



USER MANUAL

May 2013

2.433-2.449 GHz Frequency Hopping Transceiver Module

Model: D-CCA-HPB-24G-1

FCC ID: R73HPB-24G-1

REV 2

Introduction

This module is only authorized to be installed in fixed mount installation and may not be installed in a mobile or portable device.

The HPB-24G-1 module is to be used in Sapling Master Clocks such as the SMA-3000 or SMA Repeater and equivalent models.

The module is only to be connected to and installed in other Sapling products.

Specifications

The antenna gain is +2.15dBi.

The maximum output power will be 30 dBm.

The transmit cycle is a sequence of 80 data strings on 76 different frequencies, each transmitted for 3 msec.

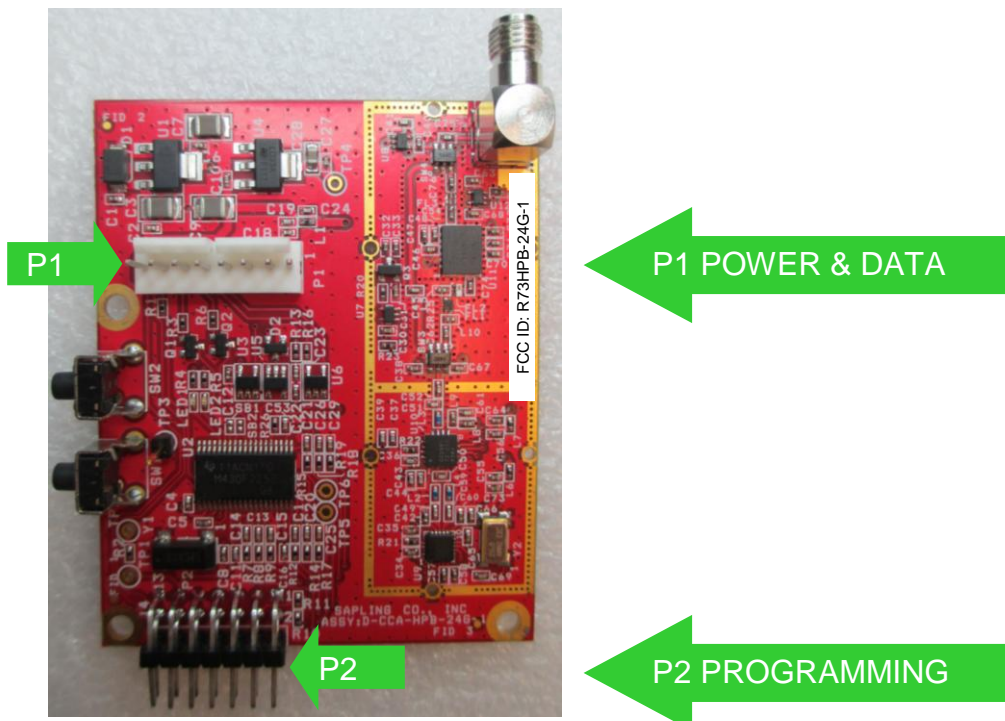
Every transmit cycle is 240 msec in duration (80 x 3ms).

The frequency hopping pattern is proprietary to Sapling and covers the range from 2.433 to 2.449 GHz.

Connections

The picture shows the HPB-24G-1 RF module, connectors, and FCC ID label.

HPB-24G-1



HPB-24G-1 Connectors

P1 OPERATING CONNECTOR	
PIN 1	5 VOLTS
PIN 2	GROUND
PIN 3	PPS OUT
PIN 4	TXD
PIN 5	RXD
PIN 6	MSTR/SLV
PIN 7	STBY
PIN 8	NO CONNECTION
* PIN 1 IS SQUARE PAD.	



