Model 7003-003

EMGen™ RF Signal Generator Plug-In Card

User Manual

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An ESCO Technologies Company

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Revision Record

MANUAL, EMGEN CARD | Part #1741904, Rev. A

Revision	Description	Date
A	Initial Release	February 1, 2022

Table of Contents

Notes, Cautions, and Warnings

Note: Denotes helpful information intended to provide tips for better use of the product.

CAUTION: Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.

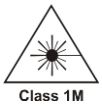
WARNING: Denotes a hazard. Failure to follow instructions could result in SEVERE personal injury and/or property damage. Included text gives proper procedures.

Safety Information

High Voltage: Indicates presence of hazardous voltage. Unsafe practice could result in severe personal injury or death.

High Voltage: Indicates presence of hazardous voltage. Unsafe practice could result in severe personal injury or death.

Protective Earth Ground (Safety Ground): Indicates protective earth terminal. You should provide uninterruptible safety earth ground from the main power source to the product input wiring terminals, power cord, or supplied power cord set.



Laser Warning: Denotes a laser (class 1M) is part of the operating system of the device.

Waste Electrical and Electronic Equipment (WEEE) Directive: (European Union) At end of useful life, this product should be deposited at an appropriate waste disposal facility for recycling and disposal. Do not dispose of with household waste.

1.0 Introduction

The **ETS-Lindgren EMGen™ RF Signal Generator Plug-in Card** is a modular signal generator with AM, FM, and pulse modulation, covering a frequency range of 4 kHz to 6 GHz. EMGen is designed for EMC testing, and quickly and accurately performs EMC tests without the need for an external modulation source. Using an internal modulator, EMGen provides CW, AM, FM, and pulse modulated signals.

The primary test signal of an Electric Magnetic Compatibility (EMC) immunity test system is generated by an RF signal generator. It produces a modulated or un-modulated RF signal at a certain frequency and signal level. The EMGen generators are designed for EMC test purposes in order to perform fast and accurate EMC tests without the need for external modulation sources.

Components

EMCenter Modular RF Platform (Required)

The EMCenter is a modular EMC/RF test system that serves as the user and computer interface for all the plug-in cards and modules. See section below about processor requirement for the 2-slot and 7-slot EMCenters using the 7003-002 EMGen module.

EMField Electric Field Generator

The patented EMField is no less than a revolution in EMC immunity testing. A complete paradigm shift involves a combination of high-level integration and a field combining technique, making several discrete components like combiner, coupler, power meters, and cabling superfluous. This product is sold separately.

Software

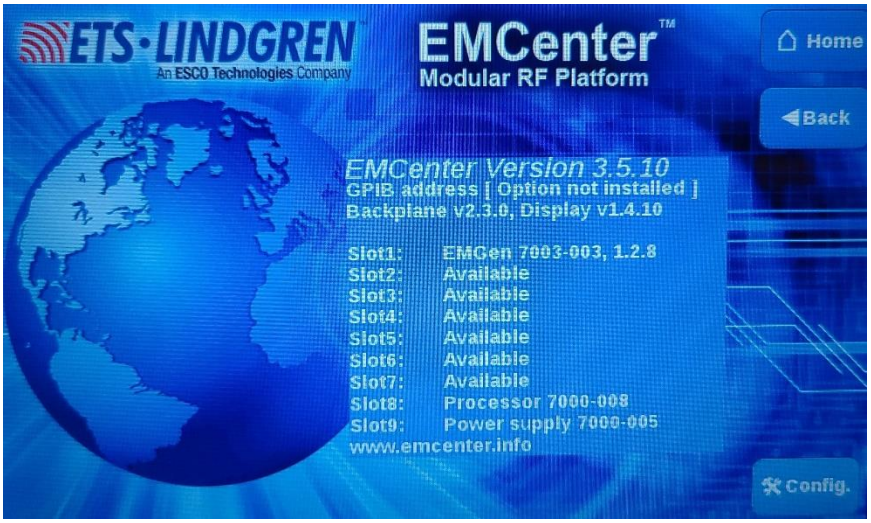
The EMCenter may be controlled from a computer using these software products:

- ETS-Lindgren TILE!™ (Totally Integrated Laboratory Environment)
- ETS-Lindgren EMQuest™ Data Acquisition and Analysis Software
- Other test automation software

2-Slot and 7-Slot EMCenter Processor Requirement

Note: The 2-slot and 7-slot EMCenter require an ARM processor board with firmware version 3.3.3 or higher to operate the EMGen 7003-002 interface card. 2-slot and 7-slot EMCenter systems utilizing an X86 processor board and/or firmware version 3.3.0 or older are not supported and will not communicate with the EMGen interface card.

To view the 2-slot or 7-slot EMCenter version information, navigate to the main screen and press the Info button. Slot 8 indicates the processor version of this EMCenter as shown in the graphic below.



Note: If the EMCenter is not operating the 7000-008 or 7000-009 processor card, contact ETS-Lindgren to purchase a new 2-slot or 7-slot EMCenter or a new processor card compatible with EMGen.

Processor Cards		
7000-008	1611365	EMCENTER PROCESSOR BOARD STD (ARM)
7000-009	1695739	EMCENTER PROCESSOR BOARD + GPIB (ARM)

Modulation Types

- **AM modulation —** The EMGen supports AM modulation depths of 0 to 100% and modulation frequencies from 1 Hz to 100 kHz, covering the requirements of all relevant EMC standards.

- **FM modulation —** The EMGen supports FM modulation deviations of 1 Hz to 100 kHz and modulation frequencies from 1 Hz to 100 kHz.

- **Pulse modulation: 200 ns - 100 s —** The EMGen supports pulse modulation with ON- and OFF times ranging from 200 ns to 100 s with a resolution of 100 ns.

- **Pulse modulation settings —** The pulse interval (on/off) of the EMGen can be set from 200 ns to 100 s This broad range allows for ultimate flexibility in the configuration of pulse modulation.

- **Gated Pulse —** In addition to standard pulse modulation the EMGen can also be used to perform Gated Pulse modulation. Gated Pulse testing is necessary to perform automotive radar pulse testing as prescribed in several automotive standards (E.G. Ford, General Motors and PSA).

How to use Gated Pulse Modulation

Several automobile manufactures have written standards in which they subscribe the Automotive Radar Pulse tests. These tests consist of an N-number of pulses in a certain period of time. When the number of pulses is reached, there must be no more output for the remaining time during that period.

