

# SPIRE

**SUBJECT:** Test Facility Control System Data ICD

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## Glossary

APID	Application ID
EGSE	Electronic Ground Support Equipment
SID	Structure ID
SPIRE	Spectral and Photometric Imaging REceiver
TFCS	Test Facility Control System

## 1. INTRODUCTION

The Test Facility Control System (TFCS) controls the equipment in the SPIRE Test Facility that is used to simulate the environment in which the instrument will operate and to stimulate the instrument. Although able to operate in a stand-alone manner during testing of the Test Facility itself, it is also used as part of the SPIRE EGSE during instrument-level tests, and in this role it has to conform to the data communication interfaces of the EGSE.

All telemetry data produced by the EGSE systems will follow the same standards as is used in the Herschel Spacecraft and Ground Segment systems (this allows easier transition from the testing to the operational environments). The data is generated in the form of TM Source Packets conforming to the ESA Packet Utilisation Standard (RD1), but the set of supported packet types within the Herschel project is restricted. This restricted set is defined in the Herschel Packet Structure ICD (AD1).

The TFCS utilises a reduced set of telemetry packet types and this document details the contents of each of these.

### 1.1 Scope

Telemetry packets are passed between the components of the EGSE by sending them as messages, through the Packet Router. The Packet Router ICD (AD2) defines the format of these messages, whereas this document defines the content of the data component of them.

## 2. DOCUMENTS

### 2.1 Applicable Documents

AD1      Herschel Packet Structure ICD  
AD2      Herschel Packet Router ICD  
AD3      SPIRE EGSE Configuration Plan

### 2.2 Reference Documents

RD1      ESA Packet Utilisation Standard

#### Change record:

Issue 1.3: TM packet modified

### 3. PACKET STRUCTURES

#### 3.1 Telecommand Packets

The following table gives the general structure of a TFCS TC Packet (after AD1)

<b>Packet Header</b>	Packet ID	00011	APID
	Sequence Control	11 Src	Count
	Length	Length	
<b>Data Field</b>	Data Field Header	0000 Ack	Type
		Sub-Type	00000000
	Source Data	DATA	
	Error Control	Checksum	

- Src, Count, Length and Checksum are defined in AD1
- Ack is defined in AD1. Only bit 3 of the Ack field (TC Acceptance Verification) is used, other bits are assumed to be zero.
- Type and Sub-Type define the packet type and are also defined in AD1.

#### 3.2 Telemetry Packets

The following table gives the general structure of a TFCS TM Packet (after AD1)

<b>Packet Header</b>	Packet ID	00001	APID
	Sequence Control	11	Count
	Length	Length	
<b>Data Field</b>	Data Field Header	00000000	Type
		Sub-Type	00000000
	Source Data	TIME	
	Error Control	Checksum	

Count, Length, TIME and Checksum are defined in AD1  
 Type and Sub-Type define the packet type and are also defined in AD1

### 3.3 APIDs

The Application ID is used to identify the source or destination of a telemetry packet. Herschel uses different APIDs for different types of packet (see AD1). The TFCS will follow this convention. The APIDs to be used by the TFCS are defined in the EGSE Configuration Plan (AD3) and are given in the following table:

Telemetry types	APID (hex)
All TFCS Data	7F4

## 4. TELECOMMAND PACKETS

This section defines all the telecommand packets accepted by the TFCS.

It is the default that all telecommands received by the TFCS will be acknowledged with a TC Acceptance Report (Service 1,1 or 1,2 depending on outcome).

There are currently no telecommands that generate command execution reports (Services 1,3; 1,5 or 1,7).

