled and monitored via the serial M&C facilities. The standard output power meter facility features high accuracy and the ability to measure both CW and burst mode signals. The 6900 series is capable of operating with a PC without requiring proprietary software. The user has the choice of an FSK based M&C interface, which is

fed via the transmit IF cable for use with intelligent modems or separate RS232 or RS422/RS485 interfaces. Multiple M&C protocols are provided to enable integration into a number of network management systems.

BUC PART NUMBER FORMAT

6FPP-X/Y-AA/BB-GG-ZZ



SPECIFICATIONS

| Power rating | 4 W | 8 W | | 16 W | | | | 25 W | | |
|--|---|--|--|--|----------------------------------|--|--------------------|--|---|---|
| Platform | DC-powered | DC-powered | | DC-powered | | AC-powered | | DC-powered | AC-powered | |
| Model numbers | 6904-W/E-24/IF-CE 6904-W/E-48/IF-CE | 6908-W/S-48/IF 6908-W/E-48/IF-CE 6908-W/E-48/EX-CE | | 6916-W/S-48/IF 6916-W/S-48/EX | 6916-W/E-48/IF 6916-W/E-48/EX | 6916-W/S-AC/EX-CE | 6916-W/E-AC/EX-CE | 6925-W/S-48/IF 6925-W/S-48/EX | 6925-W/S-AC/EX-CE | 6925-W/E-AC/EX |
| RF output frequency range | 13750 to 14500 MHz | 14000 to 14500 MHz | 13750 to 14500 MHz | 14000 to 14500 MHz | 13750 to 14500 MHz | 14000 to 14500 MHz | 13750 to 14500 MHz | 14000 to 14500 MHz | 14000 to 14500 MHz | 13750 to 14500 MHz |
| RF output connector | WR75, PBR120 flange with 4.2 mm through holes | WR75, PBR120 flange with 4.2 mm through holes | | WR75, PBR120 flange with 4.2 mm through holes | | | | WR75, PBR120 flange with 4.2 mm through holes | WR75, PBR120 flange with 4.2 mm through holes | WR75, PBR120 flange with 4.2 mm through holes |
| RF output VSWR | 2.0:1 max | 2.0:1 max | 1.8:1 max | 1.5:1 max | | | | 1.5:1 max | 1.5:1 max | 1.5:1 max |
| RF output power @ 1 dB GCP | +36.0 dBm min | +38.0 dBm min | +39.0 dBm min | +42.0 dBm min | +41.5 dBm min | +41.7 dBm min | +41.0 dBm min | +43.4 dBm min | | +43.0 dBm min |
| RF output IMD ratio with 2 carriers each at 6 dB OPBO | -25 dBc min | -24 dBc min | -25 dBc min | -25 dBc min | | | | -25 dBc min | -25 dBc min | -25 dBc min |
| LO frequency | 15450 MHz | 15450 MHz | | 15450 MHz | | | | 15450 MHz | 15450 MHz | 15450 MHz |
| Reference frequency | 10 MHz | 10 MHz | | 10 MHz | | | | 10 MHz | | |
| Reference frequency input | Multiplexed on transmit IF input | Multiplexed on transmit IF input | | Multiplexed on transmit IF input | | | | Multiplexed on transmit IF input | | |
| Reference frequency level | -10 to +5 dBm | -10 to +5 dBm | | -10 to +5 dBm | | | | -10 to +5 dBm | | |
| Reference frequency connector | Via transmit IF input | Via transmit IF input | | Via transmit IF input | | | | Via transmit IF input | | |
| Frequency conversion | Spectrum inverting | Spectrum inverting | | Spectrum inverting | | | | Spectrum inverting | | |
| Gain | 67 dB nominal | 70 dB nominal | | 73 dB nominal | | | | 74 dB nominal | | |
| Gain flatness over any 40 MHz band | ±1.50 dB max | ±1.50 dB max | ±0.75 dB max | ±1.50 dB max | | ±0.75 dB max | | ±1.50 dB max | ±0.75 dB max | |
| Gain flatness over full band | ±2.50 dB max | ±2.50 dB max | ±1.50 dB max | ±2.50 dB max | | ±2.0 dB max | | ±2.50 dB max | ±2.0 dB max | |
| Gain stability over any 50°C temperature range | ±1.50 dB max | ±1.50 dB max | | ±1.50 dB max | | ±1.0 dB max | | ±1.50 dB max | ±1.0 dB max | |
| Gain stability over entire temperature range when frequency set | ±2.0 dB max | ±2.0 dB max | | ±2.0 dB max | | | | ±2.0 dB max | | |
| Gain stability over entire temperature range when frequency not set | ±4.0 dB max | ±4.0 dB max | ±3.0 dB max | ±3.0 dB max | | | | ±3.0 dB max | | |
| Input frequency range | 950 to 1700 MHz | 950 to 1450 MHz | 950 to 1700 MHz | 950 to 1450 MHz | 950 to 1700 MHz | 950 to 1450 MHz | 950 to 1700 MHz | 950 to 1450 MHz | | 950 to 1700 MHz |
| Output power meter range | 15 dB | 15 dB | | 15 dB | | 10 dB | | 15 dB | | |
| Output power meter absolute accuracy when compensation frequency set | ±1.0 dB max | ±1.0 dB max | | ±1.0 dB max | | | | ±1.0 dB max | | |
| Output power meter absolute accuracy when compensation frequency not set | ±2.0 dB max | ±2.0 dB max | | ±2.0 dB max | | | | ±2.0 dB max | | |
| Output power meter relative accuracy when compensation frequency set | ±0.5 dB max | ±0.5 dB max | | ±0.5 dB max | | | | ±0.5 dB max | | |
| Output power meter relative accuracy when compensation frequency not set | ±1.0 dB max | ±1.0 dB max | | ±1.0 dB max | | | | ±1.0 dB max | | |
| Power meter modes | CW and burst with adjustable threshold | CW and burst with adjustable threshold | | CW and burst with adjustable threshold | | | | CW and burst with adjustable threshold | | |
| Power supply voltage @ 24 V | +17 V to +35 V DC via transmit IF input | | | | | | | | | |
| Power supply minimum turn-on voltage @ 24 V | +19 V | | | | | | | | | |
| Power supply voltage @ 48 V | +34 V to +60 V DC via transmit IF input | +34 V to +60 V DC via transmit IF input | +34 V to +60 V DC via transmit IF input or via external DC connector | +34 V to +60 V DC via transmit IF input or via external DC connector | | | | +34 V to +60 V DC via transmit IF input or via external DC connector | | |
| Power supply minimum turn-on voltage @ 48 V | +41 V | +41 V | +41 V | +41 V | | | | | | |
| Power supply voltage (AC-powered BUCs only) | | | | | | 94 to 275 V AC via Amphenol T 3110 000 | | 94 to 275 V AC via Amphenol T 3110 000 | | |
| Power supply consumption | 80 W max | 130 W max | | 150 W max | | 300 W max | | 220 W max | 375 W max | |
| Volume (for waveguide output BUCs) | 360 mm L x 182 mm W x 104 mm H | 360 mm L x 182 mm W x 137 mm H | | 360 mm L x 182 mm W x 137 mm H | | 522 mm L x 182 mm W x 204 mm H | | 360 mm L x 182 mm W x 137 mm H | 522 mm L x 182 mm W x 204 mm H | 522 mm L x 182 mm W x 204 mm H |
| Weight | 6.0 kg nominal | 6.0 kg nominal | | 6.0 kg nominal | | 12.0 kg nominal | | 7.0 kg nominal | 12.0 kg nominal | 12.0 kg nominal |