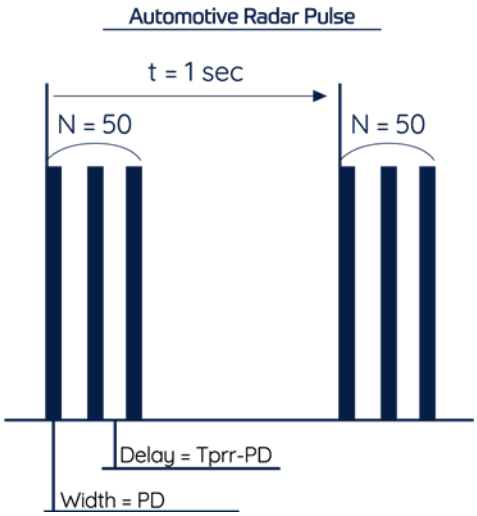
Explanation of Automotive Pulse Testing

Ford RI-114 Radar Pulse test (EMC-SC-2009) and PSA B21 7110 are using:

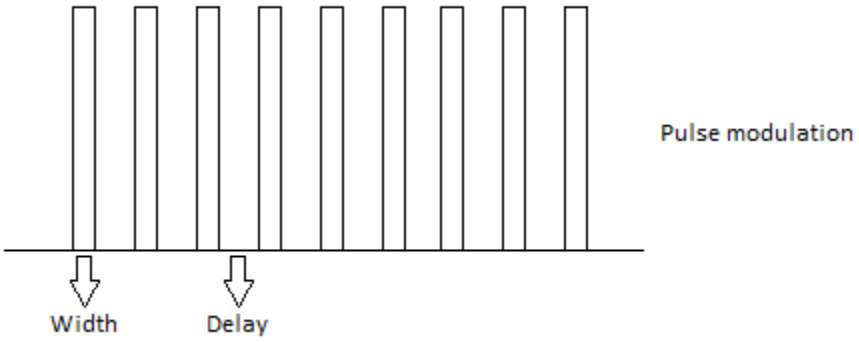
- Pulse Repetition Rate (PRR) = 300 Hz
- Pulse duration (PD) = 3 µs
- No. of pulses per second (N) = 50

GM GMW3097-2012 uses:

- Pulse Repetition Rate (PRR) = 300 Hz
- Pulse duration (PD) = 6 µs
- No. of pulses per second (N) = 50



The EMGen plug-in card is capable of generating the necessary RF bursts according to these automotive standards, using the Gated Pulse Modulation. Normal pulse modulation must be used to set the Pulse ON and Pulse OFF times (these are called, respectively, PULSe:WIDTh and PULSe:DELay, in the command set of the EMCenter system user interface).



The standards describe the pulse waveform by means of a Pulse Repetition Rate (PRR) and Pulse Duration. The EMGen plug-in card, on the other hand, uses Pulse ON and Pulse OFF (PULSe:WIDTh and PULSe:DELay) times.

As a result the PD and PRR numbers must be calculated to Pulse ON and Pulse OFF (PULSe:WIDTh and PULSe:DELay) times, according to the example below:

Example:

The Ford standard EMC-SC-2009 describes:

PRR = 300 Hz, PD = 3 µs. N =50 pulses per second.

So the period time of the Pulse Modulation is TPRR = 3,333 ms

For the EMGen this means:

The Pulse ON time, or PULSe:WIDTh equals PD = 3 µs

The Pulse OFF time, or PULSe:DELay equals TPRR – PD = 3,333 ms – 3 µs = 3,330 ms

Limitations:

The Pulse ON and OFF times apply to the specific limitations to the number of pulses per period for the Gated Pulse Modulation. The EMGen system user interface makes use of equations to intelligently adapt the buttons, prohibiting invalid settings. When the EMGen plug-in card is controlled externally by PC-software, these limitations must be controlled by the PC-software. The limitations are given by the following formulas;

$$N_{MAX} = \frac{Gateperiod - 1ms}{Pulse_{Width} + Pulse_{Delay}} - 1$$

The maximum number of pulses in one burst is limited by the settings of the pulse modulation. For example; using the Ford standard with a repetition rate of 300 Hz, a pulse width of 3µs and period time of 1 second, results in a maximum of 298 pulses.

$$Pulse_{Delay_{(MAX)}} = \frac{(Gateperiod - 1ms) - (N \cdot Pulse_{Width})}{N}$$

The formula can also be rewritten to calculate the pulse parameters:

$$Pulse_{Width(MAX)} = \frac{(Gateperiod - 1ms) - (N \cdot Pulse_{Delay})}{N}$$

2.0 Maintenance

CAUTION: Before performing any maintenance, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

WARNING: Maintenance of EMGen is limited to external components such as cables or connectors.

If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.

Maintenance of Fiber Optics (If Used)

Fiber optic connectors and cables can be damaged from airborne particles, humidity and moisture, oils from the human body, and debris from the connectors they plug into. Always handle connectors and cables with care, using the following guidelines.

CAUTION: Before performing any maintenance, disconnect fiber optic cables from the unit and turn off power.

When disconnecting fiber optic cables, apply the included dust caps to the ends to maintain their integrity.

Before connecting fiber optic cables, clean the connector tips and in-line connectors.

Before attaching in-line connectors, clean them with moisture-free compressed air.

Failure to perform these tasks may result in damage to the fiber optic connectors or cables.

Replacement and Optional Parts

Note: ETS-Lindgren may substitute a similar part or new part number with the same functionality for another part/part number. Contact ETS-Lindgren for questions about part numbers and ordering parts.

Following are the part numbers for ordering replacement or optional parts for the EMGen™ RF Signal Generator Plug-in Card.

Service Procedures

Contacting ETS-Lindgren

Note: Please see www.ets-lindgren.com for a list of ETS-Lindgren offices, including phone and email contact information.

Note: ETS-Lindgren is not responsible for service on equipment that has been configured with software other than what is provided by ETS-Lindgren. Support for such configurations requires a secondary charge from ETS-Lindgren.

Sending a Component for Service

1. Contact ETS Lindgren Customer Service to obtain a Service Request Order (SRO).

2. Briefly describe the problem in writing. Give details regarding the observed symptom(s) or error codes, and whether the problem is constant or intermittent in nature. Please include the date(s), the service representative you spoke with, and the nature of the conversation. Include the serial number of the item being returned.

3. Package the system or component carefully. If possible, use the original packing materials or carrying case to return a system or system component to ETS Lindgren.

3.0 Specifications

Electrical Specifications

AM Accuracy	**2%**
AM Modulation Depth:	5% to 95% (Usable from 0% to 100%)
Amplitude Accuracy:	± 1.0 dB +/-0.01 dB
Amplitude Resolution:	0.1 dB
FM Accuracy	2%
FM Modulation Depth	1 Hz -100 kHz
FM Modulation Resolution	1%
Frequency Accuracy:	1 ppm
Frequency Range:	4 kHz–6 GHz
Frequency Resolution:	1 Hz
Harmonics:	< -20 dBc
Modulation Frequency Range:	10 Hz–100 kHz
Modulation Type:	CW, AM, FM, Pulse and Gated Pulse
Non-Harmonic Spurious:	< -50 dBc
Output Level Settling Time:	< 1 ms
Output Level:	**Minimum:** –70 dBm **Maximum:** +13 dBm (+7.0 dBm when using AM)
Pulse Modulation On/Off Ratio:	> 90 dB
Pulse Time-Range:	**ON:** 200 ns–100 s **OFF:** 200 ns–100 s

Physical Specifications

Depth:	220 mm
Height:	3U:100 mm (3.93 in)
Output Connector:	Output,(1) SMA
Width:	One slot

Environmental Specifications

Relative Humidity:	10% to 90% (non-condensing)
Temperature Range:	10°C to 40°C (50°F to 104°F)

Power Specifications

Power Consumption:	< 30 W
Supply Voltage:	12 VDC

4.0 EMGen Plug In Card Installation

CAUTION: Before connecting any components, follow the information provided in *Safety Information* on page 7.

