Alphabetical List of RW5 Records

Note: Comment Records start with -- but many are formatted like a record. They are also included and alphabetized ignoring the -- characters.

--Advanced Occupation

Advanced Occupation - The records that follow this line are part of the Advanced Occupation function.

Field Name	Units and format	Description
	No Fields	

Samples:

--Advanced Occupation

--Ang RMS(Sec)

Angular RMS in Seconds - Part of the resection accuracy report. See --Resection and --Laser Resection

Field Name	Units and format	Description
Ang RMS(Sec)	Arc seconds. 4 decimals	Average Angle Correction

Samples:

--Ang RMS(Sec):4.1234

--Antenna Freehand

Antenna Freehand - Shows setting using in JSR analysis

Field Name	Units and format	Description
Antenna Freehand	0 (off) or 1 (on)	Antenna Freehand

Samples:

--Antenna Freehand:0

--Attribute

Attribute - Used for GIS attributes and image attachments

Field Name	Units and format	Description
None	text	Attribute Name
:	text	Attribute Value

Samples:

--Attribute: PHOTO1:\Pictures_MAY_PHOTO\CSW0127201409H25M55S.JPG

--Attribute: PHOTODESC1:HYD101

AT

Attribute - Used for GIS attributes and image attachments

Field Name	Units and format	Description
TN	text	Attribute Name

	TV	text	Attribute Value

Samples:

AT,TNPHOTO1,TV.\Pictures_MAY_PHOTO\CSW0127201409H25M55S.JPG

AT,TNPHOTODESC1,TVHYD101

--Averaged Point

Averaged Point - Point name used for Average Point function. See "--Averaged position from"

Field Name	Units and format	Description
None	text	Point Name

Samples:

--Averaged Point: pt1

--Averaged Points

Averaged Points - Range of points used for Average Point function. See "--Averaged position from"

Field Name	Units and format	Description
None	text	Range of point names

Samples:

--Averaged Points: 5-10

--Averaged position from

Averaged Points Header - First line in Averaged points function. Will be followed by "--Averaged Point:", "--StdDev N:" and other records.

Field Name	Units and format	Description
None	text	Range of point names

Samples:

--Averaged Points: 5-10

--Backsight by Azimuth

Backsight by Azimuth - Written after BK record to indicate that either the occupied coordinate will be calculated or the backsight will use an azimuth instead of a back point. If the occupied point is going to be calculated from the backsight point and azimuth then "(OC computed from BS known)" is appended to this line.

Field Name	Units and format	Description
None		

Samples:

--Backsight by Azimuth

--Backsight by Azimuth (OC computed from BS known)

--Backsight calculated during Set Collection

--Backsight calculated during Set Collection - Notification that set collection was used to create the backsight point.

Field Name	Units and format	Description
None		

Samples:

--Backsight calculated during Set Collection

--Backsight Check

Backsight Check - Point number used to check the backsight

Field Name	Units and format	Description
PT	text	Backsight Point

Sample:

B--Backsight Check: PT pt1

--Base Configuration

Base Configuration - Method used to set the GNSS base position

Field Name	Units and format	Description
by	text	Base configuration method

Base Configuration Methods
Previously Surveyed
Reading GPS Position
Reading Base Reference File
Entering Latitude and Longitude
Local Coordinate
Local Coordinate

Sample:

--Base Configuration by Previously Surveyed

--Base Configuration by Reading GPS Position

--Base Configuration by Reading Base Reference File

BD — **Backsight Direct** - TS shot to backsight in face 1

Field Name	Units and format	Description
OP	text	Occupy Point
FP	text	Foresight Point
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance
--	text	Description

Sample:

BD,OP1,FP2,AR0.0055,ZE86.0126,SD10.320000,--CP

BK — **Backsight** - TS shot to backsight

Field Name	Units and format	Description
OP	text	Occupy Point
BP	text	Backsight Point
BS	DMS Angle. 4 or 5 decimals	Backsight Angle
BC	DMS Angle. 4 or 5 decimals	Backsight Circle

