

Transponder for GainMaker® Optoelectronic Node

Description

This full frequency agile transponder is designed to interface with Scientific-Atlanta's GainMaker® Nodes. It is controlled by Scientific-Atlanta's ROSA™ Element Manager (EM) and Transmission Network Control System (TNCS) element management systems.

The transponder monitors the operational parameters of the amplifier station and allows remote control of certain amplifier functions. Communications to and from the transponder are accomplished via the built in forward RF data carrier receiver and reverse RF data carrier transmitter.



The transponder communicates with the ROSA EM and TNCS element management systems via the Phoenix™ RF Modem. The cutting-edge RF technology used in the Phoenix modem allows operation in networks that suffer from a high level of ingress noise in the return path.

The transponder monitors a wide range of operational parameters, including:

- Optical receive power for the primary and secondary receivers
- Optical transmit power of the transmitter
- RF level of the forward status monitor data carrier
- AC and DC power supply voltages
- Transponder temperature
- Open/closed housing status

If the status of any monitored parameter is outside of established thresholds, the centrally located element management console can activate an alarm. All alarm thresholds are remotely adjustable from the console. The transponder also enables remote control of the reverse "On/-6 dB/Off" RF switches (for remote isolation of ingress) and of the power supply.

The transponder is packaged in an aluminum housing that mounts directly in the lid of the GainMaker Optical Node. The only tool required to mount the transponder is a flat-blade screwdriver. There are no cables required to connect the transponder. Once installed, LEDs on the transponder indicate; "Power On", "Receiving Data", and / or "Error" condition.

This transponder is easily configured for operation with the use of a Handheld Programming Terminal. Configuration can be performed either on the bench or in the field, prior to installation.

Features

- Plug-in compatibility with the GainMaker Optical Node
- Frequency agile 5 to 65 MHz for reverse path
- Frequency agile 45 to 174 MHz for forward path
- Monitors all critical internal station parameters
- Controls all switches within the node
- Simple and efficient installation
- Wide operating temperature range

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Specifications

Agile Transmitter	Specification	Units	Notes
Carrier frequency	5 - 65	MHz	Remotely adjustable
Frequency step size	50	kHz	
Modulation type	FSK	-	
Deviation	± 67	kHz	
Occupied bandwidth	400	kHz	
RF output level	24 to 50	dBmV	Remotely adjustable
Output level step size	2.0	dB	
Level stability	< ±2.0	dB	Over full temperature and frequency range
Frequency stability	± 7.5	kHz	Over full temperature and frequency range
Spurious and harmonics (5-2000 MHz)	> 55	dBc	
Extinction ratio	> 60	dBc	From operational output level
Agile Receiver			
Receive carrier frequency	45-174	MHz	Remotely adjustable
Frequency step size	50	kHz	
RF input level range	-25 to 20	dBmV	
Selectivity at frequency offset of:			Specifies the amount an adjacent carrier's level can exceed the transponder receive carrier's level at the transponder input, without causing interference
200 kHz	+30	dBc	
400 kHz	+40	dBc	
800 kHz	+50	dBc	
Environmental			
Operating Temperature	-40 to +85	°C	
Humidity	0 to 90	%	Non Condensing

Monitored Parameters

Device	Units	Parameter
Node Temperature	°C / °F	Transponder Temperature
Station Mode	Thermal or Auto	AGC Mode Detect
Transponder Data Carrier	dBmV	Status Monitor Receiver Level Detect
Optical Receivers (Primary/Redundant)	mW / dBm	Optical Receive Power
Optical Transmitters	mW / dBm	Optical Transmit Power
Tamper Switch	Open or Closed	Housing Tamper Switch
Optical Receiver	Primary or Secondary	Receiver Relay Status
Power Supply	V DC	+ 24 V DC Output Voltage
Power Supply	V DC	+ 15 V DC Output Voltage
Power Supply	V DC	- 6 V DC Output Voltage
AC Supply	V AC	AC Input Voltage

Controllable Parameters

Device	Control Variables
Main Reverse Switch	Normal/-6 dB/Off
Aux 1 Reverse Switch	Normal/-6 dB/Off
Aux 2 Reverse Switch	Normal/-6 dB/Off
Redundant Relay Control	Primary or Secondary

Connectors

Parameter	Description	Purpose
Craft Port Interface	Mini Jack 2 Pole – 3mm	Used to configure the transponder settings via Handheld Programming Terminal.

Indicators

Indicators	Description	Status	Purpose
LED #1	Heart beat	Green	Transponder health
LED #2	Receive	Green	Data packages are detected
LED #3	Error	Red	A failure in the system has occurred

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Ordering Information

Description	Part Number
Transponder for GainMaker Node, Agile 5-65/45-174 MHz - one required per optical node	744234

Accessories

Description	Part Number
Handheld Programmer Terminal – required to configure the transponder	A91200.10
Programmer Software Download Kit	A91210.10

