PG-Flex ISDN Channel Units Quick Installation Guide

Product	Part Number	CLEI
FLC-706 List 1A 4 Channel ISDN COCU	150-1306-11	VACHEGPCAA
FRC-756 List 1A 4 Channel ISDN RTCU	150-1356-11	VARHEJRCAA

Basic ISDN Channel Unit
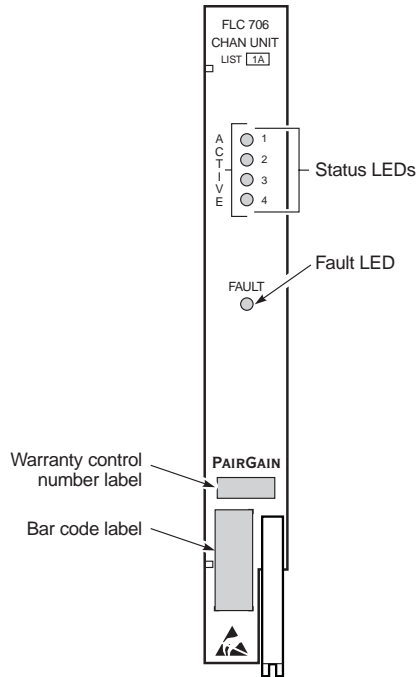
Status	COCU	RTCU
Off	Channel disabled COCU DSL not synchronized	Channel disabled RTCU DSL not synchronized
Flash (Slow)	Circuit is being tested	Circuit is being tested
Flash (Fast)	COCU DSL synchronized, act bit(s) missing (RTCU DSL may not be synchronized, RTCU may be missing, possible problems with HDSL circuit)	RTCU DSL synchronized, act bit(s) missing (COCU DSL may not be synchronized, or COCU may be missing, possible problems with HDSL circuit)
On	COCU and RTCU DSLs are synchronized, D+ and DSL "act" bits received	RTCU and COCU DSLs are synchronized, D+ and DSL "act" bits received

Installation

Insert each channel unit into the Central Office Terminal (COT) shelf or Remote Terminal (RT) enclosure. Observe that all LEDs:

- Turn on for approximately 2 seconds
- Scan from top to bottom
- Flash all on, then turn off

Configuring the Channel Units

Refer to the appropriate Central Office (CO) line unit practice for detailed information on configuring the channel units. ISDN channel units may have the following parameters configured (default parameters are in bold):

Parameter	Options	Description
PM Mode	**Interim** Segmented	Performance monitoring is accomplished using the channel as either one path (Interim) or separate sections (Segmented).
eoc Mode	**Normal** Transparent	ISDN eoc (embedded operations channel) messages are decoded and re-transmitted within the PG-Flex system (Normal), or not decoded and passed through the PG-Flex system (Transparent).
B1/B2[a] Swap	**Normal** Swap	"B1" and "B2" at the COCU are passed to "B1" and "B2" at the RTCU (Normal), or "B1" and "B2" at the COCU are passed to "B2" and "B1" at the RTCU (Swap).
Sealing Current	Off **On**	Sealing current is applied (On) or not applied (Off) to the ISDN subscriber loop.
ZBS	**Off** On	All data is passed through PG-Flex without ZBS (Zero Byte Substitution) encoding (Off), or with ZBS encoding (On).

(a) The channel units support two-wire DSL 2B+D data or subsets of that rate. The B channels (B1 and B2) are used for digitized voice or data.

Testing

1   After the PG-Flex system has powered up, HDSL becomes synchronized, and no calls are in progress, verify that the front panel ACTIVE LEDs show the correct status of each circuit, and that the FAULT indicator is off.

2   Test each ISDN circuit using a Tektronix Craftek CT-100 test set (or equivalent). Verify that the ACTIVE LEDs indicate the status of the call (the LED indicator table shows the LED states).

> **Ensure that composite clock is connected to the PG-Flex COT shelf and an FPI-729 PGTC Interface Unit or FAU-728 List 2 Alarm Unit is installed.**

Outgoing Calls

1   Originate an outgoing B1 voice call and verify:

- Dial tone is present.
- The number called is displayed (when answered).
- The number from which you called is displayed as the originating number.
- A voice connection is established.