Sample:

BK,OP1,BP2,BS315.0000,BC0.0044

BR — **Backsight Reverse** - TS shot to backsight in face 2. See BD, "--Residuals" and "--Used XY" records

Field Name	Units and format	Description
OP	text	Occupy Point
FP	text	Foresight Point
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance
--	text	Description

Sample:

BR,OP1,FP2,AR180.0055,ZE273.0126,SD10.320000,--CP

--BTR:GPS,PN

--BTR — **Base Translation** - Raw data for Rover GPS measurement when "Base Translation From Rover" is active. Associated "GPS" record will be position modified by base translation.

Field Name	Units and format	Description
GPS	"GPS"	label
PN	text	Point Number
LA	+/- DMS Angle. negative for South. 9 decimals	Latitude
LN	+/- DMS Angle. negative for West. 9 decimals	Longitude
EL	meters, 4 decimals	Ellipsoid Height at Antenna Phase Center (APC)
--	text	Description

Sample:

--BTR,GPS,PNpt1,LA38.381812345,LN.-113.381812345,EL100.0201,--note1

--Calculated from Point Projection routine

Calculated from Point Projection routine - Notice that the next line was created by the Point Projection routine. The next line will be a comment containing a point number or station and offset.

Field Name	Units and format	Description
no label	whole number	Quality of depth measurement

Samples:

--Calculated from Point Projection routine.

--pt5

--Calculated from Point Projection routine.

--Station: 1+50.1234 Offset L10.123

--Calculated GPS Scale:

Calculated GPS Scale - Shows the GPS scale factor.

Field Name	Units and format	Description
None	8 decimals	Calculated GPS Scale

Samples:

--Calculated GPS Scale: 1.00002222

--Current selected projection

Current Selected Projection - Shows the current projection on the line after the "--ITRF00-Datum Transformation->" comment record.

Field Name	Units and format	Description
None	text	Projection name

Samples:

--Current selected projection: ITRF2008

--CEP

Circle Error Probabiliy - The current GNSS receiver uses CEP to estimate the error. Other accuracy numbers explained in --HRMS comment record

--Closure

Resection Closure - Shows the closure error for a two point resection

Field Name	Units and format	Description
None	whole number	Closure estimate

Samples:

--Closure: 1233

--Coordinate from Remote Elevation

Coordinate from Remote Elevation - Calculated XYZ by using Remote Elevation function. This comment record is always immediately after "--REHeight" comment record.

Field Name	Units and format	Description
None	3 numbers, 6 decimals	X, Y and Z coordinates separated by spaces

Samples:

--Coordinate from Remote Elevation: 1233.123456 2322.123456 432.123456

--Coordinate System

Coordinate System - Name of the current coordinate system.

Field Name	Units and format	Description
None	text	Name of current coordinate system.

Samples:

--Coordinate System: USA/NAD83/UT South

--Coordinate Transformation

Coordinate Transformation - Notification that a Coordinate Transformation has been performed

Field Name	Units and format	Description

Samples:

--Coordinate Transformation

--Coordinates Used

Coordinates Used in Base Setup - Coordinates used to setup the GNSS Base

Field Name	Units and format	Description
N	+/- meter/feet, 4 decimals	Northing Coordinate
E	+/- meter/feet, 4 decimals	Easting Coordinate
Z	+/- meter/feet, 4 decimals	Elevation

Sample:

--Coordinates Used: N 5000.1234, E 6000.1234, EL100.1234

--Depth Measurement Quality

Depth - Depth measured from depth sounder, cable locator or other depth measuring device. See --Depth Measurement Quality that appears after this record for instruments that support it.

