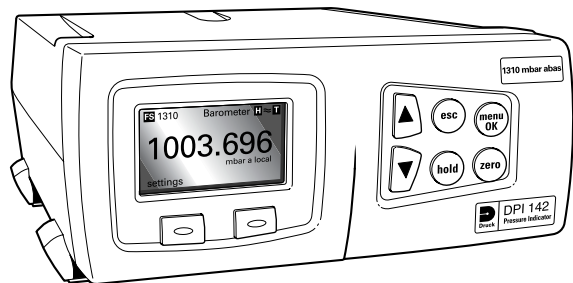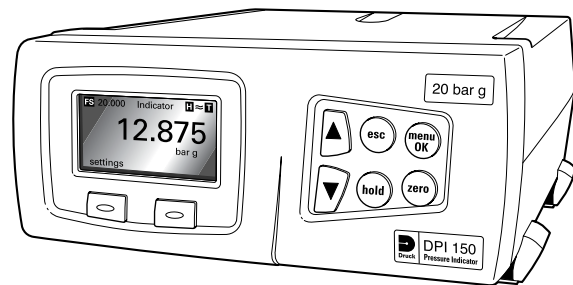Infrastructure
Sensing

Pressure Indicator DPI 142/150
Standard Commands for Programmable Instruments
SCPI User Manual K381

Introduction

This technical manual provides programming and communication instructions for the Druck DPI 142/150 Pressure Indicator compatible with the requirements of a programming technician.

o   **Scope**

This technical manual contains the communications protocol for the operator of this equipment.

o   **Software**

This technical manual applies to software version 2.

Safety

o   The manufacturer has designed this product to be safe when operated using the procedures detailed in this manual. Do not use this product for any other purpose than that stated.

o   This publication contains operating and safety instructions that must be followed to make sure of safe operation and to maintain the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage.

o   Use qualified* programming technicians and good engineering practice for all procedures in this publication.

o   **Pressure**

Do not apply pressure greater the maximum safe working pressure to the Druck DPI 142/150 Pressure Indicator.

o   **Maintenance**

The Druck DPI 142/150 Pressure Indicator must be maintained using the manufacturer's procedures and should be carried out by authorised service agents or the manufacturer's service departments.

o   **Technical Advice**

For technical advice contact the manufacturer or subsidiary.

*   A programming technician must have the necessary specialist knowledge of programming, technical knowledge and documentation to carry out the required work on the Druck DPI 142/150 Pressure Indicator.

Associated Druck Documents:

K343 DPI 142 User Manual
K344 DPI 150 User Manual
K382 DPI 142/150 Calibration Manual

Associated Documents:

A beginners Guide To SCPI by Barry Eppler, Published by Addison-Wesley Publishing Company Inc. for Hewlett Packard (ISBN 0-201-56350-9).

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Abbreviations

The following abbreviations are used in this manual; abbreviations are the same in the singular and plural.

abs	Absolute
ASCII	American Standard Code for Information Interchange
ATE	Automatic test equipment
e.g.	For example
etc.	And so on
Fig.	Figure
ft	Foot
g	Gauge
GPIB	General purpose interface bus
i.e.	That is
IEEE 488	Institute of Electrical and Electronic Engineers standard 488 data
m	Metre
max	Maximum
mbar	Millibar
min	Minute or minimum
No.	Number
qa	Quasi-absolute (combination of barometric and gauge sensor readings)
RS232	Serial communications standard
SCM	Sensor calibration module
SCPI	Standard commands for programmable instruments
+ve	Positive
-ve	Negative
°C	Degrees Celsius
°F	Degrees Fahrenheit

Pressure measurement units

The following units are used in this manual

ATM	atmosphere
BAR	bar
CMH2O	centimetres of water at 20°C
CMHG	centimetres of mercury
FTH2O	feet of water at 20°C
FTH2O4	feet of water at 4°C
HPA	hecto Pascals
INH2O	inches of water at 20°C
INH2O4	inches of water at 4°C
INH2O60	inches of water at 60°F
INHG	inches of mercury
KG/CM2	kilogrammes per square centimetre
KG/M2	kilogrammes per square metre
KPA	kilo Pascals
LB/FT2	pounds per square foot
MH2O	metres of water
MHG	metres of mercury
MMH2O	millimetres of water
MMHG	millimetres of mercury
MPA	mega Pascals
PA	Pascals
PSI	pounds per square inch
TORR	torr
MBAR	millibar

Code Definitions

The following codes are used in this manual.