CAUTION: The EMGen card is designed to be used ONLY with the EMCenter. Do not use the card in combination with any other system.

CAUTION: Always unplug the unit before starting maintenance to prevent electrical shock. Maintenance includes removal of the plug-in cards or the top panel.

Plug-In Card Installation

Please follow the instructions below on how to install the plug-in card into the correctly. NOTE:

1. Before installing and inserting a new plug-in card make sure that the EMCenter is turned OFF and disconnect the AC Mains power cord.

2. Determine in which empty slot in the EMCenter™ Modular RF Platform you want to install the EMGen™ RF Signal Generator Plug in Card. Looking at the back of the EMCenter, the slots are numbered 1 through 7 from left to right.

3. Remove the blank panel from the slot by removing the two screws at the top of the blank panel and the two screws at the bottom.

4. Carefully insert the EMGen card into the slot of the EMCenter. Position the plug-in card into the slot and slowly push it, using the lower part of the plug-in card. When it reached the end of the rail, gently push and secure the plug-in card into the backplane socket.

5. Tighten the four screws using a Pozi type screwdriver head PZ1.

6. Re-connect the AC mains power cord and turn ON the EMCenter. It can now be started by tapping the touch screen. The EMCenter will automatically detect the newly installed EMGen card.

7. Depending on the test setup requirements, connect coaxial cables to the relay connections on the back panel of the EMCenter.

8. Connect the EMCenter to a personal computer using USB, RS 232, Ethernet, or IEEE (optional).

9. Plug the interlock into the connector on the back of the EMCenter.

The card installation is complete. You can control EMGen through the EMCenter touchscreen, with ETS Lindgren TILE!™ (Totally Integrated Laboratory Environment), ETS Lindgren EMQuest™ Data Acquisition and Analysis Software, and other test automation software packages. Contact ETS Lindgren for additional information.

5.0 Operation

CAUTION: Before placing into operation, follow the information provided in *Safety Information* on page 7.

CAUTION: Prior to operation, verify that the mains voltage is within the operating range of the equipment.

Powering On and Off EMCenter

Note: For information on using the EMCenter touchscreen, see the *EMCenter Modular RF Platform User Manual*.

Power On

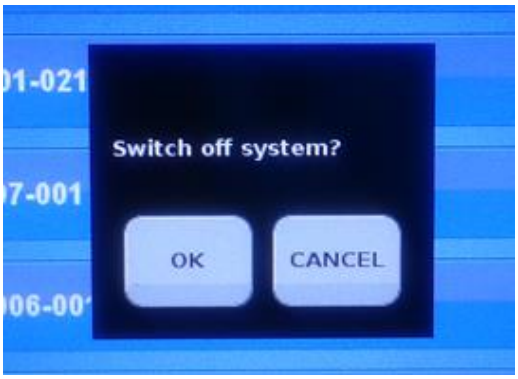
Note: Verify all cards are installed correctly in the EMCenter.

1. Plug the power cord from the mains inlet on the back panel of the EMCenter™ Modular RF Platform into a power outlet.
2. Plug the interlock jack into the interlock connector on the back panel of the EMCenter.
3. Turn the power switch located on the back panel of the EMCenter to the on position.
4. Touch anywhere on the EMCenter screen. It will take approximately 20 seconds to boot. The Information screen will flash, and then the Home screen will display.

Sample EMCenter Home Screen

Power Off

1. Press the **Off** button located on the EMCenter screen.



2. Press **OK** to switch off the system. The standby light located on the front panel of the EMCenter will flash, and then will illuminate steadily.

Note: When the EMCenter is in standby mode, touch the screen anywhere to reboot.

3. Turn the power switch located on the back panel of the EMCenter to the off position.

4. Remove the power cord from the power connector on the back panel of the EMCenter.

5. Remove the interlock jack from the interlock connector on the back panel of the EMCenter.

Manual Control

On the EMCenter Home screen, press the EMGen status box that displays next to the installed slot number for the EMGen card.

EMGen Control Screen

The EMGen Control screen will display, where you can change the following settings:

1. The **(Carrier) Frequency** button is used to set the desired carrier frequency of the EMGen. When selected it will pop up another screen. The new screen shows a numeric pad and some other options, which will be explained in more details in the Numeric Pad section.

2. The **(Carrier) Level** button defines the carrier output amplitude of the EMGen. This can be set in the same way as the Frequency button.

3. The **Carrier** button toggles the carrier signal between On (carrier signal is generated) and Off (no carrier signal is generated).

4. The **Down** and **Up** buttons are displayed under both Frequency and Level. The buttons can be selected to quickly change the frequency or level without the use of the numeric pad. The step size for each setting can be set in the frequency and level menus and the current value is displayed in the bottom right corner of the frequency and level buttons.

5. The **Modulation Type** button toggles the modulation type between AM and FM. When the currently selected type is turned On (using the State button), the other type is automatically turned Off. Note that the AM Depth and FM Deviation buttons switch out depending on which type is active.

6. The **(Modulation) Frequency** button is specifically for the modulation of the generated signal. This button shows the modulation frequency of the currently selected modulation type and can be used to change the modulation frequency of the currently selected modulation type (AM or FM).

7. The **Depth** button shows the modulation depth of the AM signal and can be used to change the modulation depth, and only appears when AM modulation is selected as the Modulation Type.

8. The **Deviation** button shows the frequency deviation of the FM signal and can be used to change the frequency deviation, and only appears when FM modulation is selected as the Modulation Type.

9. The **State** button shows whether the currently selected modulation type is On or Off and can be used to activate the AM or FM modulation. When one type is turned On, the other type is automatically turned Off if it was already On.

10. The **Pulse ON Time** button is used to define the time for which the pulse is active, when Pulse modulation is On. Pulse modulation can be turned Off by pressing the Pulse button.

11. The **Pulse OFF Time** button shows the time during which the pulse is OFF, when Pulse modulation is On. This pulse off time can be changed to a longer or shorter duration by pressing the Pulse OFF Time button.

12. The **Pulse** button toggles the pulse modulation On or Off.

13. The **Pulse Count** button shows the amount of pulses generated within the pulse gating period, and can be used to change the Pulse Count, when Pulse Gating is On.

14. The **Pulse Gating Period** button shows the pulse gating period (or duration) for which the pulses are generated, and can be used to change the pulse gating period, when Pulse Gating is On.

