

1 FY-3D 广角极光成像仪 L1 数据（OBC）

1.1 数据概况

表1. FY-3D 广角极光成像仪 L1 数据（OBC）概况表

产品名称	FY-3D 广角极光成像仪 L1 数据（OBC）
	FY-3D WAI Level 1 Onboard Telemetry Data
物理意义（中英文）	该产品存放 FY-3D 广角极光成像仪遥测参数。
	This product includes the FY-3D WAI telemetry parameter.
用途（中英文）	该数据主要用于 FY-3D 广角极光成像仪星上性能状态离线分析。
	This product is used to offline analysis of the onboard status of FY-3D WAI.
用户（中英文）	FY-3D 广角极光成像仪仪器研制方和定标工作组。
备注（中英文）	

1.2 数据基本信息

表2. FY-3D 广角极光成像仪 L1 数据（OBC）基本信息表

产品名称：FY-3D 广角极光成像仪 L1 数据（OBC）		
文件名约定： FY3D_WAIXX_GBAL_L1_YYYYMMDD_HHmm_OBCXX_MS.HDF		
栏目	值	备注
卫星名	FY3D	
仪器名称	WAI	
数据区域类型	ORBT	
数据级别	L1	
分辨率/数据子名	OBC	
数据格式名称	HDF	
更新频率	14	
更新频率单位	Day	
分块方式	整圈	
单个文件数据量	332.58 MB	约 332.58 MB/轨×14.5 轨/天 =4.71 GB/天
数据量单位	MB	

2 L1 数据规格

2.1 HDF 数据格式结构

表3. FY-3D 广角极光成像仪 L1 数据（OBC） HDF 结构

全局文件属性				
私有文件属性				
科学数据集				
分组名称	科学数据集		科学数据集名(英文)	科学数据集中文描述
Time_Fields	SDS01	Day_Count	Day Count	天计数
	SDS02	Msec_Count	Miliseconds Count	毫秒计数
Telemetry_Fields	SDS03	Image_Count	Image Count	图像幅计数
	SDS04	Frame_Count	Frame Count	图像帧计数
	SDS05	Exposure_Times	Exposure Times	曝光次数
	SDS06	Signal_Source_Selection	Signal_Source_Selection	摄像信号源选择数据
	SDS07	Mode_Selection	Mode Selection	摄像模式选择数据
	SDS08	Hall_Sensor_Status	Hall Sensor Status	霍尔传感器状态
	SDS09	Motor_Step	Motor Step	电机走完步数
	SDS10	Motor_Overheated_Protection	Motor Overheated Protection	电机过热保护状态
	SDS11	Sun_Avoid_Command	Sun Avoid Command	蔽日命令
	SDS12	Imager_Working_Status	Imager Working Status	成像仪工作状态
	SDS13	Pointing_Device_Position	Pointing Device Position	指向机构位置
	SDS14	Geomagnetic_Latitude	Geomagnetic Latitude	地磁纬度
	SDS15	Preamplifier_Current_Telemetry	Preamplifier Current Telemetry	前放电流遥测
	SDS16	Data_Processing_and_Control_Logic_Status_Parameter	Data Processing and Control Logic Status Parameter	数据处理及控制逻辑状态参数
	SDS17	Orbit_Count	Orbit Count	成像仪轨道计数
	SDS18	High_Voltage_Power_AD	High Voltage Power AD	高压电源 AD 值
	SDS19	Thermal_Control State	Thermal Control State	热控状态
	SDS20	Filter_Working_Mode	Filter Working Mode	滤光片工作模式
	SDS21	Filter_Temperature	Filter Temperature	滤光片温度
	SDS22	Components_Temperature	Components Temperature	器件温度
	SDS23	Filter_Heating_Current	Filter Heating Current	滤光片加热电流
	SDS24	Heating_Duty_Cycle	Heating Duty Cycle	加热占空比
	SDS25	Imager_Observing_M	Imager Observing	成像仪探测模式

		ode	Mode	
	SDS26	Threshold_Update_Command	Threshold Update Command	阈值更新命令
	SDS27	High_Voltage_Power_Control_Command	High Voltage Power Control Command	高压电源控制命令
	SDS28	Sensor_Threshold	Sensor Threshold	探测器阈值
	SDS29	Sensor_High_Voltage_Value	Sensor High Voltage Value	探测器高压幅值
	SDS30	Motor_Control_Command	Motor Control Command	电机控制命令
	SDS31	Exposure_Times_Update_Command	Exposure Times Update Command	曝光次数更新命令
	SDS32	Exposure_Times	Exposure Times	曝光次数
	SDS33	Hall_Command	Hall Command	霍尔命令
	SDS34	Target_Angle	Target Angle	目标角度
	SDS35	Motor_Run_Step	Motor Run Step	电机运行步数
	SDS36	Motor_Running_Direction	Motor Running Direction	电机运行方向
	SDS37	Sun_Avoid_Angle_Update_Command	Sun Avoid Angle Update Command	蔽日角度更新命令
	SDS38	Sun_Avoid_Angle	Sun Avoid Angle	蔽日角度
	SDS39	Geomagnetic_Moment_Update_Command	Geomagnetic Moment Update Command	地球磁矩更新命令
	SDS40	Geomagnetic_Moment	Geomagnetic Moment	地球磁矩
	SDS41	Thermal_Control_Mode	Thermal Control Mode	热控模式
	SDS42	FPGA_Reload_Count	FPGA Reload Count	FPGA 重加载计数
	SDS43	Internal_Command_Count	Internal Command Count	内部指令计数
	SDS44	Data_Upload_Count	Data Upload Count	数据注入计数
	SDS45	Motor_Overheated_Protection	Motor Overheated Protection	电机过热保护状态
	SDS46	Motor-Control Data	Motor Control Data	电机控制数据
	SDS47	Self-inspection_Orbit_Frequency	Self-inspection Orbit Frequency	自检轨道频率
	SDS48	Self-inspection_Orbit_Frequency_Update_Command	Self-inspection Orbit Frequency Update Command	自检轨道频率更新命令
	SDS49	Internal_Command	Internal Command	内部指令
	SDS50	Peak-holding_Circuit_Status	Peak-holding Circuit Status	峰值保持器状态
	SDS51	Senor_Received_Photon_Count	Senor Received Photon Count	探测器接收光子计数
	SDS52	Longitude	Longitude	经度
	SDS53	Latitude	Latitude	纬度
	SDS54	Solar_Vector_Xs	Solar Vector Xs	太阳矢量 Xs
	SDS55	Solar_Vector_Ys	Solar Vector Ys	太阳矢量 Ys
	SDS56	Solar_Vector_Zs	Solar Vector Zs	太阳矢量 Zs
	SDS57	Sensor_Collected_Photon_Count	Sensor Collected Photon Count	探测器采集光子计数
QA_Fields	SDS58	QA_Index	QA Index	质量信息码
Geolocation_Fields	SDS59	Sat_Latitude	Satellite Latitude	卫星纬度
	SDS60	Sat_Longitude	Satellite Longitude	卫星经度

