

SENSR - EO-IR Sensor Parameters

The SENSR provides information about an electro-optical sensor and its installation. The SENSR extension is required. The format and descriptions for the user-defined fields of the SENSR extension are detailed in Table 1. Imaging operations that require substantial time, for example push broom sensors, may require multiple SENSR extensions to adequately describe imaging geometry. The SENSR extension(s) are placed in the image subheader.

TABLE 1 SENSR – EO-IR SENSOR PARAMETERS EXTENSION FORMAT

R = REQUIRED, C = CONDITIONAL, <> = BCS SPACES ALLOWED FOR ENTIRE FIELD

Field	Name	Size	Value Range	Units	Type
CETAG	Unique Extension Identifier.	6	SENSRA	N/A	R
CEL	Length of Entire Tagged Record.	5	00132	bytes	R
<i>The Following Fields Define SENSR</i>					
REF_ROW	<u>Reference Row</u> . Data in this extension was collected at REF_ROW, REF_COL of the imaging operation. Identifies the point at which the data of this extension was valid during extended imaging operations.	8	00000000 to 99999999		<R>
REF_COL	Reference Column	8	00000000 to 99999999		<R>
SENSOR_MODEL	<u>Sensor Model Name</u> . Identifies which specific sensor produced the image.	6	alphanumeric		<R>
SENSOR_MOUNT	<u>Sensor Mounting Pitch Angle</u> . Angle in degrees between the longitudinal centerline of the platform and the sensor scan axis. Normally only applicable to push broom sensors.	3	±45	degrees	<R>

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Field	Name	Size	Value Range	Units	Type
SENSOR_LOC	<p><u>Sensor Location.</u> The earth coordinate sensor location may be expressed in either degrees-minutes-seconds or in decimal degrees.</p> <p>The format ddmss.ssX represents degrees (00 to 89), minutes (00 to 59), seconds (00 to 59), and hundredths of seconds (00 to 99) of latitude, with X = N for north or S for south, and dddmss.ssY represents degrees (000 to 179), minutes (00 to 59), seconds (00 to 59), and hundredths of seconds (00 to 99) of longitude, with Y = E for east or W for west.</p> <p>The format ±dd.dddddd indicates degrees of latitude north is positive), and ±ddd.dddddd represents degrees of longitude (east is positive). This field shall be filled with spaces if the sensor location is unknown or unavailable.</p>	21	ddmss.ssXdd dmss.ssY ±dd.dddddd±d dd.dddddd spaces	N/A	<R>
SENSOR_ALT_SOURCE	<p><u>Sensor Altitude Source.</u> Identifies the source for the value in SENSOR_ALT (and associated reference level):</p> <p>B = Barometric Altimeter (MSL) G = Global Positioning System (WGS-84 Ellipsoid) M = Manual Entry (undetermined) R = Radar Altimeter (AGL)</p>	1	B, G, M, R		<R>
SENSOR_ALT	<p><u>Sensor Altitude.</u> Altitude above reference level specified by SENSOR_ALT_SOURCE; measured in feet or meters, as specified by SENSOR_ALT_UNIT.</p>	6	-01000 to +99000	feet or meters	<R>
SENSOR_ALT_UNIT	<p><u>Unit of Sensor Altitude.</u> Applies to both SENSOR_ALT and SENSOR_AGL, and may only be null if both altitudes are null. f = feet, m =meters</p>	1	f or m		<R>
SENSOR_AGL	<p><u>Sensor Radar Altitude.</u> Altitude above ground level (AGL), measured in feet or meters, as specified by SENSOR_ALT_UNIT. Filled with spaces when not available, or outside equipment operating range.</p>	5	00010 to 99000	feet or meters	<R>

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Field	Name	Size	Value Range	Units	Type
SENSOR_PITCH	<u>Sensor Pitch Angle</u> . Angular position of the sensor optical axis, about the platform pitch axis (i.e., angle from the yaw (Za) axis to the projection of the sensor optical axis (line of sight) onto the Xa, Za plane). Measured positive from the yaw axis to the positive platform roll (Xa) axis. For push broom sensors, the angle from the platform roll axis Xa to the projection of the sensor scan axis onto the Xa, Za plane.	7	±90.000	degrees	<R>
SENSOR_ROLL	<u>Sensor Roll Angle</u> . Angular position of the sensor optical axis, about the platform roll axis (i.e., angle from the positive pitch (Ya) axis to the projection of the sensor optical axis (line of sight) onto the Ya, Za plane). Measure positive from the positive pitch (Ya) axis toward the positive yaw (Za) axis.	8	±180.000	degrees	<R>
SENSOR_YAW	<u>Sensor Yaw Angle</u> . Angular position of the sensor optical axis, about the platform yaw axis (i.e., angle from the positive roll (Xa) axis to the projection of the sensor optical axis (line of sight) onto the Xa, Ya plane). Measured positive from the positive roll (Xa) axis toward the positive pitch (Ya) axis.	8	±180.000	degrees	<R>
PLATFORM_PITCH	Platform Pitch.	7	±90.000	degrees	<R>
PLATFORM_ROLL	Platform Roll	8	±180.000	degrees	<R>
PLATFORM_HDG	Platform Heading.	5	000.0 to 359.9	degrees	<R>
GROUND_SPD_SOURCE	<u>Ground Speed Source</u> . R = Doppler Radar N = Navigation System G = Global Positioning System M = Manual Entry space = unknown	1	R, N, G, M, space		<R>
GROUND_SPD	<u>Ground Speed</u> reported by GROUND_SPEED_SOURCE at time of imagery collection.	6	0000.0 to 9999.9		<R>
GROUND_SPD_UNIT	<u>Unit of Ground Speed</u> . May be null only if GROUND_SPD is null. k =knots, f =feet/sec., m =meters/sec.	1	k, f, m		<R>

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Field	Name	Size	Value Range	Units	Type
GROUND_TRACK	<u>Ground Track</u> . The angle from north to the horizontal projection of the platform path (positive from north to east).	5	000.0 to 359.9	degrees	<R>
VERT_VEL	<u>Vertical Velocity</u> . Measured in either feet/min. or meters/min. as specified by VERT_VEL_UNIT.	5	±9999	feet or meters per min	<R>
VERT_VEL_UNIT	<u>Unit of Vertical Velocity</u> . May be null only if VERT_VEL is null. f =feet/min., m =meters/min.	1	f or m		<R>
SWATH_FRAMES	<u>Number of Frames per Swath</u> . A Swath is a continuous strip of frames swept out by the scanning motion of certain dynamic sensors. Platform dynamics may cause the number of frames to vary from one swath to another.	4	0001 to 9999		<R>
N_SWATHS	Number of Swaths.	4	0001 to 9999		<R>
SPOT_NUM	<u>Spot Number</u> . Number in point targets mode.	3	001 to 999		<R>