Remote Controller
5570

CODAN

USER GUIDE

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1   About this user guide

This user guide describes how to use the Remote Controllers 5570 and 5570D to monitor and change the operating parameters of the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series.

This guide assumes that you already know how to operate the transceiver and power supply, which are supplied separately.

The user guide contains seven chapters:

Chapter 1   About this user guide—provides lists of all the terms, abbreviations and units used in this guide

Chapter 2   Remote controller compliance—describes how to ensure that compliance of the remote controller is maintained

Chapter 3   Overview—provides a general overview of the remote controllers, the relationship between the parameters being controlled and the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series

Chapter 4   Installation and setup—describes how to connect the remote controllers to the converter

Chapter 5   Using the controller—describes the general operation of the remote controllers

Chapter 6   Display messages—lists the error messages and provides an explanation for each error

Chapter 7   Drawings—contains the cable wiring diagrams

An index can be found at the end of this guide.

Standards and icons

The following standards and icons are used in this guide:

This typeface	Means
Bold	the name of a button, knob, connector or LED and a segment of text from the display
Italic	a cross-reference or text requiring emphasis

This symbol	Means
❏	A step within a task
	Warning: it is possible that you will seriously damage yourself or the equipment
	Caution: proceed with caution as your actions may lead to loss of data, privacy or signal quality
	Note: the text provided next to this icon may be of interest to you

Definitions

Acronyms and abbreviations

Abbreviation	Stands for...
DIP	dual inline package
H	hexadecimal
HPA	high power amplifier
H/W	hardwire
IF	intermediate frequency
Insat	Indian satellite system
Intelsat	International Telecommunications Satellite Organisation
LCD	liquid crystal display
LED	light emitting diode
LNA	low noise amplifier
LNB	low noise block converter
Modem	modulator-demodulator
RF	radio frequency
Rx	receive
SELV	safety extra low voltage
SSPA	solid state power amplifier
Tx	transmit

Glossary

Term	Means...
ASCII protocol	Serial communication method—American Standard Code for Information Interchange.
C-Band	Band of frequencies nominally covering the range 3.9 GHz to 6.2 GHz.
Carrier	RF signal used to carry information.
Ku-Band	Band of frequencies nominally covering the range 11.0 GHz to 14.0 GHz.
Modem	Device used to convert digital information to a modulated RF carrier and to extract digital information from a modulated RF carrier.
Packet protocol	Serial communication method using a structured addressable packet of ASCII characters.
Palapa C	Indonesian satellite system.
Transceiver	Equipment comprising the converter, solid state power amplifier and low noise amplifier/low noise block converter.

Units

Measurement	Unit	Abbreviation
Attenuation	decibel	dB
Data rate	bits per second	bps
Frequency	hertz	Hz
Impedance	ohm	Ω
Power	watt	W
Voltage	volt	V

Unit multipliers

Unit	Name	Multiplier
d	deci	10^{-1}
k	kilo	10^3
M	mega	10^6
G	giga	10^9

About this issue

This is the first issue of the Remote Controller 5570 User Guide covering the CE compliance regulations introduced in April 2001. This guide is applicable to remote controllers with software version 2.02. Version 2.02 software provides operation with both the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series.

> Any references to the C-Band Transceiver 5700 series and Ku-Band Transceiver 5900 series also include the high power versions of this equipment and their respective manuals.

Associated documents

This user guide is one of a series of publications related to the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series. Other associated publications are:

* Hand-Held Controller 5560 User Guide (Codan part number 15-44009-EN)

* C-Band Transceiver 5700 series Reference Manual (Codan part number 15-44001-EN)

* C-Band High Power Transceiver 5700 series Reference Manual (Codan part number 15-44002-EN)

* Ku-Band Transceiver 5900 series Reference Manual (Codan part number 15-44005-EN)

* Ku-Band High Power Transceiver 5900 series Reference Manual (Codan part number 15-44006-EN)

2 Remote controller compliance

This chapter describes how to ensure the Remote Controllers 5570 and 5570D comply with the European Electromagnetic Compatibility Directive and the European Low Voltage Directive.

Electromagnetic compatibility and safety notices

The Remote Controllers 5570 and 5570D have been tested and comply with the following standards:

- ETSI EN 301 489-1 V1.2.1 (2000–08) 'Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements'

- ETSI EN 301 489-12 V1.1.1 (2000–12) 'Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 12: Specific conditions for Very Small Aperture Terminal, Satellite Interactive Earth Stations operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)'

- EN 60950 'Safety of Information Technology Equipment, including electrical business machines', 2000

Compliance with these standards is sufficient to fulfil the requirements of the following directives:

- European EMC Directive, 89/336/EEC

- European Low Voltage Directive, 73/23/EEC with no lower voltage limit

Equipment supplied by Codan that satisfies these requirements is identified by the CE0682 markings on the model label of the product.

Complying with the European EMC and Low Voltage Directives

Electromagnetic compatibility

To ensure compliance with the EMC Directive is maintained, you must:

❑   Use the standard shielded cables supplied by Codan for all connections.

❑   Ensure the covers for the equipment are correctly fitted.

> If it is necessary to remove the covers at any stage, they must be re-fitted correctly before using the equipment.

Electrical Safety

All circuits within the Remote Controllers 5570 and 5570D are SELV circuits provided that the protective earth terminal on the controller is connected to earth.

Earth symbol

A protective earth connection point has been provided on the controller. To comply with the European Low Voltage Directive, the symbol shown in Table 2-1 is used to identify the connection.

Table 2-1:   Earth symbol

Symbol	Meaning
	Protective earth

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3   Overview

CODAN

This chapter provides an overview of the remote controllers and the transceivers they control. It describes how to use the controllers and distinguishes between the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series.

This chapter includes:

• a description of the remote controller (3-2)

• an introduction to the operating modes of the remote controller (3-6)

• specifications (3-9)

• a description of the C-Band Transceiver 5700 series (3-14)

• a description of the Ku-Band Transceiver 5900 series (3-17)

About the Remote Controller 5570

The Remote Controller 5570 provides a user-friendly monitoring and programming facility for the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series.

The 5570D provides two remote controllers on a single panel for full control of redundant transceiver configurations.

The remote controller allows you to display and change the operating status and all operating parameters of the transceiver.

Using the remote controller is simple and does not require you to know the commands, command data or command structure used in direct serial control and monitoring of the transceiver.

An in-built security function is available to prevent unintended or unauthorised changing of transceiver parameters.

The remote controller is compatible with various converters with different frequency ranges, and is compatible with different SSPA systems.

Figure 3-1:   Remote Controller 5570
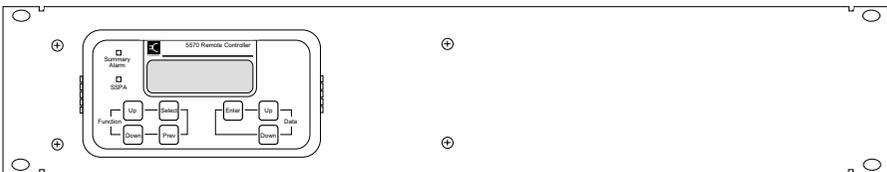
Figure 3-2:   Remote Controller 5570D
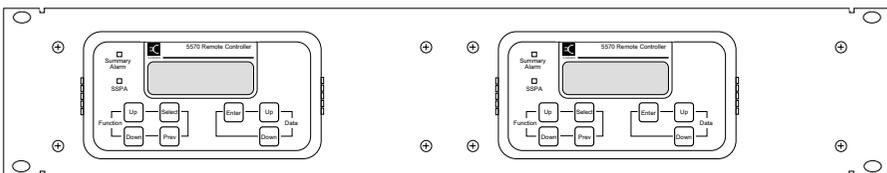
The display and controls

The display

The remote controller has an LCD. When the controller is connected to the transceiver and powered up, the mode, status or operating parameters of the transceiver can be displayed one at a time.

The indicators

The remote controller has two LED indicators:

- **Summary Alarm**

- **SSPA**

These indicators continuously indicate the status of the summary alarm and SSPA, irrespective of the menu selection on the display.

The controls

The remote controller has two sets of membrane soft-touch control buttons—the **Function** buttons and the **Data** buttons.

You use the **Function** buttons to display the next item or select the displayed item.

You use the **Data** buttons to increment or decrement the parameter value or status and to store the new setting.

Figure 3-3:   LCD, indicators and buttons on the remote
controller
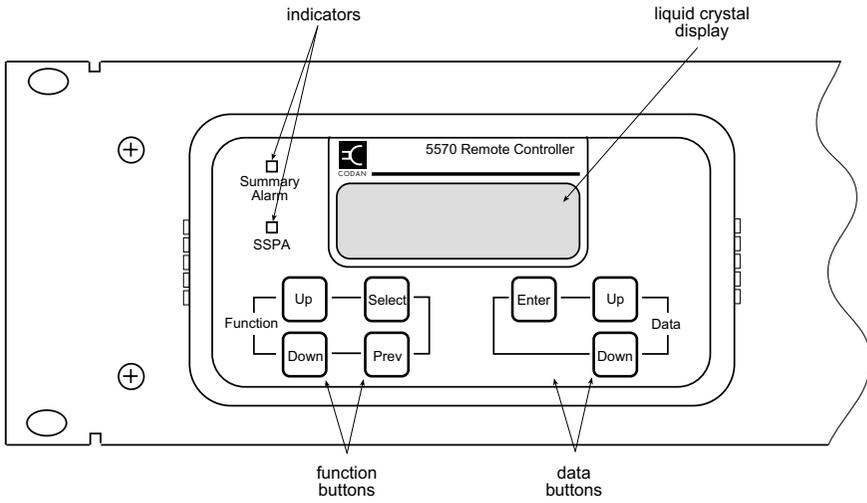
Rear panel description

On the rear panel of the controller, there are three 15-way D-type plugs with screw lock fittings:

- RS232

- RS422

- Summary alarm output

Figure 3-4:   Rear panel of the controller (mounting plate not shown)
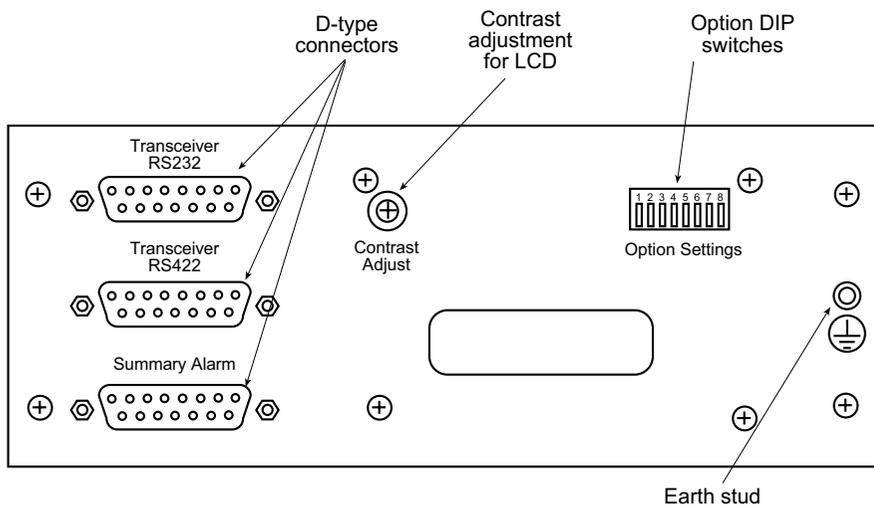
Operating modes

The remote controller has a three-level menu structure. The top level of the menu comprises the three operating modes:

• View mode

• Parameter mode

• Security mode (only if security option operational)

When you select one of these modes, submenu items are displayed. When you select a submenu item, the data for that item is displayed.