	SDS61	Sat_Height	Satellite Height	卫星高度
	SDS62	Pitch	Pitch	俯仰
	SDS63	Roll	Roll	滚动
	SDS64	Yaw	Yaw	偏航

2.2 全局文件属性

表4. FY-3D 广角极光成像仪 L1 数据（OBC）全局文件属性定义

描述	属性名称	数据类型	数量	值
卫星名称	Satellite Name	8-bit signed char	不定长	FY-3D
仪器名称	Sensor Name	8-bit signed char	不定长	Wide-field Imager Auroral Imager
传感器代码	Sensor Identification Code	8-bit signed char	不定长	WAI
数据集名称	Dataset Name	8-bit signed char	不定长	WAI L1 OBC Data
文件名称	File Name	8-bit signed char	不定长	FY3D_WAIXX_GBAL_L1_YYYYMMDD_HH_mm_OBCXX_MS.HDF
文件别名	File Alias Name	8-bit signed char	不定长	WAI_L1_OBC
产品生成地	Responser	8-bit signed char	不定长	NSMC
处理软件版本号	Version Of Software	8-bit signed char	不定长	
处理软件更新日期	Software Revision Date	8-bit signed char	不定长	YYYY-MM-DD
定标参数版本号	Version Of Coefficient Index	8-bit signed char	不定长	
定标参数更新日期	Coefficient Index Revision Date	8-bit signed char	不定长	YYYY-MM-DD
数据观测开始日期(包括年月日)	Observing Beginning Date	8-bit signed char	不定长	YYYY-MM-DD
数据观测开始时间（包括时分秒毫秒）	Observing Beginning Time	8-bit signed char	不定长	hh:mm:ss.sss
数据观测结束日期(包括年月日)	Observing Ending Date	8-bit signed char	不定长	YYYY-MM-DD
数据观测结束时间（包括时分秒毫秒）	Observing Ending Time	8-bit signed char	不定长	hh:mm:ss.sss
数据创建日期(包括年月日)	Data Creating Date	8-bit signed char	不定长	YYYY-MM-DD
数据创建时间（包括时	Data Creating Time	8-bit signed char	不定长	hh:mm:ss.sss

描述	属性名称	数据类型	数量	值
分秒毫秒)				
白天夜间标志	Day Or Night Flag	8-bit signed char	不定长	D:Day N:Night M:Mix
轨道号	Orbit Number	32-bit unsigned Integer	1	
轨道周期(分钟)	Orbit Period(min.)	16-bit unsigned Integer	1	102
轨道方向	Orbit Direction	8-bit signed char	1	A:Ascend D:Descend M:Mixed
数据质量标记(0-5级)	Data Quality	8-bit unsigned Integer	1	0为最好，5为最差
总扫描线数	Number Of Scans	32-bit signed Integer	1	
白天模式扫描线数	Number Of Day mode scans	32-bit signed Integer	1	注2
晚上模式扫描线数	Number of Night mode scans	32-bit signed Integer	1	注3
处理成功的扫描线数	Successfully pre-pressed Scans	32-bit signed Integer	1	注4
地球椭球参考坐标系ID (WGS84)	Reference Ellipsoid Model ID	8-bit signed char	不定长	WGS84
日地距离比	EarthSun Distance Ratio	64-bit floating point	1	
平近地点角	MeanAnomaly	64-bit floating point	1	
平均运动	MeanMotion	64-bit floating point	1	
偏心率	Eccentricity	64-bit floating point	1	
近地点俯角	PerigeeArgument	64-bit floating point	1	
升交点赤经	AscendingNodeLongitude	64-bit floating point	1	
轨道倾角	OrbitalInclination	64-bit floating point	1	
历元时间	EpochTime	64-bit floating point	1	
轨道4个角点纬度	Orbit Point Latitude	32-bit floating point	4	NW,NE,SW,SE
轨道4个角点经度	Orbit Point Longitude	32-bit floating point	4	NW,NE,SW,SE
文件的附加说明(可以对文件的使用、创建人等说明)	AdditionalAnnotation	8-bit signed char	不定长	LI Jiawei, +86-10-58993138, lijw@cma.gov.cn

2.3 私有文件属性

表5. FY-3D 广角极光成像仪 L1 数据 (OBC) 私有文件属性定义

描述	属性名称	数据类型	数量	值
缺帧数	Num_Missing_Packets	Int32	1	
抛帧包数	Num_Discarded_Packets	Int32	1	

定标失败帧数	Num_CaliErr_Packets	Int16	1	
定位失败帧数	Num_GeolErr_Packets	Int16	1	
蔽日帧数	Num_SolAvoid_Packets	Int16	1	
通道中心波长	Effect_Center_WaveLength	Float32	1	160 nm