Field Name	Units and format	Description
no label	whole number	Quality of depth measurement

Sample:

--Depth Measurement Quality: 1

--Dist RMS

Resection Distance RMS - Resection error estimate. Will be after a "Resection" or "Laser Resection" record

Field Name	Units and format	Description
RMS	+ meter/feet, 4 decimals	RMS of distance error

Sample:

--Dist RMS: 0.0123

--DT

Date Timestamp - Date at the moment of writing this entry to the RW5 file. See --TM

Field Name	Units and format	Description
DT	MM-DD-YYYY	Date

Sample:

--DT07-29-2021

DZ

Depth - Depth measured from depth sounder, cable locator or other depth measuring device. See --Depth Measurement Quality that appears after this record for instruments that support it.

Field Name	Units and format	Description
PN	text	Point number
DZ	+ meter/feet, 4 decimals	Depth measurement
WE	+ meter/feet, 4 decimals	Water elevation (optional)

Sample:

DZ,PN5,DZ5.0601

--EHE

Error of Horizontal Estimate - See --HRMS

--Elev RMS

Resection Elevation RMS - Resection error estimate. Will be after a "Resection" or "Laser Resection" record

Field Name	Units and format	Description
RMS	+ meter/feet, 4 decimals	RMS of elevation error

Sample:

--Elev RMS: 0.0123

--Entered

Entered Rod Height - User entered rod height when using GPS. Does not include antenna offset like LS record.

Field Name	Units and format	Description
no label	"Base" or "Rover"	Type of GPS setup
HR:	+ meter/feet, 4 decimals	User entered rod height
no label	"m" or "ft"	Units used to enter rod height
no label	"Vertical" or "Slant"	Type of measurement

Sample:

--Entered Rover HR: 6.0000 ft Vertical

--F1

Face 1 - TS shot to foresight in face 1 (direct). Will be followed by F2 record

Field Name	Units and format	Description
AR	DMS Angle. 4 decimals	Angle-Right
ZE	DMS Angle. 4 decimals	Zenith Angle
SD	+ meter/feet, 4 decimals	Slope Distance

Sample:

F1 AR 0.0055 ZE 86.0126 SD 10.3200

--F2

Face 2 - TS shot to foresight in face 2 (reverse). See F1 record

FC

Feature Code - Associates extra information with a point.

Field Name	Units and format	Description
PN	text	Point number
FN	text	Feature Name

Sample:

FC,PN1102,FNSG

FD

Foresight Direct - TS shot to foresight in face 1. See FR record

Field Name	Units and format	Description
OP	text	Occupy Point
FP	text	Foresight Point
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance

--	text	Description

Sample:

FD,OP1,FP2,AR0.0055,ZE86.0126,SD10.320000,--CP

--Feature

Feature Code - Associates extra information with a point. This is a comment version of the FC record

Field Name	Units and format	Description
None	text	Point number
None	text	Feature Name

Sample:

--Feature:1102,SG

--File Used

File Used in Base Setup - Ref file used to setup the GNSS Base

Field Name	Units and format	Description
File Used	text	Ref File Name

Sample:

--File Used: C:\data\myjob.ref

FR

Foresight Reverse - TS shot to foresight in face 2. See FD record

Field Name	Units and format	Description
OP	text	Occupy Point
FP	text	Foresight Point
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance
--	text	Description

Sample:

FR,OP1,FP2,AR0.0055,ZE270.0126,SD10.320000,--CP

--From Pt

From Point - Point used to start coordinate transformation from.

Field Name	Units and format	Description
From Pt	text	Point Name

Sample:

--From Ptpt1

GPS

GPS Measurement - Raw data for GPS measurement to create a point. Exceptions to the data in this record being the original measurements are: Average of multiple measurements, offset functions, and the Base Translation from Rover feature.

Field Name	Units and format	Description
PN	text	Point Number
LA	+/- DMS Angle. negative for South. 9 decimals	Latitude
LN	+/- DMS Angle. negative for West. 9 decimals	Longitude
EL	meters, 4 decimals	Ellipsoid Height at Antenna Phase Center (APC)
--	text	Description

Sample:

GPS,PNpt1,LA38.381812345,LN.-113.381812345,EL100.0201,--note1

--GPS

GPS Measurement Comment - Same as GPS record except it is used for saving the source of the base setup and the EL record is at ground instead of APC.

