

IZT S800E

Programming Manual

Version 1.1

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1 To make effective use of this manual

1.1 Contens of this manual

The following manual describes how to remotely control the IZT S800E. This includes the definition of the command set and the description of the status concept.

The instrument is SCPI-like which includes the implementation of the status concept and command definition in this manner. Additional documentation on SCPI may be found in the web (<http://www.scpiconsortium.org>).

1.2 How to use this manual

Chapter 2 gives an overview of how to configure the remote connections.

In chapter 3 the commands of the system are defined. The chapter includes a summary of all commands listed in command groups and then describes each command available in alphabetical order.

The status concept of the instrument and error handling are then detailed in chapter 5.

Some programming examples are listed in chapter 6.

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2 Overview of remote control

2.1 How to set up a remote control system

Overview

The instrument may be controlled via the graphical user interface or RS232 or GP-IB. Any command send from any of these sources will apply to the system.

RS232

The remote RS232 port is configure as 115200baud, 8N1. Use e.g. a hyper terminal to communicate with the unit.

GP-IB

Connect your GP-IB bus to the S800E and configure the unit by using the CONFIG page. Here you may change the primary and secondary address of the device.

2.2 Sending command messages

SCPI defines two communication methods:

- Set commands are send to device and the device will never respond. Any event (e.g. invalid value) will result in an entry in the *Event Queue* and are reflected in the status of the system. The remote control unit has to poll the status to decide whether the command has succeeded (for example with *STB?)
- Query commands are ending with '?' and the instrument will return a string describing the result of the query. For example polling the *Event Queue* with a SYSTEM:ERROR? will result in a "0,No error" message.

The remote access unit may now send valid command strings and query the status of the system to identify success.

3 Command Reference

3.1 Command Syntax

You can control the instrument through the RS232 or GP-IB interface with a large group of commands and queries. This section describes the syntax, the commands and queries themselves are explained in a later chapter.

Communication with the instrument is established using the enhanced American Standard Code for Information Interchange (ASCII) character encoding.

The Backus-Naur Form (BNF) notation is used in this manual to describe commands and queries as shown in Table 1.

Symbol	Description
< >	Defined element
	Exclusive OR
{ }	Group; one element required
[]	Optional ; can be omitted
()	Comment

Table 1 – BNF notation

3.1.1 Command and query structure

Commands consist of set commands and query commands. Often commands provide both forms of communication to allow to change or read the settings.

A command message consists of the elements listed in Table 2:

Symbol	Description
<Header>	The basic command name, if the command ends with a question mark, the command is a query else a set.
<Mnemonic>	A header subfunction. Each command may consist of 1 to N mnemonics.
<Argument>	The argument describes how to change the settings. Arguments may be strings, values, enumerations.
<Comma>	Commas separate the arguments of a command for multi-argument commands.
<Space>	A white space character between command header and argument.

Table 2 – Elements of a command

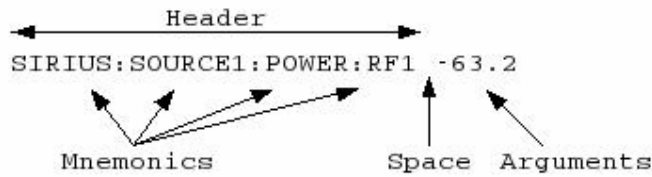


Figure 1 – Command message elements

Commands

Commands cause a change in settings or state of the unit. They have the following structure:

<Header>:[<Space><Argument>[<Comma><Argument>]...]

A command header is constructed out of one or more mnemonics arranged in a tree structure.

Queries

Queries are similar to the set commands but end with a question mark.