ALT   Altitude
ACC   Accept
CAL   Calibration
CAT   Catalogue
CLS   Clear
COND   Condition
CONF   Configuration
DIOD   Diode
ERR   Error
INST   Instrument
MACH   Mach number
PASS   Passive
POIN   Point
PRES   Pressure
RANG   Range
SAMP   Sample
SENS   Sense
SPE   Speed
STAT   State
SYST   System
UNIT   Unit of pressure
VAL   Value

Glossary

Terminology

The terminology used in this manual is specific and individual interpretation must not be introduced. The terms are defined as follows:

Adjust	To bring to a more satisfactory state; to manipulate controls, levers, linkages, etc. to return equipment from an out-of-tolerance condition to an in-tolerance condition.
Align	To bring into line; to line up; to bring into precise adjustment, correct relative position or coincidence.
Assemble:	To fit and secure together the several parts of; to make or form by combining parts.
Calibrate:	To determine accuracy, deviation or variation by special measurement or by comparison with a standard.
Check:	Make a comparison of a measure of time, pressure, temperature, resistance, dimension or other quality with a known figure for that measurement.
Disconnect:	To detach the connection between; to separate keyed or matched equipment parts.
Dismantle:	To take apart to the level of the next smaller unit or down to all removable parts.
Examine:	To perform a critical visual observation or check for specific conditions; to test the condition of.
Fit:	Correctly attach one item to another.
Inspect:	Review the work carried out by Specialists to ensure it has been performed satisfactorily.
Install:	To perform operations necessary to properly fit an equipment unit into the next larger assembly or system.
Maintain:	To hold or keep in any particular state or condition especially in a state of efficiency or validity.
Operate:	Make sure that an item or system functions correctly as far as possible without the use of test equipment or reference to measurement.
Readjust:	To adjust again; to move back to a specified condition; to bring back to an in-tolerance condition.

Reconnect: To rejoin or refasten that which has been separated.

Refit: Fit an item which has previously been removed.

Remove: To perform operations necessary to take an equipment unit out of the next larger assembly or system. To take off or eliminate. To take or move away.

Repair: To restore damaged, worn out or malfunctioning equipment to a serviceable, usable or operable condition.

Replace: Remove an item and fit a new or a serviced item.

Reset: To put back into a desired position, adjustment or condition.

Service: To perform such operations as cleaning, lubricating and replenishing to prepare for use.

Test: Ascertain by using the appropriate test equipment that a component or system functions correctly.

Pressure unit conversions

Pressure unit	Factor (Pascals)	Pressure unit	Factor (Pascals)
bar	100000	lbf/ft²	47.8803
lbf/in² (psi)	6894.76	inHg	3386.39
mH$_2$O	9806.65	inH$_2$O [1]	249.089
mbar	100	ftH$_2$O [1]	2989.07
kgf/cm²	98066.5	atm	101325.0
kgf/m²	9.80665	pdl/ft²	1.48816
mmHg	133.322	dyn/cm²	0.1
cmHg	1333.22	hbar	10000000
mHg	133322.0	tonf/ft² (UK)	107252.0
mm/H$_2$O [1]	9.80665	tonf/in² (UK)	15444300
cm/H$_2$O [1]	98.0665	inH$_2$O (USA) [2]	248.64135
N/m²	1	ftH$_2$O (USA) [2]	2983.6983
hPa	100	kp/mm²	9806650
kPa	1000	kp/cm²	98066.5
MPa	1000000	kp/m²	9.80665
torr	133.322		

Table of pressure units and conversion factors

Unit Conversion
To convert FROM pressure VALUE 1 in pressure UNITS 1
        TO pressure VALUE 2 in pressure UNITS 2, calculate as follows:

$$\text{VALUE 2} = \frac{\text{VALUE 1} \times \text{FACTOR 1}}{\text{FACTOR 2}}$$

Note:

The conversion factor for pressure units referenced [1] are calculated for a water temperature of 4°C. Pressure units referenced [2] are calculated for a water temperature of 68°F, these units are normally used in the USA.