--GS

GPS Store - Coordinates calculated from GPS record and saved to coordinate file.

Field Name	Units and format	Description
PN	text	Point number
N	+/- meter/feet, 4 decimals	Northing Coordinate
E	+/- meter/feet, 4 decimals	Easting Coordinate
EL	+/- meter/feet, 4 decimals	Elevation
--	text	Description

Sample:

--GS,N 5000.1234,E 6000.1234,EL100.1234,--test1

--GSAL

GNSS Sensors Absolute Linear deviations - Error estimates written when tilt sensor and compass are available

Field Name	Units and format	Description
TEL	+/- meter/feet, 3 decimals	Tilt X Easting linear distance to point
TNL	+/- meter/feet, 3 decimals	Tilt Y Northing linear distance to point
TZL	+/- meter/feet, 3 decimals	Tilt Z Elevation linear distance to point (optional)
T2D	+ meter/feet, 3 decimals	Tilt 2D distance to pole point
TTL	+ meter/feet, 3 decimals	Tilt tolerance in linear units

Sample:

--GSAL,TEL-0.030,TNL0.060,T2D0.060,TTL0.020

--GSRD

GNSS Sensor Raw Data - Unmodified tilt sensor data

Field Name	Units and format	Description
TXD	+/- Decimal Degrees (-90 to 90), 3 decimals	Tilt X reading, tilt axis perpendicular to GNSS panel
TYD	+/- Decimal Degrees (-90 to 90), 3 decimals	Tilt Y reading, tilt axis paralel to GNSS panel
TGD	+/- Decimal Degrees (-90 to 90), 3 decimals	Gravity reading
THD	+ Decimal Degrees (0 to 360), 3 decimals	Compass reading
TDT	text	Tilt Sensor brand and model

Sample:

--GSRD,TXD-0.100,TYD0.160,TGD90.000,THD346.500,TDTGNSS receiver_FOIF_A30

--GSRL

GNSS Sensors Relative Linear deviations - Error estimates written when tilt sensor but not compass are available

Field Name	Units and format	Description
TXL	+/- meter/feet, 3 decimals	Tilt X relative linear distance to point
TYL	+/- meter/feet, 3 decimals	Tilt Y relative linear distance to point
T2D	+ meter/feet, 3 decimals	Tilt 2D distance to pole point
TTL	+ meter/feet, 3 decimals	Tilt tolerance in linear units

Sample:

--GSRL,TXL-0.010,TYL0.060,T2D0.060,TTL0.020

--GT

GNSS Timestamp - Start and end time of GNSS measurements for this occupation or point.

Field Name	Units and format	Description
PN	text	Point name
SW	whole number of weeks since start of year	Beginning of GNSS measurements
ST	whole number of milliseconds since start of week	Beginning of GNSS measurements
EW	whole number of weeks since start of year	End of GNSS measurements
ET	whole number of milliseconds since start of week	End of GNSS measurements

Sample:

--GT,PN8,SW2168,ST419930154,EW2168,ET419930154

--HI

Height of Instrument - Distance from ground to total station axis of scope.

Field Name	Units and format	Description
HI	+/- meter/feet, 4 decimals	Height of Instrument
HT	+/- meter/feet, 4 decimals	Height of Target

--HSDV — **Horizontal Standard Deviation** - See --HRMS

--HSIG — **Horizontal 1 Sigma** - See --HRMS

--HRMS — **GNSS Statistical Information** - Error estimates and other GNSS status information. If the GNSS receiver uses an error estimate method other than Root Mean Square (RMS), the HRMS, VRMS, NRMS and ERMS labels are replaced by H,V,N and E versions of Standard Deviation(SDV), 1 Sigma(SIG), EHE, Circle Error Probabality (CEP). Not all fields will be written in all situations.

