

C-Band Transceiver

5700 series

The CODAN™ 5700 series C-Band transceivers offer a wide range of distinctive advantages and enhanced features for satellite communications systems based in remote or challenging geographic regions.

Available in dual synthesiser, standard or extended C-Band operation and 70 or 140 MHz IF configurations—and a range of power outputs—the 5700 provides industry leading technical performance.

KEY FEATURES

Durability

The 5700 series is designed and tested to meet its performance specifications in an ambient temperature range from -40°C to $+55^{\circ}\text{C}$ and up to 100% relative humidity, ensuring long-term survival in extreme conditions.

The thermal protection provided allows operation up to $+60^{\circ}\text{C}$ ambient. Field experience shows that MTBFs of greater than 100,000 hours can be expected.

RF performance

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

The 5700 also boasts industry leading spurious and harmonics specifications while guaranteed RF performance ensures expensive system link margins do not have to be used to cope with RF transceiver variations. The 5700's high linearity and low spurious characteristics contribute to superior multi-carrier performance.

Output power options

Output ratings of 20 and 40 watts are standard, while higher power options are also available.

Power consumption

Codan's C-Band transceivers all feature low power consumption and low temperature rise, ensuring internal components do not suffer undue stress.

Power supply

The 5700 features a 48 V DC floating input (37 V to 72 V range) with reverse polarity protection. This is ideal for battery backup and solar-powered systems. In addition, the 5700 may be supplied with an optional AC

power supply unit with field selectable 115/230 V operation.

The AC power supply unit is extremely robust and particularly suited for operation from poor quality AC supplies.

Internal protection

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

External protection

All user access is via a transparent cover, which can be removed without exposing major internal electronics to the elements. Special sealant is used to ensure the sealing integrity of all connectors.

RF modules are fully sealed and pressure tested to 34 kPa (5 psi). Particle and moisture penetration is rated to IP68 and the units are submersible to 3 metres.



*C-Band transceiver 5700 series
with optional power supply unit*

ADVANCED FEATURES

Enhanced monitor and control

All operating functions can be controlled and monitored via the serial interface. The operating configuration is stored in EEPROM to ensure the setup parameters are restored in the event of a power failure.

Universal interface compatibility

The 5700 has universal interface compatibility capable of operating with dumb terminals, laptop/PC emulating terminals, hand-held 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 link 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 monitor and control.

MAJOR CONFIGURATION OPTIONS

Frequency bands (MHz)	Transmit	Receive
2 C-Band Extended	5850–6425	3625–4200

Transmit/receive frequency control

D Dual synthesiser

Bandwidth

N Narrow band (40 MHz) field selectable 70 or 140 MHz IF

W Wide band (80 MHz) 140 MHz IF

SSPA output

N N-type connector output

W WR-137 waveguide output

M SSPA monitor port only available on 10 and 20 W

LNA

Options and accessories

Hand-held Controller

Remote Controller

Redundancy Switching System



Redundancy Switching System



5700 transceivers antenna mounted in 1:1 configuration

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



5570 Remote Controller



5560 Hand-held Controller

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CODAN QUALITY AND SERVICE

All C-Band transceivers are built and tested in Codan's ISO9001 quality certified manufacturing facility, and undergo 100% 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 up by a 24 hour customer service line and a warranty of three years on manufacturing, design or component defects.