View mode

View mode allows you to view:

• system status

• fault status

• control status

• lock status

• temperature status

• equipment data

• output power (Ku-Band only)

Parameter mode

Parameter mode allows you to view and change operating parameters of the transceiver as listed below.

Control parameters:

• System activation

• SSPA activation

• SSPA inhibit

Main parameters:

- Transmit frequency

- Receive frequency

- Transmit attenuation

- Receive attenuation

Auxiliary parameters for the C-Band transceiver:

- LNA fault control

- SSPA fault control

- Fan fault control

- IF impedance

- IF frequency

- Transmit cable compensation

- Converter temperature compensation type

- SSPA temperature compensation type

- SSPA control mode

- Reference oscillator override

- Packet protocol

- Packet address

- Power up mode

Auxiliary parameters for the Ku-Band transceiver:

- LNB fault control

- SSPA fault control

- SSPA output alarm mode

- SSPA alarm threshold

- IF impedance

- IF frequency

- Transmit cable compensation

- Converter temperature compensation type

- SSPA temperature compensation type

- SSPA output power detection type

- SSPA control mode

- Reference oscillator override

- Packet protocol

- Packet address

- Power up mode

- Receive range

Security mode

Security mode can be used, if required, by selecting the security option. When selected, a parameter control access code must be entered before parameter control is enabled.

Once enabled, a user can change the operating parameters of the transceiver.

When the security option is not selected, access to alter parameters is freely available.

General specifications

Power

The remote controller obtains power from the converter, therefore it does not require its own power supply.

Power to the controller is always available whenever the controller is connected to the converter and the converter is in standby mode or is on.

Supply voltage	12.5 to 15.0 V DC
Power consumption	
5570	2.0 W maximum at 13.0 V
5570D	4.0 W maximum at 13.0 V

Interface

Interface standard	RS232 or RS422 serial interface (DIP switch on converter must be set appropriately)
Interface protocol[a]	ASCII (DIP switch on converter must be set appropriately)
Data rate[b]	1.2, 2.4, 4.8 or 9.6 kbps (auto-selecting)
Parity[b]	None, odd or even (auto-selecting)
Number of data bits[b]	7 or 8 (auto-selecting)
Number of stop bits[b]	1 or 2 (auto-selecting)

a. The converter must be set to ASCII mode. Once the controller has established communication with the converter, both the converter and the controller operate in a packet protocol mode.
b. The controller adapts to the communications settings of the converter.

Connectors

RS232 connector pin assignments

The RS232 interface can only be used if the cable length is less than 10 metres.

Table 3-1:   RS232 connector pin assignments

Pin	Assignments
2	Rx data from converter to controller (serial output 1)
3	Tx data from controller to converter (serial input 1)
5	0 V
8	+13 V
15	Controller chassis connection
	All other pins are not connected

RS422 connector pin assignments

The RS422 interface should be used if the cable length is more than 10 metres.

Table 3-2:   RS422 connector pin assignments

Pin	Assignments
2	Rx+ data from converter to controller (serial output 1)
3	Tx+ data from controller to converter (serial input 1)
5	0 V
8	+13 V
10	Tx– data from controller to converter (serial input 2)
11	Rx– data from converter to controller (serial output 2)
15	Controller chassis connection
	All other pins are not connected

Summary alarm connector pin assignments

The summary alarm connector allows an external device to be activated when an alarm is detected.

Table 3-3:   Summary alarm connector pin assignments

Pin	Assignments
1	Normally closed 1 in non-alarm state
2	Normally closed 2 in non-alarm state
3	Normally open 1 in non-alarm state
4	Normally open 2 in non-alarm state
15	Controller chassis connection
	All other pins are not connected

Dimensions

Height: 2 RU

Depth: 40 mm

Weight:
    5570   0.9 kg
    5570D   1.5 kg

Mounting

The remote controller is mounted in a 19¨ (483 mm) rack using four mounting holes.

Grounding

The controller's chassis should be grounded to earth via the M4 stud on the rear connector panel.

Environment

The optimum operating temperature for the remote controller is between –10ºC and +40ºC.

The remote controller will operate correctly at a relative humidity of up to 90% non-condensing at +40ºC.

Cooling is via natural convection.

About the C-Band Transceiver 5700 series

The C-Band Transceiver 5700 series is a high performance transceiver for use in a satellite earth station. It is ideally suited to single or multicarrier rural and remote area telephony and data communications. For a complete description of the transceiver, see the *C-Band Transceiver 5700 series Reference Manual*.

The C-Band Transceiver 5700 series comprises:

• an Up/Down Converter module 5700

• an SSPA 5705, 5710, 5720, 5730, 5740, 5760 or 5712H

• an LNA

• a Power Supply Unit 5582 (if required)

For details of each of the transceiver components, see *Chapter 5*, *How the transceiver works* in the *C-Band Transceiver 5700 series Reference Manual*.

The converter is available with several frequency, bandwidth and synthesiser options. The model label on your converter will indicate the options that have been fitted. The options available are discussed in the following sections.

Frequency band options

The converter may be supplied for operation on one of four
different frequency bands. The range of transmit and receive
frequencies depends upon the band option of the transceiver
(see Table 3-4).

Table 3-4:   Transmit frequency band options of the
C-Band Transceiver 5700 series

Band	Description	Transmit frequency (MHz)	Receive frequency (MHz)
2	C-Band, Extended	5850 to 6425	3625 to 4200
3	Insat	6725 to 7025	4500 to 4800
4	Palapa C & Intelsat VIII-A	6425 to 6705	3400 to 3680

The frequency band used by your converter is indicated by the
first number in the options section on the model label. For
example, **2/W/D** indicates the transceiver operates on
extended C-Band (Band 2).

Bandwidth options

The converter may be supplied to provide one of two IF
bandwidths:

Narrow   40 MHz (indicated by an **N** in the second position
in the options section on the model label of the
converter)

Wide   80 MHz (indicated by a **W** in the second position
in the options section on the model label of the
converter)

If the converter is a narrow bandwidth model, you can select
IF operation at either 70 MHz or 140 MHz.

If the converter is a wide bandwidth model, IF operation is at 140 MHz only.

Synthesiser options

The converter may be fitted as one of two synthesiser options:

Dual   allows you to select the transmit and receive frequencies independently (indicated by a **D** in the third position in the options section on the model label of the converter)

Single   receive frequency is calculated automatically and determined by the transmit frequency (indicated by an **S** in the third position in the options section on the model label of the converter)

About the Ku-Band Transceiver 5900 series

The Ku-Band Transceiver 5900 series is a high performance transceiver for use in a satellite earth station. It is ideally suited to single or multicarrier rural and remote area telephony and data communication. For a complete description of the transceiver, see the *Ku-Band Transceiver 5900 series Reference Manual*.

The Ku-Band Transceiver 5900 series comprises:

• an Up/Down Converter module 5900

• an SSPA 5902, 5904, 5908, 5916, 5940

• an LNB

• a Power Supply Unit 5582 (if required)

For details of each of the transceiver components, see *Chapter 5*, *How the transceiver works* in the *Ku-Band Transceiver 5900 series Reference Manual*.

The converter is available with several frequency and bandwidth options. The model label on your converter will indicate the options that have been fitted. The options available are discussed in the following sections.

Transmit frequency band options

The converter may be supplied for operation on one of two different transmit frequency bands. The range of transmit frequencies depends upon the band options of the converter (see Table 3-5).

Table 3-5:   Transmit frequency band options of the Ku-Band Transceiver 5900 series

Band	Transmit frequency (MHz)
1	14000 to 14500
2	13750 to 14500

The frequency band used by your converter is indicated by the first number in the options section of the model label. For example, **1/N** indicates the transceiver operates in the transmit frequency band 14000 to 14500 MHz.

Bandwidth options

The converter may be supplied with one of two IF bandwidths:

Narrow   40 MHz (indicated by an **N** in the second position in the options section on the model label of the converter)

Wide   80 MHz (indicated by a **W** in the second position in the options section on the model label of the converter)

If the converter is a narrow bandwidth model, you can select IF operation at either 70 MHz or 140 MHz.

If the converter is a wide bandwidth model, IF operation is at 140 MHz only.

Synthesiser setting

The Ku-Band Transceiver 5900 series is fitted as a dual synthesiser. It does *not* have the single synthesiser option.

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4 Installation and setup

This chapter describes how to:

- mount the remote controller (4-2)

- select and wire the converter to controller cable (4-3)

- connect the controller to the transceiver (4-4)

- connect the summary alarms (4-6)

- set the option switches (4-7)

- check that the controller is operating correctly (4-8)

- adjust the contrast on the LCD (4-10)

Mounting

Bolt the remote controller into the user-supplied rack before connecting it to the transceiver.

Earthing

There is an earth lug on the rear panel of the remote controller (see Figure 3-4 on page 3-5). This earth lug should be connected to an appropriate earth point.

Lightning protection

If lightning strikes are likely in the area where the transceiver is being installed, you must take precautions to prevent dangerous voltage potentials between the outdoor equipment and the indoor equipment.

Huge ground currents occur for several hundred metres around a strike area, causing large voltage potentials between separate earth points. For this reason, some lightning engineers recommend the use of large copper earth straps (or braid) to connect the indoor and outdoor equipment earth systems.

It is highly recommended that the metal structures of the outdoor equipment be well grounded with earth stakes, or in the case of rooftop sites, be connected to the lightning grid and earth system of the building. This practice will also reduce the likelihood of the mains supply or RF interfering with the serial interface signals.

For critical installations in lightning-prone areas, it is strongly advised that you seek expert advice on lightning protection.

Cabling

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Standard length cables are available to connect the controller to the converter. Where the length required is unknown and the cable must be made on site, or the cable connectors are to be fitted on site, the following information on cable fabrication is provided.

A 6-core shielded cable is required. The shield must be connected to the chassis connection of the controller and the converter. For the controller, the shield must be connected to pin 15 of the controller serial interface. For the converter, the shield must be connected to the connector shell of the plug.

The required connector for connecting to the controller is a standard 15-way D-type socket with screw lock fittings.

The required connector for connecting to the converter is a MIL-C-26482 14-19P plug.

A cable wiring diagram (drawing 08-05572) is included in Chapter 7, *Drawings*.

5570D

Cable requirements for connecting the 5570D to two converters are the same as for the 5570 above.

Alternatively, the 5570D can be wired to a Redundant System Monitor 5587 using two cables (Codan part number 08-05686-xxx, see drawing 08-05686 in Chapter 7, *Drawings*). For further information on connecting into a redundancy system, see *Chapter 6*, *Installation and setup* in the *C-Band Transceiver 5700 series Redundancy Switching Equipment Reference Manual* or the *Ku-Band Transceiver 5900 series Redundancy Switching Equipment Reference Manual*.

Connecting to the transceiver

It is assumed that the C-Band Transceiver 5700 series or the Ku-Band Transceiver 5900 series has already been correctly installed and is powered up.

> The converter must be set to ASCII protocol (using the switch on the control panel of the converter). For the C-Band Converter 5700, the converter software must be version 1.20 or later.