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1   INTRODUCTION

1.1   General

The IEEE 488 and RS232 interfaces of the DPI 142/150 Pressure Indicators provide remote control of the instrument from a suitable computer or controller. The SCPI protocol enables any instrument with a SCPI facility to be controlled using the same commands. The DPI 142/150 Pressure Indicators use a reduced SCPI command set and the defined SCPI syntax.

The following sections describe and define each instrument command used by the DPI 142/150 Pressure Indicators. Each section contains a quick reference structure of the relevant commands.
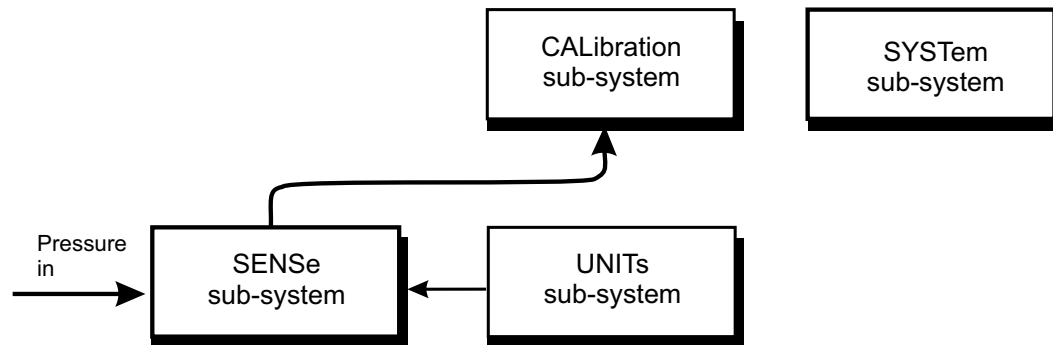
Figure 1-1 System Model

System Model

SCPI starts with a high-level block diagram of the measurement functions of the instrument. Each functional block is broken down into smaller block diagrams. SCPI contains a hierarchy of commands called a subsystem that maps directly to the hierarchy of the block diagram.

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2   COMMAND STRUCTURE

This section describes the structure of the commands and data sent and received by the DPI 142/150 Pressure Indicator.

2.1   Notation

All SCPI commands are based on a hierarchical tree structure consisting of key words and parameters. Associated commands are grouped together under a common node in the hierachy.
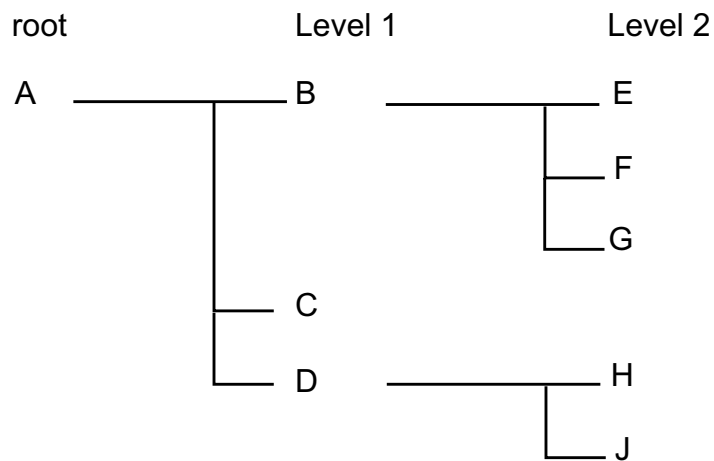
In the command tree the command A is the root command. A tree pointer is used to decode the SCPI commands. At power-up the pointer goes to the root command.