Field Name	Units and format	Description
HRMS	+ meter/feet, 3 decimals	Horizontal Root Mean Square of error estimate.
VRMS	+ meter/feet, 3 decimals	Vertical Root Mean Square of error estimate.
STATUS	text (Fixed, Float, DGPS, Autonomous, etc.)	Posiiton fix status
SATS	+ meter/feet, 3 decimals	Number of satellites used in the position solution.
AGE	seconds, 1 decimal	Seconds since last RTK or DGPS correction received
PDOP	+ 3 decimals	Position Dilution of Position
HDOP	+ 3 decimals	Horizontal Dilution of Position
VDOP	+ 3 decimals	Vertical Dilution of Position
TDOP	+ 3 decimals	Time Dilution of Position
GDOP	+ 3 decimals	Geographic Dilution of Position
NRMS	+ meter/feet, 3 decimals	North Root Mean Square of error estimate.
ERMS	+ meter/feet, 3 decimals	East Root Mean Square of error estimate.

Sample:

--GSRL,TXL-0.010,TYL0.060,T2D0.060,TTL0.020

--Import ASCII — **Import ASCII** - Notification that the following SP records were imported.

Samples:

--Import ASCII

--ITRF00-Datum Transformation — **ITRF00-Datum Transformation** - Shown when current GNSS position is in a ITRF coordinate system.

Field Name	Units and format	Description
None	text	Datum name

Sample:

--ITRF00-Datum Transformation->ITRF2008

--ITRF2000 — **ITRF2000 Active** - Shown when current GNSS position is in a ITRF coordinate system and assumed to be ITRF2000

Sample:

--ITRF2000

JB

Job - First line of RW5 file

Field Name	Units and format	Description
NM	text	Job Name
DT	MM-DD-YYYY	Date
TM	HH:MM:SS	Time

Sample:

JB,NMSAMPLE,DT06-27-2003,TM14:21:53

JSR

JSR - Special GNSS analysis not documented here.

--Known Point Initialization

Known Point Initialization - Method used to initialize the rover position. Record has the same format as "GNSS base position" comment record

--Laser Height Reading

--Laser Height Reading - Height read by distance laser

Field Name	Units and format	Description
None	+ meter/feet, 3 decimals	Height of target

Samples:

--Laser Height Reading: 5.203

--Laser Reading: OF

Offset - Laser offset from GPS measurement

Field Name	Units and format	Description
AZ	DMS Angle. 3 decimals	Azimuth
CE	+/- meter/feet, 4 decimals	Change in Elevation
HD	+/- meter/feet, 4 decimals	Horizontal Distance

Sample:

--Laser Reading: OF,AZ123.005,CE5.0000,HD10.3200

--Laser Resection

Laser Resection - Coordinates found by doing a resection with a laser. Format is the same as "Resection" comment record.

Level

Trig Level Point - Saved position of point with elevation calculated from trig leveling.

Field Name	Units and format	Description
PN	text	Point Name

	N	+/- meter/feet, 4 decimals	Northing Coordinate (Optional)
	E	+/- meter/feet, 4 decimals	Easting Coordinate (Optional)
	EL	+/- meter/feet, 4 decimals	Elevation
	--	text	Description

Sample:

Level:,PN50,N 5000.1234,E 6000.1234,EL100.1234,--test1

--Localization Used

Localization Used in Base Setup - Localization file used to setup the GNSS Base

Field Name	Units and format	Description
File Used	text	Ref File Name

Sample:

--Localization Used: C:\data\myjob.loc

LS

Line of Sight - Rod and instrument heights for GPS and Total Stations. For 3D GPS, preceded by --Entered record.

Field Name	Units and format	Description
HI	+ meter/feet, 4 decimals	Height of instrument (optional)
HR	+ meter/feet, 4 decimals	Height of Rod. For TS it is ground to center of prism. For GPS it is ground to Antenna Phase Center (APC).

