

IMAGENEX TECHNOLOGY CORP.**AT PROFILE POINT FILE FORMAT (.83P)**

When recording the profile point data to a **.83P** file, the following bytes are appended and saved to the file for each ping. The total number of bytes 'N' for each ping will vary depending on the number of beams used.

| Byte # | Byte Description |
|-----------------|--|
| 0-255 | File Header (256 bytes) |
| 256- nnn | Profile Ranges for current ping (2 range bytes / beam) nnn = $256 + (2 * \text{number_of_beams}) - 1$ |

FILE HEADER

Bytes 0 through 255 contain the following **File Header** information:

- 0 **ASCII '8'**
 1 **ASCII '3'**
 2 **ASCII 'P'**
- 3 **.83P File Version**
 0 = v1.xx
- 4-5 **Total Bytes 'N'** - number of bytes that are written to the disk for this ping

| Byte 4 | | | | | | | | Byte 5 | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|--------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| N = 256 + (2*number_of_beams) | | | | | | | | | | | | | | | |

- 6 **Reserved** - always 0
- 7 **Reserved** - always 0
- 8-19 **Date** – system date, null terminated string (12 bytes)
 "DD-**MMM**-**YYYY**"
- 20-28 **Time** – system time, null terminated string (9 bytes)
 "**HH**:**MM**:**SS**"
- 29-32 **Hundreths of Seconds** – system time, null terminated string (4 bytes)
 ".**hh**"

AT PROFILE POINT FILE FORMAT (.83P) (con't)

33-46 **GPS Ships Position Latitude** – text string (14 bytes)

“_dd.mm.xxxxx_N”

dd = Degrees

mm = Minutes

xxxxx = Decimal Minutes

_ = Space

N = North or S = South

47-60 **GPS Ships Position Longitude** – text string (14 bytes)

“ddd.mm.xxxxx_E”

ddd = Degrees

mm = Minutes

xxxxx = Decimal Minutes

_ = Space

E = East or W = West

61 **GPS Ships Speed**

Speed = (Byte 61)/10 in knots

62-63 **GPS Ships Heading**

| Byte 62 | | | | | | | | Byte 63 | | | | | | | |
|----------------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Heading * 10 (in degrees) | | | | | | | | | | | | | | | |

64-65 **Pitch Angle (from Orientation Module)**

| Byte 64 | | | | | | | | Byte 65 | | | | | | | |
|----------|-------------------------------|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| P | (Pitch Angle*10) + 900 | | | | | | | | | | | | | | |

If 'P' = 0, Pitch Angle = 0 degrees

If 'P' = 1, Pitch Angle = [(((Byte 64 & 0x7F)<<8) | (Byte 65))-900]/10

66-67 **Roll Angle (from Orientation Module)**

| Byte 66 | | | | | | | | Byte 67 | | | | | | | |
|----------|------------------------------|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| R | (Roll Angle*10) + 900 | | | | | | | | | | | | | | |

If 'R' = 0, Roll Angle = 0 degrees

If 'R' = 1, Roll Angle = [(((Byte 66 & 0x7F)<<8) | (Byte 67))-900]/10

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68-69 **Heading Angle (from Orientation Module)**

| Byte 68 | | | | | | | | Byte 69 | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| H | | | | | | | | | | | | | | | |
| Heading Angle*10 | | | | | | | | | | | | | | | |

If 'H' = 0, Heading Angle = 0 degrees

If 'H' = 1, Heading Angle = [((Byte 68 & 0x7F)<<8) | (Byte 69)]/10

70-71 **Beams**

| Byte 70 | | | | | | | | Byte 71 | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Number of Beams | | | | | | | | | | | | | | | |

72-73 **Samples Per Beam**

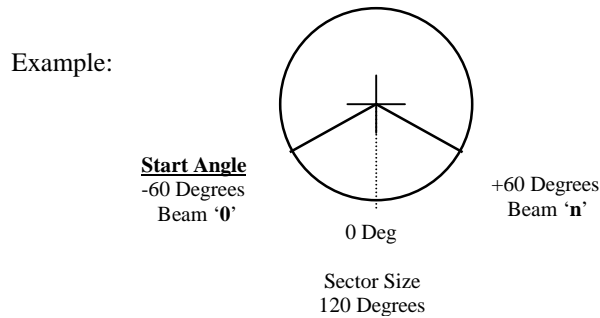
| Byte 72 | | | | | | | | Byte 73 | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Number of Samples Per Beam | | | | | | | | | | | | | | | |

