

Serial break

Reset the system. The system serial communication settings return to the default: 9600 bauds, 8 data bits, no parity, 1 stop bit, no hardware handshaking.

REPLY

RESET<CRC16><CR>

<CR> is '\r'

COMM

Set serial communication settings for system

MODE

All modes

SYNTAX

COMM:<BaudRate><DataBits><Parity><StopBits><HardwareHandshaking><CRC16><CR>

BaudRate: 1 byte. 0 for 9600 bps, and 5 for 115200 bps.

DataBits: 1 byte. 0 for 8 bits by default, and 1 for 7 bits.

Parity: 1 byte. 0 for none.

StopBits: 1 byte. 0 for 1 bit.

HardwareHandshaking: 1 byte. 0 for off.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

ErrorCode: 2 bytes.

OTHER

Wait at least 100ms

INIT

Initialize the system

MODE

All modes

SYNTAX

INIT:<CRC16><CR>

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

PHSR

Return the number of assigned port handles and the port status for each one.

MODE

Setup

PREREQUISITE

INIT

SYNTAX

PHSR:<ReplyOption><CRC16><CR>

ReplyOption: 2 bytes. 01 for reporting port handles that need to be freed, and 02 for reporting port handles that are occupied but not initialized or enabled.

REPLY

<Numbers of PortHandle><nth PortHandle><nth PortHandleStatus><CRC16><CR>

If no port handles, just REPLY 00<CRC16><CR>

Numbers of PortHandle: 2 bytes.

PortHandle: 2 bytes.

PortHandleStatus: 3 bytes.

PHRQ

Assign a port handle to a tool.

MODE

Setup

PREREQUISITE

INIT

SYNTAX

PHRQ:<HardwareDevice><SystemType><ToolType><PortNumber><Reserved><CRC16><CR>

HardwareDevice: 8 bytes.

SystemType: 1 byte.

ToolType: 1 byte. 0 for wired tool, and 1 for wireless, or * for wired.

PortNumber: 2 bytes.

Reserved: 2 bytes.

e.g. PHRQ:*****1****<CRC16><CR> for wireless tool.

REPLY

<PortHandle><CRC16><CR>

PortHandle: 2 bytes.

ERROR<ErrorCode><CRC16><CR>

PVWR

Assign a definition file to a tool.

MODE

Setup

PREREQUISITE

PHRQ or PHSR

SYNTAX

PVWR:<PortHandle><StartAddress><FileData><CRC16><CR>

PortHandle: 2 bytes.

StartAddress: 4 bytes.

FileData: 128 bytes. When data is less than 128 bytes, pad '0' to

satisfy this condition.

A file larger than 128 bytes should be sent by calling this command for more than one time.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

PINIT

Initialize a port handle

MODE

Setup

PREREQUISITE

PVWR or PHSR

SYNTAX

PINIT:<PortHandle><CRC16><CR>

PortHandle: 2 bytes.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

PENA

Enables the reporting of transformation for a particular port handle.

MODE

Setup

PREREQUISITE

PINIT

SYNTAX

PENA:<PortHandle><TrackingPriority><CRC16><CR>

PortHandle: 2 bytes.

TrackingPriority: 1 byte. 'D' for Dynamic.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

IRATE

Sets the illuminator rate.

MODE

Setup

PREREQUISITE

INIT

SYNTAX

IRATE:<IlluminatorRate><CRC16><CR>

IlluminatorRate: 1 byte. 0 for 20Hz, 1 for 30Hz, and 2 for 60Hz.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

VSEL

Selects a characterized measurement volume.

MODE

Setup

PREREQUISITE

INIT

SYNTAX

VSEL:<VolumeNumber><CRC16><CR>

VolumeNumber: 1 byte.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

SFLIST

Returns information about the supported features of the system.

MODE

Setup

SYNTAX

SFLIST:<ReplyOption><CRC16><CR>

ReplyOption: 2 byte.

- 00 for summary of supported features,
- 01 for number of active tool ports,
- 02 for number of wireless tool ports,
- 03 for characterized measurement volume,
- 04 for number of wired tool ports, and
- 05 for number of active wireless tool.