Sample:

LS,HI5.0102,HR6.0601

MO

Mode Setup - Job settings. Sometimes written as a comment (--MO)

Field Name	Units and format	Description
AD	(0 for North, 1 for South)	Azimuth Direction
UN	Units (0=international feet, 1=meter, 2=US feet)	Distance Unit
SF	8 decimals	Scale Factor for TS or GPS, whichever is active
EC	0=off, 1=on	Earth Curvature
EO	0.0 (not used)	EDM Offset
AU	0 (not used)	Not used

Sample:

MO,AD0,UN0,SF1.00000000,EC1,EO0.0,AU0

--New occupied point created by Remote Benchmark

New occupied point created by Remote Benchmark - Notification that remote benchmark has created a new point.

Sample:

--New occupied point created by Remote Benchmark

OC

Occupied Point - location of total station

Field Name	Units and format	Description
OP	text	Occupied Point Number
N	+/- meter/feet, 4 decimals	Northing Coordinate
E	+/- meter/feet, 4 decimals	Easting Coordinate
EL	+/- meter/feet, 4 decimals	Elevation
--	text	Description

Sample:

OC,OP50,N 5000.1234,E 6000.1234,EL100.1234,--test1

OF,AR

Offset - Offset from GPS measurement

Field Name	Units and format	Description
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance

Sample:

OF,AR0.0055,ZE86.0126,SD10.320000

OF,AZ

Offset - Direction and distance offset from GPS measurement

Field Name	Units and format	Description
AZ	DMS Angle. 3 decimals	Azimuth
CE	+/- meter/feet, 4 decimals	Change in Elevation
HD	+/- meter/feet, 4 decimals	Horizontal Distance

Sample:

OF,AZ123.005,CE5.0000,HD10.3200

--OF,HD

Offset - Horizontal offset from GPS measurement

Field Name	Units and format	Description
HD	+/- meter/feet, 4 decimals	Horizontal Distance

Sample:

OF,HD10.3200

OF,ZE

Offset - Zenith angle offset from GPS measurement

Field Name	Units and format	Description
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
--	text	Always says "Vert Angle Offset"

Sample:

OF,ZE86.0126,--Vert Angle Offset

--Offset GPS

Offset GPS - Coordinates calculated from the original GPS position from the receiver before doing the offset.

Field Name	Units and format	Description
PN	text	Point Number
LA	+/- DMS Angle. negative for South. 12 decimals	Latitude
LN	+/- DMS Angle. negative for West. 12 decimals	Longitude
EL	meters, 6 decimals	Ellipsoid Height at Antenna Phase Center (APC)
--	text	Description

Sample:

Offset GPS,PNpt1,LA38.381812345,LN.-113.381812345,EL100.0201,--note1

--Offset GPS by

Offset GPS by - Offset method used to create a point offset from the original GPS measurement.

Field Name	Units and format	Description
by	text	GPS offset method
2 Point -	text	Direction of offset ("Straight", "Left" or "Right) (optional)

GPS Offset Methods
Distance/Angle
Intersection
multiple-tilted pole
2 Point -

Sample:

--Offset GPS by by Distance/Angle

--Offset GPS by by Intersection

--Offset GPS by by 2 Point - Right

--P.C. mm Applied

Prism Constant - Shows setting of prism target type and offset

Field Name	Units and format	Description

None	+/- meter/feet, 4 decimals	Prism Offset
None	text	Prism Target Name
None	text	"backsight" or "foresight"

Sample:

--P.C. mm Applied: 0.0212 (ABC:backsight)

--PN

Point Name - Coordinates calculated in alignment from shapes dialog. Related to "--STA/OFF" comment record.

