Codan’s 5700 series C-Band and 5900 series Ku-Band high power transceivers offer a wide range of distinctive advantages and enhanced features for satellite communications systems based in remote or challenging geographic regions.

Available in single or dual synthesiser options, extended C-Band and Ku-Band frequency bands and 70 or 140 MHz IF configurations—and a range of power outputs—the 5700 and 5900 series provide industry leading technical performance.

**Key Features**

**Durability**
The 5700 series and 5900 series are designed and tested to meet their performance specifications in an ambient temperature range from –40°C to +55°C, ensuring long-term survival in extreme conditions. Field experience shows that MTBFs of greater than 90,000 hours can be expected.

**RF performance**
RF performance is superb, particularly intermodulation performance, gain stability over temperature and flatness across the IF band.

**Output power options**
The 5700 series C-Band transceiver is available with 60 watts and 120 watts output power rating. The 5900 series Ku-Band transceiver is available with 40 watts output rating.

**Power consumption**
Codan’s high power transceivers feature low power consumption and low temperature rise, ensuring internal components do not suffer undue stress.

**Power supply**
All the high power transceivers are AC mains powered and may be field selected to operate from either 115 V AC or 230 V AC.

**Internal protection**
Internal protection against high temperature and short or open circuit RF output is standard.

**Enhanced monitor and control**
All operating functions can be controlled and monitored via the serial interface, and the operating configuration is stored in EEPROM to ensure the set-up parameters are restored in the event of a power failure.

**Universal interface compatibility**
The transceivers have universal interface compatibility capable of operating with dumb terminals, laptop/PC emulating terminals, handheld terminals and personal organisers without requiring proprietary software. The versatile configuration options support contact closure, RS232, RS422 and RS485 (2 or 4 wire).

Two dedicated controllers are available from Codan:

- 5560 Hand-held Controller, suitable for in the field installation setup
- 5570 Remote Controller, suitable for indoor rack mounting to provide permanent monitoring and control capabilities

**Redundancy switching system**
A redundancy switching system is available to provide an automatic changeover to a second transceiver to maximise availability and minimise any disruption to service. This system is fully outdoor mounted, but can be supplied with the 5587 Redundant System Monitor to provide indoor monitoring and control.
### Major Configuration Options

<table>
<thead>
<tr>
<th>C-Band Frequency Band (GHz)</th>
<th>Transmit</th>
<th>Receive</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 C-Band extended</td>
<td>5.850–6.425</td>
<td>3.625–4.200</td>
</tr>
</tbody>
</table>

### C-Band Transceiver Specifications

- **Transmit**: 14.00–14.50 GHz
- **Receive**: 13.75–14.50 GHz

### C-Band LNA

A selection of LNAs is available to best meet noise temperature and configuration needs.

### Ku-Band Transmitter Frequency Bands

- **Ku-Band Standard**: 14.00–14.50 GHz
- **Ku-Band Extended**: 13.75–14.50 GHz

### Ku-Band Receiver Frequency Bands

- **Band 1**: 10.95–11.7 GHz
- **Band 2**: 11.7–12.2 GHz
- **Band 3**: 12.25–12.75 GHz

### Ku-Band LNB

- **Bandwidth Options**:
  - Narrow band (40 MHz)
  - Wide band (80 MHz)
- **Output Power**:
  - C-Band: 60 W and 120 W
  - Ku-Band: 40 W

### Options and Accessories

- Hand-held Controller
- Remote Controller
- Redundancy Switching Systems
- Transmit Reject Filters
- Antenna Mounting Kits

### Codan Quality and Service

- The high power transceivers are built and tested in Codan’s ISO9001 quality certified manufacturing facility, and undergo 100% burn in and performance monitoring.
- 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 up by a 24 hour customer service line and a warranty of three years on manufacturing, design or component defects.
# C-Band High Power Transceiver
## 5700 series