2.2   Message Terminators

All SCPI commands are terminated by line feed i.e., either <newline> (ASCII character, decimal 10), EOI for IEEE. After receiving a termination character the tree pointer returns to the root command.

Colon

A colon moves the current path down one level in the command tree, (e.g., the colon in UNIT:PRESSURE specifies PRESSURE the is one level below UNIT). When the colon is the first character of the command, it specifies that the next command is a root level command (e.g., :UNIT specifies that UNIT is a root level command).

Semicolon

A semicolon separates two commands in the same message without changing the tree pointer.

(e.g., with reference to the tree)   :A:B:E;F:G

This equivalent to sending three messages

:A:B:E

:A:B:F

:A:B:G

SCPI commands are not case sensitive and may have a short form. In this manual, upper case letter identify the short form.

(e.g.)   :INSTrument:SN?

Some nodes can be the default node and these key words are optional when programming the command. The instrument processes the command, with the same effect, with or without the option node. In this manual [] enclose [default notes].

(e.g.)   :UNIT[:PRESsure:]?

can be sent as

:UNIT:PRESsure?

or

:UNIT?

This gives the pressure units

2.3 Program Headers

Program headers are keywords that identify a command, instruments accept both upper and lower case characters in a program header. There are two types of program header, common command headers and instrument control headers; each header can be a command or a query.

Common Command and Query Headers

The common command and query program header syntax, specified in IEEE 488.2, are defined as follows:

Command

    *<PROGRAM MNEMONIC>

Query

    *<PROGRAM MNEMONIC>?

Instrument Control Command and Query Headers

The instrument control command and query program header syntax controls and extracts data from the instrument as follows:

Command

    :<MNEMONIC>

    :<MNEMONIC> <PARAMETER>

Query

    :<MNEMONIC>?

Queries

Most SCPI commands can be queried. A query is a command header with an attached question mark character (?). On receiving a query command, the current settings for the command are loaded in the output buffer. A query does not affect the operation or set-up of the instrument.

When the parameter contains enumerated character data, both long form and short form are recognised. Querying the command causes the return of data in the short form.

Querying numeric parameters causes the resulting data to be returned in the units selected by the instrument unless specified otherwise.

2.4   SCPI Data Types

A variety of data types can be sent to the instrument as parameters or sent out from the instrument as response data.

Decimal Numeric Data

All normal decimal expressions are accepted including optional signs, decimal point and scientific notation.

Note:

> *This includes floating point data.*

The following are valid:

> 123
> 45.67
> -2.6
> 4.6e-10
> .76

A suffix multiplier can be added to the numeric value.

> :CAL:PRES:VAL 100 m

would set the calibrated pressure input to 0.1 units (100m units).

The multipliers supported are:

Mnemonic	Multiplier
A	1e-18
G	1e+9
K	1e+3
M	1e-3
T	1e+12

If a real value is sent to the instrument when an integer is expected, it will be rounded to an integer.

Integer Data

Integer data are whole numbers (containing no decimal places). A query of an integer value returns numbers containing no decimal places.

Note:

Integer values can be specified in binary, octal or hexadecimal formats using the suffix letters (upper or lower case) B, Q and H respectively.

e.g.,	#B1010	binary representation of 10
	#Q71	octal representation of 57
	#HFA	hexadecimal representation of 250

Hexadecimal digits A-F can be in upper or lower case.

Enumerated Character Program Data

Enumerated characters are used for data that has a finite number of values; enumerated parameters use mnemonics to represent each valid setting. The mnemonics have long and short forms just like command mnemonics.

Example:

    :UNIT:BAR

selects the pressure units as bar.

Boolean Program Data

Boolean data can only be one of two conditions; the numbers 1 and 0.

Example:

    :CALibration:DIODe:ABORT 1

A query of boolean data always returns 1 or 0.