### 4.1 Telecommand Packet Types

The Packet Structure ICD (AD1) defines many types of service that can be provided by an application. The following table shows the telecommand packet types that will be accepted by the SPIRE TFCS

Description	Service Type	Service Sub-Type	Comments
<b>Function Management</b> Perform Activity of Function	8	4	
<b>Time Management</b> Enable Time Verification	9	7	
<b>Test Service</b> Perform Connection Test	17	1	

**Table 4-1 Telecommand Packet Types**

### 4.2 Telecommand Packet Definition

#### 4.2.1.1 Perform Activity of Function (Service 8,4)

All commands of this type and subtype may give rise to the following errors:

Error	TM Service	Error Code	Description
Illegal_Activity_ID	(1,2)	0x0802	Activity_ID_Not_Known

#### 4.2.1.1.1 Function 0xC1 Observations, Activity 0x01: Set Observation ID

This command sets the value for the Observation ID, which is included in all telemetry packets to allow them to be ingested into the HCSS database. The current BBID value is unaffected.

0	0	0	1	1	APID1										
1	1	0	0	0	Count										
Length = 11															
0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
FUNCTIONID							ACTIVITYID								
OBSID															
Checksum															

Parameter	Value	Description
FUNCTIONID	0xC1	
ACTIVITYID	0x01	Set Observation ID (8bit)
OBSID		Observation ID (32bit)

#### 4.2.1.1.2 Function 0xC1 Observations, Activity 0x02: Set Building Block ID

This command sets the value for the Building Block ID which is included in all telemetry packets to allow them to be ingested into the HCSS database

0	0	0	1	1	APID1										
1	1	0	0	0	Count										
Length = 11															
0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
FUNCTIONID							ACTIVITYID								
BBID															
Checksum															

Parameter	Value	Description
FUNCTIONID	0xC1	
ACTIVITYID	0x02	Set BBID (8bit)
BBID		Building Block ID (32bits)

#### 4.2.1.1.3 Function 0xCC TFCS, Logging Control.

These commands control the activation and deactivation of the logging subsystems of the Temperature, Cryogen Level, and Pressure monitoring systems.

0	0	0	1	1	APID1										
1	1	0	0	0	Count										
Length = 7															
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
FUNCTIONID							ACTIVITYID								
Checksum															

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x01	Activate Temp. Logging
	0x02	Deactivate Temp. Logging
	0x03	Activate Cryogen Logging
	0x04	Deactivate Cryogen Logging
	0x05	Activate Pressure Logging
	0x06	Deactivate Pressure Logging

#### 4.2.1.1.4 Function 0xCC TFCS, Activity 0x07: Set Interface Temperature

This command sets the temperature of an interface.

0	0	0	1	1	APID1											
1	1	0	0	0	Count											
Length = 13																
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
FUNCTIONID					ACTIVITYID											
0	0	0	0	0	0	0	0	0	INTERF							
TEMP																
Checksum																

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x07	Set Interface Temperature.
INTERF		Interface Number:
	0	Level 0 Heater 1
	1	Level 0 Heater 2
	2	Level 0 Heater 3
	3	Level 1
	4	10K Shield
TEMP		Target Temperature. (32 bits)

#### 4.2.1.1.5 Function 0xCC TFCS, Flip Mirror.

These commands set various attributes of the Cold Black Body.

0	0	0	1	1	APID1											
1	1	0	0	0	Count											
Length = 7																
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
FUNCTIONID					ACTIVITYID											
Checksum																

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x08	Activate Logging
	0x09	Deactivate Logging
	0x0A	Open Flip Mirror
	0x0B	Close Flip Mirror
	0x0C	Open Heat Shunt
	0x0D	Close Heat Shunt

#### 4.2.1.1.6 Function 0xCC TFCS, Activity 0x0E. Set Cold Black Body Power

This command sets the Cold Black Body to a specific power level.