### SPECIFICATIONS

#### TRANSMIT SECTION

**IF input**
- **Frequency range**
  - Narrow BW option: 70 ±20 MHz/140 ± 20 MHz selectable
  - Wide BW option: 140 ± 40 MHz
- **Impedance**: 50/75 Ω selectable
- **Connector**: N female
- **Return loss**: 18 dB minimum @ 50 Ω

**Gain specification**
- **Gain**
  - 60 W, 120 W: 74 dB minimum
  - (0 dB SSPA & Converter attenuator settings)

**Attenuator ranges**
- Narrow BW option: 0 dB to 25 dB nominal (Converter)
- Wide BW option: 0 dB to 20 dB nominal (SSPA)

**Attenuator step size**: 1 dB nominal

**Gain flatness**
- Narrow BW option: ±1.0 dB maximum, 40 MHz
- Wide BW option: ±2.0 dB maximum, 80 MHz

**Gain stability**
- ±2.0 dB maximum, –40°C to +55°C

**RF output**
- **Frequency range**: 5.850 to 6.425 GHz
- **Connector**: CPR137G
- **VSWR**: 1.25:1 maximum

**60 W SSPA**
- **Output power @ 1 dB GCP**: +47.8 dBm (60 W) typical
- **Carrier to intermodulation ratio**: –26 dB, two carriers, each @ 6 dB OPBO from 1 dB GCP

**120 W SSPA**
- **Output power @ 1 dB GCP**: +50.8 dBm (120 W) typical
- **Carrier to intermodulation ratio**: –26 dBc, two carriers, each @ 6 dB OPBO from 1 dB GCP

**Spurious output**
- Narrow BW option: –60 dBc maximum @ 1 dB GCP
- Wide BW option: –50 dBc maximum @ 1 dB GCP

**Harmonics**
- 100 Hz: –60 dBc/Hz maximum, –75 dBc/Hz typical
- 1 kHz: –70 dBc/Hz maximum, –80 dBc/Hz typical
- 10 kHz: –80 dBc/Hz maximum, –85 dBc/Hz typical
- 100 kHz: –90 dBc/Hz maximum, –95 dBc/Hz typical

**Synthesiser step size**: 1 MHz

**Frequency stability**
- –40°C to +55°C: ±1 x 10⁻⁸
- Aging: ±1 x 10⁻⁷/year

#### RECEIVE SECTION (EXCLUDING LNA)

**RF input**
- **Frequency range**: 3.625 to 4.200 GHz
- **Impedance**: 50 Ω
- **Connector**: N female
- **VSWR**: 1.4:1 maximum
- **Noise figure**: 18 dB typical
- **DC output (switch selectable)**: +15 V @ 75 to 250 mA

**IF input**
- **Frequency range**: 70 ± 20 MHz/140 ± 20 MHz selectable
- **Impedance**: 50/75 Ω selectable
- **Connector**: N female
- **Return loss**: 18 dB minimum @ 50 Ω

**Gain specification**
- **Gain**
  - 45 dB nominal

**Attenuator ranges**
- Narrow BW option: 0 dB to 30 dB nominal
- Wide BW option: 1 dB nominal

**Attenuator step size**: 1 dB nominal

**Gain flatness**
- Narrow BW option: ±1.0 dB maximum, 40 MHz
- Wide BW option: ±2.0 dB maximum, 80 MHz

**Gain stability**
- ±4.0 dB maximum, –40°C to +55°C

**Image rejection**: 50 dB minimum

**Spurious output**: –65 dBm maximum

**Phase noise (SSB)**
- 100 Hz: –60 dBc/Hz typical
- 1 kHz: –70 dBc/Hz typical
- 10 kHz: –80 dBc/Hz typical
- 100 kHz: –90 dBc/Hz typical

**Synthesiser step size**: 1 MHz

**Frequency stability**
- –40°C to +55°C: ±1 x 10⁻⁸
- Aging: ±1 x 10⁻⁷/year

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*Excludes mains related sidebands*
LOW NOISE AMPLIFIER

Indicative specifications; LNAs with lower noise temperatures are also available.