3.1.2 Argument types

The remote access language of the IZT S800E uses the following argument types:

Symbol	Description
<string>	String value describing the setting
<numeric_value>	Value including precision
<Boolean>	0 to disable, any other value to enable setting
<enum>	Enumeration, only one item of list may be used

Table 3 – Argument types

3.2 Command Groups

3.2.1 Common Commands

Miscellaneous Commands

Mnemonic	Name	Page
*IDN?	Identification query	13
*RCL	Recalls a file	13
*SAV	Saves the current settings to file	13

Status and Error Commands

Mnemonic	Name	Page
*CLS	Clears the S800E status data structure	12
*ESR?	Standard event status register query	12
*STB?	Read status byte query	14
CALibration:ALL	Calibrates the entire instrument	14
STATus:PRESet	Presets the instrument	14
SYSTem:ERRor[:NEXT]?	Event Queue query	15

3.2.2

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3.2.3 *Sirius Commands*

Miscellaneous Commands

Mnemonic	Name	Page
SIRIus:SOURce:ROSCillator[:INTernal]	Configures the instrument to internal 10MHz	20
SIRIus:SOURce:ROSCillator:EXTernal	Configures the instrument to external 10MHz	21

Signal Generation Commands

Mnemonic	Name	Page
SIRIus:DATA:SOURce:BERMode	Sets or queries the bit error rate mode	15
SIRIus:DATA:SOURce:NAME	Sets or queries the file name used to generate the signal	15
SIRIus:DATA:SOURce:STATe	Enables or disables signal generation for Sirius	16
SIRIus:SOURce:DELay	Sets or queries the delay of the according source	18
SIRIus:SOURce:FREQuency:OFFSet	Sets or queries the frequency offset	19
SIRIus:SOURce:MODE	Sets or queries the mode of the source	19
SIRIus:SOURce:POWER:OFFSet:RF	Sets or queries the power offset	20
SIRIus:SOURce:POWER:RF	Sets or queries the output power level of the RF output	20

Impairments Commands

Mnemonic	Name	Page
SIRIus:NOISe:BW	Configures the bandwidth of the noise generation.	16
SIRIus:NOISe:CN:RF	Configures the noise as C/N	16
SIRIus:NOISe:CN0:RF	Configures the noise as C/N0	17
SIRIus:NOISe:FREQuency[:CENTer]	Configures the center frequency of the noise	17
SIRIus:NOISe:N0:RF	Configures the noise density	17
SIRIus:NOISe:REFCarrier:RF	Configures reference carrier for noise	18

3.2.4 XM Commands

Miscellaneous Commands

Mnemonic	Name	Page
XM:SOURce:ROSCillator[:INTernal]	Configures the instrument to internal 10MHz	26
XM:SOURce:ROSCillator:EXTernal	Configures the instrument to external 10MHz	27

Signal Generation Commands

Mnemonic	Name	Page
XM:DATA:SOURce:STATe	Enables or disables signal generation for XM	21
XM:DATA:SOURce:TDMA	Sets or queries the filename for TDM ensemble A	21
XM:DATA:SOURce:TDMB	Sets or queries the filename for TDM ensemble B	22
XM:SOURce:DELay	Sets or queries the delay of the according source	24
XM:SOURce:FREQUency:OFFSet	Sets or queries the frequency offset	25
XM:SOURce:MODE	Sets or queries the mode of the source.	25
XM:SOURce:POWer:OFFSet:RF	Sets or queries the power offset	26
XM:SOURce:POWer:RF	Sets or queries the output power level of the RF output	26

Impairments Commands

XM:NOISe:BW	Configures the bandwidth of the noise generation	22
XM:NOISe:CN:RF	Configures the noise as C/N	22
XM:NOISe:CN0:RF	Configures the noise as C/N0	23
XM:NOISe:FREQUency[:CENTer]	Configures the center frequency of the noise	23
XM:NOISe:N0:RF	Configures the noise density	23
XM:NOISe:REFCarrier:RF	Configures reference carrier for noise	24

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4 Command Descriptions

4.1 Common Commands

****CLS***

Group	Status and Error Commands
Syntax	*CLS
Name	Clears the S800E status data structure
Description	The *CLS command clears the following: <ul style="list-style-type: none"> • the event queue • the standard event status register (SESR) • the status byte register
Arguments	None
Examples	None
Related	*ESE, *ESR?, *SRE, *STB?, SYST:ERR?

****ESR?***

Group	Status and Error Commands
Syntax	*ESR?
Name	Standard event status register query
Description	Returns the current status of the Standard Event Status Register (SESR) and automatically clears the register.
Returns	<numeric_value>
Examples	*ESR? might return the value 48 indicating a command and an execution error.
Related	*CLS, *ESE, *SRE, *STB?, SYST:ERR?

