IndoTraq™ Development Kit 1: Command Reference

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Contents

DK1 Command Reference v1.0

This document is designed to cover the commands that are available to communicate with the tags and anchors.

1 Introduction

1.1 Writing Conventions

This User Guide follows a set of typographic rules that makes the document consistent and easy to read.   The following writing conventions are used:

Commands are written in *Lucida Console*.

2 Basics

2.1 Tag or Anchor Data Output

By default, Anchor 1 and all the Tags will stream output data through the USB port after the system is setup and turned on.

2.2 Saving data to device

Any commands that are used to alter the way the tag or anchor functions need to include the write password of 123456. The data in these commands are saved to the chip and retain their settings after power has been reset.

3 Command Reference

3.1 Burst Data Control

Command Name	Command Description	Command
Start Data	Starts all data output.	*$,20031,**
Stop Data	Stops all data output. It is helpful to first turn off the data output when trying to read it when at high update rates.	*$,20030,**
Data Delay	Sets the data output delay (delay is just for slowing down display, it has no effect on tag update speed). *500* is the delay is ms between each data output	*$,20032,500,**

3.2 Firmware Version

Command Name	Command Description	Command
Get Firmware Version	Gets Firmware Version	*$,30021,**

 Document Number: DevKit1 v1.0

3.3 Burst Data Commands

Command Name	Command Description	Command
Enable Data Output	Example: • *20033*: Burst on/off command. • *123456*: Write password. • *10006*: Anchor position values parameter as listed below • *1*: Enable data output	*$,20033,123456,10006, 1,**
Disable Data Output	Example: • *20033*: Burst on/off command. • *123456*: Write password. • *10006*: Anchor position values parameter as listed below • *0*: Disable data output	*$,20033,123456,10006, 0,**
Value Parameter 1	Tag coordinates and quaternion values.	*10001*
Value Parameter 2	Anchor-to-Anchor raw distance values.	*10002*
Value Parameter 3	Tag-to-Anchor raw distance values.	*10003*
Value Parameter 4	Tag linear acceleration values.	*10004*
Value Parameter 5	Tag Euler angle values.	*10005*
Value Parameter 6	Anchor position values.	*10006*

3.4 Device ID

Command Name	Command Description	Command
Set ID	Set New ID to 3 *Actual label ID is always one more than the ID or 3+1 = 4 (ie. Anchor 4).*	*$,20000,123456,3,**
Get ID	Command to get Current ID	*$,20001,**

3.5 Calibration Constants

Command Name	Command Description	Command
Set Calibration Constants	• *20002*: Set new values • *123456*: Write password • *0*: Starting device • *1*: Ending device *Example: Calibrate Tag 1 to Anchor 2 distance (remember ID label is 1 more than shown in commands).* • *10034*: Calibration slope, where 10000 is a slope of 1 • *-19*: Calibration offset in units of mm, where 0 would be no offset *Note: In order to generate the slope and intercept, plot actual reference distances (mm units) on the Y-axis and measured Tag to Anchor distances (mm units) on the X-axis. Apply a best fit linear line. The slope is then multiplied by 10000 to get the calibration slope constant and the intercept is the calibration offset in mm*	*$,20002,123456,0,1,10034,-19,**
Get Calibration Constants	*20003*: Get current calibration constants	*$,20003,**

3.6 Number of Tags and Anchors

Command Name	Command Description	Command
Set the Number of Anchors	• 20010: Set the number of anchors • 123456: Write password • 4: Number of anchors in use (3 for 2D, 4 for 3D, 5-6 for higher precision)	$,20010,123456,4,*
Get the Current Number of Anchors	20011: Get the current number of anchors	$,20011,*
Set the Number of Tags	• 20012: Set the number of tags • 123456: Write password • 1: Means 1 tag is being tracked in the system. *Note: Tracking 1 tag will give the highest update rate at 250Hz. Tracking 4 tags will give an update rate of 100Hz for each tag. Each additional tag after 4, will add 2ms of latency to all tag updates. The update rate for 10 tags would be 45Hz (10ms for 4 tags + 6*2ms for 6 tags = 22ms total or 45Hz).* *Note: Default is tracking of 4 tags. The last tag in the sequence must be turned ON in order to get the highest update rate (ie… Tag 4 must be ON).*	$,20012,123456,1,*
Get the Number of Tags	20013: Get the number of tags being tracked	$,20013,*

3.7 Automatic/Manual Anchor Position Calculation Mode

Command Name	Command Description	Command
Set the Mode	• *20022*: Sets the mode • *1*: Mode 1 (Automatic) • *3*: Mode 3 (Manual) *Note: Other modes are being developed and will be released as they become available. To setup your system for mode 1, please see video "How to set up Anchors" located at IndoTraq.com/support* *Note: In mode 1, Anchors 1-3 are placed at the same height in a counter clockwise triangle. Anchor 4 is placed below Anchor 1 and sets the Z axis height for Anchors 1-3. Anchor 1 is at [0,0,Z axis height] by default.*	*$,20022,123456,1, * Or *$,20022,123456,3, *
Get the Mode	20023: Gets the current mode	*$,20023,*
Set the Anchor Positions	• *20020*: Set the manual anchor position • *0*: Device ID (0 + 1 = Anchor 1) • *20*: X-Coordinate in mm • *40*: Y-Coordinate in mm • *227*: Z-Coordinate in mm *Note: When one of the anchor positions is manually set, the mode automatically changes to mode 3 and then all anchor positions must be set. To get back to automatic, use command 20022 shown above.* *Note: By default Anchor 1 will stream anchor coordinates with command 10006. This can be used to verify anchor positions are correct.*	*$,20020,123456,0, 20,40,227,*
Get the Anchor Positions	• *20021*: Get anchor positions • *3:* is the anchor ID (3+1 = 4 or Anchor 4)	*$,20021,3,*

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