CISCO

GainMaker Node
HMS Status Monitor Transponder
Installation Instructions

Overview

Introduction

The GainMaker® Node Hybrid Management Sublayer (HMS) Transponder (part number 4006432) is designed to be installed in the lid of the GainMaker Node housing. The HMS Transponder complies with the Society of Cable Telecommunications Engineers (SCTE) HMS standard, which allows an element management system (EMS) to monitor the components in a cable network.

The transponder can be configured after it is installed in a powered node, either on a test bench or on site. The transponder must be configured before it can be activated in the EMS.

Purpose

These installation instructions will enable cable system operators or installers to properly install and configure a GainMaker Node HMS Transponder in a GainMaker Node.

Audience

This document is intended for authorized service personnel who have experience working with similar equipment. The service personnel should have appropriate background and knowledge to complete the procedures described in this document.

Qualified Personnel

Only appropriately qualified and skilled service personnel should attempt to install, operate, maintain, and service this product.

> ⚠ **WARNING:**
>
> **Allow only qualified and skilled personnel to install, operate, maintain, and service this product. Otherwise, personal injury or equipment damage may occur.**

Document Version

This is the fourth release of this guide. In addition to minor text and graphic changes, the following table provides the technical changes to this guide.
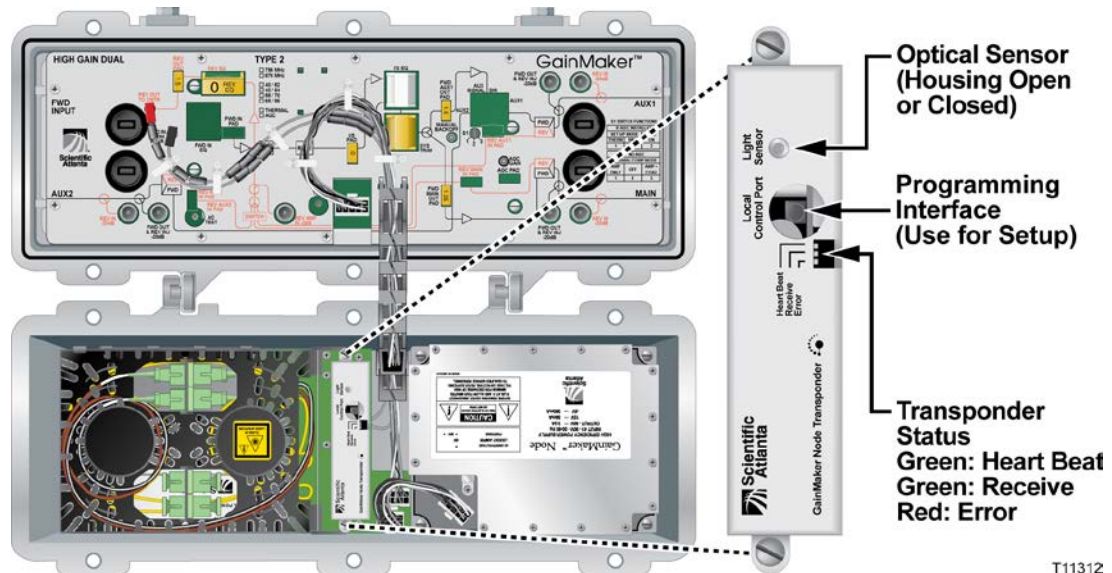
Page	Description
All	No substantive changes to content.

In This Document

Installing the Transponder

The transponder module mounts in the lid of the GainMaker node housing. The transponder mounting location is shown below.


Note: You must mount the transponder module in a GainMaker Node housing before you can configure the transponder module.

To Mount the Transponder in the Node Housing

Complete the following steps to mount the transponder in the node housing.

