

## INNOVATUM SMARTRAK DATA OUTPUT STRING

Dated 12 February 2020

### 1. DESCRIPTION OF STRING

Data is output asynchronously at the end of each computation cycle (0.1 to 0.5 sees) as an ASCII string of 80 characters(operator selected) terminated by <CR> and <LF>.

Default RS232 parameters are 9600 baud, 8 bits, 1 stop bit and no parity. No hardware or software handshaking is implemented. It is strongly recommended that every single output string is logged for subsequent post-processing.

Characters	Description
1 - 2	Space characters (20h)
3 - 4	Day of month (1 to 31)
5	Space character (20h)
6 - 8	Month of year (first 3 letters)
9	Space character (20h)
10 - 13	Year (all 4 digits)
14 - 15	Hour of day (24 hour clock)
16	: character (3Ah)
17 - 18	Minutes of hour (0 to 59)
19	: character (3Ah)
20 - 21	Seconds of minute (0 to 59)
22 - 24	Relative heading (+ or -) in degrees i.e. vehicle heading minus target heading
25	Mode 1 = passive 2 = active DC 3 = active AC
26	Solution 0 = no signal 1 = valid direction only 2 = valid horizontal displacement only 3 = valid horizontal & vertical displacements

27 - 30	Signal strength & polarity (logarithmic scale)
31 - 33	Video overlay (percentage of horizontal displacement) i.e. -99 to +99 equals full left to full right
34 - 35	Video overlay (percentage of maximum depth) i.e. 00 to 99 equals minimum to maximum
36	Source type     0 = single 1 = complex
37 - 41	Horizontal displacement of target in metres (from centre of array to centre of target where -ve = target to left and +ve = target to right)
42 - 45	Probable maximum error of horizontal displacement in metres
46 - 49	Vertical displacement of target in metres (from Innovatum reference to centre of target)
50 - 53	Probable maximum error of vertical displacement in metres
54 - 58	Vertical displacement from skids to top of target in metres (equals "depth of bury" ONLY if vehicle skids are level with seabed)
	<b>OR</b>
	Burial ("depth of bury") in metres (ONLY if altimeter option is both installed and enabled)
59 - 64	In <i>passive</i> mode - total normalised radial magnetization of target.  In <i>active</i> mode - estimated magnitude of current flowing in target.  (in active DC mode, +ve indicates current flowing in same direction as vehicle heading)
65 - 69	Altitude in metres referenced to vehicle skids
70 - 72	Pitch angle (+ or -) in degrees
73 - 75	Roll angle (+ or -) in degrees

76 - 78	Absolute heading in degrees (from system's own fluxgate compass or from an external gyrocompass if interfaced and enabled)
79 - 80	Time split in 0.01 seconds if enabled (to be added to time of day if required)
81	<CR> character (0Dh)
82	<LF> character (0Ah)

A typical 80 character data string would therefore be as follows:

**"16 May 198915:33:27 2 13-4.4-6 250-0.150.051.980.05 1.01 -5146 0.31 1 -5 47 00"**

Date	= 16 May 1989
Time	= 15:33:27
Relative heading	= +2 degrees
Mode	= 1 (passive)
Solution	= 3 (valid horizontal and vertical displacements)
Signal strength	= -4.4
Horizontal overlay	= -6
Vertical overlay	= 25
Source type	= 0 (single)
Horizontal displacement	= -0.15 metres
Horizontal error	= +/- 0.05 metres
Vertical displacement	= 1.98 metres
Vertical error	= +/- 0.05 metres
Skids to top	= +1.01 metres
Magnetization	= -5146
Altitude	= +0.31 metres
Pitch	= +1 degree
Roll	= -5 degrees
Absolute heading	= 47 degrees
Time split	= 0.00 seconds