String Data

String data can contain any of the ASCII characters. A string must start with a double "quote" (ASCII 34) or a single `quote` (ASCII 39) and end with the same character.

Example:

    :SENse:RANGe '2barg'

or

    :SENse "2barg"

selects the 2 bar g range.

A query of a string parameter always returns the string in double "quotes".

2.5   Output queue

The output queue is a text readable data queue that is read through the IEEE 488 talk command. The queue is cleared by reading all elements in it or by the *CLS command.

Output Queue

| 0.0027 |
| 1 |
| bar |
| 2barg |

Every time a query has been successfully completed, the response, in a text readable format is placed at the end of the output queue. The output queue can contain up to 256 characters. If there is not enough space in the output queue for a new message, the error -350, "Queue overflow" will be placed into the error queue and the most recent output message will be lost.

3 COMMAND AND QUERY SUMMARY

The following lists of all the SCPI commands and queries that apply to the instrument.

3.1 Command structure

Some of the commands in the following summary are enabled at specific times and conditions, most can be enabled at any time. The parameters column shows the states, values and data contained in a command. The command structure divides into subsystems as follows:

Command sub-system

- :CALibration - calibration commands.

- :INSTrument - instrument specific commands.

- :SENSe - directs the instrument to measure selected parameters.

- :SYSTem - errors and calibration mode.

- :UNIT - sets the units for the instrument.

Command	Parameters	Comments

CALibration
  :[PRESSure]
  :ABORt
  :ACCEPt
  :DATA?
  :ZERO
    :AUTO
    :AUTO?
      :ABS
      :VALue
 	
    :TIME
      :STATe
	
	<Boolean>
	
	<number>
	
	<integer>
	<Boolean>
		
		zero offset
		
		on/off
		
		offset value of
		absolute range
		
		enabled/disabled timed zero

INSTrument
 	
  :CATalog?
  :SN
		lists ranges and details
		of transducers fitted

:SENSe
  :PRESsure?
  :ALT?
  :SPEed?
  :MACH?
  :RANGe
  :RANGe?
	
	<string>
		
		sensor range

:SYSTem
  :ERROr?
  :PASS:[CEN]2317100
  :PASS:CDIS 2317100
  :PASS:[CEN]:STAT?
		
		error queue

:UNIT
  [:PRESsure]
  [:PRESsure]?
  :SPEed
  :SPEed?
  :ALTitude
  :ALTitude?
	
	<name>
	
	<name>
	
	<name>
		
		ASCII (unit name)
		conversion factor

*CLS		standard SCPI commands

Figure 4-1 Command and Query Summary

CALibration

The CALibration subsystem enables the calibration of the transducers and the rate control system, refer to the user manual for further details.

:CAL:DIOD:ABOR

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

:CALibration:DIODe:ABORt

Parameter:

	Boolean	0	-	enables calibration
		1	-	aborts calibration

Short form: :CAL:ABOR
Function: stops calibration
Default: 0

Description
This command is used to stop a calibration of the RPT diode, at any time, during the procedure.

Query Syntax

n/a

:CAL:DIOD:ACC

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

:CALibration:DIODe:ACCept

Parameter:

Short form: :CAL:DIOD:ACC
Function: accepts new RPT diode calibration data
Default:

Description
This command is used to accept the new two-point calibration values.

Query Syntax

n/a

:CAL:DIOD:POIN

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

n/a

Query Syntax

:CALibration:DIODe:POINt?

Short form: :CAL:DIOD:POIN?
Function: returns number of calibration points.
Response: number

Description
This queries the required number of RPT diode calibration points.

:CAL:DIOD:SAMP

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

n/a

Query Syntax

:CALibration:DIODe:SAMPle?

Short form: :CAL:DIOD:SAMP?
Function: Returns number of samples remaining.
Response: number

Description

This queries the number of samples remaining in the diode calibration procedure of the RPT; if zero is returned the calibration voltage can be entered.