15. The **Pulse Gating** button toggles the pulse gating (pulse burst modulation) On or Off.

EMGen Configuration Screen

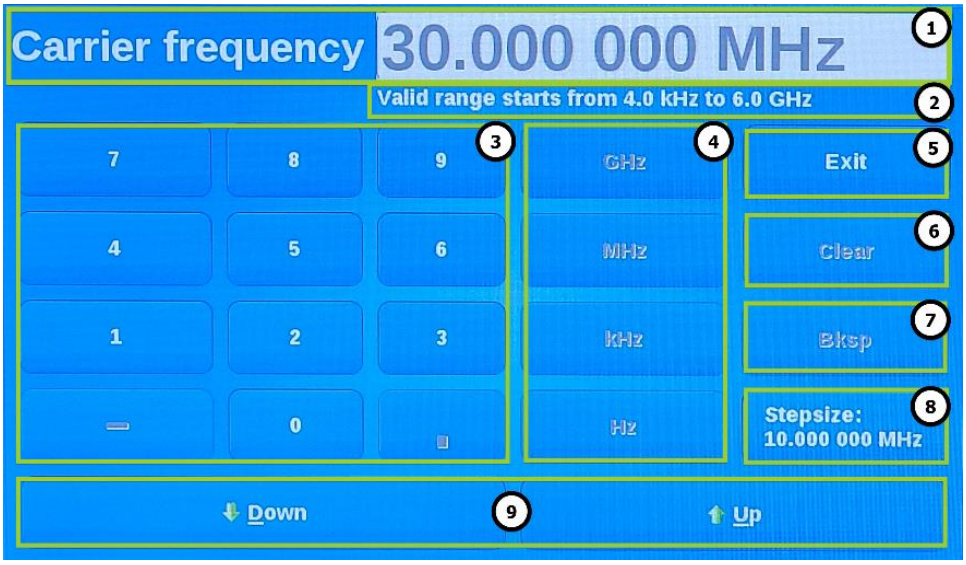
On the EMGen Control screen press **Config** to display the Configuration screen.

The step size for the parameters for frequency and power on the control screen can be set from this configuration screen. By selecting one of the step buttons, a numeric pad appears where the new value can be entered. By pressing the unit, the value will be entered.

The **External reference** button toggles the External Reference clock input.
OFF = Internal clock is used
ON = External Reference clock input is used

Number Pad

The numeric pad is used for multiple values and functions such as Frequency, Level, or Stepsize. On the numeric pad, new values can be entered for the selected parameter. After selecting the desired unit (for example “Hz”), the control screen will reappear.



1. The **parameter box** shows the value of the chosen parameter. This value can be changed using the numeric pad.
2. The **valid range** shows the minimum and maximum values that can be selected. Be aware that when parameters are changed the valid range may change too.
3. The **numeric pad** sets the correct numerical value and + /- sign.
4. The **Unit** buttons set the unit type of the parameter's value if applicable.
5. The **Exit** button exits the numeric pad.
6. The **Clear** button clears the settings of the parameter box.
7. The **Backspace** button deletes the last character typed in the parameter box.
8. The **Stepsize** button indicates the actual step size.
9. The **Down** and **Up** buttons change the step size.

6.0 EMGen Command Set

The following tables in this section shows all available commands for the EMGen™ Plug-in Card.

Note: Terminate each command with a line feed (LF, shown as in command syntax). Each response from the device is terminated with a line feed (LF, shown as \n in command syntax).

Syntax for EMCenter commands

When controlling the EMGen with an EMCenter, please note that each command must also include a device ID number as the prefix. See the EMCenter Modular RF Platform User Manual for complete information on device ID numbers.

For example, to send the FREQ? command to the EMGen located in slot 6 of the EMCenter™ Modular RF Platform, the complete command would be: **6:FREQ?\n**

The following notation is used for each command:

COMMAND NAME

Description:	Description of the command function and any associated special information.
Syntax:	cmd <required parameter> [optional parameter] Parameter list: List of parameters and their descriptions (as required) with any associated special information.
Response:	If applicable, description of expected response from Gets, with any associated special information.
Example:	Write: s:CMD PARM\n : Command to set parameter Write: s:CMD?\n : Command to query parameter • s : Slot number of the EMGen in the EMCenter • CMD : Command • PARM : Parameter • \n : Line feed

Shortcut syntax

All commands sent to the EMCenter are programmed through the Standard Commands for Programmable Instruments (SCPI). Note that not all commands are case sensitive. The command tables contain the 'full' commands.

These commands can also be entered in several shorter versions. The syntax of the commands is described as followed:

- **COM**mand = Information in capital letters is considered necessary and is part of the short notation. If any lowercase letters are used, then all lowercase letters must be included.

- [**COM**mand] = Information contained within [here] is considered not necessary but if used, then the CAPITAL letters are necessary. If any lowercase letters are used, then all lowercase letters must be included.

Example 1 = [:SOURce]:FREQuency?

Requesting the state of the carrier frequency can be entered as follows:

- :SOURCE:FREQUENCY?
- :SOURCE:FREQ?
- :SOUR:FREQUENCY?
- :SOUR:FREQ?
- :FREQUENCY?
- :FREQ?

Example 2 = [:SOURce]:FREQuency <frequency>

Setting the state of the carrier frequency to 50,000,000 Hz can be entered as follows:

- :SOURCE:FREQUENCY 50000000
- :SOURCE:FREQ 50000000
- :SOUR: FREQUENCY 50000000
- :SOUR:FREQ 50000000
- : FREQUENCY 50000000
- :FREQ 50000000FREQ 50 MHZ

Special Characters in Command Syntax

Table: Special Characters in Command Syntax

Characters	Meaning	Example
[ ]	Square brackets indicate that the enclosed keywords or parameters are optional when composing the command. These implied keywords or parameters will be executed even if they are omitted.	[:SOURce]:AM[:DEPTh]? SOURce and DEPTh are optional syntax.
< >	Angle brackets around a word (or phrase) indicate they are not to be used literally in the command. They represent the needed item.	[:SOURce]:FREQuency <value><unit> In this command, the words <value> and <unit> should be replaced by the actual frequency and unit. For example: :FREQuency 2.5GHz
|	A vertical bar character between keywords or parameters indicates alterative choices. For parameters, the effect of the command varies depending on the choice.	[:SOURce]:AM:STATe ON|OFF|1|0 ON or OFF or 1 or 0 are the choices.

IEEE 488.2 Mandatory Instruction Set

*CLS

Description:	CLS (Clear Status) is used to clear the status byte (STB) and event status enable register (ESR) by setting them to 0.
Syntax:	*CLS

*ESE

Description:	Set bits in the standard event status enable (ESE) register. Value can be set from 0 to 128.
Syntax:	*ESE <value>

***ESE?**

Description:	Gets the result of the event status enable (ESE) register. Response a value from 0 to 128.
Syntax:	*ESE?

***ESR?**

Description:	Gets the Event Status Enable Register (ESR). Response a value from 0 to 128.
Syntax:	*ESR?