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****IDN?***

Group	Miscellaneous Commands
Syntax	*IDN?
Name	Identification query
Description	Returns the instruments identification code in IEEE 488.2 notation.
Returns	<string>
Examples	*IDN? IZT,IZT S800E,2355900101010001,MB 1.0.10
Related	None

****RCL***

Group	Miscellaneous Commands
Syntax	*RCL {filename}
Name	Recalls a file
Description	Loads the settings from the specified file, skips settings which cannot be configured (e.g. if an option is not available).
Arguments	<string>
Examples	*RCL /data/save_rcl/data.txt recalls the settings from data.txt
Related	*SAV, STATus:PRESet

****SAV***

Group	Miscellaneous Commands
Syntax	*SAV {filename}
Name	Saves the current settings to file
Description	Stores the current settings to the specified filename, stores default values for settings which are not configurable (e.g. if an option is not available).
Arguments	<string>
Examples	*SAV /data/save_rcl/data.txt stores the current settings to data.txt
Related	*RCL, STATus:PRESet

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****STB?***

Group	Status and Error Commands
Syntax	*STB?
Name	Read status byte query
Description	Returns the content of the status byte register.
Returns	<numeric_value>
Examples	*STB? might return the value of 36 indicating entries in the event queue and having an error condition in the SESR register.
Related	*CLS, *ESE, *ESR?, *SRE, SYST:ERR?

CALibration:ALL

Group	Miscellaneous Commands
Syntax	CALibration:ALL
Name	Calibrates the entire instrument
Description	Engages an auto-calibration of the instrument. Both the upper and lower modulator card are auto-calibrated.
Arguments	None
Examples	CALIBRATION:ALL
Related	None

STATus:PRESet

Group	Status and Error Commands
Syntax	STATus:PREset
Name	Presets the instrument
Description	Configures all parameters to the default values.
Arguments	None
Examples	STATUS:PRESET
Related	*RCL, *SAV

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SYSTem:ERRor[:NEXT]?

Group	Status and Error Commands
Syntax	SYSTem:ERRor[:NEXT]?
Name	Event Queue query
Description	Queries the next entry of the event queue, return "0,No Error" in case the event queue is empty.
Returns	<string>
Examples	SYST:ERR? might return "-113,Invalid header".
Related	*CLS, *ESE, *ESR?, *SRE

4.2 Sirius Commands

SIRIus:DATA:SOURce:BERMode

Group	Signal Generation Commands
Syntax	SIRIus:DATA:SOURce:BERMode <numeric_value> SIRIus:DATA:SOURce:BERMode?
Name	Sets or queries the bit error rate mode
Description	If this feature is available, the online BER mode may be disabled by choosing sequence 0 or enabled by choosing the desired BER mode sequence.
Arguments	<numeric_value>
Examples	SIRIUS:DATA:BERMODE 2 activates the online BER mode generation with sequence 2.
Related	None

SIRIus:DATA:SOURce:NAME

Group	Signal Generation Commands
Syntax	SIRIus:DATA:SOURce:NAME <filename> SIRIus:DATA:SOURce:NAME?
Name	Sets or queries the file name used to generate the signal
Description	If the DATA:SOURce:STATe is OFF, this parameter may be changed to allow the generation of different signals. The file name specifies the file used to generate the signal.
Arguments	<string>
Examples	SIRIUS:DATA:SOURCE:NAME /data/bitstream/myfile.te1 configure the instrument to use myfile.te1 as input file of signal generation.
Related	SIRIus:DATA:SOURce:STATe, SIRIus:DATA:SOURce:TYPE

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SIRIus:DATA:SOURce:STATe

Group	Signal Generation Commands
Syntax	SIRIus:DATA:SOURce:STATe {START STOP} SIRIus:DATA:SOURce:STATe?
Name	Enables or disables signal generation for Sirius
Description	Allow the signal generation to be started or stopped. With the query command the current state is returned.
Arguments	<enum>
Examples	SIRIUS:DATA:SOURCE:STATE START will start the signal generation.
Related	SIRIus:DATA:SOURce:NAME, SIRIus:DATA:SOURce:TYPE