:CAL:DIOD:SAMP:STAR

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

:CALibration:DIODe:SAMPle:STARt

Parameter:	Boolean	0	-	disable
		1	-	enable (start)
Short form:	:CAL:DIOD:SAMP:STAR			
Function:	Starts sampling			
Defaults:	0			

Description
Starts sampling of the RPT tranducer diode voltage.

Query Syntax

n/a

:CAL:DIOD:VAL

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

:CALibration:DIODe:VALue \<n> \<value>

Parameter: integer in volts

Query Syntax

:CALibration:DIODe:VALue \<n>?

Short form: :CAL:DIOD:VAL?
Function:
Response:

Description
This command and query gives the voltage output from the RPT diode.

:CAL:PRES:ABOR

Applicable to DPI 150

Command Syntax

:CALibration:PRESsure:ABORt

Parameter:

| | Boolean | 0 | - | enables calibration |
| | | 1 | - | aborts calibration |

Short form: :CAL:ABOR
Function: stops calibration
Default: 0

Description
This command is used to stop the current pressure calibration, at any time, during the procedure.

Query Syntax

n/a

:CAL:PRES:ACC

Applicable to DPI 150

Command Syntax

:CALibration:PRESsure:ACCept

Parameter:

Short form: :CAL:PRE:ACC
Function: accepts new pressure calibration values
Default:

Description
This command is used to accept the new two-point calibration values.

Query Syntax

n/a

:CAL:PRES:POIN

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

n/a

Query Syntax

:CALibration:DIODe:POINt?

Short form: :CAL:DIOD:POIN?
Function: returns number of calibration points.
Response: number

Description
This queries the required number of RPT diode calibration points.

:CAL:PRES:SAMP

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

n/a

Query Syntax

:CALibration:DIODe:SAMPle?

Short form: :CAL:DIOD:SAMP?
Function: Returns number of samples remaining.
Response: number

Description
This queries the number of samples remaining in the diode calibration procedure of
the RPT; if zero is returned the calibration voltage can be entered.

:CAL:PRES:SAMP:STAR

Applicable to DPI 142 and Option E of the DPI 150

Command Syntax

:CALibration:DIODe:SAMPle:STARt

Parameter:	Boolean	0	-	disable
		1	-	enable (start)
Short form:	:CAL:DIOD:SAMP:STAR			
Function:	Starts sampling			
Defaults:	0			

Description

Starts sampling of the RPT tranducer diode voltage.

Query Syntax

n/a

:CAL:PRES:VAL

Command Syntax

:CALibration:PRESsure:VALue <n> <value>

Parameter: integer

Short form: CAL:PRES:VAL
Function: Enters nth pressure value in mbar
Defaults: zero

Query Syntax

:CALibration:PRESsure:VALue <n>?

Short form: :CAL:PRES:VAL?
Function: Queries nth entered pressure value in mbar
Response: <n> <value>

Description

This command enters calibration pressure values up to the nth number. The query gives the calibration pressure values up to the nth number.

INSTrument

The INSTrument subsystem gets information about the configuration of the instrument and contains query only commands.

:INST:CAT

Command Syntax

n/a

Query Syntax

:INSTrument:CATalog?

Short form: :INST:CAT?
Function: Query ranges fitted
Response: A list of comma separated strings of ranges fitted.

Description

This command returns a list of ranges fitted to the instrument. The reply is a comma separated list of strings representing each range.

e.g.
"2barg","3.5barqa".

If a barometer is fitted, the string "BAROMETER" is added to the list.

:INST:SN

Command Syntax

n/a

Query Syntax

:INStrument:SN?

Short form: :INST:SN?
Function: Used to query the serial number of the instrument.
                   Asks for serial number
Response: Integer representing serial number

Description
This query only command returns the serial number of the instrument.

SENSe

The SENSe subsystem selects and configures the sensing functions of the instrument.

:SENS:PRESsure

Command Syntax

n/a

Query Syntax

:SENSe:PRESsure?

Short form: :SENS:PRES?
Function: Used to query the current pressure reading of the instrument.
Response: <n> pressure

Description
This query only command returns the pressure reading of the instrument.