Phoenix RF Modem	Part Number
Tx (1), Rx (1)	
Phoenix 110/220 V AC EU, Tx (1) and Rx (1)	V9528341
Phoenix 110/220 V AC UK, Tx (1) and Rx (1)	V9528342
Phoenix 110/220 V AC AUS, Tx (1) and Rx (1)	V9528343
Phoenix 110/220 V AC US, Tx (1) and Rx (1)	V9528082
Tx (1), Rx (2)	
Phoenix 110/220 V AC EU, Tx (1) and Rx (2)	V9528344
Phoenix 110/220 V AC UK, Tx (1) and Rx (2)	V9528345
Phoenix 110/220 V AC AUS, Tx (1) and Rx (2)	V9528347
Phoenix 110/220 V AC US, Tx (1) and Rx (2)	V9528346
Tx (1), Rx (4)	
Phoenix 110/220 V AC EU, Tx (1) and Rx (4)	V9528348
Phoenix 110/220 V AC UK, Tx (1) and Rx (4)	V9528349
Phoenix 110/220 V AC AUS, Tx (1) and Rx (4)	V9528351
Phoenix 110/220 V AC US, Tx (1) and Rx (4)	V9528350
Tx (1), Rx (8)	
Phoenix -48 V DC, Combicon, Tx (1) and Rx (8)	V9523551
Phoenix -48 V DC, Mate-N-Lock, Tx (1) and Rx (8)	4002043
Phoenix 110/220 V AC EU, Tx (1) and Rx (8)	V9523552
Phoenix 110/220 V AC UK, Tx (1) and Rx (8)	V9528338
Phoenix 110/220 V AC AUS, Tx (1) and Rx (8)	V9528340
Phoenix 110/220 V AC US, Tx (1) and Rx (8)	V9528339
Phoenix Options	Part Number
Phoenix Receiver Kit (one receiver)	4002230
Optional connector MATE-N-LOCK -60 V DC	VOPT2000

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Ordering Information, continued

ROSA EM – North and Latin America	Part Number
ROSA EM – AC Version	
ROSA EM, 100 - 240 V AC US, DCL Class 1 (0-10 devices)	4005326
ROSA EM, 100 - 240 V AC US, DCL Class 2 (0-25 devices)	4005370
ROSA EM, 100 - 240 V AC US, DCL Class 3 (0-50 devices)	4005371
ROSA EM, 100 - 240 V AC US, DCL Class 4 (0-100 devices)	4005372
ROSA EM, 100 - 240 V AC US, DCL Class 5 (0-250 devices)	4005373
ROSA EM, 100 - 240 V AC US, DCL Class 6 (0-500 devices)	4005374
ROSA EM, 100 - 240 V AC US, DCL Class 7 (0-750 devices)	4005375
ROSA EM, 100 - 240 V AC US, DCL Class 8 (0-1000 devices)	4005376
ROSA EM – DC Version	
ROSA EM, -48 V DC US, DCL Class 1 (0-10 devices)	4006322
ROSA EM, -48 V DC US, DCL Class 2 (0-25 devices)	4007210
ROSA EM, -48 V DC US, DCL Class 3 (0-50 devices)	4007211
ROSA EM, -48 V DC US, DCL Class 4 (0-100 devices)	4007212
ROSA EM, -48 V DC US, DCL Class 5 (0-250 devices)	4007213
ROSA EM, -48 V DC US, DCL Class 6 (0-500 devices)	4007214
ROSA EM, -48 V DC US, DCL Class 7 (0-750 devices)	4007215
ROSA EM, -48 V DC US, DCL Class 8 (0-1000 devices)	4007216

ROSA EM – EMEA (Europe, Middle-East, Asia)	Part Number
ROSA EM Headend	
ROSA EM Headend, 100 – 240 V AC EU DCL Class 5 (0-250 headend devices)	4005317
ROSA EM Headend, 100 – 240 V AC UK DCL Class 5 (0-250 headend devices)	4005320
ROSA EM Headend, 100 – 240 V AC AUS DCL Class 5 (0-250 headend devices)	4005323
ROSA EM Headend, -48 V DC DCL Class 5 (0-250 headend devices)	4007217
ROSA EM Hub & HFC	
ROSA EM Hub & HFC, 100 – 240 V AC EU DCL Class 6 (0-500 Hub & HFC network devices)	4005318
ROSA EM Hub & HFC, 100 – 240 V AC UK DCL Class 6 (0-500 Hub & HFC network devices)	4005321
ROSA EM Hub & HFC, 100 – 240 V AC AUS DCL Class 6 (0-500 Hub & HFC network devices)	4005324
ROSA EM Hub & HFC, -48 V DC DCL Class 6 (0-500 hub & HFC network devices)	4007218
ROSA EM Transmitter sites	
ROSA EM Tx Site, 100 – 240 V AC EU DCL Class 1 (0-10 devices in transmitter sites)	4005319
ROSA EM Tx Site, 100 – 240 V AC UK DCL Class 1 (0-10 devices in transmitter sites)	4005322
ROSA EM Tx Site, 100 – 240 V AC AUS DCL Class 1 (0-10 devices in transmitter sites)	4005325
ROSA EM Tx Site, -48 V DC DCL Class 1 (0-10 devices in transmitter sites)	4007219

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Ordering Information, continued

ROSA EM Upgrades		Part Number
ROSA EM Device Count License (DCL) Upgrade		4005377
Class Info DCL Class 1 : 0-10 devices DCL Class 2 : 0-25 devices DCL Class 3 : 0-50 devices DCL Class 4 : 0-100 devices DCL Class 5 : 0-250 devices DCL Class 6 : 0-500 devices DCL Class 7 : 0-750 devices DCL Class 8 : 0-1000 devices		
ROSA EM Options		Part Number
ROSA EM external temperature sensor, maximum 2 per ROSA EM (cable length 15 m / 50 ft)		4005382



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