SIRIus:NOISe:BW

Group	Impairments Commands
Syntax	SIRIus:NOISe:BW <25.0MHz 12.5MHz 6.25MHz 3.125MHz> SIRIus:NOISe:BW?
Name	Configures the bandwidth of the noise generation.
Description	The noise may be configure to 25, 12.5, 6.25 or 3.125MHz. With this settings the user may change the bandwidth of the noise. In case the noise is configured to 25MHz, the center frequency is automatically changed as then the frequency is fix.
Arguments	<enum>
Examples	SIRIUS:NOISE:BW 6.25MHz changes the bandwidth of the noise to 6.25MHz.
Related	All SIRIus:NOISe commands.

SIRIus:NOISe:CN:RF

Group	Impairments Commands
Syntax	SIRIus:NOISe:CN:RF{1 2} <numeric_value>
Name	Configures the noise as C/N
Description	Configures the noise regarding the selected reference carrier as C/N in dB.
Arguments	<numeric_value>
Examples	SIRIUS:NOISE:CN:RF1 6.0 creates noise with C/N of 6dB according to the configured reference carrier.
Related	All SIRIus:NOISe commands.

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SIRIus:NOISe:CN0:RF

Group	Impairments Commands
Syntax	SIRIus:NOISe:CN0:RF{1 2} <numeric_value>
Name	Configures the noise as C/N0
Description	Configures the noise as C/N0 dBHz for the according RF output.
Arguments	<numeric_value>
Examples	SIRIUS:NOISE:CN0:RF1 -64.0 activates the noise generation with a C/N0 of -64.0 dBHz.
Related	All SIRIus:NOISe commands.

SIRIus:NOISe:FREQUency[:CENTer]

Group	Impairments Commands
Syntax	SIRIus:NOISe:FREQUency[:CENTer] <numeric_value> SIRIus:NOISe:FREQUency[:CENTer]?
Name	Configures the center frequency of the noise
Description	If the noise bandwidth is limited, the user may configure the frequency of the noise generation allowing him to produce noise at any frequency within the band.
Arguments	<numeric_value>
Examples	SIRIUS:NOISE:FREQUENCY 2322.293 places the center frequency of the noise generation on the satellite 1.
Related	All SIRIus:NOISe commands.

SIRIus:NOISe:N0:RF

Group	Impairments Commands
Syntax	SIRIus:NOISe:N0:RF{1 2} <numeric_value> SIRIus:NOISe:N0:RF{1 2}?
Name	Configures the noise density
Description	Configures the noise as N0 in dBm/Hz for the according RF output.
Arguments	<numeric_value>
Examples	SIRIUS:NOISE:N0:RF1 -140.0 activates the noise generation with -140.0 dBm/Hz.
Related	All SIRIus:NOISe commands.

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SIRIus:NOISe:REFCarrier:RF

Group	Impairments Commands
Syntax	SIRIus:NOISe:REFCarrier:RF{1 2} <SAT1 TERR SAT2> SIRIus:NOISe: REFCarrier:RF{1 2}?
Name	Configures reference carrier for noise
Description	If noise is configured as C/N or C/N0 a reference carrier must be selected.
Arguments	<enum>
Examples	SIRIUS:NOISE:REFCARRIER:RF1 SAT1 chooses the satellite1 signal as reference carrier for C/N and C/N0 settings regarding the output.
Related	All SIRIus:NOISe commands.

SIRIus:SOURce:DELay

Group	Signal Generation Commands
Syntax	SIRIus:SOURce{1 2 3}:DELay <numeric_value> SIRIus:SOURce{1 2 3}:DELay?
Name	Sets or queries the delay of the according source
Description	Changes the delay of the according source.
Arguments	<numeric_value> value entered in ms with precision of μ s.
Examples	SIRIUS:SOURCE1:DELAY 275.582375 changes the delay of source 1 (QPSK1) to 275ms, 582 microseconds and 375 nanoseconds.
Related	All SIRIUS:SOURce commands.