:SENS:ALTitude

Command Syntax

n/a

Query Syntax

:SENSe:ALTitiude?

Short form: :SENS:ALT?
Function: Used to query the current altitude pressure reading of the
                   instrument.
Response: Altitude reading in aeronautical units.

Description

This query only command returns the altitude reading in aeronautical units of the
instrument.

:SENS:SPEed

Command Syntax

n/a

Query Syntax

:SENSe:SPEed?

Short form:	:SENS:SPE?
Function:	Used to query the current speed reading of the instrument.
Response:	Speed reading in aeronautical units.

Description

This query only command returns the current speed reading in aeronautical units of the instrument.

:SENS:MACH

Command Syntax

n/a

Query Syntax

:SENSe:MACH?

Short form: :SENS:MACH?
Function: Used to query the current Mach reading of the instrument.
Response: Speed reading in Mach number.

Description
This query only command returns the current speed reading in Mach number.

:SENS:RANGe

Command Syntax

n/a

Query Syntax

:SENSe:RANGe?

Short form: :SENS:RANG?
Function: Used to query the current pressure range of the instrument.
Response: Returns the current pressure measurement range.

Description

This query only command returns the current pressure measurement range of the instrument.

SYSTem

The SYSTem subsystem consists of general purpose commands.

:SYST:ERR

Command Syntax

n/a

Query Syntax

:SYStem:ERRor?

Query   :ERRor?
Short form: :SYST:ERR?
Function: Gets next error from the error queue

Response: The follow list of errors are available
                   -102, "Syntax error"
                   -104, "Data type error"
                   -108, "Parameter not allowed"
                   -109, "Missing parameter"
                   -110, "Command Header Error"
                   -111, "Header Separator Error"
                   -112, "Program mnemonic too long"
                   -113, "Undefined header"
                   -114, "Header suffix out of range"
                   -120, "Numeric data error"
                   -121, "Invalid character in number"
                   -123, "Exponent too large"
                   -124, "Too many digits"
                   -128, "Numeric data not allowed"
                   -130, "Suffix error"
                   -131, "Invalid suffix"
                   -134, "Suffix too long"
                   -138, "Suffix not allowed"
                   -140, "Character data error"
                   -141, "Invalid character data"
                   -144, "Character data too long"
                   -148, "Character data not allowed"
                   -150, "String data error"
                   -151, "Invalid string data"
                   -158, "String data not allowed"
                   -200, "Execution error"
                   -201, "Invalid while in local"
                   -202, "Settings lost due to rtl"
                   -220, "Parameter error"
                   -222, "Data out of range"
                   -223, "Too much data"
                   -224, "Illegal parameter value"
                   -300, "Calibration error"
                   -310, "System error"
                   -350, "Queue overflow"
                   -400, "Query error"
                   201 , "Query only"
                   202 , "No query allowed"
                   203 , "Parameter(s) not expected"
                   207 , "Enumerated value not in union"
                   208 , "Illegal number of parameters"
                   210 , "Run out of memory handle"
                   211 , "Unit not matched"
                   212 , "Unit not required"

Description
This command queries the error queue which holds up to five errors. The instrument returns the message "No error" when no more errors are in the queue.

:SYST:PASS

Command Syntax

:SYSTem:PASS:[CEN] 2317100

Parameter: n/a
Short form: :SYST:PASS
Function: Enters calibration mode.

Description
This command enters calibration mode.

Query Syntax

n/a

:SYST:PASS:CDIS

Command Syntax

:SYSTem:PASS:CDIS 2317100

Parameter: n/a
Short form: SYST:PASS:CDIS
Function: Exits calibration mode

Description
This command exits calibration mode.

Query Syntax

n/a

:SYST:PASS:STAT

Command Syntax
n/a

Query Syntax

:SYSTem:PASS:[CEN] STAT?

Short form: SYST:PASS:STAT?
Function: Queries calibration mode
Response: 0 indicates **not in** calibration mode
                   1 indicates **in** calibration mode

Description
This command indicates the calibration mode.