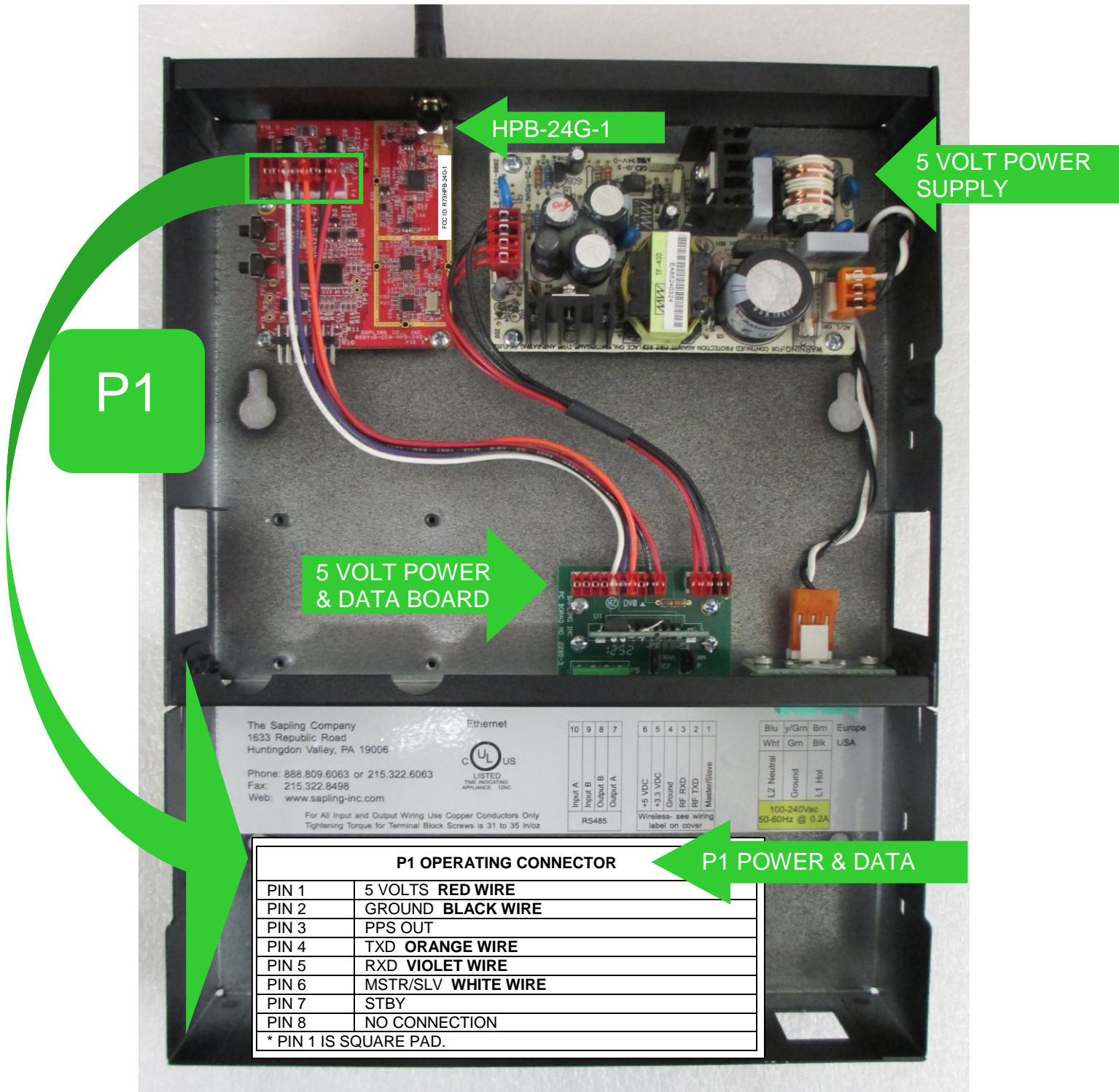
P2 PROGRAMMING CONNECTOR	
PIN 1	TDO/TDI
PIN 2	3.3 VOLTS
PIN 3	TDI
PIN 4	3.3 VOLTS
PIN 5	TMS
PIN 6	NO CONNECTION
PIN 7	TCLK
PIN 8	TEST
PIN 9	GROUND
PIN 10	NO CONNECTION
PIN 11	RST
PIN 12	TXD
PIN 13	SHIELD
PIN 14	RXD
* PIN 1 IS SQUARE PAD.	