If you are using the RS422 interface, the converter must be set to RS422 interface and 4-wire operation. If you are using the RS232 interface, the converter must be set to RS232 interface. See the *C-Band Transceiver 5700 series Reference Manual* or the *Ku-Band Transceiver 5900 series Reference Manual* for more information.

> We recommend that you use the RS422 interface for all installations, particularly if the cable length between the controller and the converter is to be more than 10 metres.

> For correct operation, the following must match:
> - interface option on the control panel of the converter
> - interface setting on the controller
> - rear panel connection on the controller

You do not have to turn the power to the transceiver off before connecting the remote controller.

To connect the remote controller to the transceiver:

❑ If you are using the RS422 interface, push the D-type connector into the RS422 connector socket on the rear panel of the controller.

If you are using the RS232 interface, use the RS232 connector socket.

❑ Tighten the locking screws on the connector.

❑   Push the MS connector on the other end of the remote controller cable into the **MONITOR/CONTROL** socket on the converter.

The connector and socket are polarised with small locating lugs.

❑   When the connector is in position, tighten the locking collar by turning it clockwise.

The locking collar will click into position.

❑   Ensure that the converter connector is appropriately sealed as described in the connector sealing section in *Chapter 6*, *Installation* in the *C-Band Transceiver 5700 series Reference Manual* or the *Ku-Band Transceiver 5900 series Reference Manual*.

Figure 4-1:   Connecting the controller to the transceiver
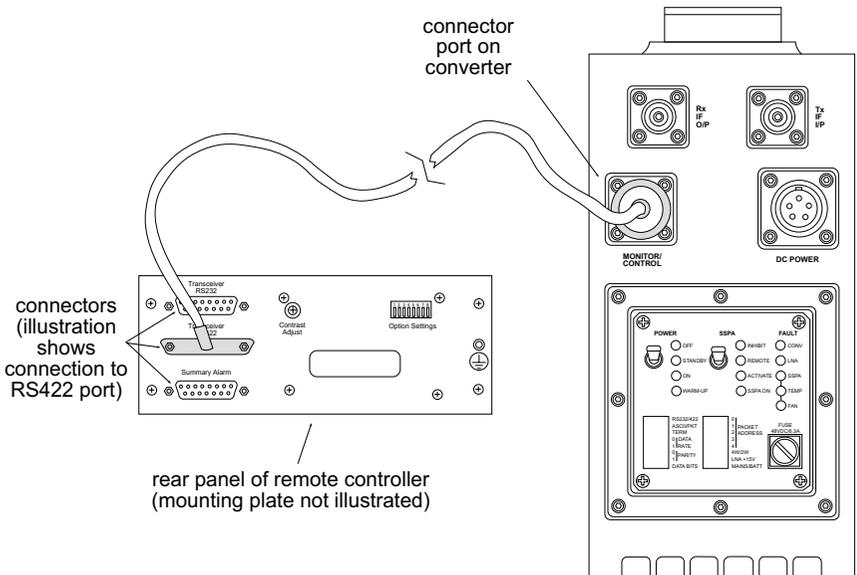
Connecting the summary alarm

If required, the controller can be connected to an external warning device via the summary alarm output.

The summary alarm output provides isolated normally closed and normally open relay alarm contacts (see page 3-12, *Summary alarm connector pin assignments*).

A summary alarm can be indicated for:

- LNA/LNB fault

- converter fault

- SSPA fault

- temperature fault

- fan fault[1]

- standby[1]

- SSPA not activated[1]

- the 10 MHz reference oscillator has not warmed up[1]

- output power fault

> If power or connection from the converter to the remote controller is lost, the summary alarm output will be in the alarm state.

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1. These alarms can be included in the summary alarm by selecting the appropriate option switch (see page 4-7, *Setting the option switches*).

Setting the option switches

Use the 8-way DIP switch on the rear panel of the remote controller to set the required options for your installation.

The switch settings can be changed at any time.

Table 4-1:   Option switches

Switch	Options
1	RS232 (switch in OFF position) RS422 (switch in ON position)
2	Security option When set to ON, Security mode is operational
3	Spare
4	Output power fault included in summary alarm When set to ON, summary alarm is on when the SSPA output power is below the output power threshold (5900 only)
5	Reference oscillator 'warming' included in summary alarm When set to ON, summary alarm is on during the warm-up period of the reference oscillator
6	SSPA status OFF included in summary alarm When set to ON, summary alarm is on when the SSPA is off
7	Fan Fault included in summary alarm When set to ON, summary alarm is on when there is a fan fault
8	'Standby' system status included in summary alarm When set to ON, summary alarm is on when the system is in Standby mode

Checking controller operation

To check that the remote controller is installed properly and ready for use:

❑ Ensure that the transceiver is in Standby mode or On.

The **ON** LED or the **STANDBY** LED on the control panel of the converter will be on when the transceiver is On or in Standby mode. Other LEDs may also be on, including **FAULT** LEDs.

There are two LEDs on the control panel of the remote controller:

SSPA LED (Yellow)   illuminated if the SSPA is on

Summary Alarm LED (Red)   illuminated if there is an alarm condition

The LCD on the remote controller will display the Codan logo for a few seconds. The LCD will then display **Connecting...**.

The first item to be displayed will be **View Mode**.

If the controller displays an error message during this connecting period, see Chapter 6, *Display messages*.

❑ Press the **Up Function** button repeatedly to scroll through each item in turn.

Three items should be displayed, one at a time:

- **View Mode**

- **Parameter Mode**

- **Security Mode** (only if security option is operational (see page 4-7, *Setting the option switches*))

❑ To scroll backwards through each item in turn, press the **Down Function** button.

❑ When **Parameter Mode** is displayed, press the **Select** button.

Control Parameters should be displayed.

❑ Press the **Select** button again.

The system status should be displayed.

❑ To return to the previous item, press the **Prev** button.

If the controller responds as above, it is ready for use.

If the controller does not respond as above, see Chapter 6, *Display messages* of this guide or consult your Codan representative.

Adjusting the contrast of the display

If you need to adjust the contrast of the display, use the single-turn trimmer on the rear panel of the remote controller (see Figure 3-4 on page 3-5).

5 Using the controller

This chapter describes the display, and how to navigate through the menu structure and different modes of the remote controller. It describes the parameters of the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series and how the remote controller is used to set or change the parameter settings.

This chapter includes:

- operating the remote controller (5-2)

- a description of the display, function and data buttons, and the LED indicators on the control panel of the remote controller (5-3)

- a description of Security mode (5-7)

- a description of View mode (5-10)

- a description of Parameter mode (5-16)

- resetting the remote controller (5-57)

Operating the controller

The menu structure

The remote controller has a three-level menu structure.

Figure 5-1:   Menu structure for the remote controller
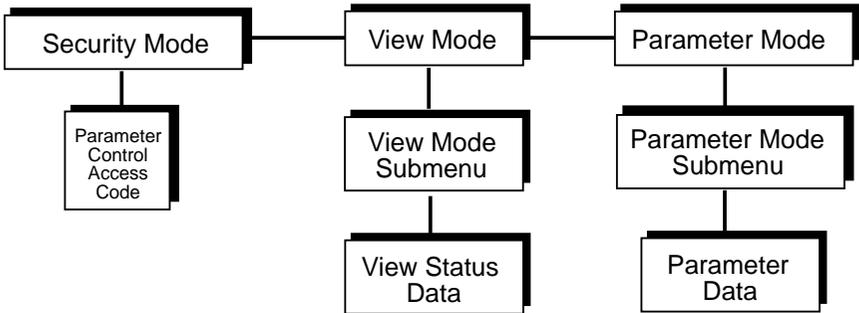
The top level of the menu comprises:

- Security mode (if security option is operational)

- View mode

- Parameter mode

When you select one of these modes, a submenu item is displayed. When you select one of the submenu items, the submenu data is displayed.

Understanding the display

When the controller is powered up and connected to the transceiver, the mode, status or operating parameters of the transceiver can be displayed on the LCD one at a time.

Information is shown in four fields. The details displayed are:

• function/parameter name

• present parameter value

• parameter data units (if applicable)

• menu location or error message (if applicable)

Figure 5-2:   LCD of the remote controller
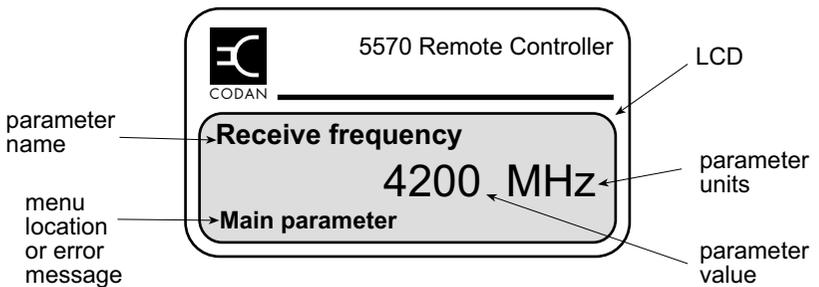
The function and data buttons

The remote controller has two sets of control buttons—the **Function** buttons and the **Data** buttons.

Figure 5-3:   The function and data buttons
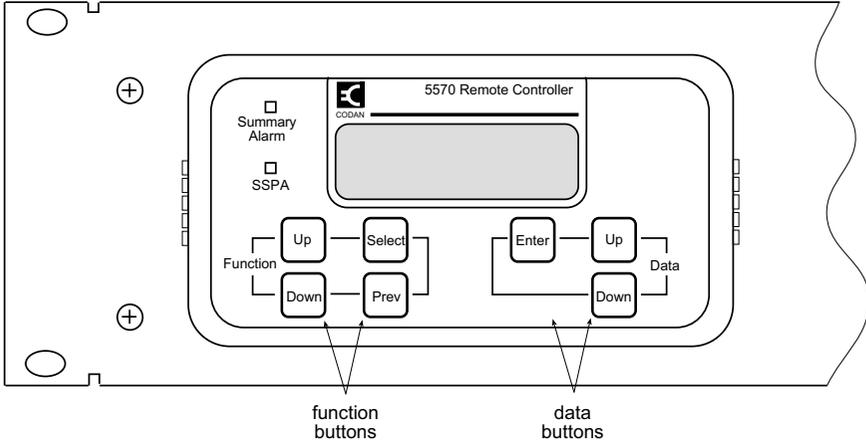
Table 5-1:   Function buttons

Button	Function
Up	Cycles upwards through displayed items
Down	Cycles downwards through displayed items
Select	Selects the displayed item
Prev	Displays the previous level above the displayed item

Table 5-2:   Data buttons

Button	Function
Up	Cycles upwards through data values
Down	Cycles downwards through data values
Enter	Sends displayed data to the converter to be stored

The LED indicators

There are two LED indicators on the control panel of the remote controller.

The **SSPA** LED (yellow) is illuminated whenever the SSPA is on.

The **Summary Alarm** LED (red) is illuminated if one or more of the following alarm conditions exist:

- converter fault

- LNA fault (only if LNA fault control enabled) (C-Band only)

- LNB fault (only if LNB fault control enabled) (Ku-Band only)

- SSPA fault (only if SSPA fault control enabled)

- SSPA temperature fault (only if SSPA fault control enabled)

- SSPA fan fault (only if DIP switch 7 on the controller is set to ON and SSPA fan fault control enabled) (C-Band only)

- reference oscillator is 'warming up' (only if DIP switch 5 on the controller is set to ON)

- SSPA status is Off (only if DIP switch 6 on the controller is set to ON)

- System status is Standby (only if DIP switch 8 on the controller is set to ON)

- SSPA output power is below the SSPA alarm threshold (only if DIP switch 4 on the controller is set to ON and SSPA output alarm mode is set to O/P level) (Ku-Band only)

About Security mode

The remote controller has an in-built security option.