***IDN?**

Description:	Gets the device identification of <Manufacturer>, <Product name> <Model number>, <Embedded software version>
Syntax:	*IDN?
Response:	ETS-Lindgren, EMGen XXXX-XXX, N.N.N
Example:	Write: ***IDN?** Response **ETS-Lindgren, EMGen 7003-003, 1.2.8**

***OPC?**

Description:	Operation Complete (OPC) queries whether the last command has been executed. OPC returns 1 when the previous command has been processed. This command allows for software synchronization following the setting of signal generator parameters. ETS-Lindgren recommends using the *OPC? query following FREQuency and POWer setting changes. The command can be appended to the previous command using a semicolon as the separator (see Example).
Syntax:	*OPC?
Example:	Write: **POW 3** = Set output level to 3 dBm Write: ***OPC?** = Query operation complete Response ***OPC 1** = Previous command is complete Write **FREQ 30MHZ;*OPC?** = Set frequency to 30MHz and query operation complete Response *OPC 1 = Previous command is complete

***RST**

Description:	Resets the device (RST). Reset all parameters to their specified default values. Device remains in remote mode.	
Syntax:	*RST	
Reset Values:	AM:DEPTh	80 %
	AM:INTernal:FREQuency	1000 Hz
	AM:STATe	OFF
	FM:DEViation	1000 Hz
	FM:INT:FREQuency	1000 Hz
	FM:STATe	OFF
	FREQuency	125 MHz
	OUTPut:STATe	OFF
	POWer	-30 dBm
	PULM:BURST:NUMber	50
	PULM:BURST:PERiod	1 Hz
	PULM:BURST:STATe	OFF
	PULM:STATe	OFF
	PULSe:DELay	PULSe:DELay:MINimum
	PULSe:WIDTh	PULSe:WIDTh:MINimum

***SRE**

Description:	Sets bits in the service request enable (SRE) register. Value can be set from 0 to 128.
Syntax:	*SRE <value>

***SRE?**

Description:	Gets the current state of the service request enable (SRE) register. Response a value from 0 to 128.
Syntax:	*SRE?

***STB?**

Description:	Gets the value of the instrument's status byte (STB). Response a value from 0 to 128.
Syntax:	*STB?

Command List

AM:DEPT

Description:	Sets the amplitude modulation depth from 0 to 100 in %.
Syntax:	[:SOURce]:AM[:DEPTh] <value><unit>
Example:	Write: **AM:DEPT 100** = Sets amplitude modulation depth to 100 % Write: **AM 20 %** = Sets amplitude modulation depth to 20 %

AM:DEPT?

Description:	Gets the amplitude modulation depth in %.
Syntax:	[:SOURce]:AM[:DEPTh]?
Example:	Write: **AM:DEPT?** Response: **:AM:DEPT 50.0** = Gets 50%

AM:DEPT:MAX?

Description:	Gets the maximum amplitude modulation depth as a %.
Syntax:	[:SOURce]:AM[:DEPTh]:MAXimum?
Example:	Write: **AM:DEPT:MAX?** Response: **:AM:DEPT:MAX 100.0**

AM:DEPT:MIN?

Description:	Gets the minimum amplitude modulation depth as a %.
Syntax:	[:SOURce]:AM[:DEPTh]:MINimum?
Example:	Write: **AM:DEPT:MIN?** Response: **:AM:DEPT:MIN 0.0**

AM:INT:FREQ

Description:	Sets the amplitude modulation frequency in Hz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ. The value can also be increased or decreased by step size: UP = Increase amplitude modulation frequency by step size. DOWN = Decrease amplitude modulation frequency by step size. Use the AM:INT:FREQ:STEP command to change the current step size.
Syntax:	[:SOURce]:AM:INTernal:FREQuency <value><unit>|UP|DOWN
Example:	Write: **AM:INT:FREQ 1000** Write: **AM:INT:FREQ 2 KHZ**

AM:INT:FREQ?

Description:	Gets the amplitude modulation frequency in Hz.
Syntax:	[:SOURce]:AM:INTernal:FREQuency?
Example:	Write: **AM:INT:FREQ?** Response: **:AM:INT:FREQ 2000**

AM:INT:FREQ:MAX?

Description:	Gets the highest amplitude modulation frequency in Hz.
Syntax:	[:SOURce]:AM:INTernal:FREQuency:MAXimum?
Example:	Write: **AM:INT:FREQ:MAX?** Response: **:AM:INT:FREQ:MAX 100000**

AM:INT:FREQ:MIN?

Description:	Gets the lowest amplitude modulation frequency in Hz.
Syntax:	[:SOURce]:AM:INTernal:FREQuency:MINimum?
Example:	Write: **AM:INT:FREQ:MIN?** Response: **AM:INT:FREQ:MIN 10.0**

AM:INT:FREQ:STEP

Description:	Sets the step size of the amplitude modulation frequency in Hz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ.
Syntax:	[:SOURce]:AM:INTernal:FREQuency:STEP <value><unit>
Example:	Write: **AM:INT:FREQ:STEP 10**

AM:INT:FREQ:STEP?

Description:	Gets the step size of the amplitude modulation frequency in Hz.
Syntax:	[:SOURce]:AM:INTernal:FREQuency:STEP?
Example:	Write: **AM:INT:FREQ:STEP?** Response: **:AM:INT:FREQ:STEP 10**

AM:INT:FREQ:STEP:MAX?

Description:	Gets the maximum step size of the amplitude modulation frequency.
Syntax:	[:SOURce]:AM:INTernal:FREQuency:STEP:MAXimum?
Example:	Write: **AM:INT:FREQ:STEP:MAX?** Response: **:AM:INT:FREQ:STEP:MAX 1000**

AM:INT:FREQ:STEP:MIN?

Description:	Gets the minimum step size of the amplitude modulation frequency.
Syntax:	[:SOURce]:AM:INTernal:FREQuency:STEP:MINimum?
Example:	Write: **AM:INT:FREQ:STEP:MIN?** Response: **:AM:INT:FREQ:STEP:MIN 1**

AM:OPT:2HZ

Description:	Set the AM frequency to 2Hz and depth to 80%. This is equivalent to sending the commands: AM:INT:FREQ 2 AM:DEPT 80
Syntax:	[:SOURce]:AM:OPT:2HZ

AM:POW:MAX?

Description:	Gets the maximum carrier level when the AM is turned ON.
Syntax:	[:SOURce]:AM:POWer[:LEVel][:IMMediate][:AMPLitude]:MAXimum?
Example:	Write: **AM:POW:MAX?** Response: **:AM:POW:MAX 4.0**

AM:POW:MIN?