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C-Band Transceiver

5700 series

SPECIFICATIONS

TRANSMIT SECTION

IF input	
Frequency range	70 ± 20 MHz/140 ± 20 MHz selectable
Narrow BW option	140 ± 40 MHz
Wide BW option	
Impedance	50/75 Ω selectable
Connector	N female
Return loss	18 dB minimum @ 50 Ω
Gain specification	
Gain	74 dB nominal
20 W and 40 W	
Attenuator range	0 dB to 25 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	±1.5 dB maximum, -40°C to +55°C
RF output	
Frequency range	5.850 to 6.425 GHz
Band 2 (Extended)	
Connector	N female, or CPR137G (Band 2 only)
VSWR	1.5:1 maximum
20 W SSPA	
Output power (1 dB GCP)	+44.0 dBm (25 W) typical +43.0 dBm (20 W) minimum
Carrier to intermodulation ratio	-27 dBc, two carriers, each @ 6 dB OPBO from 1 dB GCP
40 W SSPA	
Output power (1 dB GCP)	+46.0 dBm (40 W) typical +45.7 dBm (37 W) minimum
Carrier to intermodulation ratio	-25 dBc, two carriers, each @ 6 dB OPBO from 1 dB GCP
Spurious output (including harmonics)	Meets EN301443 with 53 dBi antenna gain
Phase noise (SSB)*	
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	±2 × 10 ⁻⁸
Aging	±1 × 10 ⁻⁷ /year

RECEIVE SECTION (EXCLUDING LNA)

RF input	
Frequency range	3.625–4.200 GHz
Band 2 (Extended)	
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 output	
Frequency range	70 ± 20 MHz/140 ± 20 MHz selectable
Narrow BW option	140 ± 40 MHz
Wide BW option	
Impedance	50/75 Ω selectable
Connector	N female
Return loss	18 dB minimum @ 50 Ω
Gain specification	
Gain	45 dB nominal
Attenuator range	0 dB to 30 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	+5.0/-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 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	±2 × 10 ⁻⁸
Aging	±1 × 10 ⁻⁷ /year

LOW NOISE AMPLIFIER

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

Input

Interface	CPR229G
Noise temperature	40 K typical @ 25°C

Gain specification

Gain	50 dB minimum
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Output

1 dB GCP	+5 dBm minimum
Impedance	50 Ω
Connector	N female
VSWR	2:1 maximum

TRANSMIT REJECT FILTER (OPTIONAL)

Indicative specifications; TRFs to cover bands 2, 3 and 4 are available.

Insertion loss	0.05 dB maximum
Rejection	55 dB minimum

POWER

Input voltage	42 to 72 V DC (floating input) standard 115/230 V AC, ±15% with Power Supply Unit
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Power consumption

DC	20 W	200 W maximum SSPA On
	40 W	280 W maximum SSPA On 40 W maximum SSPA Off
AC	20 W	310 VA maximum SSPA On
	40 W	370 VA maximum SSPA On 80 VA maximum SSPA Off (all @ nominal AC voltage)

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

Control panel facilities

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

Remote monitor and control facilities

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 fault, LNA fault, SSPA fault, Temperature fault, Fan fault, SSPA inhibit control, SSPA activate control*, Transmit frequency*, Receive frequency*, Transmit attenuation*, Receive attenuation*, Cable compensation*, Reference oscillator override*, SSPA alarm enable*, LNA alarm enable*, Fan alarm enable*, Temperature compensation*, Address*, SSPA mode*, Converter lock, Packet protocol*, IF impedance*, IF frequency*, Power-up mode

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*, LNA alarm enable*, Fan alarm enable, Temperature compensation select*, Address range*, SSPA mode*, Packet protocol*, IF impedance*, IF frequency*, Power-up mode

All of the above serial interface functions are accessible via the Remote Controller 5570. The functions supported by the Hand-Held Controller 5560 are indicated by an (*)

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

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

ENVIRONMENTAL

Converter module and SSPA module

Temperature	-40°C to +55°C
Relative humidity	100%
Cooling	Converter—Convection 20 W and 40 W—Forced air
Weatherproofing	Sealed to 34 kPa

Power supply unit

Temperature	-40°C to +55°C
Relative humidity	100%
Cooling	Convection
Weatherproofing	Sealed to IP65

PHYSICAL

All dimensions are measured over the connectors.

Size

Converter module	110 mm W x 410 mm D x 240 mm H
SSPA module, 20 W and 40 W	
N-type output option	165 mm W x 415 mm D x 215 mm H
Waveguide output option	165 mm W x 420 mm D x 215 mm H
Power Supply Unit	200 mm W x 160 mm D x 370 mm H

Weight

Converter module	8 kg
SSPA module, 20 W or 40 W	9 kg
Power Supply Unit	10 kg

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CETECOM™

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