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SIRIus:SOURce:FREQuency:OFFSet

Group	Signal Generation Commands
Syntax	SIRIus:SOURce{1 2 3}:FREQuency:OFFSet <numeric_value> SIRIus:SOURce{1 2 3}:FREQuency:OFFSet?
Name	Sets or queries the frequency offset
Description	Sets the center frequency offset of all sources, it does not matter which source was used. This allows the user to configure an offset in case there is no way to synchronize the S800E to 10MHz and the receiver has a certain frequency offset.
Arguments	<numeric_value> is a frequency in MHz ranged from -0.1 to 0.1.
Examples	SIRIUS:SOURCE1:FREQUENCY:OFFSET 0.045 changes the frequency offset to 45kHz
Related	All SIRIUS:SOURce commands.

SIRIus:SOURce:MODE

Group	Signal Generation Commands
Syntax	SIRIus:SOURce{1 2 3}:MODE {OFF CW INPUT} SIRIus:SOURce{1 2 3}:MODE?
Name	Sets or queries the mode of the source
Description	Allows the configuration of the source: Setting the source to OFF will mute this carrier, changing it to CW will generate a continuous wave (sine) signal and adapting it to INPUT will generate the normal signal.
Arguments	<enum> either OFF, CW or INPUT
Examples	SIRIUS:SOURCE3:MODE CW Starts the generation of a CW signal on source 3.
Related	All SIRIUS:SOURce commands.

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SIRIus:SOURce:POWer:OFFSet:RF

Group	Signal Generation Commands
Syntax	SIRIus:SOURce{1 2 3}:POWer:OFFSet:RF{1 2} <numeric_value> SIRIus:SOURce{1 2 3}:POWer:OFFSet:RF{1 2}?
Name	Sets or queries the power offset
Description	Sets the power level offset of all sources, it does not matter which source was used. This allows the user to address a power level offset. Commonly this is used to compensate cable losses from the S800E to the device under test.
Arguments	<numeric_value> is a power level offset in dB ranged from 0.0 to 20.0dB.
Examples	SIRIUS:SOURCE1:POWER:OFFSET 5.7 changes the power level offset to 5.7dB
Related	All SIRIUS:SOURce commands.

SIRIus:SOURce:POWer:RF

Group	Signal Generation Commands
Syntax	SIRIus:SOURce{1 2 3}:POWer:RF{1 2} <numeric_value> SIRIus:SOURce{1 2 3}:POWer:RF{1 2}?
Name	Sets or queries the output power level of the RF output
Description	Changes the output power level of the according source regarding the specified RF output. The value may be entered in dBm and are applied if the output is configured to RF output.
Arguments	<numeric_value> may be any power level in dBm in the range from -110.0 to -30.0dBm
Examples	SIRIUS:SOURCE1:POWER:RF1 -52.0 changes the source1 output to a power level of -52.0dBm.
Related	All SIRIUS:SOURce commands.

SIRIus:SOURce:ROSCillator[:INTernal]

Group	Miscellaneous Commands
Syntax	SIRIus:SOURce:ROSCillator[:INTernal]
Name	Configures the instrument to internal 10MHz
Description	Uses the internally generated 10MHz as clock reference.
Arguments	None
Examples	SIRIUS:SOURCE:ROSCILLATOR switches to internal 10MHz reference.
Related	SIRIus:SOURce:ROSCillator:EXTernal

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SIRIus:SOURce:ROSCillator:EXTernal

Group	Miscellaneous Commands
Syntax	SIRIus:SOURce:ROSCillator:EXTernal
Name	Configures the instrument to external 10MHz
Description	Synchronizes the unit to an external 10MHz reference.
Arguments	None
Examples	SIRIUS:SOURCE:ROSCILLATOR:EXTERNAL switches to external 10MHz reference.
Related	SIRIus:SOURce:ROSCillator

4.3 XM Commands

XM:DATA:SOURce:STATe

Group	Signal Generation Commands
Syntax	XM:DATA:SOURce:STATe {START STOP} XM:DATA:SOURce:STATe?
Name	Enables or disables signal generation for XM
Description	Allow the signal generation to be started or stopped. With the query command the current state is returned.
Returns	<enum>
Examples	XM:DATA:SOURCE:STATE START will start the signal generation.
Related	XM:DATA:SOURce:STATe