2.4 科学数据集

表6. FY-3D 广角极光成像仪 L1 数据（OBC）科学数据集（SDS）定义

SDS01.	SDS 名称	数据类型	维数	数据量(字节)
	Day_Count 天计数	uint16	[645]	645*2
	SDS 属性名	数据类型	数量	值
	FillValue	uint16	1	65535
	Intercept	float32	1	0.0
	Slope	float32	1	1.0
	band_name	String	1	"none"
	long_name	String	1	"Day Count"
	units	string	1	"day"
	valid_range	unit16	2	[0, 10000]
	Description	string	1	"Day count from 2000.01.01.12:00 for each frame of total 645."
SDS02.	SDS 名称	数据类型	维数	数据量(字节)
	Msec_Count 毫秒计数	uint32	[645]	645*4
	SDS 属性名	数据类型	数量	值
	FillValue	uint32	1	4294967295
	Intercept	float32	1	0.0
	Slope	float32	1	1.0
	band_name	String	1	"none"
	long_name	String	1	"Milisecond Count"
	units	string	1	"milisecond"
	valid_range	uint32	2	[0, 864000000]
	Description	string	1	"Milisecond count from 2000.01.01 12:00 for each frame of total 645."
SDS03.	SDS 名称	数据类型	维数	数据量(字节)
	Image_Count 图像幅计数	int16	[645]	645*2
	SDS 属性名	数据类型	数量	值
	FillValue	int16	1	-9999
	Intercept	float32	1	0.0
	Slope	float32	1	1.0
	band_name	String	1	"none"
	long_name	String	1	"Image_Count"
	units	string	1	"none"
	valid_range	int16	2	[1, 300]
	Description	string	1	"Image count for each frame of total 645."
SDS04.	SDS 名称	数据类型	维数	数据量(字节)
	Frame_Count	int16	[645]	645*2

图像帧计数			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Frame_Count"
units	string	1	"none"
valid_range	int16	2	[1, 300]
Description	string	1	"Frame count for each frame of total 645."
SDS05. SDS 名称	数据类型	维数	数据量(字节)
Exposure_Times 曝光次数	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Exposure times"
units	string	1	"none"
valid_range	int16	6	['1', '2', '4', '6', '8', '10']
Description	string	1	"Exposure times for each frame of total 645."
SDS06. SDS 名称	数据类型	维数	数据量(字节)
Signal_Source_Selection 摄像信号源选择数据	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Signal Source Selection "
units	string	1	"none"
valid_range	int16	2	['0xC3', '0x3C']
Description	string	1	"Signal source selection for each frame of total 645. '0xC3' stands for the analog signal, and '0x3C' for the sensor signal."
SDS07. SDS 名称	数据类型	维数	数据量(字节)
Mode_Selection 摄像模式选择数据	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Mode Selection"
units	string	1	"none"
valid_range	int16	4	['0x2A', '0x3C', '0x4D', '0x5E']
Description	string	1	"Mode selection for each frame of total 645. '0x2A' stands for the self-inspection mode, '0x3C' for the stare mode, '0x4D' for the 120°

			scan mode, and '0x5E' for the 80° scan mode."
SDS08. SDS 名称	数据类型	维数	数据量(字节)
Hall_Sensor_Status 霍尔传感器状态	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	" Hall Sensor Status "
units	string	1	"none"
valid_range	int16	4	['00000000', '00001111', '11110000', '11111111']
Description	string	1	"Hall sensor status for each frame of total 645. Bit0~3 stand for the status of sensor 1,and the bit4~7 stand for the status of sensor 2; '0000' indicates that the sensor is the effective, and '1111' indicates tha the sensor is ineffective."
SDS09. SDS 名称	数据类型	维数	数据量(字节)
Motor_Step 电机走完步数	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Step"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Motor step for each frame of total 645."
SDS10. SDS 名称	数据类型	维数	数据量(字节)
Motor_Overheated_Protection 电机过热保护状态	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Overheated Protection"
units	string	1	"none"
valid_range	int16	2	['0x66', '0x99']
Description	string	1	"Motor overheated protection for each frame of total 645. '0x66' indicates that the motor is not protected, and '0x99' indicated that the motor is protected."
SDS11. SDS 名称	数据类型	维数	数据量(字节)
Sun_Avoid_Command 蔽日命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值

FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Sun Avoid Command"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Sun avoid command for each frame of total 645. '0xAC' indicates that the sun avoid command is executed, and others not."
SDS12. SDS 名称	数据类型	维数	数据量(字节)
Imager_Working_Status 成像仪工作状态	int16	[645,3]	645*3*2
Notes: Bit Flag Description Imager Working Status 10 Self-inspection Mode Image Collection 0: Not collected, 1: Collected 1 Scan Mode Image Collection 0: Not collected, 1: Collected 2 Stare Mode Image Collection 0: Not collected, 1: Collected 3 FPGA Reload 0: Not reloaded, 1: Reloaded 4 Broadcast Message Reception 0: Not received, 1: Received 5 Instantaneous Orbit Elements Reception 0: Not received, 1: Received 6 Data Uploading Reception 0: Not received, 1: Received 7 Internal Instruction Reception 0: Not received, 1: Received Imager Working Status 20 High Voltage Power 1 Status 0: Disabled, 1: Enabled 1 High Voltage Power 2 Status 0: Disabled, 1: Enabled 2 High Voltage Power 1 LATCH 0: Unlatched, 1: Latched 3 High Voltage Power 2 LATCH 0: Unlatched, 1: Latched 4 Whole Instrument (Except the Filters) Thermal Control Switch 0: Off, 1: On 5 Filter Primary Thermal Control Switch 0: Off, 1: On 6 Filter Secondary Thermal Control Switch 0: Off, 1: On 7 Geomagnetic Latitude Calculation Input 0: Geographic Lng & Lat, 1: GPS parameters Imager Working Status 30 Imager Location - North-South 0: North, 1: South 1 Imager Location – Sunlight Condition 0: Sunlight area, 1: Shadow area 2 Hall Sensor 1 Status 0: Normal, 1: Abnormal 3 Hall Sensor 2 Status 0: Normal, 1: Abnormal 4 Motor Overheated Protection 0: Not protected, 1: Protected 5 120 °Scan Implementation 0: Not implemented, 1: Implemented 6 80 °Scan Implementation 0: Not implemented, 1: Implemented 7 Reserved			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Imager Working Status"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Imager working status for each frame of total 645. The second dimension stands for the 3status of the imager, respectively."
SDS13. SDS 名称	数据类型	维数	数据量(字节)
Pointing_Device_Position	float32	[645]	645*4