Input Interface CPR229G
Noise temperature 40 K @ 25°C

Gain specification
Gain 50 dB minimum

Output
1 dB GCP +5 dBm minimum
3rd order intercept +16 dBm minimum
Impedance 50 Ω
Connector N female
VSWR 1.5:1 typical

TRANSMIT REJECT FILTER (OPTIONAL)

Indicative specifications
Insertion loss 0.05 dB maximum
Rejection 55 dB minimum

POWER

Input voltage 104 to 274 V AC, 47 to 63 Hz
Power consumption AC 60 W 440 VA @ 115/230 V AC maximum SSPA On
120 W 760 VA @ 115/230 V AC maximum SSPA On

MONITOR AND CONTROL

LNA interface
DC output +15 V @ 75 to 400 mA
Alarm input Current monitoring as specified, and contact closure; O/C is fault condition

Monitor and control facilities (converter)
Indicators: Standby, On, Warm-up, SSPA activated, Converter fault, LNA fault, SSPA fault, Temperature fault, Fan fault

Controls: Power control (off/standby/on), SSPA control (inhibit/remote/activate), Serial interface settings, LNA supply via RX RF input connector, Mains/Battery supply select

Monitor and control facilities (SSPA)
Indicators: Online, Alarm, Standby, Maintenance

Display: Output power, Heatsink temperature, Alarms
Controls: State, Gain, Compensation

Remote monitor and control facilities (only via converter)
Serial interface standards RS232, RS422 (RS485)
Protocol standards ASCII, Packet (RS485)
Packet protocol address range 0 to 127


Remote monitoring functions (contact closure): Standby, Warm-up, SSPA activated control, Converter fault, LNA fault, SSPA fault, Temperature fault

Remote control functions (contact closure): Power control, (standby/on), SSPA inhibit control, SSPA activate control

ENVIRONMENTAL

Converter module
Temperature −40°C to 55°C
Relative humidity 100%
Cooling Convection
Weatherproofing Sealed to IP68

SSPA module
Temperature −40°C to +55°C
Relative humidity 100%
Cooling Forced air
Weatherproofing Sealed to IP66

PHYSICAL

All dimensions are measured over the connectors.

Size
Converter module 110 mm W x 410 mm D x 240 mm H
SSPA module, 60/120 W 280 mm W x 355 mm D x 495 mm H

Weight
Converter module 8 kg
SSPA module, 60/120 W 27 kg
## TRANSMIT SECTION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IF input</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency range</td>
<td>70 ± 20 MHz/140 ± 20 MHz selectable</td>
</tr>
<tr>
<td>Impedance</td>
<td>50/75 Ω selectable</td>
</tr>
<tr>
<td>Connector</td>
<td>N female</td>
</tr>
<tr>
<td>Return loss</td>
<td>18 dB minimum @ 50 Ω</td>
</tr>
<tr>
<td><strong>Gain specification</strong></td>
<td></td>
</tr>
<tr>
<td>Over IF</td>
<td>±1.0 dB maximum, 40 MHz</td>
</tr>
<tr>
<td>Over frequency range</td>
<td>±2.0 dB maximum, 80 MHz</td>
</tr>
<tr>
<td><strong>RF output</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency range</td>
<td>14.0 to 14.5 GHz</td>
</tr>
<tr>
<td>Connector</td>
<td>WR75</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.25:1 maximum</td>
</tr>
<tr>
<td>Output power (1 dB GCP)*</td>
<td>+46.7 dBm (47 W) typical</td>
</tr>
<tr>
<td></td>
<td>+46.0 dBm (40 W) minimum</td>
</tr>
<tr>
<td>Carrier to intermodulation ratio</td>
<td>−25 dBc, two carriers, each @ 6 dB OPBO from 1 dB GCP</td>
</tr>
<tr>
<td></td>
<td>−60 dBc maximum @ 1 dB GCP</td>
</tr>
<tr>
<td></td>
<td>−50 dBc maximum @ 1 dB GCP</td>
</tr>
<tr>
<td><strong>Phase noise (SSB)</strong>**</td>
<td></td>
</tr>
<tr>
<td>100 Hz</td>
<td>−60 dBc/Hz maximum</td>
</tr>
<tr>
<td>1 kHz</td>
<td>−70 dBc/Hz maximum</td>
</tr>
<tr>
<td>10 kHz</td>
<td>−85 dBc/Hz maximum</td>
</tr>
<tr>
<td>100 kHz</td>
<td>−85 dBc/Hz maximum</td>
</tr>
<tr>
<td><strong>Synthesiser step size</strong></td>
<td>1 MHz</td>
</tr>
<tr>
<td><strong>Frequency stability</strong></td>
<td>−40°C to +55°C</td>
</tr>
<tr>
<td>Aging</td>
<td>±2 x 10⁻⁸</td>
</tr>
<tr>
<td></td>
<td>±1 x 10⁻⁷/year</td>
</tr>
</tbody>
</table>