XM:DATA:SOURce:TDMA

Group	Signal Generation Commands
Syntax	XM:DATA:SOURce:TDMA <filename> XM:DATA:SOURce:TDMA?
Name	Sets or queries the filename for TDM ensemble A
Description	If the DATA:SOURce:STATe of OFF this parameters allows the change of the input file used to generate the ensemble A.
Returns	<string>
Examples	XM:DATA:SOURCE:TDMA /data/bitstream/myfile_a.tdm configure the instrument to use myfile_a.tdm for signal generation
Related	XM:DATA:SOURce:STATe

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XM:DATA:SOURce:TDMB

Group	Signal Generation Commands
Syntax	XM:DATA:SOURce:TDMB <filename> XM:DATA:SOURce:TDMB?
Name	Sets or queries the filename for TDM ensemble B
Description	If the DATA:SOURce:STATe of OFF this parameters allows the change of the input file used to generate the ensemble B.
Returns	<string>
Examples	XM:DATA:SOURCE:TDMB /data/bitstream/myfile_b.tdm configure the instrument to use myfile_b.tdm for signal generation
Related	XM:DATA:SOURce:STATe

XM:NOISe:BW

Group	Impairments Commands
Syntax	XM:NOISe:BW <25.0MHz 12.5MHz 6.25MHz 3.125MHz> XM:NOISe:BW?
Name	Configures the bandwidth of the noise generation
Description	The noise may be configure to 25, 12.5, 6.25 or 3.125MHz. With this settings the user may change the bandwidth of the noise. In case the noise is configured to 25MHz, the center frequency is automatically changed as then the frequency is fix.
Arguments	<enum>
Examples	XM:NOISE:BW 6.25MHz changes the bandwidth of the noise to 6.25MHz.
Related	All XM:NOISe commands.

XM:NOISe:CN:RF

Group	Impairments Commands
Syntax	XM:NOISe:CN:RF{1 2} <numeric_value>
Name	Configures the noise as C/N
Description	Configures the noise regarding the selected reference carrier as C/N in dB.
Arguments	<numeric_value>
Examples	XM:NOISE:CN:RF1 6.0 creates noise with C/N of 6dB according to the configured reference carrier.
Related	All XM:NOISe commands.

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XM:NOISe:CN0:RF

Group	Impairments Commands
Syntax	XM:NOISe:CN0:RF{1 2} <numeric_value>
Name	Configures the noise as C/N0
Description	Configures the noise as C/N0 dBHz for the according RF output.
Arguments	<numeric_value>
Examples	XM:NOISe:CN0:RF{1 2} -64.0 activates the noise generation with a C/N0 of -64.0 dBHz.
Related	All XM:NOISe commands.

XM:NOISe:FREQUency[:CENTer]

Group	Impairments Commands
Syntax	XM:NOISe:FREQUency[:CENTer] <numeric_value> XM:NOISe:FREQUency[:CENTer]?
Name	Configures the center frequency of the noise
Description	If the noise bandwidth is limited, the user may configure the frequency of the noise generation allowing him to produce noise at any frequency within the band.
Arguments	<numeric_value>
Examples	XM:NOISe:FREQUENCY 2333.465 places the center frequency of the noise generation on the satellite 1 ensemble A.
Related	All XM:NOISe commands.

XM:NOISe:N0:RF

Group	Impairments Commands
Syntax	XM:NOISe:N0:RF{1 2} <numeric_value> XM:NOISe:N0:RF{1 2}?
Name	Configures the noise density
Description	Configures the noise as N0 in dBm/Hz for the according RF output.
Arguments	<numeric_value>
Examples	XM:NOISe:N0:RF1 -140.0 activates the noise generation with -140.0 dBm/Hz.
Related	All XM:NOISe commands.

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XM:NOISe:REFCarrier:RF

Group	Impairments Commands
Syntax	XM:NOISe:REFCarrier:RF{1 2} <SAT1A SAT2A TERRA TERRB SAT2B SAT1B> XM:NOISe: REFCarrier:RF{1 2}?
Name	Configures reference carrier for noise
Description	If noise is configured as C/N or C/N0 a reference carrier must be selected.
Arguments	<enum>
Examples	XM:NOISE:REFCARRIER:RF1 SAT1A chooses the satellite1 ensemble A signal as reference carrier for C/N and C/N0 settings regarding the RF1 output.
Related	All XM:NOISe commands.