2   Hold up the B1 voice circuit, then switch to the B2 data circuit.

3   Originate an outgoing B2 data call to the data loopback (LPBK) test line. Perform a Bit Error Rate (BER) test.

4   After the B2 data test is completed, drop the B2 data line, then drop the B1 voice line.

5   Return all circuits to normal.

Incoming Calls

1   Receive an incoming B1 voice call and:

- Draw dial tone from another ISDN or POTS circuit.
- Dial the ISDN B1 voice circuit number.
- Verify that the number you called is displayed (when answered).
- Verify that the number from which you called is displayed as the originating number.
- Verify a voice connection is established.

2   Hold up the B1 voice circuit, then switch to the B2 data circuit.

3   Originate an outgoing call on the B2 data circuit using another ISDN data circuit and call the B2 data circuit under test. Perform a BER test.

4   After the B2 data test is completed, drop the B2 data circuit, then drop the B1 voice circuit.

5   Return all circuits to normal.

Technical Support

PairGain Technical Support is available 24 hours a day, 7 days a week by contacting PairGain Customer Service.

During normal business hours (8:00 AM to 5:00 PM, Pacific Time, Monday through Friday, excluding holidays), a Customer Service Engineer directly answers technical assistance calls. At other times, an on-duty Customer Service Engineer provides technical assistance through a callback process, usually within 30 minutes of the initial customer request.

In addition, PairGain maintains a computer bulletin board system for obtaining current information on PairGain products, product troubleshooting tips and aids, and helpful utilities, as well as for posting requests or questions. This system is available 24 hours a day by calling (714) 730-3299. Transmission speeds up to 28.8 kbps are supported with a character format of 8-N-1.

Technical Support	24 hours a day, 7 days a week
Telephone:	(800) 638-0031 or (714) 832-9922
Fax:	(714) 730-2961
BBS:	(714) 730-3299 (28.8 kb/s, 8-N-1)
E-mail:	support@pairgain.com
Internet:	http://www.pairgain.com
Sales	(800) 373-2185
RMA	(800) 370-9670, extension 5226

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Troubleshooting

Indication	Problem	Action
FAULT LED On	Internal fault in channel unit.	Replace the channel unit.
ACTIVE LED slow flash	Circuit is in loopback or metallic access.	Release the circuit through the COLU maintenance port or wait for test originator to complete testing.
ACTIVE LED fast flash	ISDN circuit lost sync.	Check loop and/or NT1 removal by customer.
Data transmission errors		Perform BER test on circuit. Obtain circuit status information through COLU or RTLU maintenance port and clear any indicated trouble. Verify composite clock.
Loopback established		Through the COLU maintenance port, activate loopbacks at various points in circuit.

Warranty

PairGain Technologies warrants this product to be free of defects and to be fully functional for a period of 60 months from the date of original shipment, given correct customer installation and regular maintenance. PairGain will repair or replace any unit without cost during this period if the unit is found to be defective for any reason other than abuse or incorrect use or installation.

Do not try to repair the unit. If it fails, replace it with another unit and return the faulty unit to PairGain for repair. Any modifications of the unit by anyone other than an authorized PairGain representative voids the warranty.

If a unit needs repair, call PairGain for a Return Material Authorization (RMA) number and return the defective unit, freight prepaid, along with a brief description of the problem, to:

Repair and Return Department
PairGain Technologies, Inc.
14352 Franklin Avenue
Tustin, CA 92780
(800) 370-9670

PairGain continues to repair faulty modules beyond the warranty program at a nominal charge. Contact your PairGain sales representative for details and pricing.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Refer to the installation section of the appropriate instruction manual for the unit you are installing to get information on:

- Cabling
- Correct connections
- Grounding

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by PairGain Technologies, Inc. may void the user's authority to operate the equipment.

All wiring external to the products should follow the provisions of the current edition of the National Electrical Code.

Documentation

You can download a complete technical practice for each CU from the Technical Manuals section of the PairGain Web page at:

www.pairgain.com

A password is required. If you do not have a password, contact your PairGain sales representative.