指向机构位置			
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Pointing Device Position"
units	string	1	"none"
valid_range	float32	2	'-2.0, 122.0'
Description	string	1	"Pointing device position for each frame of total 645. The sub-satellite point is corresponding to 60 °, the angle varies from 0 ° to 120 ° when scan along the orbit, and from 120 ° to 0 ° on the contrary."
SDS14. SDS 名称	数据类型	维数	数据量(字节)
Geomagnetic_Latitude 地磁纬度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Geomagnetic Latitude"
units	string	1	"degree"
valid_range	float32	2	[0.0 ,90.0]
Description	string	1	"Geomagnetic latitude for each frame of total 645."
SDS15. SDS 名称	数据类型	维数	数据量(字节)
Preamplifier_Current_Telemetry 前放电流遥测	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Preamplifier Current Telemetry"
units	string	1	"mA"
valid_range	Float32	2	[79.0, 166.0]
Description	string	1	"Preamplifier current telemetry for each frame of total 645."
SDS16. SDS 名称	数据类型	维数	数据量(字节)
Data_Processing_and_Control_Logic_Status_Parameter 数据处理及控制逻辑状态参数	int16	[645,2]	645*2*2
Notes: Bit Flag Description Data Processing and Control Logic Status Parameter 1 0~3 Senor 2 Count Rate 0000: No count, 0001: 0<count rate≤10 kHz, 0010: 10<count rate≤20 kHz, 0011: 20<count rate≤30 kHz, 0100: 30<count rate≤40 kHz, 0101: 40<count rate≤50 kHz, 0110: 50<count rate≤60 kHz,			

0111: $60 < \text{count rate} \leq 70 \text{ kHz}$,
1000: $70 < \text{count rate} \leq 80 \text{ kHz}$,
1001: $\text{count rate} > 80 \text{ kHz}$
4~7 Senor 1 Count Rate 0000: No count,
0001: $0 < \text{count rate} \leq 10 \text{ kHz}$,
0010: $10 < \text{count rate} \leq 20 \text{ kHz}$,
0011: $20 < \text{count rate} \leq 30 \text{ kHz}$,
0100: $30 < \text{count rate} \leq 40 \text{ kHz}$,
0101: $40 < \text{count rate} \leq 50 \text{ kHz}$,
0110: $50 < \text{count rate} \leq 60 \text{ kHz}$,
0111: $60 < \text{count rate} \leq 70 \text{ kHz}$,
1000: $70 < \text{count rate} \leq 80 \text{ kHz}$,
1001: $\text{count rate} > 80 \text{ kHz}$
8~9 Mode Selection 01: Scan mode, 10: Stare mode,
11: Self-inspection mode
10~11 Signal Source Selection 01: Analog signal,
10: Sensor signal
12 Hall Sensor 2 Status 0: Motor not in Hall B,
1: Motor in Hall B
13 Hall Sensor 1 Status 0: Motor not in Hall A,
1: Motor in Hall A
14 Motor Step Completment 0: Not completed, 1: Completed
15 Observing Completment 0: Not completed, 1: Completed
Data Processing and Control Logic Status Parameter 2 0 Sensor 2 PH300 Status 0: Normal, 1: Abnormal
1 Sensor 1 PH300 Status 0: Normal, 1: Abnormal
2 Motor Overheated Status 0: Not overheated,
1: Overheated
3 Observing Status 0: Not observing, 1: Observing
4 Sun Avoid Status 0: Sun avoid command ineffective, 1: Sun avoid command received and
executed
5~7 Exposure Times 001: 2, 010: 4, 011: 6, 100: 8, 101: 10

SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Data Processing and Control Logic Status Parameter"
units	string	1	"none"
valid_range	int16	2	[0,65535]
Description	string	1	"Data processing and control logic status parameter for each frame of total 645. The second dimension stands for the 2 status parameter, respectively."
SDS17. SDS 名称	数据类型	维数	数据量(字节)
Orbit_Count 成像仪轨道计数	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Orbit Count"