Field Name	Units and format	Description
PN	text	Point Number
N	+/- meter/feet, 4 decimals	Northing Coordinate
E	+/- meter/feet, 4 decimals	Easting Coordinate
EL	+/- meter/feet, 4 decimals	Elevation
--	text	Description

Sample:

--PNpt1,N 5000.1234,E 6000.1234,EL100.1234,--test1

--Reading

Resection Reading - Will be after a "Resection" or "Laser Resection" record

Field Name	Units and format	Description
none	whole number	Set number
none	D or R	Direct or Reverse face reading
FP	text	Foresight Point
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance
--	text	Description
HR	+ meter/feet, 3 decimals	User entered rod height

Sample:

--Reading: 1(D):FPpt1,AR0.0055,ZE86.0126,SD10.3200,--CP,HR6.000

--Reading: 1(R):FPpt1,AR180.0055,ZE270.0126,SD10.3200,--CP,HR6.000

--REHeight

Remote Elevation Height - Height difference between new elevation and remote base. Followed by "--Coordinate from Remote Elevation" comment record.

Field Name	Units and format	Description
None	+ meter/feet, 6 decimals	Difference in elevation between os

Sample:

--REHeight: 5.123123

--Resection

Resection - Coordinates found by doing a Total Station resection. "Laser Resection" record is the same but done with a laser.

Field Name	Units and format	Description
HI	+ meter/feet, 4 decimals	Height of instrument
PN	text	Point Number
N	+/- meter/feet, 4 decimals	Northing Coordinate
E	+/- meter/feet, 4 decimals	Easting Coordinate
EL	+/- meter/feet, 4 decimals	Elevation
--	text	Description

Sample:

--Resection:HI5.123,PNpt1,N 5000.1234,E 6000.1234,EL100.1234,--test1

--Residuals:

Resection Residuals - Will be after a "Resection" or "Laser Resection" record

Field Name	Units and format	Description
Dist	+ meter/feet, 4 decimals	Distance Residual
Ang(sec)	seconds, 1 decimal	Angle Residual
Elv	+ meter/feet, 4 decimals	Elevation Residual

Sample:

--Residuals:Dist0.0123,Ang(sec)0.0231,Elv 0.2123

--RBM

Remote Benchmark Measurement - TS shot to benchmark

Field Name	Units and format	Description
None	whole number	Measurement number
ZE	DMS Angle. 5 decimals	Zenith Angle
SD	+ meter/feet, 3 decimals	Slope Distance

Sample:

--RBM1,ZE86.01261,SD10.320

--Same Pt ID JsrAnalysis Averaged point

JSR - Special GNSS analysis not documented here.

--Set Collection with Obs Order

Set Collection with Obs Order - Shows the type of set collection used.

Field Name	Units and format	Description
None	text	Pattern of observations

Set Collection Order
112233...
123...123...
123...321...

Sample:

--Set Collection with Obs Order 112233...

SP

Store Point - Store a hand entered or calculated point

Field Name	Units and format	Description
PN	text	Point Number
N	+/- meter/feet, 4 or 5 decimals	Northing Coordinate
E	+/- meter/feet, 4 or 5 decimals	Easting Coordinate
EL	+/- meter/feet, 4 or 5 decimals	Elevation
--	text	Description

Sample:

OC,OP50,N 5000.1234,E 6000.1234,EL100.1234,--test1

--SP

State Plane Coordinates - Coordinates used to setup the GNSS Base

Field Name	Units and format	Description
SP North	+/- meter/feet, 6 decimals	Northing Coordinate
SP East	+/- meter/feet, 6 decimals	Easting Coordinate
Elv	+/- meter/feet, 5 decimals	Elevation

Sample:

--SP North: 5000.123456, SP East 6000.123456, EL100.12345

SS

Sideshot - TS shot to foresight to store a point

Field Name	Units and format	Description
OP	text	Occupy Point
FP	text	Foresight Point
AR	DMS Angle. 4 or 5 decimals	Angle-Right
ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
SD	+ meter/feet, 6 decimals	Slope Distance

	--	text	Description

Sample:

SS,OP1,FP2,AR0.0055,ZE86.0126,SD10.320000,--CP

--STA/OFF

Station and Offset - Coordinates calculated from station and offset in alignment from shapes dialog. Related to "--PN" comment record.