## RECEIVE SECTION (EXCLUDING LNB)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RF input</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency range</td>
<td>950 to 1700 MHz</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Connector</td>
<td>N female</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.4:1 maximum</td>
</tr>
<tr>
<td>Noise figure</td>
<td>20 dB typical</td>
</tr>
<tr>
<td>DC output (switch selectable)</td>
<td>+15 V @ 75 to 400 mA</td>
</tr>
<tr>
<td>10 MHz output</td>
<td>0 dBm ±1 dB</td>
</tr>
<tr>
<td><strong>IF output</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency range</td>
<td>70 ± 20 MHz/140 ± 20 MHz selectable</td>
</tr>
<tr>
<td>Impedance</td>
<td>50/75 Ω selectable</td>
</tr>
<tr>
<td>Connector</td>
<td>N female</td>
</tr>
<tr>
<td>Return loss</td>
<td>18 dB minimum @ 50 Ω</td>
</tr>
<tr>
<td><strong>Gain specification</strong></td>
<td></td>
</tr>
<tr>
<td>Over IF</td>
<td>±1.0 dB maximum, 40 MHz</td>
</tr>
<tr>
<td>Over frequency range</td>
<td>±2.0 dB maximum, 80 MHz</td>
</tr>
<tr>
<td><strong>Image rejection</strong></td>
<td>50 dB minimum</td>
</tr>
<tr>
<td><strong>Spurious output</strong></td>
<td>−65 dBm maximum</td>
</tr>
<tr>
<td><strong>Phase noise (SSB)</strong></td>
<td></td>
</tr>
<tr>
<td>100 Hz</td>
<td>−60 dBc/Hz maximum</td>
</tr>
<tr>
<td>1 kHz</td>
<td>−70 dBc/Hz maximum</td>
</tr>
<tr>
<td>10 kHz</td>
<td>−80 dBc/Hz maximum</td>
</tr>
<tr>
<td>100 kHz</td>
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</tr>
<tr>
<td><strong>Synthesiser step size</strong></td>
<td>1 MHz</td>
</tr>
<tr>
<td><strong>Frequency stability</strong></td>
<td>−40°C to +55°C</td>
</tr>
<tr>
<td>Aging</td>
<td>±2 x 10⁻⁸</td>
</tr>
<tr>
<td></td>
<td>±1 x 10⁻⁷/year</td>
</tr>
<tr>
<td><strong>L-Band IF monitor port</strong></td>
<td></td>
</tr>
<tr>
<td>Output frequency range</td>
<td>950 to 1700 MHz</td>
</tr>
<tr>
<td>Gain</td>
<td>10 ± 3 dB RF I/P to L-Band monitor</td>
</tr>
<tr>
<td>Gain ripple</td>
<td>±2 dB maximum</td>
</tr>
<tr>
<td>Connector</td>
<td>N female</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Return loss</td>
<td>15 dB minimum</td>
</tr>
</tbody>
</table>