XM:SOURce:DELay

Group	Signal Generation Commands
Syntax	XM:SOURce1:DELay <numeric_value> XM:SOURce1:DELay?
Name	Sets or queries the delay of the according source
Description	Changes the delay of the satellite1.
Arguments	<numeric_value> value entered in ms with precision of μ s.
Examples	XM:SOURCE1:DELAY -5.2 changes the delay of satellite1 to -5.2ms.
Related	All XM:SOURce commands.

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XM:SOURce:FREQuency:OFFSet

Group	Signal Generation Commands
Syntax	XM:SOURce{1 2 3 4 5 6}:FREQuency:OFFSet <numeric_value> XM:SOURce{1 2 3 4 5 6}:FREQuency:OFFSet?
Name	Sets or queries the frequency offset
Description	Sets the center frequency offset of all sources, it does not matter which source was used. This allows the user to configure an offset in case there is no way to synchronize the S800E to 10MHz and the receiver has a certain frequency offset.
Arguments	<numeric_value> is a frequency in MHz ranged from -0.1 to 0.1.
Examples	XM:SOURCE1:FREQUENCY:OFFSET 0.045 changes the frequency offset to 45kHz
Related	All SIRIUS:SOURce commands.

XM:SOURce:MODE

Group	Signal Generation Commands
Syntax	XM:SOURce{1 2 3 4 5 6}:MODE {OFF CW INPUT} XM:SOURce{1 2 3 4 5 6}:MODE?
Name	Sets or queries the mode of the source.
Description	Allows the configuration of the source: Setting the source to OFF will mute this carrier, changing it to CW will generate a continous wave (sine) signal and adapting it to INPUT will generate the normal signal.
Arguments	<enum> either OFF, CW or INPUT
Examples	XM:SOURCE3:MODE CW Starts the generation of a CW signal on terrestrial ensemble A.
Related	All XM:SOURce commands.

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XM:SOURce:POWer:OFFSet:RF

Group	Signal Generation Commands
Syntax	XM:SOURce{1 2 3 4 5 6}:POWer:OFFSet:RF{1 2} <numeric_value> XM:SOURce{1 2 3 4 5 6}:POWer:OFFSet:RF{1 2}?
Name	Sets or queries the power offset
Description	Sets the power level offset of all sources, it does not matter which source was used. This allows the user to address a power level offset. Commonly this is used to compensate cable losses from the S800E to the device under test.
Arguments	<numeric_value> is a power level offset in dB ranged from 0.0 to 20.0dB.
Examples	XM:SOURCE1:POWER:OFFSET 5.7 changes the power level offset to 5.7dB
Related	All XM:SOURce commands.

XM:SOURce:POWer:RF

Group	Signal Generation Commands
Syntax	XM:SOURce{1 2 3 4 5 6}:POWer:RF1 <numeric_value> XM:SOURce{1 2 3 4 5 6}:POWer:RF1?
Name	Sets or queries the output power level of the RF output
Description	Changes the output power level of the according source regarding the specified RF output. The value may be entered in dBm and are applied if the output is configured to RF output.
Arguments	<numeric_value> may be any power level in dBm in the range from -110.0 to -30.0dBm
Examples	XM:SOURCE1:POWER:RF1 -52.0 changes the source1 output to a power level of -52.0dBm.
Related	All XM:SOURce commands.

XM:SOURce:ROSCillator[:INTernal]

Group	Miscellaneous Commands
Syntax	XM:SOURce:ROSCillator[:INTernal]
Name	Configures the instrument to internal 10MHz
Description	Uses the internally generated 10MHz as clock reference.
Arguments	None
Examples	XM:SOURCE:ROSCILLATOR switches to internal 10MHz reference.
Related	XM:SOURce:ROSCillator:EXTernal

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XM:SOURce:ROSCillator:EXTernal

Group	Miscellaneous Commands
Syntax	XM:SOURce:ROSCillator:EXTernal
Name	Configures the instrument to external 10MHz
Description	Synchronizes the unit to an external 10MHz reference.
Arguments	None
Examples	XM:SOURCE:ROSCILLATOR:EXTERNAL switches to external 10MHz reference.
Related	XM:SOURce:ROSCillator

5 Error handling

5.1 Overview

The IZT S800E includes the standard SCPI status concept as shown in Figure 2.