Field Name	Units and format	Description
N	+/- meter/feet, 4 decimals	Northing Coordinate
E	+/- meter/feet, 4 decimals	Easting Coordinate
EL	+/- meter/feet, 4 decimals	Elevation
--	text	Description

Sample:

--STA/OFF,N 5000.1234,E 6000.1234,EL100.1234,--test1

--Station

Station and Offset - Calculated from Point Projection routine. Written after "--Calculated from Point Projection routine." comment record.

Field Name	Units and format	Description
Station	+/- meter/feet, 4 decimals	Length along polyline/road
Offset	+/- meter/feet, 3 decimals, preceded with L or R	Distance from road.

Sample:

--Station: 1+00.1234, Offset: L20.000

--StDev

Resection Standard Deviation - Resection error estimate. Will be after a "Resection" or "Laser Resection" record

Field Name	Units and format	Description
N	+ meter/feet, 4 decimals	Northing Standard Deviation
E	+ meter/feet, 4 decimals	Easting Standard Deviation

Sample:

--StDev:N0.0123,E0.0231

--StdDev

Average Point Standard Deviation - Averaging points routine error estimate. Will be after a "Averaged Position" record

Field Name	Units and format	Description
	One of the following fields	
N	+ meter/feet, 6 decimals	Northing Standard Deviation
E	+ meter/feet, 6 decimals	Easting Standard Deviation

	Z	+ meter/feet, 4 decimals	Easting Standard Deviation
	Sample:		
	--StdDev N: 0.123456		
SurvPC Version	**SurvPC Software Version number**		
	Field Name	**Units and format**	**Description**
	Version	text	Software Version Number
	Sample:		
	--SurvPC Version 6.04.17		
--Target Type Set	**Target Type** - Shows setting of prism target type		
	Field Name	**Units and format**	**Description**
	None	text	Name of target
	None	text	"backsight" or "foresight"
	Sample:		
	--Target Type Set: ABC (backsight)		
--Temperature	**Temperature and Pressure** - Values are from the Total Station, either manually entered or measured.		
	Field Name	**Units and format**	**Description**
	Temperature	+/- 2 decimals	Temperature value
	none	text	Temperature units
	Pressure	+/- 2 decimals	Pressure value
	None	text	Pressure units
	Sample:		
	--Temperature = 79.23F Pressure = 101.33kPa		
--TM	**Timestamp** - Time at the moment of writing this entry to the RW5 file. Preceeded by --DT. See --TM		
	Field Name	**Units and format**	**Description**
	TM	HH-MM-SS	Local time or UTC time
	Sample:		
	--TM14:38:16		
TR	**Traverse** - TS shot to traverse point		
	Field Name	**Units and format**	**Description**

	OP	text	Occupy Point
	FP	text	Foresight Point
	AR	DMS Angle. 4 or 5 decimals	Angle-Right
	ZE	DMS Angle. 4 or 5 decimals	Zenith Angle
	SD	+ meter/feet, 6 decimals	Slope Distance
	--	text	Description

Sample:

SS,OP1,FP2,AR0.0055,ZE86.0126,SD10.320000,--CP

--Used XY

Resection Used XY options - Will be after a "Resection" or "Laser Resection" record

Field Name	Units and format	Description
Used XY	"Yes" or "No"	Whether XY was used in Resection
Used Z	"Yes" or "No"	Whether Z was used in Resection

Sample:

--Used XY: Yes, Used Z:Yes

USRADAR

Sideshot - TS shot to foresight point

Field Name	Units and format	Description
PN	text	Point Number
GD	+ meter/feet, 4 decimals	Ground Depth

Sample:

USRADAR,PN1,FP2,AR0.0055,ZE86.0126,GD10.3200