Description:	Gets the minimum carrier level when the AM is turned ON.
Syntax:	[:SOURce]:AM:POWer[:LEVel][:IMMediate][:AMPLitude]:MINimum?
Example:	Write: **AM:MIN?** Response: **:AM:POW:MIN -70.0**

AM:STAT

Description:	Sets the amplitude modulation state to ON or OFF. Note: Frequency modulation must be turned OFF before amplitude modulation can be enabled.
Syntax:	[:SOURce]:AM:STATe ON|OFF|1|0
Example:	Write: **AM:STAT ON** Write: **AM:STAT OFF** Write: **AM:STAT 1**

AM:STAT?

Description:	Gets the state of the amplitude modulation as ON or OFF.
Syntax:	[:SOURce]:AM:STATe?
Example:	Write: **AM:STAT?** Response: **:AM:STAT ON**

FM:DEV

Description:	Sets the frequency modulation deviation in Hz between 1 Hz and 100 kHz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ. Note: The deviation frequency can be limited by the carrier frequency. The minimum carrier frequency is 9 kHz. For example, if the carrier frequency is set to 20 kHz, then the maximum deviation frequency is 11 kHz (20 kHz – 9 kHz).
Syntax:	[:SOURce]:FM:DEViation <value><unit>
Example:	Write: **FM:DEV 100** Write: **FM:DEV 1 KHZ**

FM:DEV?

Description:	Gets the frequency modulation deviation in Hz.
Syntax:	[:SOURce]:FM:DEViation?
Example:	Write: **FM:DEV?** Response: **:FM:DEV 100**

FM:INT:FREQ

Description:	Sets the frequency modulation frequency in Hz between 1 Hz and 100 kHz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ.
Syntax:	[:SOURce]:FM:INTernal:FREQuency <value><unit>
Example:	Write: **FM:INT:FREQ 1000**

FM:INT:FREQ?

Description:	Gets the frequency modulation frequency in Hz.
Syntax:	[:SOURce]:FM:INTernal:FREQuency?
Example:	Write: **FM:INT:FREQ?** Response: **:FM:INT:FREQ 1000**

FM:STAT

Description:	Sets the frequency modulation state to ON or OFF. Note: Amplitude modulation must be turned OFF before frequency modulation can be enabled.
Syntax:	[:SOURce]:FM:STATe ON|OFF|1|0
Example:	Write: **FM:STAT ON** Write: **FM:STAT OFF** Write: **FM:STAT 1**

FM:STAT?

Description:	Gets the state of the frequency modulation as ON or OFF.
Syntax:	[:SOURce]:FM:STATe?
Example:	Write: **FM:STAT?** Response: **:FM:STAT OFF**

FREQ

Description:	Sets the current carrier frequency in Hz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ. The value can also be increased or decreased by step size: UP = Increase frequency by step size. DOWN = Decrease frequency by step size. Use the FREQ:STEP command to change the current step size.
Syntax:	[:SOURce]:FREQuency <value><unit>|UP|DOWN
Example:	Write: **FREQ 100000000** = Sets frequency to 100 MHz Write: **FREQ 200 MHZ** = Sets frequency to 200 MHz Write: **FREQ 1GHZ** = Sets frequency to 1 GHz Write: **FREQ UP** = Increase frequency by step size Write: **FREQ DOWN** = Decrease frequency by step size

FREQ?

Description:	Gets the current carrier frequency in Hz.
Syntax:	[:SOURce]:FREQuency?
Example:	Write: **FREQ?** Response: **:FREQ 100000000**

FREQ:MAX?

Description:	Gets the highest carrier frequency in Hz.
Syntax:	[:SOURce]:FREQuency:MAXimum?
Example:	Write: **FREQ:MAX?** Response: **:FREQ:MAX 6000000000**

FREQ:MIN?

Description:	Gets the lowest carrier frequency in Hz. This value depends on whether the LF Output or HF Output is currently selected.
Syntax:	[:SOURce]:FREQuency:MINimum?
Example:	Write: **FREQ:MIN?** Response: **:FREQ:MIN 80000000**

FREQ:STAR

Description:	Sets the start frequency. This is the lowest carrier frequency that can be set in Hz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ. Setting a carrier frequency (using the FREQ command) below this frequency generates a “Data out of range” error. When using the FREQ UP command, the generator is set to this frequency when the next step will be higher than the stop frequency. When using the FREQ DOWN command, the generator is set to the stop frequency when the next step will be lower than this frequency.
Syntax:	[:SOURce]:FREQuency:STARt <value><unit>
Example:	Write: ***RST** Write: **FREQ 30 MHZ** = carrier frequency set to 30 MHz Write: **FREQ:STAR 1 MHZ** = start frequency set to 1 MHz Write: **FREQ 500 KHZ** = results in “Data out of range” error; frequency does not change Write: **FREQ 1 MHZ** = frequency set to 1 MHz Write: **FREQ DOWN** = frequency set to the stop frequency value Write: **FREQ UP** = frequency set back to 1 MHz

FREQ:STAR?

Description:	Gets the start frequency in Hz.
Syntax:	[:SOURce]:FREQuency:STARt?
Example:	Write: **FREQ:STAR?** Response: **:FREQ:STAR 4000**

FREQ:STEP

Description:	Sets the step size of the carrier frequency in Hz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ. The step size is applied to the carrier frequency using the command FREQ UP or FREQ DOWN.
Syntax:	[:SOURce]:FREQuency:STEP <value><unit>
Example:	Write: **FREQ:STEP 1000** Write: **FREQ:STEP 10 KHZ**

FREQ:STEP?

Description:	Gets the step size of the carrier frequency in Hz.
Syntax:	[:SOURce]:FREQuency:STEP?
Example:	Write: **FREQ:STEP?** Response: **:FREQ:STEP 100000000**

FREQ:STEP:MAX?

Description:	Gets the highest step size of the carrier frequency in Hz.
Syntax:	[:SOURce]:FREQuency:STEP:MAXimum?
Example:	Write: **FREQ:STEP:MAX?** Response: **:FREQ:STEP:MAX 1000000000**

FREQ:STEP:MIN?

Description:	Gets the lowest step size of the carrier frequency in Hz.
Syntax:	[:SOURce]:FREQuency:STEP:MINimum?
Example:	Write: **FREQ:STEP:MIN?** Response: **:FREQ:STEP:MIN 1**

FREQ:STOP

Description:	Sets the stop frequency. This is the highest carrier frequency that can be set in Hz. The units default to Hz but can also be specified as KHZ, MHZ or GHZ. Setting a carrier frequency (using the FREQ command) above this frequency generates a “Data out of range” error. When using the FREQ UP command, the generator is set to the start frequency when the next step will be higher than this frequency. When using the FREQ DOWN command, the generator is set to this frequency when the next step will be lower than the start frequency.
Syntax:	[:SOURce]:FREQuency:STOP <value><unit>
Example:	Write: ***RST** Write: **FREQ 30 MHZ** = carrier frequency set to 30 MHz Write: **FREQ:STOP 100 MHZ** = stop frequency set to 100 MHz Write: **FREQ 1 GHZ** = results in “Data out of range” error; frequency does not change Write: **FREQ 100 MHZ** = frequency set to 100 MHz Write: **FREQ UP** = frequency set to the start frequency value Write: **FREQ DOWN** = frequency set back to 100 MHz

FREQ:STOP?