When the security option is selected (DIP switch 2 on the rear panel of the controller set to ON), an access code must be entered to enable parameter control and allow transceiver parameters to be changed.

To see if the security option is selected in your installation:

❑ From the top menu level, press the **Up Function** button several times.

If only two modes are displayed, **View Mode** and **Parameter Mode**, the security option has not been selected.

If there is a third mode displayed, **Security Mode**, the security option has been selected.

If the security option has not been selected, any user has free access to view and change the operating parameters of the transceiver.

If the security option has been selected, the user can view the parameters, but no settings can be changed unless the correct parameter control access code is entered to enable parameter control.

Enabling parameter control

If the security option has not been selected (DIP switch 2 on the rear panel of the controller set to OFF), parameter control is automatically enabled.

If the security option has been selected, the user can view the parameters, but no settings can be changed unless the correct parameter control access code is entered to enable parameter control.

To enable parameter control:

❑ From the top menu level, press the **Up Function** button until **Security Mode** is displayed.

The display will show **Parameter Control Disabled**.

❑ Press the **Select** button to display **Enter Access Code**.

1234 will be displayed.

❑ Press the **Up** or **Down Data** button (hold the button down to fast scroll through the codes) until the access code 1722 is displayed and then press **Enter**.

❑ Press the **Prev** button to return to the top menu level.

The display will show **Parameter Control Enabled**. Parameter control will remain enabled until it is disabled, or until power to the controller is lost.

Disabling parameter control

If the security option has not been selected (DIP switch 2 on the rear panel of the controller set to OFF), parameter control is always enabled and cannot be disabled.

If the security option has been selected and parameter control has been enabled, the user may prevent unwanted changes being made to the transceiver operating parameters by disabling parameter control.

To disable parameter control:

❑ From the top menu level, press the **Up Function** button until **Security Mode** is displayed.

The display will show **Parameter Control Enabled**.

❑ Press the **Select** button to display **Enter Access Code**.

1234 will be displayed.

❑ Press **Enter**.

❑ Press the **Prev** button to return to the top menu level.

❑ The display will show **Parameter Control Disabled**.

Whenever power is lost to the controller, parameter control will be reset to disabled.

About View mode

View mode allows you to view the complete operating status of the transceiver.

View mode has six submenu items.

Figure 5-4:   Menu structure for View mode
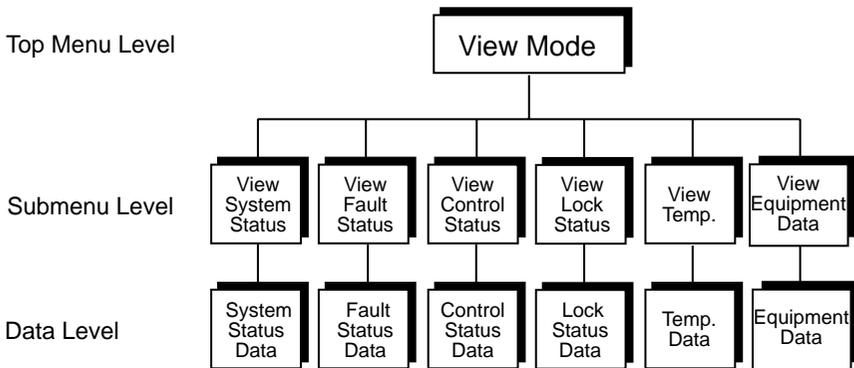
Viewing View mode data

To view the View mode data:

❑   From the top menu level, press the **Up Function** button until **View Mode** is displayed.

❑   Press the **Select** button to display a submenu item.

❑   Press the **Up Function** (or **Down Function**) button to scroll through each submenu item.

❑   Press **Select** to display the data for a submenu item.

❑   Press the **Up Function** (or **Down Function**) button to scroll through the data.

❑   To return to the submenu level, press **Prev**.

❑   Continue to use the Function buttons to display submenu items and their data as required.

❑ To return to the top menu level, press **Prev**.

Repeat the above process to display the remaining submenu and data items, as listed below.

View system status

❑ Select **View System Status** from the submenu to view:

- System Standby/On

- SSPA summary activation On/Off

- SSPA summary inhibit On/Off

- SSPA status On/Off

- Transmit IF status On/Off

- Reference oscillator Warm/Warming

View fault status for the C-Band transceiver

❑ Select **View Fault Status** from the submenu to view:

- Converter OK/Fault

- LNA OK/Fault (will always indicate OK when LNA fault control is disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA OK/Fault (will always indicate OK when SSPA fault control is disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA temperature OK/Fault (will always indicate OK when SSPA fault control is disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA fan OK/Fault (will always indicate OK when fan fault control or SSPA fault control are disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA output power OK/Fault (will always indicate OK when SSPA alarm mode is set to ON/OFF)

View fault status for the Ku-Band transceiver

❑ Select **View Fault Status** from the submenu to view:

- Converter OK/Fault

- LNB OK/Fault (will always indicate OK when LNB fault control is disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA OK/Fault (will always indicate OK when SSPA fault control is disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA temperature OK/Fault (will always indicate OK when SSPA fault control is disabled (see page 5-34, *Enabling/disabling fault controls*)

- SSPA fan OK/Fault (will always indicate OK if the SSPA does not have a fan (see page 5-34, *Enabling/disabling fault controls*)

- SSPA output power OK/Fault (will always indicate OK when SSPA alarm mode is set to ON/OFF)

View control status

❑ Select **View Control Status** from the submenu to view:

- Power switch On/Standby

- SSPA switch Remote/Activate/Inhibit

- H/W (hardwire) system on input On/Off

- H/W SSPA activate input On/Off

- H/W SSPA inhibit input On/Off

View lock status for the C-Band transceiver

❑ For a converter with the dual synthesiser option, select **View Lock Status** from the submenu to view:

- Transmit local oscillator Locked/Unlocked

- Receive local oscillator Locked/Unlocked

- Transmit synthesiser 1 Locked/Unlocked

- Transmit synthesiser 2 Locked/Unlocked

- Receive synthesiser 1 Locked/Unlocked

- Receive synthesiser 2 Locked/Unlocked

❑ For a converter with the single synthesiser option, select **View Lock Status** from the submenu to view:

- Transmit local oscillator Locked/Unlocked

- Receive local oscillator Locked/Unlocked

- Synthesiser 1 Locked/Unlocked

- Synthesiser 2 Locked/Unlocked

View lock status for the Ku-Band transceiver

❑ Select **View Lock Status** from the submenu to view:

- Transmit local oscillator Locked/Unlocked

- Receive local oscillator Locked/Unlocked

- Transmit synthesiser 1 Locked/Unlocked

- Transmit synthesiser 2 Locked/Unlocked

- Transmit synthesiser 3 Locked/Unlocked

- Receive synthesiser 1 Locked/Unlocked

- Receive synthesiser 2 Locked/Unlocked

View temperature status for the C-Band transceiver

❑ Select **View Temperature** from the submenu to view:

- Converter temperature

- SSPA temperature (if the SSPA compensation is off, the display will show **N/A** and the error message **Temp Comp Off!** will be displayed. See page 5-42, *Changing the SSPA temperature compensation type* and Chapter 6, *Display messages*)

View temperature status for the Ku-Band transceiver

❑ Select **View Temperature** from the submenu to view:

- Converter temperature

- Converter maximum/minimum temperatures

- SSPA temperature

- SSPA maximum/minimum temperatures

☞ If the SSPA is disconnected and the SSPA control mode is set to Extended or Basic, the display will show **N/A**.

View equipment data for the C-Band transceiver

❑ Select **View Equipment Data** from the submenu to view:

- Converter software version

- Remote controller software version

View equipment data for the Ku-Band transceiver

❑ Select **View Equipment Data** from the submenu to view:

- Converter model number

- Converter serial number

- Converter software version

- SSPA model number

- SSPA serial number

- SSPA software version

- Remote controller software version

If the SSPA is disconnected and the SSPA control mode is set to Extended or Basic, the display will show **N/A**.

View output power for the Ku-Band transceiver

❑ Select **View Output Power** from the submenu to view:

- SSPA output power (in dBm)

The display of SSPA output power is not available with all SSPA models.

About Parameter mode

Parameter mode allows you to view and change the operating parameters of the transceiver.

If security mode is operational, you must enable Parameter Control before you can change any parameter settings. See page 5-8, *Enabling parameter control*.

Parameter mode has three submenu items:

• Control parameters

• Main parameters

• Auxiliary parameters

Figure 5-5:   Menu structure for Parameter mode

Top Menu Level — Parameter Mode

Submenu Level — Control Parameters | Main Parameters | Auxiliary Parameters

Data Level — Control Parameter Data | Main Parameter Data | Auxiliary Parameter Data
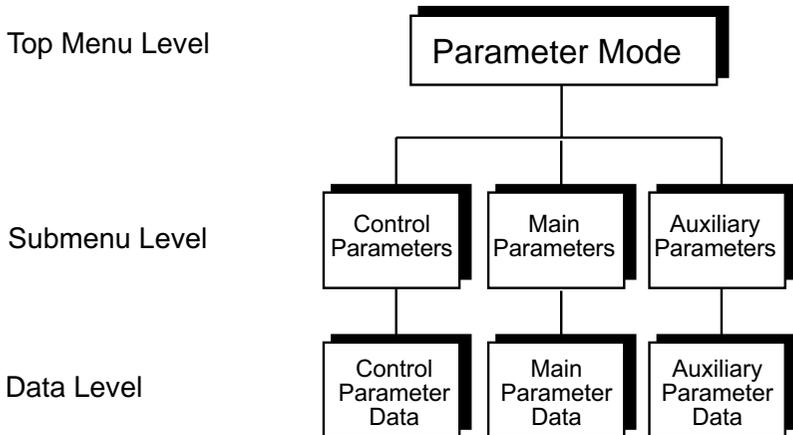
Control parameters

Control parameters activate or deactivate components of the transceiver.

Control parameters are used to:

- activate/deactivate the transceiver system by switching between the On and Standby transceiver modes

- activate (On/Off) the SSPA

- inhibit (On/Off) the SSPA

Activating/deactivating the transceiver system

You can use the remote controller to activate or deactivate the entire transceiver system if required.

To activate or deactivate the system:

❑ From the top menu level, press the **Up Function** button until **Parameter Mode** is displayed.

❑ Press the **Select** button to display the submenu item **Control Parameters**.

❑ Press the **Select** button.

❑ Press the **Up Function** button until **System** is displayed.

❑ Press the **Up Data** button to toggle between **On** and **Standby**.

The unstored setting will flash.

❑ When the required setting is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing.

If you press the **Up**, **Down** or **Prev Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

❑ If you want to return to the submenu level, press **Prev**.

❑ If you want to return to the top menu level, press **Prev** again.

Activating/deactivating the SSPA

You can use the remote controller to activate or deactivate the SSPA as required.

To activate or deactivate the SSPA:

❑ From the top menu level, press the **Up Function** button until **Parameter Mode** is displayed.

❑ Press the **Select** button to display the submenu item **Control Parameters**.

❑ Press the **Select** button.

❑ Press the **Up Function** button until **SSPA Activate** is displayed.

❑ Press the **Up Data** button to toggle between **On** and **Off**.