0	0	0	1	1	APID1											
1	1	0	0	0	Count											
Length = 11																
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
FUNCTIONID					ACTIVITYID											
POWER																
Checksum																

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x0E	Set CBB Power.
POWER		Power Setting. (32 bit)

#### 4.2.1.1.7 Function 0xCC TFCS, Telescope Simulator MM4006.

These commands control various attributes of the Telescope Simulator System

0	0	0	1	1	APID1									
1	1	0	0	0	Count									
Length = 7														
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
FUNCTIONID							ACTIVITYID							
Checksum														

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x0F	Activate MM4006
	0x10	Deactivate MM4006
	0x11	Center Actuators

#### 4.2.1.1.8 Function 0xCC TFCS, Activity 0x12. Set Actuator Position

This command sets a specific actuator to a specific position.

0	0	0	1	1	APID1										
1	1	0	0	0	Count										
Length = 13															
0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
FUNCTIONID							ACTIVITYID								
ACTUATORID															
POSITION															
Checksum															

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x12	Set Actuator Position.
ACTUATORID		Actuator Number.
POSITION		Position (mm, 32 bit)

#### 4.2.1.1.9 Function 0xCC TFCS, Activity 0x13. Move To Detector Position

This command moves the telescope beam to a specific location on the detector. The coordinates refer to an absolute position. X is the defocus (distance from the best focus calculated by the TFCS)

0	0	0	1	1	APID1										
1	1	0	0	0	Count										
Length = 19															
0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
FUNCTIONID							ACTIVITYID								
POSITIONX															
POSITIONY															
POSITIONZ															
Checksum															

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x13	Move to Detector Position.
POSITIONX		Detector X Coordinate.
POSITIONY		Detector Y Coordinate.
POSITIONZ		Detector Z Coordinate.



#### 4.2.1.1.10 Function 0xCC TFCS, Activity 0x14. Move from Detector X1,Y1, Z1 to X2,Y2, Z2 (not used?)

This command moves the Telescope beam across the detector from position X1, Y1, Z1 to X2,Y2, Z2.

0	0	0	1	1	APID1									
1	1	0	0	0	Count									
Length = 31														
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
FUNCTIONID		ACTIVITYID												
POSITIONX1														
POSITIONY1														
POSITIONZ1														
POSITIONX2														
POSITIONY2														
POSITIONZ2														
Checksum														

Parameter	Value	Description
FUNCTIONID	0xCC	
ACTIVITYID	0x14	Move from X1,Y1, Z1 to X2,Y2, Z2.
POSITIONX1		Detector X1 Coordinate.
POSITIONY1		Detector Y1 Coordinate.
POSITIONZ1		Detector Z1 Coordinate.
POSITIONX2		Detector X1 Coordinate.
POSITIONY2		Detector Y2 Coordinate.
POSITIONZ2		Detector Z2 Coordinate.

## 4.2.2 Time Management

### 4.2.2.1 Enable Time Verification (Service 9,7)

On receipt of this TC, The TFCS responds with a Time Verification Report (Service 9,9)

0	0	0	1	1	APID1									
1	1	0	0	0	Count									
Length = 5														
0	0	0	0	0	0	1	0	0	0	0	1	0	0	1
0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
Checksum														

#### 4.2.3 Test Service

##### 4.2.3.1 Perform Connection Test (Service 17,1)

On successful receipt of this command the TFCS shall respond with a nominal Successful Command Acceptance Report (Service 1,1) followed by a Link Connection Report (Service 17,2).

0	0	0	1	1	APID1											
1	1	0	0	0	Count											
Length = 5																
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Checksum																

## 5. TFCS TELEMETRY PACKETS

This section defines all the TM packets that will be produced by the TFCS.