Installed

The picture on the next page shows the HPB-24G-1 RF module in a repeater. It shows the SMA-1SR-G0000-1 and the connectors to the rest of the Sapling Wireless Clock System.

SMA-1SR-G000-1



HPB-24G-1

5 VOLT POWER SUPPLY

P1

5 VOLT POWER & DATA BOARD

P1 POWER & DATA

The Sapling Company
1633 Republic Road
Huntingdon Valley, PA 19006
Phone: 888.809.6063 or 215.322.6063
Fax: 215.322.8498
Web: www.sapling-inc.com

Ethernet
UL US LISTED TIME INDICATING APPLIANCE 12NC

10	9	8	7	6	5	4	3	2	1	Blu y/Gm Bm Europe
Input A	Input B	Output B	Output A	+5 VDC	+3.3 VDC	Ground	RF PxD	RF TXD	Master/Slave	Wht Grm Blk USA
RS485										L2 Neutral Ground L1 Hot
For All Input and Output Wiring Use Copper Conductors Only Tightening Torque for Terminal Block Screws is 31 to 35 in/lb										100-240Vac 50-60Hz @ 0.2A

P1 OPERATING CONNECTOR	
PIN 1	5 VOLTS RED WIRE
PIN 2	GROUND BLACK WIRE
PIN 3	PPS OUT
PIN 4	TXD ORANGE WIRE
PIN 5	RXD VIOLET WIRE
PIN 6	MSTR/SLV WHITE WIRE
PIN 7	STBY
PIN 8	NO CONNECTION
* PIN 1 IS SQUARE PAD.	

The picture below shows the top of the SMA-1SR-G000-1 with HPB-24G-1 RF module antenna connector and the FCC ID and the Compliance Label.

SMA-1SR-G000-1



SMA-1SR-G000-1 Label

The label below is an example of the FCC ID and the Compliance Label.

June 18, 2013
The Sapling Company, Inc.
1633 Republic Road
Huntingdon Valley, PA 19006
(215) 322-6063
www.sapling-inc.com

Patent Pending **Made in U.S.A.**



Part#: SMA-1SR-G000-1
A/SMA-1SR-G000-1/1/130618/F0002120

Qty: 1

The Sapling Company, Inc.