1   Record the MAC address and physical location of the node for reference by network management software. Write the physical location on the gray label on the transponder module (see figure).
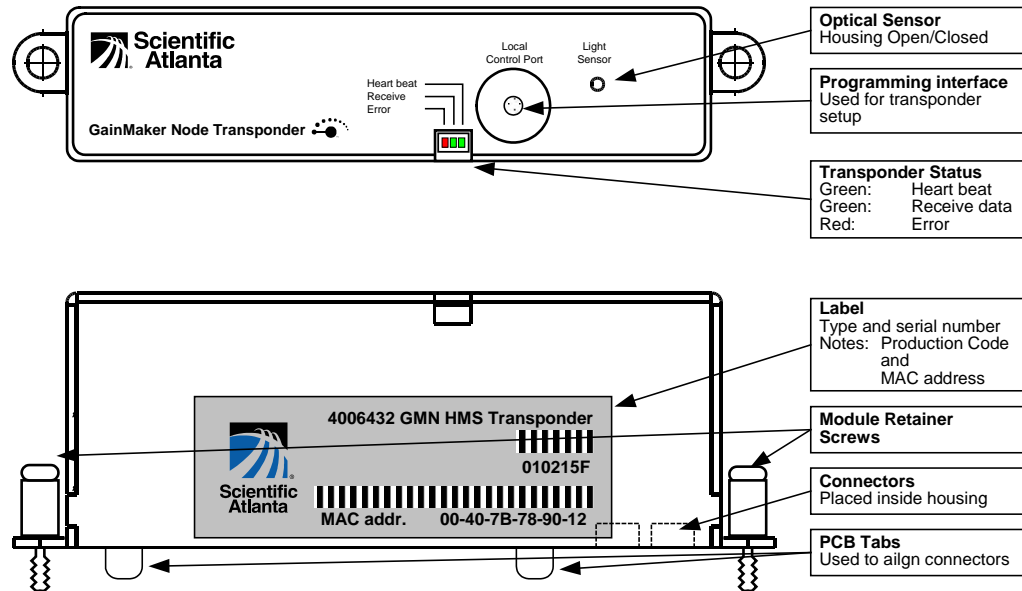
2   Open the GainMaker node housing. Note the position and orientation of the transponder in the lid of the housing.

⚠️ **WARNING:**

Protect yourself from electric shock and your system from damage. Take precautions when working with this equipment. Certain components can deliver electrical shock or cause burns.

3   Position the transponder module with the bar-code label facing you. Align the connectors on the other side of the transponder module with the mating connectors on the interface board. Use the two tabs on the other side of the transponder as a guide to position the transponder module correctly.

4   Push down on the module of the transponder module until it clicks into place.

5   Tighten the two module retaining screws on the transponder to 6.2 in-lb (0.7 Nm).

Transponder Signaling

Three front-panel status LEDs indicate the transponder operating condition.

LED	Indication
Heart Beat	This green LED flashes approximately once per second if the transponder receives the correct voltage.
Receive	This green LED flashes if data packages are detected (e.g., to another transponder). If the data packages are addressed to this transponder, the LED flashes for 3 seconds.
Error	This red LED flashes during start-up. If this LED illuminates during operation, a system failure has occurred.

Start/Restart Signaling

Immediately after the transponder starts or restarts, all LEDs illuminate and remain on. Approximately 7 seconds later, the Receive and Error LEDs turn off and the Heart Beat LED begins flashing rapidly until the transponder locates an open communication frequency. When the transponder finds an open frequency, the Heart Beat LED slows to approximately one flash per second.

Configuring and Enabling the Transponder

You must configure the transponder before activating it in the EMS. You can configure the transponder after installing it in a powered node, either on a test bench or on site.

You can configure the transponder in one of two ways:

- Locally, using the Handheld Programming Terminal, Model 1200 (part number A91200.10)

- Remotely, by letting the transponder and the EMS perform automatic configuration

Note: Remote configuration requires the transponder and EMS to find available transmit and receive frequencies. When using this method, be sure to allow for a delay of up to 14 hours in communication.

To Configure the Transponder Locally

Complete the following steps to configure the transponder using the Handheld Programming Terminal.

1   Insert the 3-mm plug of the Handheld Programming Terminal into the Local Control Port on the transponder.

    Note: Be sure that the plug is fully inserted into the port.

2   Confirm that the handheld is powered up and that the transponder is responsive. If the GainMaker node is active, the green Heart Beat LED will blink to indicate that the transponder is operating.

3   Set the configuration parameters as needed for your installation. See **Configuration Parameters** below for descriptions.

4   Disconnect the handheld, close the housing, and tighten the closure bolts to the proper specifications. Refer to the housing installation instructions for torque specifications.

To Configure the Transponder Remotely

Complete the following steps to configure the transponder remotely.

1   Allow up to 14 hours for the transponder and EMS to find available transmit and receive frequencies.

2   Enable the transponder via the EMS and confirm that the transponder is responsive. The green Receive LED on the transponder will flash for 3 seconds to acknowledge packets received from the EMS.

3   Set the configuration parameters as needed for your installation. See **Configuration Parameters** below for descriptions.

4 Close the housing and tighten the closure bolts to the proper specifications. Refer to the housing installation instructions for torque specifications.

Configuration Parameters

Set the following configuration parameters as required for your installation.

Menu/Parameter	Description
Receive Frequency (45-174 MHz)	Sets the frequency that the transponder receives data from the HFC modem at the headend. The factory setting is 109 MHz, but can be changed from 45-174 MHz in 50 kHz steps.
Transmit Level (84-110 dBµV)	Sets the carrier level transmitted by the transponder. The factory setting is 100 dBµV (40 dBmV), but can be changed from 84-110 dBµV (24-50 dBmV) in 2 dB steps.

For Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.