### 5.1 Telemetry Packet Types

The Packet Structure ICD (AD1) defines many types of service that can be provided by an Application. The following table shows the telemetry packet types that will be produced by the TFCS:

Description	Service Type	Service Sub-Type	Comments
<b>Telecommand Verification Service</b>			
Telecommand Acceptance Report - Success	1	1	
Telecommand Acceptance Report - Failure	1	2	
Telecommand Execution Report - Failure	1	8	
<b>Housekeeping and Diagnostic Data Reporting</b>			
Housekeeping Parameter Report	3	25	
<b>Event Reporting</b>			
Event Report	5	1	
Error/Alarm Report	5	4	
<b>Time Management</b>			
Time Verification Report	9	9	
<b>Test Service</b>			
Link Connection Report	17	2	

## 5.2 TC Verification Packets

### 5.2.1 Telecommand Acceptance Report - Success

00000111111110100
11 Count
00000000000001111
00000000000000001
00000000100000000
TIME
00001111111111000
11 TC Packet Count
Checksum

### 5.2.2 Telecommand Acceptance Report - Failure

The structure of this packet depends on the type of error found.

00000111111110100
11 Count
00000000000010001
00000000000000001
00001000000000000
TIME
00001111111111000
11 TC Packet Count
Failure Code
Params (n*16bits)
Checksum

Error	Code	Parameter
Illegal Packet Type	3	Type
Illegal Packet Sub-Type	4	Sub-Type

00000111111110100
11 Count
00000000000010011
00000000000000001
00000001000000000
TIME
00001111111111000
11 TC Packet Count
Code

Error	Code	Parameter
Illegal APID	0	APID
Incomplete Packet or invalid Length	1	Length
Incorrect Checksum	2	Checksum

Parameter
Checksum

000000111111110100
11 Count
Length
000000000000000001
000000100000000000
TIME
0000111111111111000
11 TC Packet Count
00000000 Code
Parameters
Checksum

Error	Code	Parameters
Illegal or inconsistent Application Data	16	See Note
Illegal TFCS Subsystem	17	See Note
Other TBD TFCS errors	18-255	See Note

*Note: The parameters for each TBD error are TBD, but as a suggestion this field should contain the first 20 words from the 'source data' field of the received telecommand packet, unless this field is less than 20 words in length, in which case all words from the 'source data' field will be included.*

### 5.2.3 Telecommand Execution Report - Failure

The structure of this packet depends on the type of error found and are currently TBD, but the Telemetry packet will take the following form.

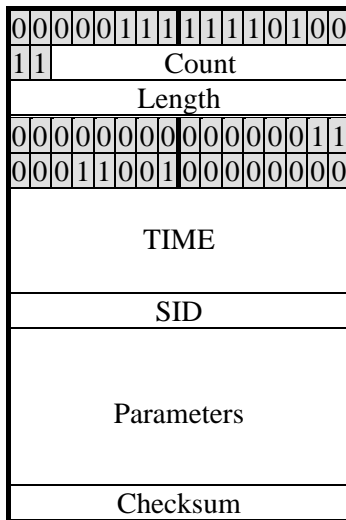
000000111111110100
11 Count
Length
000000000000000001
000010000000000000
TIME
0000111111111111000
11 TC Packet Count
00000000 Code
Parameters
Checksum

## 5.3 Housekeeping Packets

### 5.3.1 Housekeeping Parameter Report

Each TFCS packet type is allocated a single Structure ID (SID) which is used to identify the source and contents of the housekeeping packet. The number of parameters, and hence the length of the packet depends on the SID.

#### 5.3.1.1 TFCS Telemetry Packets

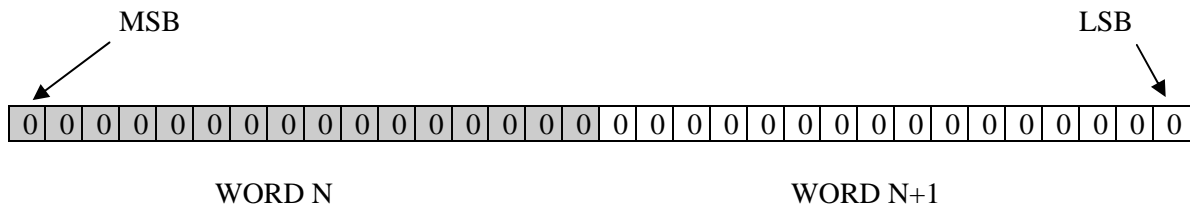


Subsystem	SID
TFCS	0x100

The data field in the cryostat telemetry packet is broken down in the following way. The data types are indicated in the table. REAL values are converted to a 32 bit binary (Packet Type Code 5, Packet Format Code 1) in accordance with AD1 Section A6.3.5.