The unstored setting will flash.

❑ When the required setting is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing.

If you press the **Up**, **Down** or **Prev Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

❑ If you want to return to the submenu level, press **Prev**.

❑ If you want to return to the top menu level, press **Prev** again.

Inhibiting the SSPA

You can use the remote controller to inhibit activation of the SSPA if required.

To switch the inhibit SSPA function on or off:

❑ From the top menu level, press the **Up Function** button until **Parameter Mode** is displayed.

❑ Press the **Select** button to display the submenu item **Control Parameters**.

❑ Press the **Select** button.

❑ Press the **Up Function** button until **SSPA Inhibit** is displayed.

❑ Press the **Up Data** button to toggle between **On** and **Off**.

The unstored setting will flash.

❑ When the required setting is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing.

If you press the **Up**, **Down** or **Prev Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

❑ If you want to return to the submenu level, press **Prev**.

❑ If you want to return to the top menu level, press **Prev** again.

Main parameters

The Main parameters are used to control general operational functions. The Main parameters are:

- transmit frequency

- receive frequency

- transmit attenuation

- receive attenuation

Changing the transmit frequency

The transmit frequency can be set in 1 MHz increments. The range of frequencies available depends on the band option of the converter.

See Table 5-3 to determine the appropriate transmit frequency for your particular transceiver.

Table 5-3:   Transmit frequencies

Band	C-Band Transceiver 5700 series (MHz)	Ku-Band Transceiver 5900 series (MHz)
1		14000 to 14500
2	5850 to 6425	13750 to 14500
3	6725 to 7025	
4	6425 to 6705	

It is good practice to deactivate the SSPA before changing the transmit frequency (see page 5-18, *Activating/deactivating the SSPA*).

To view or change the transmit frequency of the converter:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until the **Transmit frequency** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ If you want to change the transmit frequency, press the **Up Data** button or the **Down Data** button until the required frequency is displayed.

If you hold the button down for more than two seconds, the controller will fast scroll through the values.

The unstored value will flash.

❑ When the required value is displayed, press the **Enter Data** button.

The new value is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new value will not be stored.

❑ If you deactivated the SSPA before changing the transmit frequency, you may want to reactivate it now.

Changing the receive frequency

C-Band Transceiver 5700 series

The ability to change the receive frequency depends on whether the converter is fitted with the dual or single synthesiser option.

Single synthesiser operation is indicated by an **S** in the third position in the options section on the model label of the converter. Dual synthesiser operation is indicated by a **D**.

If the converter is fitted with the single synthesiser option, the receive frequency is calculated automatically; determined by the transmit frequency with a 2225 MHz offset. In this case, you will be able to view the value for the receive frequency on the remote controller LCD, but will not be able to change it. If you attempt to change the receive frequency, a message is displayed (see Chapter 6, *Display messages)*.

If the converter is fitted with the dual synthesiser option, you will be able to set the transmit and receive frequencies independently.

The receive frequency can be set in 1 MHz increments. The range of frequencies available depends on the band option of the converter.

See Table 5-4 to determine the appropriate receive frequency for your converter.

Table 5-4:   Receive frequencies of the C-Band Transceiver 5700 series

Band	Rx frequency minimum (MHz)	Rx frequency maximum (MHz)
2	3625	4200
3	4200	4800
4	3400	3680

Ku-Band Transceiver 5900 series

The converter is fitted as a dual synthesiser, therefore you are able to set the transmit and receive frequencies independently.

The receive frequency can be set in 1 MHz increments. The range of frequencies available depends on the receive range setting of the converter. The receive range of the converter must be set to match the receive frequency range of the connected LNB.

See Table 5-5 to determine the appropriate receive frequency for your receive range setting.

Table 5-5:   Receive frequencies of the Ku-Band Transceiver 5900 series

Receive range setting	Rx frequency minimum (MHz)	Rx frequency maximum (MHz)
L-Band	950	1700
Band 1	10950	11700
Band 2	11700	12200
Band 3	12250	12750

The L-Band setting is provided for test purposes. These frequencies correspond directly to the converter's Rx input, and not the LNB input.

> Before adjusting the receive frequency, ensure the receive range is set correctly (see page 5-56, *Changing the receive frequency range (Ku-Band transceiver only))*.

Changing the receive frequency

To view or change the receive frequency of the converter:

☐ Press the **Up Function** button repeatedly to scroll through each parameter until the **Receive frequency** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

☐ If you want to change the receive frequency, press the **Up Data** button or the **Down Data** button until the required frequency is displayed.

If you hold the button down for more than two seconds, the controller will fast scroll through the available values.

The unstored value will flash.

☐ When the required value is displayed, press the **Enter Data** button.

The new value is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new value will not be stored.

Changing the transmit attenuation

The transmit attenuation value sets the attenuation of the up converter and hence can be used to set the output level of the SSPA.

It is good practice to monitor the SSPA output power when changing the transmit attenuation.

You must deactivate the SSPA before disconnecting the SSPA output from the antenna or power meter (see page 5-18, *Activating/deactivating the SSPA*).

To adjust the transmit attenuation:

❑ Disconnect the SSPA output from the antenna.

❑ Connect the SSPA output to an appropriately rated load and a power meter.

❑ Set the modem (or other IF signal source) to transmit a carrier at the required IF.

❑ Use a power meter or spectrum analyser to check that the IF level is correct.

❑ Connect the remote controller to the converter.

❑ Reactivate the SSPA (see page 5-18, *Activating/ deactivating the SSPA*).

❑ Press the **Up Function** button on the remote controller repeatedly to scroll through each parameter until the **Transmit attenuation** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up** or **Down Data** buttons to change the transmit attenuation setting.

Reducing attenuation increases the output level.

❑ Press the **Enter Data** button to store the new setting.

□   Continue to adjust the transmit attenuation until the RF level is within ±1 dB of the required level.

The transmit attenuation can be set between 0 and 30 dB for the C-Band Transceiver 5700 series with serial number prefix C or earlier, and between 0 and 25 dB for the C-Band Transceiver 5700 series with serial number prefix D or later and all Ku-Band Transceiver 5900 series.

□   Deactivate the SSPA, set the modem to the transmit Off state, disconnect all test equipment and reconnect the SSPA output to the antenna.

□   Reactivate the SSPA.

Changing the receive attenuation

The receive attenuation sets the received carrier level presented to the demodulators.

To adjust the receive attenuation:

□   Connect a spectrum analyser to the **Rx IF O/P** connector of the converter.

□   Select a carrier at a level suitable for reception at the earth station.

If no such carrier is available, arrange for a carrier to be transmitted either from another earth station, or by looping back via the satellite from your earth station.

□   Connect the remote controller to the converter.

□   Press the **Up Function** button on the remote controller repeatedly to scroll through each parameter until the **Receive attenuation** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

□   Press the **Up** or **Down Data** buttons to change the receive attenuation setting.

Reducing attenuation increases the receive IF output level.

❑ Press the **Enter Data** button to store the new setting.

❑ Continue to adjust the receive attenuation until the IF level is within ±2 dB of the required level.

The receive attenuation can be set between 0 and 30 dB for the C-Band Transceiver 5700 series and between 0 and 25 dB for the Ku-Band Transceiver 5900 series.

❑ Turn off the loop back carrier (if used) and disconnect all test equipment.

Auxiliary parameters

The Auxiliary parameters are set during the installation of the transceiver and should not need to be changed unless the installation is changed. The Auxiliary parameters of the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series are listed below.

Auxiliary parameters for the C-Band transceiver:

- LNA fault control

- Fan fault control

- SSPA fault control

- IF impedance

- IF frequency

- Transmit cable compensation

- Converter temperature compensation type

- SSPA temperature compensation type

- SSPA mode

- Reference oscillator override

- Packet protocol

- Packet address

- Power up mode

Auxiliary parameters for the Ku-Band transceiver:

- LNB fault control
- SSPA fault control
- SSPA alarm mode
- SSPA alarm threshold
- IF impedance
- IF frequency
- Transmit cable compensation
- Converter temperature compensation type
- SSPA temperature compensation type
- SSPA output power detection type
- SSPA mode
- Reference oscillator override
- Packet protocol
- Packet address
- Power up mode
- Receive range

The Auxiliary parameters of the C-Band Transceiver 5700 series and the Ku-Band Transceiver 5900 series are described in the following sections.

Fault indicators

The converters may be used with a range of SSPAs or LNAs/
LNBs, some of which may not require fault reporting via the
converter module. Simply disconnecting the SSPA or LNA/
LNB will not prevent faults being indicated. In these
installations, the unwanted fault indicators may be disabled
using the remote controller.

There are five red **FAULT** LEDs on the control panel of the
converter. These LEDs will illuminate to indicate faults in the
converter, LNA/LNB and SSPA, including SSPA temperature,
and/or SSPA fan fault.

C-Band Transceiver 5700 series

You can enable or disable the LNA, SSPA, SSPA temperature
and SSPA fan faults as required. However, there is no facility
to disable the converter (**CONV**) fault.

If the SSPA fault control is disabled, the fan fault
control will automatically be disabled and the SSPA,
SSPA temperature and SSPA fan fault indicators will
be prevented from operating.

Use the following tables to determine the required setting of
the fault controls for the installation of your C-Band
Transceiver 5700 series.

Converter in stand-alone situation

If the converter in your installation is stand-alone, such as in a major earth station where the HPA and LNA systems are independent and not monitored with the converter, see Table 5-6 for the fault control settings.

Table 5-6:   Fault control settings in a stand-alone situation

Fault control	Status
LNA fault	Disabled
SSPA fault	Disabled
Fan fault	Disabled (this setting automatically occurs when the SSPA fault control is disabled)

Converter used with LNA and SSPA

If the converter in your installation is used with an LNA and either a 5705, 5710, 5720, 5730, 5740, 5760 or 5712H SSPA, see Table 5-7 for the fault control settings.

Table 5-7:   Fault control settings for a converter used with an LNA and SSPA (extended interface)

Fault control	Status
LNA fault	Enabled
SSPA fault	Enabled
Fan fault	Enabled for 5710, 5720, 5730, 5740 Disabled for 5705, 5760 and 5712H

For operation with other C-Band HPAs, contact your Codan representative.

Converter used with Basic SSPA

If the converter in your installation is used with a Basic SSPA, see Table 5-8 for the fault control settings.

Table 5-8:   Fault settings for a converter used with a Basic SSPA

Fault control	Status
SSPA fault	Enabled
Fan fault	Disabled (if an SSPA with a suitable fan interface is used, the fault indicator may be enabled)

Ku-Band Transceiver 5900 series

You can enable or disable the LNB, SSPA, and SSPA temperature faults as required. However, there is no facility to disable the converter (**CONV**) fault or the **FAN** fault. The Ku-Band Transceiver 5900 series *does not* have a fan fault control. The converter automatically detects whether or not the SSPA that is connected has a fan. If the SSPA connected does not have a fan, the fan fault indicators are automatically disabled.

> If the SSPA fault control is disabled, the SSPA and SSPA temperature fault indicators and alarm outputs will automatically be disabled.

Use the following tables to determine the required setting of the fault controls for the installation of your Ku-Band Transceiver 5900 series.

Converter in a stand-alone situation

If the converter in your installation is stand-alone, such as in a major earth station where the HPA and LNB systems are independent and not monitored with the converter, see Table 5-9 for the fault control settings.