units	string	1	"none"
valid_range	int16	2	[0, 255]
Description	string	1	"Orbit count for each frame of total 645."
SDS18. SDS 名称	数据类型	维数	数据量(字节)
High_Voltage_Power_AD 高压电源 AD 值	float32	[645,4]	645*4*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"High Voltage Power AD"
units	string	1	"V"
valid_range	float32	2	[0.0, 10000.0]
Description	string	1	"High voltage power A/D for each frame of total 645. The second dimension stands for high voltage power 1 MON, LATCH, high voltage power 2 MON, and LATCH, respectively."
SDS19. SDS 名称	数据类型	维数	数据量(字节)
Thermal_Control State 热控状态	int16	[645]	645*2
Notes: Bit Flag Description 0 Heating Area 1 0: Heated, 1: Notheated 1 Heating Area 2 0: Heated, 1: Notheated 2 Heating Area 3 0: Heated, 1: Notheated 3 Heating Area 4 0: Heated, 1: Notheated 4 Heating Area 5 0: Heated, 1: Notheated 5 Heating Area 6 0: Heated, 1: Notheated 6 Heating Area 7 0: Heated, 1: Notheated 7 Heating Area 8 0: Heated, 1: Notheated 8 Heating Area 9 0: Heated, 1: Notheated 9 Heating Area 10 0: Heated, 1: Notheated 10 Reserved 11 Reserved 12 Filter 1 Primary Heating Loop Temperature Measurment Accuracy 0: High, 1: Low 13 Filter 1 Secondary Heating Loop Temperature Measurment Accuracy 0: High, 1: Low 14 Filter 2 Primary Heating Loop Temperature Measurment Accuracy 0: High, 1: Low 15 Filter 2 Secondary Heating Loop Temperature Measurment Accuracy 0: High, 1: Low			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Thermal Control Status"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Thermal control status for each frame of total 645."
SDS20. SDS 名称	数据类型	维数	数据量(字节)
Filter_Working_Mode 滤光片工作模式	int16	[645]	645*2
Notes: Bit Flag Description			

0~1 Filter 1 Primary Heating Loop Working Mode 00: Open-loop and not working, 01: Open-loop and working, 10: Non-default sensor close-loop working; 11: Default sensor close-loop working 2~3 Filter 1 Secondary Heating Loop Working Mode 00: Open-loop and not working, 01: Open-loop and working, 10: Non-default sensor close-loop working; 11: Default sensor close-loop working 4~5 Filter 2 Primary Heating Loop Working Mode 00: Open-loop and not working, 01: Open-loop and working, 10: Non-default sensor close-loop working; 11: Default sensor close-loop working 6~7 Filter 2 Secondary Heating Loop Working Mode 00: Open-loop and not working, 01: Open-loop and working, 10: Non-default sensor close-loop working; 11: Default sensor close-loop working			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Filter Working Mode"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Filter working mode for each frame of total 645."
SDS21. SDS 名称	数据类型	维数	数据量(字节)
Filter_Temperature 滤光片温度	float32	[645,8]	645*8*4
Notes: The second dimension: 0: Filter 1 Primary High Accuracy Temperature Measurement, 1: Filter 1 Primary Low Accuracy Temperature Measurement, 2: Filter 1 Secondary High Accuracy Temperature Measurement, 3: Filter 1 Secondary Low Accuracy Temperature Measurement, 4: Filter 2 Primary High Accuracy Temperature Measurement, 5: Filter 2 Primary Low Accuracy Temperature Measurement, 6: Filter 2 Secondary High Accuracy Temperature Measurement, 7: Filter 1 Secondary Low Accuracy Temperature Measurement 数据量（字节）			
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Filter Temperature"
units	string	1	"°C"
valid_range	float32	2	[-100.0,1000.0]
Description	string	1	"Filter temperature for each frame of total 645."
SDS22. SDS 名称	数据类型	维数	数据量(字节)
Components_Temperature 器件温度	float32	[645,19]	645*19*4
Notes:The second dimension: 0: Lens Components 1 Thermal Control Temperature			

-
- 1: Lens Components 2 Thermal Control Temperature
 - 2: Lens Components Frame Thermal Control Primary Temperature
 - 3: Lens Components Frame Thermal Control Secondary Temperature
 - 4: U Type Frame +Y Column +Y Side Thermal Control Primary Temperature
 - 5: U Type Frame +Y Column +Y Side Thermal Control Secondary Temperature
 - 6: U Type Frame -Y Column -Y Side Thermal Control Primary Temperature
 - 7: U Type Frame -Y Column -Y Side Thermal Control Secondary Temperature
 - 8: Motor Thermal Control Primary Temperature
 - 9: Motor Thermal Control Secondary Temperature
 - 10: Sensor Housing 1 Temperature
 - 11: Sensor Housing 2 Temperature
 - 12: High Voltage Module 1 Temperature
 - 13: High Voltage Module 2 Temperature
 - 14: Motor Support +X Side Temperature
 - 15: Motor Support -X Side Temperature
 - 16: Base -Y Side U Type Frame Side Temperature
 - 17: Base +Y Side U Type Frame Side Temperature
 - 18: Base -Y Side Mounting Surface Side Temperature

SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Components Temperature"
units	string	1	"°C"
valid_range	float32	2	[-100.0, 1000.0]
Description	string	1	"Components temperature for each frame of total 645."
SDS23. SDS 名称	数据类型	维数	数据量(字节)
Filter_Heating_Current 滤光片加热电流	float32	[645,8]	645*8*4

Notes:

The second dimension:

- 0: Filter 1 Primary Heating Current
- 1: Filter 1 Primaty Heating Current Telemetry Value
- 2: Filter 1 Secondary Heating Current
- 3: Filter 1 Secondary Heating Current Telemetry Value
- 4: Filter 2 Primary Heating Current
- 5: Filter 2 Primaty Heating Current Telemetry Value
- 6: Filter 2 Secondary Heating Current
- 7: Filter 2 Secondary Heating Current Telemetry Value

SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.0
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	" Filter Heating Current"
units	string	1	"A"
valid_range	float32	2	[0.0, 100.0]
Description	string	1	"Filter heating current for each frame of total 645."
SDS24. SDS 名称	数据类型	维数	数据量(字节)
Heating_Duty_Cycle 加热占空比	float32	[645,10]	645*10*4

Notes:The second dimension:

0: Lens Components 1 Thermal Control Heating Duty Cycle
 1: Lens Components 2 Thermal Control Heating Duty Cycle
 2: Lens Components Frame Thermal Control Primaty Heating Duty Cycle
 3: Lens Components Frame Thermal Control Secondary Heating Duty Cycle
 4: U Type Frame +Y Column +Y Side Thermal Control Primary Heating Duty Cycle
 5: U Type Frame +Y Column +Y Side Thermal Control Secondary Heating Duty Cycle
 6: U Type Frame -Y Column -Y Side Thermal Control Primary Heating Duty Cycle
 7: U Type Frame -Y Column -Y Side Thermal Control Secondary Heating Duty Cycle
 8: Motor Thermal Control Primary Heating Duty Cycle
 9: Motor Thermal Control Secondary Heating Duty Cycle

SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Heating Duty Cycle"
units	string	1	"none"
valid_range	float32	2	'0.0, 100.0'
Description	string	1	"Heating duty cycle for each frame of total 645."
SDS25. SDS 名称	数据类型	维数	数据量(字节)
Imager_Observing_Mode 成像仪探测模式	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Imager Observing Mode"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Imager observing mode for each frame of total 645. '0x4C' stands for the self-inspection mode, '0x5D' for the stare mode, '0x6E' for the 120° scan mode, '0x8F' for the 80° scan mode, '0x77' for standby, and others for not controlled."
SDS26. SDS 名称	数据类型	维数	数据量(字节)
Threshold_Update_Command 阈值更新命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Threshold Update Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Threshold update command for each frame of total 645. '0x3A' stands for updated, and others for not updated."
SDS27. SDS 名称	数据类型	维数	数据量(字节)

High_Voltage_Power_Control_Command 高压电源控制命令	int16	[645,2]	645*2*2
Notes: Second dimension Description 0 High Voltage 1 Control Command '0x8D': Power on, '0x7B': Power off, '0xD8': Prohibited, Others: Not controled 1 High Voltage 2 Control Command '0x9E': Power on, '0x2E': Power off, '0xE9': Prohibited, Others: Not controled			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"High Voltage Power Control Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"High voltage power control command for each frame of total 645."
SDS28. SDS 名称	数据类型	维数	数据量(字节)
Sensor_Threshold 探测器阈值	float32	[645,4]	645*4*4
Notes:The second dimension: 0: Sensor 1 Lower Threshold - Uploaded 1: Sensor 1 Lower Threshold - Applied 2: Sensor 2 Lower Threshold - Uploaded 3: Sensor 3 Lower Threshold - Applied			
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Sensor Threshold"
units	string	1	"V"
valid_range	float32	2	[0.0, 4095.0]
Description	string	1	"Sensor threshold for each frame of total 645."
SDS29. SDS 名称	数据类型	维数	数据量(字节)
Sensor_High_Voltage_Value 探测器高压幅值	float32	[645,2]	645*2*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Sensor High Voltage Value"
units	string	1	"V"
valid_range	float32	2	[0.0, 3185.0]
Description	string	1	"Sensor high voltage value for each

			frame of total 645. The second dimension stands for the sensor 1 and sensor 2, respectively."
SDS30. SDS 名称	数据类型	维数	数据量(字节)
Motor_Control_Command 电机控制命令	int16	[645]	645*2
Notes: '0x8E': Controlled by the direction and steps of the motor, '0x71': Controlled by the target angle and the Hall command, Others: Not controlled.			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Control Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Motor control command for each frame of total 645."
SDS31. SDS 名称	数据类型	维数	数据量(字节)
Exposure_Times_Update_Comm and 曝光次数更新命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	Int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Exposure Times Update Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Exposure times update command for each frame of total 645. '0x3A' stands for the updated, and others for not."
SDS32. SDS 名称	数据类型	维数	数据量(字节)
Exposure_Times 曝光次数	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Exposure times"
units	string	1	"none"
valid_range	int16	5	['0x02', '0x04', '0x06', '0x08', '0x0A']
Description	string	1	"Exposure times for each frame of total 645."
SDS33. SDS 名称	数据类型	维数	数据量(字节)
Hall_Command 霍尔命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值

FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Hall Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Hall command for each frame of total 645. '0x12' indicates that only Hall 1 is adopted, '0xB4' indicates that only Hall 2 is adopted, and others for not controlled."
SDS34. SDS 名称	数据类型	维数	数据量(字节)
Target_Angle 目标角度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Target Angle"
units	string	1	"degree"
valid_range	float32	2	[0.0, 1200.0]
Description	string	1	"Target angle for each frame of total 645. The angle increases in the direction of flight."
SDS35. SDS 名称	数据类型	维数	数据量(字节)
Motor_Run_Step 电机运行步数	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Run Step"
units	string	1	"none"
valid_range	int16	2	[0, 10667]
Description	string	1	"Motor run step for each frame of total 645."
SDS36. SDS 名称	数据类型	维数	数据量(字节)
Motor_Running_Direction 电机运行方向	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Running Direction"
units	string	1	"none"
valid_range	int16	2	['0x80', '0x40']
Description	string	1	"Motor running direction for each frame of total 645. '0x80' stands for the scanning along the orbit, and '0x40' on the contrary."

SDS37. SDS 名称	数据类型	维数	数据量(字节)
Sun_Avoid_Angle_Update_Command 蔽日角度更新命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Sun Avoid Angle Update Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Sun avoid angle update command for each frame of total 645. '0x3A' stands for updated, and others for not."
SDS38. SDS 名称	数据类型	维数	数据量(字节)
Sun_Avoid_Angle 蔽日角度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	Float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Sun Avoid Angle"
units	string	1	"degree"
valid_range	float32	2	[0.0, 1200.0]
Description	string	1	"Sun avoid angle for each frame of total 645."
SDS39. SDS 名称	数据类型	维数	数据量(字节)
Geomagnetic_Moment_Update_Command 地球磁矩更新命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Geomagnetic Moment Update Command"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Geomagnetic moment update command for each frame of total 645. '0x3A' stands for updated, and others for not."
SDS40. SDS 名称	数据类型	维数	数据量(字节)
Geomagnetic_Moment 地球磁矩	float32	[645,10]	645*10*4
Notes:The second dimension: 0: G10 higher byte 1: G10 lower byte 2: G11 higher byte			

3: G11 lower byte
 4: H11 higher byte
 5: H11 lower byte
 6: ΔG10
 7: ΔG11
 8: ΔH11
 9: EPOCH

SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Geomagnetic Moment"
units	string	1	"A·m2"
valid_range	float32	2	[-315430.0, 315430.0]
Description	string	1	"Geomagnetic moment for each frame of total 645."
SDS41. SDS 名称	数据类型	维数	数据量(字节)
Thermal_Control_Mode 热控模式	int16	[645,51]	645*51*2

参见附录《SDS41Notes.docx》

SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Thermal Control Mode"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Thermal control mode for each frame of total 645."