Description:	Get the stop frequency in Hz.
Syntax:	[:SOURce]:FREQuency:STOP?
Example:	Write: **FREQ:STOP?** Response: **:FREQ:STOP 10000000**

HVER?

Description:	Gets the current version of hardware.
Syntax:	HVERsion?

ID_NUMBER?

Description:	Gets the system ID number of the plug-in card without header command. See the SYST:IDNU? command for response with header.
Syntax:	ID_number?
Example:	Write: **ID_number?** Response **:1.44.65.178.27.0.0.207**

OUTP:SELECT?

Description:	Gets the currently selected output port of the EMGen card: 1 = Output 1 This command is only included for compatibility with other EMGen model types that support two ports (e.g. 7003-002). For the EMGen 7003-003, this command will always return a value of 1.
Syntax:	OUTPut:SELECTed?
Example:	Write: **OUTP:SELECT?** Response: **:OUTP:SELECT 1**

OUTP:STAT

Description:	Turns the output signal ON or OFF.
Syntax:	OUTPut[1]:STATe ON|OFF|1|0
Example:	Write: **OUTP:STAT ON** Write: **OUTP:STAT OFF** Write: **OUTP:STATE 1**

OUTP:STAT?

Description:	Gets the state of the output signal. Returns the output signal state as ON or OFF.
Syntax:	OUTPut[1]:STAT?
Response:	:OUTP:STAT <state> <state> = ON or OFF
Example:	Write: **OUTP:STAT?** Response: **:OUTP:STAT ON**

POW

Description:	Sets the carrier amplitude power in dBm. The value can be set between -70 dBm and +13 dBm. The value can also be increased or decreased by step size: UP = Increase amplitude by step size DOWN = Decrease amplitude by step size Use the POW:STEP command to change the current step size.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <amplitude><unit>|UP|DOWN
Example:	Write: **POW -20.1 DBM** = Sets power to -20.1 dBm Write: **POW 3** = Sets power to 3 dBm Write: **POW UP** = Increase power by step size Write: **POW DOWN** = Decrease power by step size

POW?

Description:	Gets the carrier amplitude power in dBm.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?
Example:	Write: **POW?** Response: **:POW -30.0**

POW:MAX?

Description:	Gets the highest carrier amplitude power in dBm.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:MAXimum?
Example:	Write: **POW:MAX?** Response: **:POW:MAX 13.0**

POW:MIN?

Description:	Gets the lowest carrier amplitude power in dBm.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:MINimum?
Example:	Write: **POW:MIN?** Response: **:POW:MIN -70.0**

POW:STEP

Description:	Set the step size of the carrier amplitude in dB. The value can be set between 0.01 and 100 dB. The step size is applied to the output power when using the command POW UP or POW DOWN.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP <value>

POW:STEP?

Description:	Gets the step size of the carrier amplitude.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP?
Example:	Write: **POW:STEP?** Response: **:POW:STEP 1.00**

POW:STEP:MAX?

Description:	Get the maximum step size of the carrier amplitude step size.
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP:MAXimum?
Example:	Write: **POW:STEP:MAX?** Response: **:POW:STEP:MAX 100.00**

POW:STEP:MIN?

Description:	Get the minimum step size of the carrier amplitude step size
Syntax:	[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP:MINimum?
Example:	Write: **POW:STEP:MIN?** Response: **:POW:STEP:MIN 0.01**

PULM:BURST:NUM

Description:	Set the number of pulses in a period for the pulse burst modulation (pulse gating). The value can be set between 1 – 1000. Note that the maximum number is depending on the period time, pulse width and delay, as the number of pulses will need to fit in the selected burst period time
Syntax:	[:SOURce]:PULM:BURST:NUMber <pulse number>
Example:	Write: **PULM:BURST:NUM 50**

PULM:BURST:NUM?

Description:	Gets the number of pulses in a period for the pulse burst modulation (pulse gating).
Syntax:	[:SOURce]:PULM:BURST:NUMber?
Example:	Write: **PULM:BURST:NUM?** Response: **:PULM:BURST:NUM 50**

PULM:BURST:NUM:MAX?

Description:	Gets the maximum number for the pulses for burst modulation (pulse gating).
Syntax:	[:SOURce]:PULM:BURST:NUMber:MAXimum?
Example:	Write: **PULM:BURST:NUM:MAX?** Response: **:PULM:BURST:NUM:MAX 1000**

PULM:BURST:NUM:MIN?

Description:	Gets the minimum number for the pulses for burst modulation (pulse gating).
Syntax:	[:SOURce]:PULM:BURST:NUMber:MINimum?
Example:	Write: **PULM:BURST:NUM:MIN?** Response: **:PULM:BURST:NUM:MIN 1**

PULM:BURST:PER

Description:	Sets the period time for the pulse burst modulation (pulse gating) in seconds. The value can be set between 2 ms and 100 sec with 1 ms resolution. The units default to S but can also be specified as MS (milliseconds), US (microseconds), or NS (nanoseconds).
Syntax:	[:SOURce]:PULM:BURST:PERiod <value><unit>
Example:	Write: **PULM:BURST:PER 1.000** Write: **PULM:BURST:PER 500MS**

PULM:BURST:PER?

Description:	Gets the period time for the pulse burst modulation (pulse gating) in seconds.
Syntax:	[:SOURce]:PULM:BURST:PERiod?
Example:	Write: **PULM:BURST:PER?** Response: **:PULM:BURST:PER 1.000**

PULM:BURST:PER:MAX?

Description:	Gets the maximum time for the pulse burst modulation (pulse gating) in seconds.
Syntax:	[:SOURce]:PULM:BURST:PERiod:MAXimum?
Example:	Write: **PULM:BURST:PER:MAX?** Response: **:PULM:BURST:PER:MAX 100.000**

PULM:BURST:PER:MIN?

Description:	Gets the minimum time for the pulse burst modulation (pulse gating) in seconds.
Syntax:	[:SOURce]:PULM:BURST:PERiod:MINimum?
Example:	Write: **PULM:BURST:PER:MIN?** Response: **:PULM:BURST:PER:MIN 0.002**

PULM:BURST:STAT

Description:	Sets the pulse burst modulation (pulse gating) state to ON or OFF.
Syntax:	[:SOURce]:PULM:BURST:STATe ON|OFF|1|0
Example:	Write: **PULM:BURST:STAT ON** Write: **PULM:BURST:STAT OFF** Write: **PULM:BURST:STAT 1**

PULM:BURST:STAT?

Description:	Gets the state of the pulse burst modulation (pulse gating) as ON or OFF.
Syntax:	[:SOURce]:PULM:BURST:STATe?
Example:	Write: **PULM:BURST:STAT?** Response: **:PULM:BURST:STAT OFF**

PULM:STAT

Description:	Sets the pulse modulation state to ON or OFF.
Syntax:	[:SOURce]:PULSe:STATe ON|OFF|1|0
Example:	Write: **PULM:STATE ON** Write: **PULM:STATE OFF** Write: **PULM:STAT 1**

PULM:STAT?