Table 5-9:   Fault control settings in a stand-alone situation

Fault control	Status
LNB fault	Disabled
SSPA fault	Disabled

Converter used with LNB and SSPA

If the converter in your installation is used with an LNB and a 5902, 5904, 5908, 5916 or 5940 SSPA, see Table 5-10 for the fault control settings.

Table 5-10:   Fault control settings for a converter used with an LNB and 5902–5940 SSPA

Fault control	Status
LNB fault	Enabled
SSPA fault	Enabled

For operation with other Ku-Band HPAs, contact your Codan representative.

Enabling/disabling fault controls

To enable or disable the fault controls:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **LNA fault control/LNB fault control**, **SSPA fault control**, or **Fan fault control** (C-Band Transceiver 5700 series *only*) is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up Data** or **Down Data** button to toggle between **Enabled** and **Disabled**.

The unstored setting will flash.

❑ When the required setting is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing. If you try to set the fan fault control to **Enabled** when the SSPA fault control is **Disabled**, the LCD will display an error message (see Chapter 6, *Display messages*).

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

Changing the IF impedance

To view or change the IF impedance:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until the **IF impedance** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

The IF impedance is displayed in ohms. There are two values, 50 or 75 ohms.

❏ If you want to change the IF impedance, press the **Up Data** button or the **Down Data** button until the required value is displayed.

The unstored setting will flash.

❏ When the required setting is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

Changing the IF

The ability to change the IF depends on whether your converter is fitted with the narrow or wide bandwidth option.

If your converter is fitted with the narrow bandwidth (40 MHz) option, you will be able to select IF operation at either 70 MHz or 140 MHz.

If your converter is fitted with the wide bandwidth (80 MHz) option, the IF is preset to 140 MHz. In this case, you will be able to view the value for the IF on the remote controller LCD, but you will not be able to change it.

Narrow bandwidth operation is indicated by an **N** in the second position in the options section on the model label of the converter. Wide bandwidth operation is indicated by a **W** in the same position on the model label.

To view or change the IF of the converter:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until the **IF frequency** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

The IF is displayed in MHz. The narrow bandwidth option has two valid values of 70 or 140 MHz. The wide bandwidth option has one valid value of 140 MHz.

❑ If you want to change the IF, press the **Up Data** button or the **Down Data** button until the required frequency is displayed.

The unstored value will flash.

❑ When the required value is displayed, press the **Enter Data** button.

The new value is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new value will not be stored.

Changing the transmit cable compensation

5700 and 5900 converters with a serial number prefix of D or later are not provided with a cable compensation facility. When connected to one of these converters, the remote controller shows the cable compensation setting as N/A.

The cable compensation can be changed to allow the frequency response of the transmit IF cable to be corrected.

The transmit cable compensation must be set when the transceiver is first installed. Additionally, it may be necessary to change the cable compensation if the type or length of the transmit IF cable in your installation is changed.

There are 16 boost increments for cable compensation, ranging from 0 dB to 1.2 dB boost for the 70 MHz IF (see Table 5-11), and from 0 dB to 2.5 dB boost for the 140 MHz IF (see Table 5-12).

You do not need to set or change the transmit cable compensation value for narrow bandwidth single carrier applications.

For multiple carrier or IF agile applications, see Tables 5-11 and 5-12 to determine the most suitable setting for your installation.

Table 5-11:   Cable compensation settings (70 MHz IF)

Cable Length		RG58	RG8	FSJ1-50A Heliax	Belden 9913	RG6	RG11	Belden 9116
metres	feet	50 Ω	50 Ω	50 Ω	50 Ω	75 Ω	75 Ω	75 Ω
0–5	0–16	1	0	0	0	0	0	0
6–10	17–33	3	1	1	1	1	1	1
11–15	34–49	5	2	2	1	2	2	3
16–20	50–66	7	3	3	2	3	3	4
21–25	67–82	9	4	3	2	5	4	5
26–30	83–98	12	5	4	3	6	5	6
31–35	99–115	14	6	5	3	6	6	7
36–40	116–131	15	7	6	3	7	7	8
41–45	132–148	-	7	6	4	8	7	9
46–50	149–164	-	8	7	4	9	8	10
51–55	165–180	-	9	8	5	11	9	11
56–60	181–197	-	10	9	5	12	10	12
61–65	198–213	-	11	9	6	12	11	13
66–70	214–230	-	12	10	6	13	12	14
71–75	231–246	-	12	11	7	14	12	15
76–80	247–262	-	13	12	8	15	13	-
81–85	263–279	-	14	12	8	-	14	-
86–90	280–295	-	15	13	9	-	15	-
91–95	296–312	-	-	14	9	-	-	-
96–100	313–328	-	-	15	10	-	-	-

Table 5-12:   Cable compensation settings (140 MHz IF)

Cable Length		RG58	RG8	FSJ1-50A Heliax	Belden 9913	RG6	RG11	Belden 9116
metres	feet	50 Ω	50 Ω	50 Ω	50 Ω	75 Ω	75 Ω	75 Ω
0–5	0–16	1	0	0	0	0	0	0
6–10	17–33	2	1	1	1	1	1	1
11–15	34–49	4	2	1	1	2	2	2
16–20	50–66	5	2	2	1	2	2	3
21–25	67–82	7	3	2	2	3	3	4
26–30	83–98	8	3	3	2	4	3	5
31–35	99–115	10	4	3	3	5	4	5
36–40	116–131	11	5	4	3	5	5	6
41–45	132–148	13	5	4	4	6	5	7
46–50	149–164	14	6	5	4	7	6	8
51–55	165–180	15	6	6	4	7	6	9
56–60	181–197	-	7	6	5	8	7	10
61–65	198–213	-	8	7	5	9	8	11
66–70	214–230	-	8	7	6	10	8	11
71–75	231–246	-	9	8	6	10	9	12
76–80	247–262	-	10	8	7	11	10	13
81–85	263–279	-	10	9	7	12	10	14
86–90	280–295	-	11	9	7	12	11	15
91–95	296–312	-	11	10	8	13	11	15
96–100	313–328	-	12	10	8	14	12	-

The settings in Tables 5-11 and 5-12 typically provide compensation to within ±0.2 dB over the IF range.

If you require a more accurate compensation, use a signal generator and a power meter to measure the total system frequency response from IF to RF. For further details, see *Chapter 6*, *Installation* in the *C-Band Transceiver 5700 series Reference Manual* or the *Ku-Band Transceiver 5900 series Reference Manual*.

To view or change the transmit cable compensation value:

❑   Press the **Up Function** button repeatedly to scroll through each parameter until the **Transmit cable comp** parameter is displayed.

 If you want to scroll backwards, press the **Down Function** button.

❑   Set the cable compensation to the value determined from either Table 5-11 or 5-12. Press the **Up Data** button or the **Down Data** button until the required setting is displayed.

 The unstored value will flash.

❑   When the required value is displayed, press the **Enter Data** button.

 The new value is now stored and the data field will stop flashing.

 If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new value will not be stored.

Changing the converter temperature compensation type

The gain versus temperature compensation characteristic of the converter is normally set to the standard type. For special applications where more accurate compensation is required, the converter can be individually characterised and the characteristic uploaded into the converter. When an alternative converter characteristic is loaded, it may be selected using the converter temperature compensation type parameter.

To view or change the converter temperature compensation type:

❑   Press the **Up Function** button repeatedly to scroll through each parameter until **Conv temp comp** is displayed.

   If you want to scroll backwards, press the **Down Function** button.

❑   Press the **Up Data** button to toggle between **Standard** and the other setting (an eight-character name). If a custom temperature compensation type has not been loaded, you will only be able to select **Standard**.

   The unstored setting will flash.

❑   When the required setting is displayed, press the **Enter Data** button.

   The new setting is now stored and the data field will stop flashing.

   If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

Changing the SSPA temperature compensation type

C-Band Transceiver 5700 series

The gain versus temperature compensation characteristic for the SSPA selected in the converter needs to equate to the type of SSPA connected. Therefore, the converter must be set with the temperature compensation type of the SSPA used in your installation.

If the converter in your installation is in a stand-alone situation, such as where the HPA system is independent and not monitored with the converter, the SSPA temperature compensation type should be set to **Off**.

> The SSPA temperature compensation type is automatically set to **Off** when the SSPA fault control is disabled.

If you are using a 5760, 5712H or another SSPA that is internally temperature compensated, the SSPA temperature compensation type should be set to **Off**.

If the converter is used with a 5705–5740 SSPA, the SSPA temperature compensation type should be the model number of the SSPA (see Table 5-13). Additionally, there may be up to three custom SSPA types.

Table 5-13:   SSPA temperature compensation type for the C-Band Transceiver 5700 series

SSPA	SSPA temperature compensation type
5705	5705
5710	5710
5720	5720–5740
5730	5720–5740
5740	5720–5740
5760	Off
5712H	Off
internally compensated	Off

For special applications, where more accurate compensation is required, the SSPA may be individually characterised and the characteristic uploaded into the converter. When such an alternative SSPA characteristic is loaded, it will appear as an additional temperature compensation table in the menu list and can then be selected.

Ku-Band Transceiver 5900 series

The gain versus temperature compensation characteristic for the SSPA is provided by the SSPA. Therefore, the setting automatically changes when a different SSPA is connected. However, the remote controller obtains this information when it is initially connected and switched on. If the SSPA is disconnected or reconnected, or the SSPA control mode is changed, the remote controller must be reset to ensure that it has the current SSPA information (see page 5-57, *Resetting the controller*).

The SSPA compensation type for the Ku-Band Transceiver 5900 series can be **Off** (for an internally temperature compensated SSPA), a standard characteristic for SSPAs 5902, 5904, 5908 or 5916, or a custom characteristic (if loaded).

The standard characteristic displayed is dependent upon the model number of the SSPA used. For example, if a 5902 SSPA is connected, the display shows **5902 Std** (see Table 5-14).

Table 5-14:   SSPA temperature compensation type for the Ku-Band Transceiver 5900 series

SSPA	SSPA temperature compensation type
5902	5902 Std
5904	5904 Std
5908	5908 Std
5916	5916 Std
5940	Off
internally compensated	Off

For special applications, where more accurate compensation is required, the SSPA may be individually characterised and the characteristic uploaded into the SSPA. When such an alternative SSPA characteristic is loaded, it will appear as an additional temperature compensation table in the menu list and can then be selected.

Changing the SSPA temperature compensation type

To view or change the type of SSPA temperature compensation type:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **SSPA temp comp** is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up** or **Down Data** button to scroll through the SSPA settings.

The unstored setting will flash.

❑ When the required SSPA type is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing. If you try to set the SSPA type to a setting other than **Off** when the SSPA fault control is **Disabled** or the SSPA control mode is **Basic**, the LCD will display an error message (see Chapter 6, *Display messages*).

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

Changing the SSPA control mode

The SSPA control mode sets the interface mode to the SSPA. The **Extended** mode allows for more data feedback from the SSPA than the **Basic** mode.

If the converter in your installation is in a stand-alone situation, such as where the HPA system is independent and not monitored with the converter, it does not matter how the SSPA control mode is set.

When the converter is used with an SSPA, set the SSPA control mode according to the SSPA model that you have (see Tables 5-15 and 5-16).

Table 5-15:   SSPA control mode for the C-Band
Transceiver 5700 series

SSPA	Mode
5705	Extended
5710	Extended
5720	Extended
5730	Extended
5740	Extended
5760	Basic
5712H	Basic

Table 5-16:   SSPA control mode for the Ku-Band
Transceiver 5900 series

SSPA	Mode
5902	Extended
5904	Extended
5908	Extended
5916	Extended
5940	Basic

For interfacing with SSPAs other than those listed in
Tables 5-15 and 5-16, contact your Codan representative.