SDS42. SDS 名称	数据类型	维数	数据量(字节)
FPGA_Reload_Count FPGA 重加载计数	int16	[645]	645*2

SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"FPGA Reload Count"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"FPGA reload count for each frame of total 645."

SDS43. SDS 名称	数据类型	维数	数据量(字节)
Internal_Command_Count 内部指令计数	int16	[645]	645*2

SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Internal Command Count"
units	string	1	"none"

valid_range	int16	2	[0, 65535]
Description	string	1	"Internal command count for each frame of total 645."
SDS44. SDS 名称	数据类型	维数	数据量(字节)
Data_Upload_Count 数据注入计数	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Data Upload Count"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Data upload count for each frame of total 645."
SDS45. SDS 名称	数据类型	维数	数据量(字节)
Motor_Overheated_Protection 电机过热保护状态	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Overheated Protection"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Motor overheated protection for each frame of total 645. '0x48' stands for valid, '0x96' for invalid, and others for not changed."
SDS46. SDS 名称	数据类型	维数	数据量(字节)
Motor-Control Data 电机控制数据	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Motor Control Data"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Motor control data for each frame of total 645. Bit 0~13 stand for the steps, and bit 14~15 for the direction (01: positive, 10, negative)."
SDS47. SDS 名称	数据类型	维数	数据量(字节)
Self-inspection_Orbit_Frequency 自检轨道频率	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0

band_name	String	1	"none"
long_name	String	1	"Self-inspection orbit Frequency"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Self-inspection orbit frequency for each frame of total 645."
SDS48. SDS 名称	数据类型	维数	数据量(字节)
Self-inspection_Orbit_Frequency_Update_Command 自检轨道频率更新命令	int16	[645]	645*2
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Self-inspection Orbit Frequency Update Command"
units	string	1	"none"
valid_range	int16	2	[0, 65535]
Description	string	1	"Self-inspection orbit frequency update command for each frame of total 645. '0x3A' stands for updated, others for not."
SDS49. SDS 名称	数据类型	维数	数据量(字节)
Internal_Command 内部指令	int16	[645]	645*2
Notes: No. Command Description 0 '0x0411' Out of the Shadows 1 '0x0511' Into the Shadows 2 '0x1411' High Voltage 1 Enabled 3 '0x1511' High Voltage 1 Disabled 4 '0x1611' High Voltage 2 Enabled 5 '0x1711' High Voltage 2 Disabled 6 '0x2411' Whole Instrument (Except the Filters) Thermal Control On 7 '0x2511' Whole Instrument (Except the Filters) Thermal Control Off 8 '0x2611' Primary Filter Thermal Control Off 9 '0x2711' Primary Filter Thermal Control On 10 '0x2811' Secondary Filter Thermal Control Off 11 '0x2911' Secondary Filter Thermal Control On 12 '0x3811' Self-inspection Mode 13 '0x3911' Scan Mode 14 '0x4011' Using GPS Parameters to Calculate Geomagnetic Latitude 15 '0x4111' Using Geographic Longitude and Latitude to Calculate Geomagnetic Latitude			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Internal Command"
units	string	1	"none"
valid_range	int16	16	['0x0411', '0x0511', '0x1411', '0x1511', '0x1611', '0x1711', '0x2411', '0x2511', '0x2611', '0x2711', '0x2811', '0x2911', '0x3811', '0x3911', '0x4011',

			'0x4111']
Description	string	1	"Internal command for each frame of total 645."
SDS50. SDS 名称	数据类型	维数	数据量(字节)
Peak-holding Circuit_Status 峰值保持器状态	int16	[645]	645*2
Notes: Bit Flag Description 0 Z2 Peak-holding Circuit Status 0: Normal, 1: Abnormal 1 W2 Peak-holding Circuit Status 0: Normal, 1: Abnormal 2 S2 Peak-holding Circuit Status 0: Normal, 1: Abnormal 3 Z1 Peak-holding Circuit Status 0: Normal, 1: Abnormal 4 W1 Peak-holding Circuit Status 0: Normal, 1: Abnormal 5 S1 Peak-holding Circuit Status 0: Normal, 1: Abnormal 6~7 Reserved			
SDS 属性名	数据类型	数量	值
FillValue	int16	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Peak-holding Circuit Status"
units	string	1	"none"
valid_range	int16	2	[-32767, 65535]
Description	string	1	"Peak-holding circuit status for each frame of total 645."
SDS51. SDS 名称	数据类型	维数	数据量(字节)
Senor_Received_Photon_Count 探测器接收光子计数	int32	[645,2]	645*2*4
SDS 属性名	数据类型	数量	值
FillValue	int32	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	" Senor Received Photon Count"
units	string	1	"none"
valid_range	int32	2	[0, 4294967294]
Description	string	1	"Sensor received photon counts for each frame of total 645. The second dimension stands for sensor 1 and 2, respectively."
SDS52. SDS 名称	数据类型	维数	数据量(字节)
Longitude 经度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Longitude"
units	string	1	"degree"
valid_range	unit16	2	[-180.0, 180.0]
Description	string	1	"Longitude in WGS84 for each frame of total 645."
SDS53. SDS 名称	数据类型	维数	数据量(字节)
Latitude	float32	[645]	645*4