COMMON SPECIFICATIONS

| | |
|--|---|
| IF input connector | N-type |
| IF input impedance | 50 Ω |
| IF input VSWR | 1.5:1 max |
| Transmit attenuator steps | 0 dB to 12 dB in 4 dB steps |
| Spurious output @ 3 dB OPBO | -50 dBc max |
| Harmonic output @ 3 dB OPBO | -60 dBc max |
| AC-powered BUC fault monitor connector | Transmit IF input |
| AC-powered BUC fault monitor polarity | +ve on centre conductor |
| AC-powered BUC fault monitor no fault state | >23 mA @ 48 V DC |
| AC-powered BUC fault monitor fault state | <20 mA @ 48 V DC |
| * Maximum phase noise (SSB) of reference frequency: | |
| 100 Hz | -135 dBc/Hz |
| 1 kHz | -145 dBc/Hz |
| 10 kHz | -155 dBc/Hz |
| 100 kHz | -155 dBc/Hz |
| Phase noise (SSB) of BUC with frequency reference defined above *: | |
| 100 Hz | -63 dBc/Hz |
| 1 kHz | -73 dBc/Hz |
| 10 kHz | -73 dBc/Hz |
| 100 kHz | -83 dBc/Hz |
| Group Delay | |
| Linear (over any 10 MHz band) | 2 nsec _{pp} max |
| Parabolic (over any 80 MHz band) | 0.00025 nsec/MHz ² max |
| Ripple (over full band) | 1 nsec _{pp} max |
| AM/PM conversion | 2.0°/dB max @ 2 dB OPBO |
| Monitor & Control | |
| FSK data format | User selectable |
| FSK data transmitter frequency | 650 kHz ±1% |
| FSK data transmitter deviation | ±60 kHz ±1% |
| FSK data transmitter sense | +60 kHz=mark; -60 kHz=space |
| FSK output level | -3 dB nominal |
| FSK start tone time | 10 ms minimum |
| FSK data receiver nominal frequency | 650 kHz |
| FSK data receiver locking range | ±30 kHz |
| FSK data receiver input sensitivity | -15 dBm minimum |
| Digital data format RS232 | 9600 bps, 8 bits, no parity, 1 stop bit, ASCII protocol |
| Digital data format RS485 | User selectable |
| Digital connector | MIL-C-26482 12-14S socket |
| Operating temperature range | -40 to +55°C |
| Relative humidity | 100% |
| Weatherproofing | Sealed to 34 kPa |

CODAN QUALITY AND SERVICE

All BUCs are built and tested in Codan's ISO9001 quality certified manufacturing facility, and undergo burn in and performance monitoring over the temperature range specified. Codan's fully trained staff and agents provide in-factory and in-country training services and complete installation and on-site assistance. This service is backed by a 24-hour customer service line

and a warranty of three years on manufacturing, design or component defects.



C-Band Medium power Block Up Converter

CONFIGURATION OPTIONS

Refer to the Specifications on this data sheet for allowed combinations of configuration options.

For accessories and options, please refer to the Block Up Converter Accessories data sheet (Codan part number 12-20185-EN).

Equipment descriptions and specifications are subject to change without notice or obligation.

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