The data field is a fixed length of 358 bytes. All parameters are always sent. If data is not available for a particular parameter, the data field will be set to the value of the data word count to indicate invalid data.

The parameters are broken down into 2 consecutive 16 bit words:



Data field definition:

<b>Location</b>	<b>Parameter Description</b>	<b>Parameter type</b>
0	SID	Integer (U16)
2	OBSID	Integer (U32)
6	BBID	Integer (U32)
10	Temperature Logging Enabled/Disabled	Boolean (True = Enabled)
11	Pressure Logging Enabled/Disabled	Boolean (True = Enabled)
12	Cryogen level logging Enabled/Disabled	Boolean (True = Enabled)
13	Cold Blackbody Logging Enabled/Disabled	Boolean (True = Enabled)
14	Weather station logging Enabled/Disabled	Boolean (True = Enabled)
15	Telescope simulator logging Enabled/Disabled	Boolean (True = Enabled)
16	Beam monitor logging Enabled/Disabled	Boolean (True = Enabled)
17	Hot Black Body logging Enabled/Disabled	Boolean (True = Enabled)
18	(spare 2)	(1 byte)
19	(spare 3)	(1 byte)
20	Pirani Gauge Pressure	Real
24	Full Range Gauge Pressure	Real
28	N2 Level	Real
32	He Level	Real
36	77K Shield Endcap 1 Temperature	Real
40	77K Shield Endcap 2 Temperature	Real
44	77K Shield Filter Flange Temperature	Real
48	10K Shield Inlet Pipe Temperature	Real
52	10K Shield Outlet Pipe Temperature	Real
56	10K Shield Endcap 1 Temperature	Real
60	10K Shield Endcap 2 Temperature	Real
64	10K Shield Cylinder End 1 Temperature	Real
68	10K Shield Cylinder Centre Temperature	Real
72	10K Shield Cylinder End 2 Temperature	Real
76	10K Shield Filter Flange Temperature	Real
80	Vacuum Vessel Standoff 1 Temperature	Real
84	Vacuum Vessel Standoff 2 Temperature	Real
88	Vacuum Vessel Standoff 3 Temperature	Real
92	Vacuum Vessel Standoff 4 Temperature	Real
96	HOB Sim Phot JFET Enclosure Temperature	Real
100	HOB Sim Spec JFET Enclosure Temperature	Real
104	HOB Sim FPU Foot 1 Interface Temperature	Real
108	HOB Sim FPU Foot 2 Interface Temperature	Real
112	HOB Sim FPU Foot 3 Interface Temperature	Real
116	HOB Sim Harness Sink - RF Filters Temperature	Real
120	HOB Sim Harness Sink - Phot JFET Temperature	Real
124	HOB Sim Harness Sink - Spec JFET Temperature	Real
128	4K Vessel Top Temperature	Real
132	4K Vessel Bottom Temperature	Real
136	4K FPU Level 1 Strap interface Temperature	Real
140	1.7K Vessel - Bottom Temperature	Real
144	1.7K FPU Box Strap interface Temperature	Real
148	1.7K FPU Pump Strap interface Temperature	Real
152	1.7K FPU Evap Strap interface Temperature	Real
156	1.7K Vessel - Top Temperature	Real
160	Level 0 Interface 1 Set Point Temperature	Real
164	Level 0 Interface 2 Set Point Temperature	Real