纬度			
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"degree"
long_name	String	1	"Latitude"
units	string	1	"none"
valid_range	float32	2	[-90.0, 90.0]
Description	string	1	"Latitude in WGS84 for each frame of total 645."
SDS54. SDS 名称	数据类型	维数	数据量(字节)
Solar_Vector_Xs 太阳矢量 Xs	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Solar Vector Xs"
units	string	1	"none"
valid_range	double64	2	[-90.0, 90.0]
Description	string	1	"Solar vector Xs for each frame of total 645."
SDS55. SDS 名称	数据类型	维数	数据量(字节)
Solar_Vector_Ys 太阳矢量 Ys	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Solar Vector Ys"
units	string	1	"none"
valid_range	double64	2	[-90.0, 90.0]
Description	string	1	"Solar vector Ys for each frame of total 645."
SDS56. SDS 名称	数据类型	维数	数据量(字节)
Solar_Vector_Zs 太阳矢量 Zs	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Solar Vector Zs"
units	string	1	"none"
valid_range	double64	2	[-90.0, 90.0]
Description	string	1	"Solar vector Zs for each frame of total 645."
SDS57. SDS 名称	数据类型	维数	数据量(字节)
Sensor_Collected_Photon_Count 探测器采集光子计数	int32	[645,2]	645*2*4
SDS 属性名	数据类型	数量	值

FillValue	int32	1	-9999
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	" Sensor Collected Photon Count"
units	string	1	"none"
valid_range	int32	2	[0, 4294967294]
Description	string	1	"Sensor collected photon count for each frame of total 645. The second dimension stands for the sensor 1 and 2, respectively."
SDS58. SDS 名称	数据类型	维数	数据量(字节)
QA_Index 质量信息码	int32	[645]	645*4
注释: bit 位 标志说明 0~2 帧 LQC 码 3~4 帧 DQC 码 5 时间码有效性检验 0: 有效; 1: 无效 6 时间码连续性检验 0: 连续; 1: 不连续 7 时间码修正标识 0: 不修正; 1: 修正 8 帧同步码检验 0: 正常; 1: 异常 9 帧计数有效性检验 0: 有效; 1: 无效 10 帧计数连续性检验 0: 连续; 1: 不连续 11~13 曝光次数标识 000: 2 次; 001: 4 次; 010: 6 次; 011: 8 次; 100: 10 次 14 蔽日状态标志 0: 未蔽日; 1: 蔽日 15 高压电源 1 输出检验 0: 正常; 1: 异常 16 高压电源 2 输出检验 0: 正常; 1: 异常 17 滤光片 1 温度检验 0: 正常; 1: 异常 18 滤光片 2 温度检验 0: 正常; 1: 异常 19~31 保留			
SDS 属性名	数据类型	数量	值
FillValue	int32	1	-32767
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Qaulity Index"
units	string	1	"none"
valid_range	int32	2	[0, 2147483647]
Description	string	1	"The quality assurance index for each frame of total 645."
SDS59. SDS 名称	数据类型	维数	数据量(字节)
Sat_Latitude 卫星纬度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Satellite Latitude"
units	string	1	"degree"
valid_range	float32	2	'-90.0, 90.0'
Description	string	1	"The latitude of satellite above"

			WGS84 for each frame of total 645."
SDS60. SDS 名称	数据类型	维数	数据量(字节)
Sat_Longitude 卫星经度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Satellite Longitude"
units	string	1	"degree"
valid_range	float32	2	'-180.0, 180.0'
Description	string	1	"The longitude of satellite above WGS84 for each frame of total 645."
SDS61. SDS 名称	数据类型	维数	数据量(字节)
Sat_Height 卫星高度	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Satellite Height"
units	string	1	"kilometre"
valid_range	float32	2	'0.0, 900.0'
Description	string	1	"The height of satellite for above WGS84 each frame of total 645."
SDS62. SDS 名称	数据类型	维数	数据量(字节)
Pitch 俯仰	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Pitch"
units	string	1	"degree"
valid_range	float32	2	'-90.0, 90.0'
Description	string	1	"The pitch above WGS84 for each frame of total 645."
SDS63. SDS 名称	数据类型	维数	数据量(字节)
Roll 滚动	float32	[645]	645*4
SDS 属性名	数据类型	数量	值
FillValue	float32	1	-9999.9
Intercept	float32	1	0.0
Slope	float32	1	1.0
band_name	String	1	"none"
long_name	String	1	"Roll"
units	string	1	"degree"
valid_range	float32	2	'-90.0, 90.0'
Description	string	1	"The roll above WGS84 for each

			frame of total 645."
SDS64.	SDS 名称	数据类型	维数
	Yaw 偏航	float32	[645]
			645*4
	SDS 属性名	数据类型	数量
	FillValue	float32	1
	Intercept	float32	1
	Slope	float32	1
	band_name	String	1
	long_name	String	1
	units	string	1
	valid_range	float32	2
	Description	string	1
			"The yaw above WGS84 for each frame of total 645."

2.5 表格数据

表7. FY-3D 广角极光成像仪 L1 数据（OBC）表格数据（Vdata）定义

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3 备忘录

表8. 更新备忘录

版本号	日期	修改者	修 改 描 述
V1.0	2016-01-12	李嘉巍, 于超	建立文档。
V2.0	2016-07-15	李嘉巍, 于超	修改全局属性; 增加通道中心波长等私有属性; 增加斜率、截距和描述等科学数据集属性; 对同类科学数据集进行合并; 修改文件大小; 全局属性中增加创建人信息; 修改数据质量标记分级定义。
V2.1	2016-08-23	李嘉巍, 孙凌, 于超	修改部分科学数据集描述; 修改数据质量标记分级定义。