UNIT

The UNIT sub-system configures the instrument's pressure measurement units.

:UNIT

Command Syntax

:UNIT <name>

Parameter: <name>

> BAR
> PA
> HPA
> KPA
> MPA
> MBAR
> KG/CM2
> KG/M2
> MMHG
> CMHG
> MHG
> MMH2O
> CMH2O
> MH2O
> TORR
> ATM
> PSI
> LB/FT2
> INHG
> INH2O
> INH2O4
> FTH2O
> FTH2O4
> USER1
> USER2

Note: *See Pressure Measurements Units on page v for a definition of these parameters.*

Short form   :UNIT <name>
Function: Selects pressure units

:UNIT[:PRESsure]?

Short form: :UNIT?
Function: Query what pressure units are selected
Response: name as above

Description

This command selects the current pressure units; USER1 and USER2 are the user defined units.

3.2 Standard Commands
The commands identified with * are SCPI standard commands.

*CLS

Command Syntax

*CLS

Parameter: none
Short form   *CLS
Function: This command clears the status registers in the status reporting
                system.

Query Syntax

n/a

Description
Clears all errors..

4 ERRORS

Negative error numbers are used for standard SCPI errors. Positive error numbers are device specific errors. Following the error number, a message describes the error. An error, when detected, is held in the error queue. When SYST:ERR? is sent any error in the error queue sets the error bit in the event status register.

Error numbers

Each error detected causes an error number with an error message to be returned as follows:

Error code	Error message	Error code	Error message
-102	-102, Syntax error	-134	-134, Suffix too long
-104	-104, Data type error	-138	-138, Suffix not allowed
-108	-108, Parameter not allowed	-140	-140, Character data error
-109	-109, Missing parameter	-141	-141, Invalid character data
-110	-110, Command Header Error	-144	-144, Character data too long
-111	-111, Header Separator Error	-148	-148, Character data not allowed
-112	-112, Program mnemonic too long	-150	-150, String data error
-113	-113, Undefined header	-151	-151, Invalid string data
-114	-114, Header suffix out of range	-158	-158, String data not allowed
-120	-120, Numeric data error	-160	-160, Block data error
-121	-121, Invalid character in number	-161	-161, Invalid block data
-123	-123, Exponent too large	-168	-168, Block data not allowed
-124	-124, Too many digits	-170	-170, Expression error
-128	-128, Numeric data not allowed	-171	-171, Invalid expression
-130	-130, Suffix error	-178	-178, Expression data not allowed
-131	-131, Invalid suffix		

Table 4-1 Errors -100 to -199

Error code	Error message	Error code	Error message
-200	-200, Execution error	-256	-256, File name not found
-220	-220, Parameter error	-257	-257, File name error
-221	-221, Settings conflict	-260	-260, Expression Error
-222	-222, Data out of range	-261	-261, Math error in expression
-223	-223, Too much data	-280	-280, Program error
-224	-224, Illegal parameter value	-281	-281, Cannot create program
-230	-230, Data corrupt or stale	-282	-282, Illegal program name
-231	-231, Data questionable	-283	-283, Illegal variable name
-240	-240, Hardware error	-284	-284, Program currently running
-241	-241, Hardware missing	-285	-285, Program syntax error
-254	-254, Media full	-286	-286, Program runtime error

Table 4-2 Errors -200 to -299

Error code	Error message
-300	-300, Device-specific error
-310	-310, System error
-311	-311, Memory error
-313	-313, Calibration memory lost
-314	-314, Save/recall memory lost
-315	-315, Configuration memory lost
-350	-350, Queue overflow
-400	-400, Query error

Table 4-3 Errors -300 to -400

Error code	Error message
201	201, Query only
202	202, No query allowed
203	203, Paramerter(s) not expected
208	208, Illegal number of parameters
210	210, Run out of memory handle
211	211, Unit not matched
212	212, Unit not required

Table 4-4 Errors +201 to +212

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