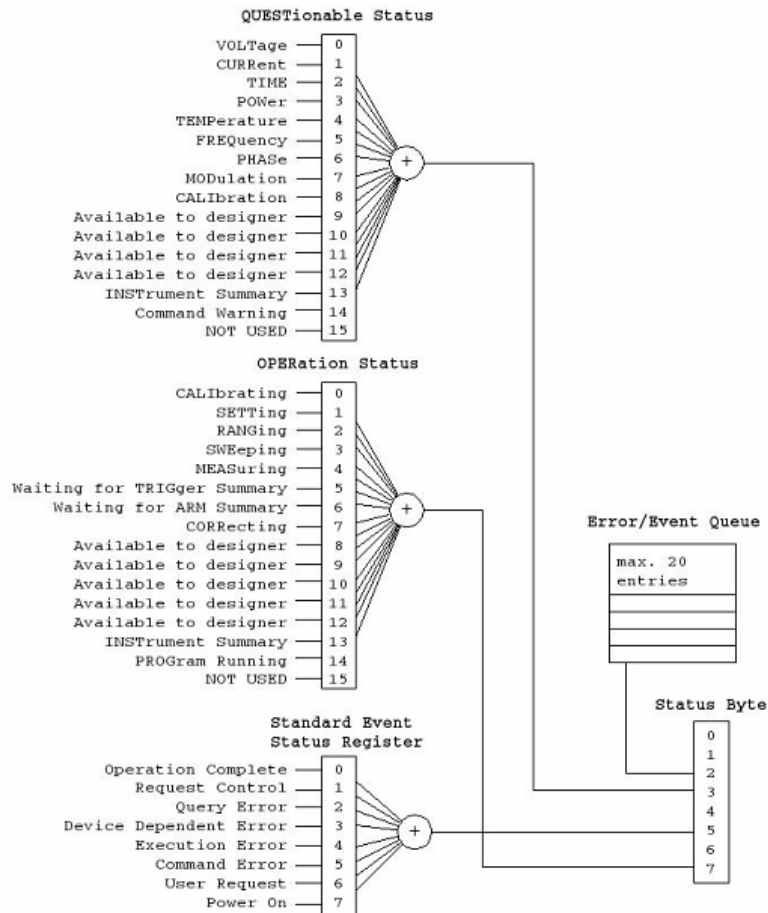


Figure 2 – Overview of the status concept

Any event which occurring, if not masked, will be placed into the *Event Queue* and will then be stored at the according position of the status tree. A voltage error for example will generate a *QUESTIONable:VOLTage* event. Simultaneously the *Status Byte* informs the remote application about the entire status: if the *Event Queue* contains entries, bit 2 is set; if any *QUESTIONable* or *OPERation Status* error has occurred, bit 3 or 7 are set. *Command* or *Execution Errors* are reported via the *Standard Event Status Register* reflected in bit 5 of the *Status Byte*.

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5.2 Using the event queue

The following commands apply to the event queue:

Mnemonic	Name	Page
*CLS	Clears the S800E status data structure	12
SYSTem:ERRor[:NEXT]?	Event Queue query	15

In case of entries within the event queue, the according bit in the status byte register is set. Any poll of the event queue with SYSTEM:ERROR? will return the next event and automatically removes this event from the queue. As soon as the queue is empty, the status byte register will be adapted.

5.3 Using the status reporting system

It is recommended to clear the status before starting to remotely control the system by calling *CLS. Next verify if any event is reported by calling *STB?. If the system return '0' it is ready to operate.

Now execute several commands to change the behaviour of the system. When finished query the status byte register. If still no event is reported, the commands have succeeded, else check the event queue for the reason of the failure.

The standard event status register is also reflected in the status byte register. This register is cleared as soon as it is queried with *ESR?.

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6 Sample program

Not yet available

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