WHERE TIMING & TECHNOLOGY MEET

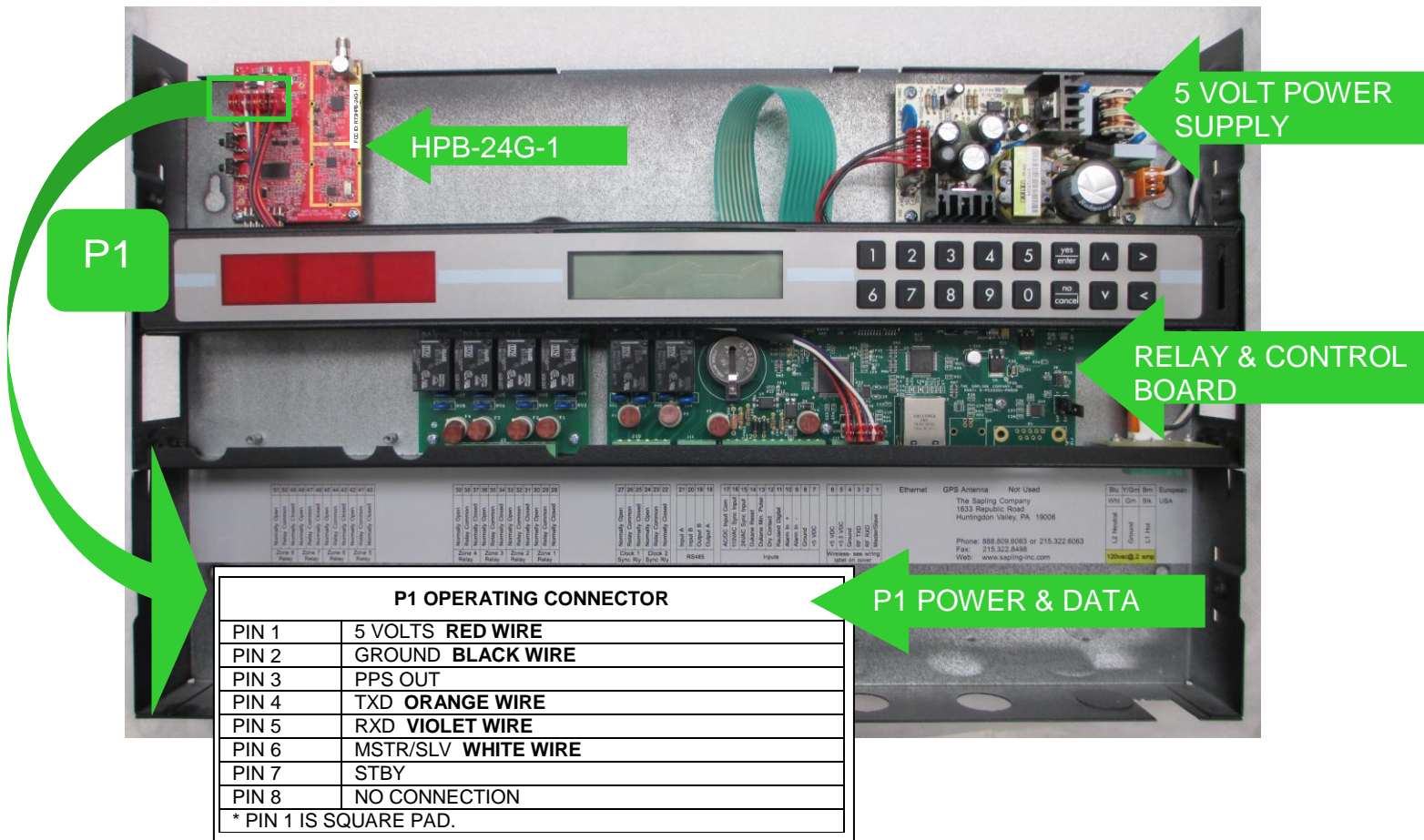
Contains FCC ID: R73HPB-24G-1
Model: D-CCA-HPB-24G-1

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Installed

The picture below shows the HPB-24G-1 RF module in a master clock. It shows the SMA-3S0-G008-1 and the connectors to the rest of the Sapling Wireless Clock System.

SMA-3S0-G008-1



The picture below shows the top of the SMA-3S0-G008-1 with HPB-24G-1 RF module antenna connector and the FCC ID and the Compliance Label.

SMA-3S0-G008-1



SMA-3S0-G008-1 Label

The label below is an example of the FCC ID and the Compliance Label.

Date: June 18, 2013

Contains FCC ID: R73HPB-24G-1

Model: D-CCA-HPB-24G-1

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



The Sapling Company, Inc.
1633 Republic Road
Huntingdon Valley, PA 19006
(215) 322-6063
www.sapling-inc.com

The Sapling Company, Inc.

Part#: SMA-3S0-G008-1

Quantity: 1

Made in U.S.A.

A/SMA-3S0-G008-1/1/130618/F0009562

Operation

1. The HPB-24G-1 RF module, as a repeater transceiver, will receive time from another transmitter or clock and re-transmit the time.
2. The HPB-24G-1 RF module, as a master clock transceiver, will transmit the time for 240 msec and receive the time for up to 20 seconds once a minute.

FCC Statement:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

“Changes Or Modifications Not Expressly Approved By The Party Responsible For Compliance Could Void The User's Authority To Operate The Equipment.”