When selecting **Basic**, you must set the SSPA temperature
compensation to **Off** (see page 5-42, *Changing the SSPA
temperature compensation type*).

For the Ku-Band transceiver, SSPA information is obtained when the remote controller is initially connected and switched on. If the SSPA is disconnected or reconnected, or the SSPA control mode is changed, the remote controller must be reset to ensure that the remote controller has the current SSPA information

To select the SSPA control mode:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **SSPA mode** is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up Data** button to toggle between **Extended** and **Basic**.

The unstored mode will flash.

❑ When the required mode is displayed, press the **Enter Data** button.

The new mode is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new mode will not be stored.

Changing the power up mode

The power up mode facility is only available in converters with serial number prefix D or later. For converters with serial number prefix A, B or C, this parameter setting is shown as N/A.

CE approval requires that upon power up, the transceiver shall not enter the transmit state (SSPA on). When the power up mode is set to **TxOff**, the SSPA is not activated upon application of power to the transceiver. When the power up mode is set to **LastState** the SSPA returns to the same activation state that existed prior to power off. For further information on power up mode, see *Chapter 8*, *Operating the transceiver* in the *C-Band Transceiver 5700 series Reference Manual* or the *Ku-Band Transceiver 5900 series Reference Manual.*

To set the power up mode:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **Power Up** is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up Data** button to toggle between **LastState** and **TxOff**.

The unstored mode will flash.

❑ When the required mode is displayed, press the **Enter Data** button.

The new mode is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new mode will not be stored.

Enabling/disabling the reference oscillator override

When the transceiver is switched from off to the standby or operating mode, the internal reference oscillator has to warm up. This may take only 30 seconds or as long as 15 minutes, depending on the ambient temperature and how long the transceiver has been switched off.

If the reference oscillator override is disabled, the **WARM-UP** LED on the control panel of the converter will be on during the warm-up period. During this time, transmission from the converter is prevented. The **WARM-UP** LED goes off when the oscillator reaches its correct operating temperature. Transmission can then occur.

If the reference oscillator override is enabled, the transmit disable function during the warm-up period is overridden. In this situation, the **WARM-UP** LED on the control panel of the converter flashes during the warm-up period. During this time, transmission from the converter can occur, but it should be noted that the accuracy of the transmit frequency may not be within specifications.

Transmit frequency accuracy may not be within specifications while the **WARM-UP** LED is flashing.

To enable or disable the reference oscillator override:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **Reference override** is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up Data** button to toggle between **Enabled** and **Disabled**.

The unstored setting will flash.

If you enable the override, the transceiver will be able to transmit during the warm-up period.

❑   When the required setting is displayed, press the **Enter Data** button.

The new setting is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

Changing the packet protocol

Communication with the transceiver can be via ASCII or various packet protocols. For more information on protocols, see *Chapter 8*, *Operating the transceiver* in the *C-Band Transceiver 5700 series Reference Manual* or the *Ku-Band Transceiver 5900 series Reference Manual*.

The remote controller allows you to select one of four packet protocols (depending on the version of software in the converter).

To change the packet protocol:

❑   Press the **Up Function** button repeatedly to scroll through each parameter until **Packet protocol** is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑   Press the **Up** or **Down Data** button to scroll through the protocols.

The unstored protocol will flash.

❑   When the required protocol is displayed, press the **Enter Data** button.

The new protocol is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new protocol will not be stored.

Changing the packet address

In a system using packet protocol control, the address of the transceiver is set at the time of installation, or when replacing a transceiver.

The remote controller allows you to select one of four serial interface address ranges. The ranges are in increments of 32, from 0 (00H) to 127 (7FH).

The actual address within the range selected on the remote controller is set using the DIP switches on the control panel of the converter.

> The **ASCII/PKT** DIP switch on the control panel of the converter must be set to **PKT** (ON) for the packet address to be applicable.

> The packet address *should not* be set to 0 or 127. Address 0 is reserved for the controlling source and address 127 is a global address for all Codan converters.

To change the packet address:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **Packet address** is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up** or **Down Data** button to display the address range you require. The ranges are:

0 to 31

32 to 63

64 to 95

96 to 127

Using the packet address DIP switches on the control panel of the converter, select the required address within the range (see Table 5-17 for switch positions).

Table 5-17:   Switch positions for setting the packet address

Switch 0	Switch 1	Switch 2	Switch 3	Switch 4	Packet address
OFF	OFF	OFF	OFF	OFF	0
ON	OFF	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	OFF	2
OFF	OFF	ON	OFF	OFF	4
OFF	OFF	OFF	ON	OFF	8
OFF	OFF	OFF	OFF	ON	16
ON	ON	ON	ON	ON	31

The DIP switches can be changed at any time.

The selected address will be shown on the display of the remote controller. If the address range has been changed from the previous setting, it will be flashing.

❑   When the required address range has been selected, press the **Enter Data** button.

The new address range is now stored and the display will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new address range will not be stored.

Changing the SSPA alarm mode (Ku-Band transceiver only)

The SSPA alarm mode controls the mode of the SSPA alarm output.

On/**Off**   the SSPA output alarm from the transceiver is **On** when the SSPA is not activated

O/P level   the SSPA output alarm from the transceiver is **On** when the SSPA output power is below the SSPA alarm threshold

To view or change the SSPA alarm mode:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until the **SSPA alarm mode** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ If you want to change the SSPA alarm mode, press the **Up Data** button or the **Down Data** button until the required mode is displayed.

The unstored mode will flash.

❑ When the required mode is displayed, press the **Enter Data** button.

The new mode is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new mode will not be stored.

Changing the SSPA alarm threshold (Ku-Band transceiver only)

The SSPA alarm threshold can be set between 20 and 55 dBm. If the SSPA alarm mode is set to **O/P level**, the SSPA output alarm from the transceiver is **On** when the SSPA output power is below the set threshold.

To view or change the SSPA alarm threshold:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until the **SSPA alarm threshold** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ If you want to change the alarm threshold, press the **Up Data** button or the **Down Data** button until the required alarm threshold value is displayed.

The unstored value will flash.

❑ When the required value is displayed, press the **Enter Data** button.

The new value is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new value will not be stored.

Changing the SSPA output power detection type (Ku-Band transceiver only)

The SSPA output power detection characteristic of the SSPA is normally set to the standard setting.

The standard characteristic displayed is dependent upon the model number of the SSPA used. For example, if an 5902 SSPA is connected, the display shows **5902 Std**.

For special applications, where more accurate detection is required, the SSPA detector can be individually characterised and the characteristic uploaded into the SSPA. When an alternative SSPA characteristic is loaded, it should be selected. Contact your Codan representative for further details.

To view or change the SSPA output power detection type:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until **SSPA O/P detection** is displayed.

   If you want to scroll backwards, press the **Down Function** button.

❑ Press the **Up Data** button to toggle between **59XX Std** and the other setting (an eight-character name). If a second output power detection type has not been loaded, you will only be able to select **59XX Std**.

   The unstored setting will flash.

❑ When the required setting is displayed, press the **Enter Data** button.

   The new setting is now stored and the data field will stop flashing.

   If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new setting will not be stored.

Changing the receive frequency range (Ku-Band transceiver only)

The receive frequency range of the converter must match the receive frequency range of the LNB. See Table 8-18 for the appropriate receive range and the corresponding receive frequency range for the LNB options.

Table 5-18:   Receive frequency range for the LNB options

Receive range	Rx frequency minimum (MHz)	Rx frequency maximum (MHz)
L-Band	950	1700
Band 1	10950	11700
Band 2	11700	12200
Band 3	12250	12750

To view or change the receive frequency range of the converter:

❑ Press the **Up Function** button repeatedly to scroll through each parameter until the **Receive range** parameter is displayed.

If you want to scroll backwards, press the **Down Function** button.

❑ If you want to change the receive frequency range, press the **Up Data** button or the **Down Data** button until the required receive frequency range is displayed.

The unstored value will flash.

❑ When the required value is displayed, press the **Enter Data** button.

The new value is now stored and the data field will stop flashing.

If you press the **Up** or **Down Function** button to move to the next parameter without pressing the **Enter Data** button first, the new value will not be stored.

Resetting the controller

When the remote controller is initially connected to a transceiver and switched on, it obtains identity and table information from the transceiver, i.e. model number, software version, temperature compensation names etc. In the case of the Ku-Band transceiver, some of the information is obtained from the SSPA. If the SSPA is disconnected or reconnected, or the SSPA control mode is changed, the current, valid SSPA information can be obtained by resetting the remote controller without disconnecting or reconnecting the remote controller.

To reset the remote controller:

❑ Press the **Up** *and* **Down Function** buttons on the control panel of the remote controller simultaneously until you see the **Reset** message on the display.

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6 Display messages

This chapter describes the messages that may be displayed in the Message field at the bottom of the LCD on the remote controller, and suggests the course of action you should take for each of the messages you may receive.

This chapter contains:

- a description of the message field (6-2)

- a list of the different types of display messages (6-3)

Message field

Parameter details are shown in four fields on the LCD. The Message field is at the bottom of the display.

Figure 6-1:   Location of the Message field
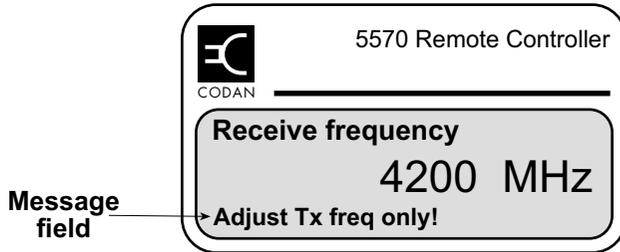
Display messages

There are three types of messages that may appear in the Message field:

- communication

- data entry error

- unavailable data error

Communication messages

Communication messages remain displayed until the problem is rectified.

Table 6-1:   Communication messages

Message	Meaning	Action
Cannot connect!	The remote controller is not connecting with the converter within the initial timeout period.	Check that the cable is connected to the converter correctly. Check for a faulty cable. If possible, change the remote controller and then the converter to establish which component is causing the problem.
Data error!	A data error was detected during the data transfer that occurs between the transceiver and remote controller when the remote controller is switched on or reset.	The remote controller will automatically attempt to obtain valid data. If the data error persists, reset the remote controller (see page 5-57, *Resetting the controller*).

Table 6-1:   Communication messages (cont.)

Message	Meaning	Action
Incompatible conv.! (C-Band Transceiver 5700 series only)	The converter is not responding to communications.	Check that the C-Band converter has software version 1.20 or later. Check with your Codan representative that the software in the remote controller and the converter are compatible. If possible, change the remote controller and then the converter to establish which component is causing the problem.
Loss of connection	Communication between the remote controller and the converter has been lost after connection was obtained. The controller then displays **Connecting...**, indicating that it is trying to establish connection again.	Check that the cable is connected to the converter correctly. Check for a faulty cable. If possible, change the remote controller and then the converter to establish which component is causing the problem.
Reset	The remote controller is performing a reset.	Release the **Up** and **Down Function** buttons.

Data entry error messages

Data entry error messages are displayed momentarily in the error message field when the **Enter Data** button is pressed.