74-75 **Sector Size**

| Byte 74 | | | | | | | | Byte 75 | | | | | | | |
|---------------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Sector Size (in degrees) | | | | | | | | | | | | | | | |

76-77 **Start Angle (Beam 0 angle)**

| Byte 76 | | | | | | | | Byte 77 | | | | | | | |
|---|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| [Start Angle (in degrees) + 180] * 100 | | | | | | | | | | | | | | | |



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78 **Angle Increment**
 Angle spacing per beam = (Byte 78)/100 in degrees

79-80 **Acoustic Range**

| Byte 79 | | | | | | | | Byte 80 | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Acoustic Range (in meters) | | | | | | | | | | | | | | | |

81-82 **Acoustic Frequency**

| Byte 81 | | | | | | | | Byte 82 | | | | | | | |
|------------------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Acoustic Frequency (in kHz) | | | | | | | | | | | | | | | |

83-84 **Sound Velocity**

| Byte 83 | | | | | | | | Byte 84 | | | | | | | |
|---------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| V | Sound Velocity (in meters/second) * 10 | | | | | | | | | | | | | | |

If 'V' = 0, Sound Velocity = 1500.0 m/s

If 'V' = 1, Sound Velocity = [((Byte 83 & 0x7F)<<8) | (Byte 84)]/10.0

85-86 **Range Resolution**

| Byte 85 | | | | | | | | Byte 86 | | | | | | | |
|--|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Range Resolution (in millimeters) | | | | | | | | | | | | | | | |

87-88 **Pulse Length**

| Byte 87 | | | | | | | | Byte 88 | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Pulse Length (in microseconds) | | | | | | | | | | | | | | | |

89-90 **Profile Tilt Angle (mounting offset)**

| Byte 89 | | | | | | | | Byte 90 | | | | | | | |
|--|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Profile Tilt Angle (in degrees) + 180 | | | | | | | | | | | | | | | |

ΔT PROFILE POINT FILE FORMAT (.83P) (con't)

91-92 **Repetition Rate** – Time between pings

| Byte 91 | | | | | | | | Byte 92 | | | | | | | |
|--|---|---|---|---|---|---|---|---------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Repetition Rate (in milliseconds) | | | | | | | | | | | | | | | |

93-96 **Ping Number** – increment for every ping

| Byte 93 | Byte 94 | Byte 95 | Byte 96 |
|--------------------|---------|---------|---------|
| 7 - 0 | 7 - 0 | 7 - 0 | 7 - 0 |
| Ping Number | | | |

97-255 **Reserved** - always 0

START OF PROFILE RANGE POINTS (2 bytes/point)

256-257 **Profile Range : Beam 0**

| Byte 256 | | | | | | | | Byte 257 | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|----------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Profile Range (in samples) | | | | | | | | | | | | | | | |

Profile Range for Beam 0 (starting angle):

range = (Byte 256<<8 | Byte 257) * Range Resolution / 1000 (meters)

*note: all ranges assume a sound velocity of 1500m/s

258-259 **Profile Range : Beam 1**

| Byte 258 | | | | | | | | Byte 259 | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|----------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Profile Range (in samples) | | | | | | | | | | | | | | | |

Profile Range for Beam 1 (starting angle + angle increment):

range = (Byte 258<<8 | Byte 259) * Range Resolution / 1000 (meters)

nnn-1
to nnn **Profile Range : Beam N**

| Byte (nnn-1) | | | | | | | | Byte nnn | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|----------|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Profile Range (in samples) | | | | | | | | | | | | | | | |

Profile Range for Beam N (starting angle + N*angle increment):

range = (Byte (nnn-1)<<8 | Byte nnn) * Range Resolution / 1000 (meters)