* 2 dB less for Band 2
** Meets Intelsat Phase Noise requirement using Limit-2 for data rates up to 8 Mbps.
Excludes mains related sidebands.
LOW NOISE BLOCK CONVERTER

Indicative specifications

Input
Frequency range
Band 1 10.95 to 11.7 GHz
Band 2 11.7 to 12.2 GHz
Band 3 12.25 to 12.75 GHz
Interface WR75
VSWR 2.5:1 typical
Noise temperature 75K @ 25°C maximum
Gain specification
Gain 60 dB typical
Gain flatness ±1.5 dB maximum full band
Output
1 dB GCP 0 dBm minimum
3rd order intercept +11 dBm minimum
Impedance 50 Ω
Connector N female
VSWR 1.5:1 typical

TRANSMIT REJECT FILTER (OPTIONAL)

Pass band 10.95 to 12.75 GHz
Insertion loss 0.05 dB maximum
Reject band 13.75 to 14.5 GHz
Rejection 55 dB minimum

POWER
Input voltage 104 to 274 V AC, 47 to 63 Hz
Power consumption 500 VA typical, SSPA on

MONITOR AND CONTROL

Monitor and control facilities (converter)
Indicators: Standby, On, Warm-up, SSPA activated, Converter fault, LNB fault, SSPA fault, Temperature fault
Controls: Power control (off/standby/on), SSPA control (inhibit/remote/activate), Serial interface settings, LNB supply via Rx RF input connector, Mains/Battery supply select

Monitor and control facilities (SSPA)
Indicators: Online, Alarm, Standby, Maintenance
Display: Output power, Heatsink temperature, Alarms
Controls: State, Gain

Remote monitor and control facilities (only via converter)
Serial interface standards: RS232, RS422 (RS485)
Protocol standards: ASCII, Packet (RS485)
Packet protocol address range: 0 to 127

Remote monitoring functions (serial interface): Standby, On, Warm-up, SSPA activated, Converter temperature, Converter fault, LNB fault, SSPA fault, Temperature fault, SSPA inhibit control, SSPA activate control, Transmit frequency, Receive frequency, Transmit attenuation, Receive attenuation, Cable compensation, Reference oscillator override, SSPA alarm enable, LNB alarm enable, Temperature compensation select, Packet address (ASCII mode only), Packet address range (ASCII mode only), Packet protocol select (ASCII mode only), SSPA mode select, Converter lock, Status change poll

Remote control functions (serial interface): Power control (standby/on), SSPA inhibit control, SSPA activate control, Transmit frequency, Receive frequency, Transmit attenuation, Receive attenuation, Cable compensation, Reference oscillator override, SSPA alarm enable, LNB alarm enable, Temperature compensation select, Address range select (ASCII mode only), Packet protocol select (ASCII mode only), SSPA mode select, Reset, Reset change bits

Remote monitoring functions (contact closure): Standby, Warm-up, SSPA activated, Converter fault, LNB fault, SSPA fault, Temperature fault

Remote control functions (contact closure): Power control (standby on), SSPA inhibit control, SSPA activate control

ENVIRONMENTAL

Converter module
Temperature −40°C to +55°C
Relative humidity 100%
Cooling Convection
Weatherproofing Sealed to 3 kPa
SSPA module
Temperature −40°C to +55°C
Relative humidity 100%
Cooling Forced air
Weatherproofing Sealed to IP66

PHYSICAL

All dimensions are measured over the connectors.
Size
Converter module 110 mm W x 410 mm D x 240 mm H
SSPA module 280 mm W x 355 mm D x 495 mm H
Weight
Converter module 8 kg
SSPA module 27 kg

Specifications subject to change without notice or obligation