Description:	Gets the state of the pulse modulation as ON or OFF.
Syntax:	[:SOURce]:PULSe:STATe?
Example:	Write: **PULM:STATE?** Response: **:PULM:STATE OFF**

PULS:DEL

Description:	Sets the delay (OFF time) for pulse modulation in seconds. The value can be set between 200 ns and 100 seconds with 100 ns resolution. The units default to S but can also be specified as MS (milliseconds), US (microseconds), or NS (nanoseconds).
Syntax:	[:SOURce]:PULSe:DELay <value><unit>
Example:	Write: **PULS: DEL 2.1** Write: **PULS: DEL 500 us**

PULS:DEL?

Description:	Gets the delay (OFF time) for pulse modulation in seconds.
Syntax:	[:SOURce]:PULSe:DELay?
Example:	Write: **PULS: DEL?** Response: **:PULS:DEL 0.00020000**

PULS:DEL:MAX?

Description:	Gets the maximum delay (OFF-time) for the pulse modulation.
Syntax:	[:SOURce]:PULSe:DELay:MAXimum?
Example:	Write: **PULS:DEL:MAX?** Response: **:PULS:DEL:MAX 100.00000000**

PULS:DEL:MIN?

Description:	Gets the minimum delay (OFF-time) for the pulse modulation.
Syntax:	[:SOURce]:PULSe:DELay:MINimum?
Example:	Write: **PULS:DEL:MIN?** Response: **:PULS:DEL:MIN 0.00000020**

PULS:WIDT

Description:	Sets the width (ON time) for pulse modulation in seconds. The units default to S but can also be specified as MS (milliseconds), US (microseconds), or NS (nanoseconds).
Syntax:	[:SOURce]:PULSe:WIDTh <value><unit>
Example:	Write: **PULS:WIDT 0.5** Write: **PULS:WIDT 100 ms**

PULS:WIDT?

Description:	Gets the width (ON time) for pulse modulation in seconds.
Syntax:	[:SOURce]:PULSe:WIDTh?
Example:	Write: **PULS:WIDT?** Response: **:PULS:WIDT 0.00020000**

PULS:WIDT:MAX?

Description:	Gets the largest pulse modulation width (ON time) in seconds.
Syntax:	[:SOURce]:PULSe:WIDTh:MAXimum?
Example:	Write: **PULSE:WIDTH:MAX?** Response: **:PULSE:WIDTH:MAX 100.00000000**

PULS:WIDT:MIN?

Description:	Gets the shortest pulse modulation width (ON time) in seconds.
Syntax:	[:SOURce]:PULSe:WIDTh:MINimum?
Example:	Write: **PULSE:WIDTH:MIN?** Response: **:PULSE:WIDTH:MIN 0.00000020**

REF:EXT:CLK

Description:	Sets the clock reference. OFF = internal clock is used ON = External Reference clock input is used
Syntax:	REFerence:EXTernal:CLocK ON|OFF|1|0
Example:	Write: **REF:EXT:CLK OFF** = internal clock Write: **REF:EXT:CLK ON** = external clock

REF:EXT:CLK?

Description:	Queries if the external clock input is being used. 'OFF' = internal clock is used 'ON' = external clock input is used
Syntax:	REFerence:EXTernal:CLocK?
Example:	Write: **REF:EXT:CLK?** Response**: :REF:EXT:CLK OFF**

SOFTWARE:UP

Description:	Starts the software update procedure.
Syntax:	SOFTWARE:UPDate

STAT:OPER?

Description:	Gets the status operation event register value from 0 to 128.
Syntax:	STATus:OPERation[:EVENt]?
Example:	Write: **STAT:OPER?** Response: **:STAT:OPER 0**

STAT:OPER:COND?

Description:	Gets the status operation condition register value from 0 to 128.
Syntax:	STATus:OPERation[:EVENt]:CONDition?
Example:	Write: **STAT:OPER:COND?** Response: **:STATUS:OPER:COND 0**

STAT:OPER:ENAB

Description:	Sets the Status Operation Enable register value from 0 to 128.
Syntax:	STATus:OPERation[:EVENt]:ENABle <value>

STAT:PRES

Description:	The Status Operation Enable and Status Questionable Enable registers are cleared.
Syntax:	STATus:PRESet

SVER?

Description:	Gets the current software version of firmware.
Syntax:	SVERsion?
Example:	Write: **SVER?** Response: **:SVER 1.2.8**

SYST:BUSA?

Description:	Gets the bus address of the plug-in card.
Syntax:	SYSTem:BUSAddress?
Example:	Write: **SYST:BUSA?** Response: **:SYST:BUSA 4**

SYST:ERR?

Description:	Get the first system error. When this command is sent again, the second/next error is replied. To clear the error queue, continue sending SYST:ERR? until the response 0, “No Error” is returned. The *CLS command will also clear the EMGen error queue.
Syntax:	SYSTem:ERRor[:NEXT]?
Example:	Write: **SYST:ERR?** Response: **SYST:ERR 0, “No error”** = No error Write: **SYST:ERR?** Response: **:SYST:ERR -222, "Data out of range"** = Data out of range

SYST:IDNU?

Description:	Gets the system ID number of the plug-in card including header command. See the ID_NUMBER? command for response without header.
Syntax:	SYSTem:IDNUmber?
Example:	Write: **SYST:IDNU?** Response: **:SYSTEM:IDNUMBER 1.44.65.178.27.0.0.207**

SYST:PRES

Description:	Resets all the user parameters. This command does the same operation as *RST.
Syntax:	SYSTem:PRESet

SYST:SAVECON

Description:	Saves the following system parameters of the outputs into memory: • Frequency • Amplitude • AM frequency • AM depth • AM state • FM frequency • FM dev • FM state • PM delay • PM width • PM state • BM number • BM period • BM state These settings will be loaded as default when the EMGen is restarted.
Syntax:	SYSTem:SAVECONfiguration

TEMP?

Description:	Gets the temperature of the device and returns the temperature in °C. The two values returned represent the temperature readings of individual sensors on the EMGen card.
Syntax:	[:SENse]:TEMPerature?
Response:	:TEMP <temp_board1> / :TEMP <temp_board2>
Example:	Write: **TEMP?** Response: **:TEMP 51.2 / :TEMP 53.3**

Appendix A: Appendix A: EC Declaration of Conformity

ETS-Lindgren Inc. declares these products to be in conformity with the following standards, following the provisions of EMC Directive 2004/108/EC:

EMGen RF Signal Generator Plug In Card

Emission: EN 61326 1:2006, Class B

Electrical equipment for measurement, control, and laboratory use.

Immunity: EN 61326 1:2006, Industrial level, performance criteria A

Electrical equipment for measurement, control, and laboratory use.

Technical Construction Files are available upon request.