REPLY

<ReplyOptionData n><CRC16><CR>

ReplyOptionData 00: 8 bytes.

ReplyOptionData 01: 1 byte.

ReplyOptionData 02: 1 byte.

ReplyOptionData 03:

<VolumeNumber><nth ShapeType><nth ShapeParameter><nth
WavelengthSupportedNumber><nth SupportedWavelength><LF>

VolumeNumber: 1 byte.

ShapeType: 1 byte.

ShapeParameter: 10 parameters, 7 bytes each(a sign, 6 digits meaning
xxxx.xx).

WavelengthSupportedNumber: 1 byte.

SupportedWavelength: 1 byte per wavelength supported. 0 for 930nm, 1

for 880nm, and 4 for 870nm.

<LF> is '\n'

ReplyOptionData 04: 1 byte.

ReplyOptionData 05: 1 byte.

ERROR<ErrorCode><CRC16><CR>

DSTART

Starts diagnostic mode

MODE

Setup

PREREQUISITE

INIT

SYNTAX

DSTART:<ReplyOption><CRC16><CR>

ReplyOption: optional, and 80 for resetting frame count to 0.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

DSTOP

Stops diagnostic mode.

MODE

Diagnostic

PREREQUISITE

DSTART

SYNTAX

DSTOP: <CRC16><CR>

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

3D

Returns the latest 3D marker position of marker(s)

MODE

Diagnostic or Tracking

PREREQUISITE

IRET, only for active markers in Diagnostic mode.

SYNTAX

3D:<PortHandle><ReplyOption><CRC16><CR>

PortHandle: 2 bytes.

ReplyOption: 1 – 4 for single marker, 5 for up to 50 markers.

REPLY

<VisibleMarkerNumber><LF><ReplyOptionData n><CRC16><CR>

VisibleMarkerNumber: 3 bytes(a sign and 2 digits meaning xx).

ReplyOptionData 5: <Txn><Tyn><Tzn><LineSeparation><OutOfVolume><LF>
Txn, Tyn, Tzn: 9 bytes each(a sign, 8 digits meaning xxxx.xxxx).
LineSeparation: 4 bytes(a sign, 3 digits meaning x.xx).
OutOfVolume: 1 byte. 0 for inside, and 1 for outside.
ERROR<ErrorCode><CRC16><CR>

TSTART

Starts Tracking mode.

MODE

Setup

PREREQUISITE

INIT

SYNTAX

TSTART:<ReplyOption><CRC16><CR>

ReplyOption: optional, and 80 for resetting frame count to 0.

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

TSTOP

Stops Tracking mode

MODE

Tracking

PREREQUISITE

TSTART

SYNTAX

TSTOP: <CRC16><CR>

REPLY

OKAY<CRC16><CR>

ERROR<ErrorCode><CRC16><CR>

TX

Returns the latest tool information.

MODE

Tracking

SYNTAX

TX:<ReplyOption><CRC16><CR>

ReplyOption: Optional. 4 bytes.

0001 for transformation data by default,
0002 for tool and marker information,
0004 for 3D position of a single stray active marker,
0008 for 3D positions of markers on tools,
0800 for transformations not normally reported, and
1000 for 3D positions of stray passive markers.

REPLY

<PortHandleNumber><PortHandle n><ReplyOptionData 0001>...<ReplyOptionData 0008><LF><ReplyOptionData 1000><SystemStatus><CRC16><CR>

PortHandleNumber: 2 bytes.

PortHandle: 2 bytes.

ReplyOptionData 0001:

<Q0><Qx><Qy><Qz><Tx><Ty><Tz><Error><PortStatus><FrameNumber>

Q0, Qx, Qy, Qz: 6 bytes each(a sign, 5 digits meaning x.xxxx)

Tx, Ty, Tz: 7 bytes each(a sign, 6 digits meaning xxxx.xx)

Error: 6 bytes(a sign, 5 digits meaning x.xxxx).RMS error in mm.

PortStatus: 8 bytes.

FrameNumber: 8 bytes.

Or MISSING<PortStatus><FrameNumber>

ReplyOptionData 0002 - 1000 could be null by default option.

SystemStatus: 4 bytes.

ERROR<ErrorCode><CRC16><CR>