Table 6-2:   Data entry error messages

Message	Meaning	Action
Adjust Tx freq only! (C-Band Transceiver 5700 series only)	You are attempting to set the receive frequency when the converter is fitted with the single synthesiser option.	*Do not* attempt to change the receive frequency. Alternatively, change the converter to a dual synthesiser (see page 3-16, *Synthesiser options*).
Control disabled!	You are attempting to change a parameter when parameter access is disabled.	*Do not* change the parameter. Alternatively, change the control access to **Enabled** (see page 5-8, *Enabling parameter control*).
Invalid protocol!	You are attempting to set the packet protocol to a mode that is not supported by the converter.	Contact your Codan representative.
SSPA faults disabled! (C-Band Transceiver 5700 series only)	You may be attempting to set the fan fault control to **Enabled** when the SSPA fault control is **Disabled**. When the SSPA fault control is **Disabled**, the fan fault control is automatically disabled and cannot be changed.	*Do not* change the setting of the fan fault control. Alternatively, change the SSPA fault control to **Enabled** (see page 5-34, *Enabling/disabling fault controls*).

Table 6-2: Data entry error messages (cont.)

Message	Meaning	Action
SSPA faults disabled! cont.	Alternatively, you may be attempting to set the SSPA temperature compensation to a setting other than **Off** when the SSPA fault control is **Disabled**. When the SSPA fault control is **Disabled**, the SSPA temperature compensation type is automatically set to **Off** and cannot be changed.	*Do not* change the setting of the SSPA temperature compensation type. Alternatively, change the SSPA fault control to **Enabled** (see page 5-34, *Enabling/ disabling fault controls*).
SSPA disabled/ basic (Ku-Band Transceiver 5900 series only)	You may be attempting to set the SSPA temperature compensation to a setting other than **Off** when the SSPA fault control is **Disabled** or the SSPA control mode is **Basic**. When the SSPA fault control is **Disabled** and/or the SSPA control mode is **Basic**, the SSPA temperature compensation type is automatically set to **Off** and cannot be changed.	*Do not* change the setting of the SSPA temperature compensation type. Alternatively, change the SSPA fault control to **Enabled** (see page 5-34, *Enabling/ disabling fault controls*), and/or change the SSPA control mode to **Extended** (see page 5-45, *Changing the SSPA control mode*).

Table 6-2:   Data entry error messages (cont.)

Message	Meaning	Action
SSPA disabled/ basic cont.	Alternatively, you may be attempting to set the SSPA output power detection type when the SSPA fault control is **Disabled** and/or the SSPA control mode is **Basic**.	*Do not* change the setting of the SSPA output power detection type. Alternatively, change the SSPA fault control to **Enabled** (see page 5-34, *Enabling/ disabling fault controls*), and/or change the SSPA control mode to **Extended** (see page 5-45, *Changing the SSPA control mode*).
140 MHz only!	You are attempting to set the IF to 70 MHz when the converter is fitted with the wide bandwidth option.	Set the IF to 140 MHz, which is consistent with the wide bandwidth option (see page 3-15, *Bandwidth options*).

Unavailable data error messages

Unavailable data error messages are displayed when data cannot be received from the SSPA. These messages remain displayed until the **Up** or **Down Function** buttons are pressed.

Table 6-3:   Unavailable data error messages

Message	Meaning	Action
N/A (C-Band Transceiver 5700 series only)	You are attempting to view the SSPA temperature when the SSPA temperature compensation is set to **Off**.	You cannot view the SSPA temperature when the SSPA temperature compensation type is set to **Off**. Alternatively, change the SSPA temperature compensation type from **Off** (see page 5-42, *Changing the SSPA temperature compensation type*).
N/A (Ku-Band Transceiver 5900 series only)	Data is not available. You have selected a parameter that requires data from the SSPA.	Check that the SSPA is connected, and/or the SSPA fault control is **Enabled** (see page 5-34, *Enabling/disabling fault controls*), and/or the SSPA control mode is **Extended** (see page 5-45, *Changing the SSPA control mode*). If the converter is being used without an SSPA, use the **Up** or **Down Function** buttons to change to another parameter.

7   Drawings

This chapter contains drawings that may be required by someone installing or using the remote controller.

Drawing no.	Description
08-05572	Cable, Serial Converter to Controller
08-05686	Cable, 15-way control

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WIRE	FROM	TO
WH	J1/2	P1/J
YE	J1/3	P1/H
GN	J1/5	P1/D
RD	J1/8	P1/A
BK	J1/10	P1/G
BL	J1/11	P1/T
BRAID	J1/15	SHELL

ITEM	DESCRIPTION	QTY	MANUF. PART No.	MANUFACTURER	CODAN P/No.
J1	SOCKET, 15 WAY D TYPE	1	DA-15S-K83	ITT-CANNON	60-00153-270
P1	PLUG, 19 WAY MIL	1	MS3116F-14-19P	ITT-CANNON	60-00191-090
1	CABLE, 6 CORE SCR. 7/020"	SEE NOTE 1	B3006CS	MM CABLES	67-00607-000
2	COVER, 15 WAY SCREW-LOCK	1	DHA-15PS	NS TECH	60-00159-091
3	SLEEVE, HELSYN H50x19mm	2	5x1mm WALL x 19mm	HELLERMAN	71-95010-190
4	LUG, SOLDER 3.5mm	1	G410 CODE 330	CLIFORD W	61-30200-025
5	ADHESIVE/SEALANT, SILICONE CLEAR	A/R	SILASTIC 1080	DOW CORNING	71-30000-007
6	ADHESIVE/SEALANT, CLEAR RTV	A/R	5140	LOCTITE	71-30001

'L' REF NOTE 1

J1 REAR VIEW
SCALE 2:1

WH YE GN RD

BL   BRAID
BK

REAR VIEW P1
SCALE 2:1

YE   BK   BL
WH   GN
RD
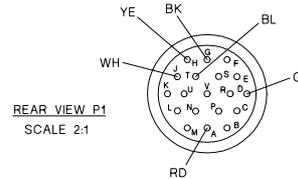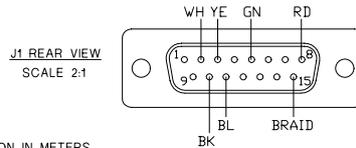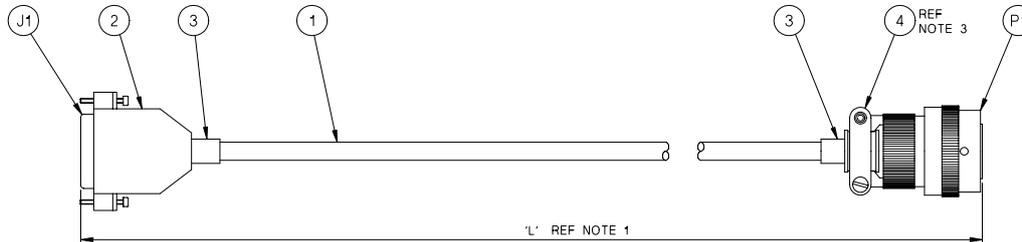
NOTES :
1. LENGTH 'L' IS VARIANT EXTENSION IN METERS.
   e.g. FOR 08-05572-030 L = 30m.

2. SEAL UNUSED WIRE ENTRY HOLES OF P1 GROMMET WITH ITEM 5

3. THE SCREEN WIRE (BRAID) AT THE CIRCULAR CONNECTOR
   END OF THE CABLE, SHOULD BE SOLDERED TO A SOLDER LUG.
   THE LUG IS TO BE PLACED BETWEEN THE RUBBER GROMMET
   AND THE CABLE CLAMP OF THE CONNECTOR AND
   ATTACHED TO THE CONNECTOR SHELL WITH A SCREW.

4. INJECT SOME SILASTIC (ITEM 6) UNDER THE CABLE INSULATION AT
   P1 END OF THE CABLE.

5. USE SELF-POLYMERISING TAPE AND/OR SLEEVES TO INCREASE
   CABLE DIAMETER, SO IT IS ADEQUATELY SECURED BY P1 CABLE CLAMP.

FILE No.
08\05572__1.DWG

CODAN

	SCALE 1:1 2:1	
DRN	DB	DATE 23-6-98
CHKD	DJM	30-6-98
APPD	VS	16-06-99

MATERIAL

FINISH

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TITLE
CABLE,
REMOTE CONTROLLER

DRAWING/DOC NO.
A3   08-05572

TOLERANCES
UNLESS OTHERWISE STATED
2 PLACES DEC.   ±0.25
1 PLACE DEC.   ±0.5
0 PLACE DEC.   ±1
ANGULAR   ±2°

ISS B   1

SHT. 1
OF 1

DO NOT SCALE

ITEM	DESCRIPTION	MANUFACTURER	MANUFACTURERS PART No	CODAN P/No	QTY
1	PLUG, 15 WAY D SOLDER POT FIXED	ITT-CANNON	DA-15P-K83	60-00150-092	1
2	SOCKET, 15 WAY D SOLDER POT FIXED	ITT-CANNON	DA-15S-K83	60-00153-270	1
3	COVER, 15 WAY SCREW-LOCK PLASTIC	ITT-CANNON	DA11 5500-1U	60-91638-001	2
4	CABLE, 6 CORE PLUS SCREEN	MM CABLES	B3006CS	67-00607-000	x
5	SLEEVE, HELSYN H50X19mm	HELLERMAN	5X1X19mm	71-95010-190	2
6	SLEEVING, TERYLENE (SEE NOTE 2)	JONES-STROUD	VIDAFLEX	71-80304-604	0.04m

'x' SEE NOTE 1 AND VARIANT TABLE

COLOUR	FROM	TO
WHITE	J1/2	P1/2
YELLOW	J1/3	P1/3
GREEN	J1/5	P1/5
RED	J1/8	P1/8
BLACK	J1/10	P1/10
BLUE	J1/11	P1/11
SCREEN	J1/15	P1/15

LENGTH = XXX cm. (±2 cm.)
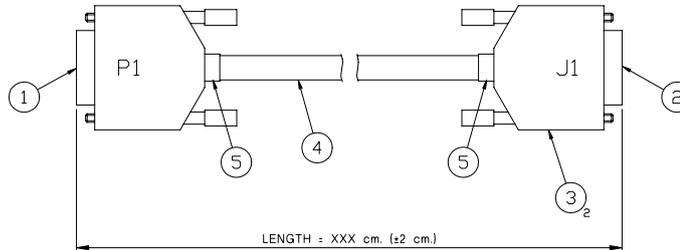
CODAN PART No.	LENGTH XXX
08-05686-050	0.5m

NOTES :
(1) FOR VARIANTS 08-05686-XXX
    XXX = LENGTH IN cm.
    e.g. "050" = 50 cm. OR 0.5 m.
(2) USE ITEM 6 TO INSULATE THE
    SCREEN CONNECTIONS TO PIN 15.

DIMENSIONS IN mm

CODAN

		SCALE 1:1	© CODAN PTY LTD, A.C.N. 007 590 605: 1999
DRN	DHB	DATE 09-02-99	TITLE
MATERIAL			CABLE,
CHKD	ADB	29/3/99	15-WAY CONTROL, SCREW
APPD	MJC	21/3/00	DRAWING/DOC NO.
FINISH		A3	08-05686

TOLERANCES
UNLESS OTHERWISE STATED
2 PLACES DEC. ±0.25
1 PLACE DEC.   ±0.5
0 PLACE DEC.   ±1

FILE No.
08\05686__1.DWG

ISS 1

SHT. 1 OF 1

Index

T

U

V

W