168	Level 0 Interface 3 Set Point Temperature	Real
172	Level 1 Interface Set Point Temperature	Real
176	10K Shield Set Point Temperature	Real
180	HOB Simulator Heater Temperature	Real
184	Level 0 Heater 1 Power	Real
188	Level 0 Heater 2 Power	Real
192	Level 0 Heater 3 Power	Real
196	Level 1 Heater Power	Real
200	10K Shield Heater Power	Real
204	HOB Simulator Heater Power	Real
208	Fold Mirror 2 Commanded Azimuth	Real
212	Fold Mirror 2 Measured Azimuth	Real
216	Fold Mirror 2 Commanded Elevation	Real
220	Fold Mirror 2 Measured Elevation	Real
224	Fold Mirror 3 Commanded Azimuth	Real
228	Fold Mirror 3 Measured Azimuth	Real
232	Fold Mirror 3 Commanded Elevation	Real
236	Fold Mirror 3 Measured Elevation	Real
240	Translation Stage Commanded Position	Real
244	Translation Stage Measured Position	Real
248	X ESA commanded (defocus)	Real
252	Y ESA commanded	Real
256	Z ESA commanded	Real
260	Axis in motion status (Tel sim)	Boolean (True=in motion)
264	Flip Mirror Status	Boolean (True = closed)
268	Heat Shunt Status	Boolean (True = Active)
272	Cold Blackbody Temperature 1	Real
276	Cold Blackbody Temperature 2	Real
280	Cold Blackbody Temperature 3	Real
284	Cold Blackbody Heater Power	Real
288	Weather station Temperature 1	Real
292	Weather station Temperature 2	Real
296	Weather station Temperature 3	Real
300	Weather station Temperature 4	Real
304	Weather station Temperature 5	Real
308	Weather station Pressure	Real
312	Weather station Relative Humidity 1	Real
316	Weather station Relative Humidity 2	Real
320	Weather station Temperature 1 RAW	Integer (U32)
324	Weather station Temperature 2 RAW	Integer (U32)
328	Weather station Temperature 3 RAW	Integer (U32)
332	Weather station Temperature 4 RAW	Integer (U32)
336	Weather station Temperature 5 RAW	Integer (U32)
340	Weather station Pressure RAW	Integer (U32)
344	Weather station Relative Humidity 1 RAW	Integer (U32)
348	Weather station Relative Humidity 2 RAW	Integer (U32)
352	Beam monitor Signal	Real
356	Hot Black Body Set Point temperature	Real
360	Hot Black Body Temperature	Real

### 5.3.2 Error/Alarm Report

Each subsystem within the TFCS is allocated a single Structure ID (SID) which is used to identify the source of the alarm. The number of parameters, and hence the length of the packet depends on the subsystem.

0000111111110100
11 Count
Length
0000000000000101
0000010000000000
TIME
SID
Parameters
Checksum

Subsystem	SID
TFCS	0
Telescope Simulator	1
FTS	2
Beam Monitor	3
FIR Laser	4
Cold BB	5
Cryostat	6

## 5.4 Time Management Packets

### 5.4.1 Time Verification Report

0000111111110100
11 Count
00000000000010001
00000000000001001
0000100100000000
TIME
Local Time
Checksum



## 5.5 Link Connection Report (17,2)

0	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	
1	1	Count														
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
TIME																
Checksum																

## 5.6 Supplementary Temperature Monitoring System.

In addition to the TFCS Temperature Monitoring system, there is another temperature monitoring program on the TFCS PC to monitor the 24 extra sensors required during CQM testing. It takes data from 3 additional LakeShore units and displays and logs it in the same way as the TFCS system. Data logged by the supplementary temperature monitoring system may be viewed through the TFCS 'Playback' facility.

The data log files created by the TFCS system have names derived from the time and date that the file was created, i.e.:

yymmdd\_hhmm.tfc (e.g: 030712\_0900.tfc)

Log files created by the supplementary temperature system are named in a slightly different way:

yymmdd\_hhmm\_T2.tfc (e.g: 030712\_0900\_T2.tfc)

As with the TFCS system, these extra files log data for 60 minutes before a new file is created.

### 5.6.1 Supplementary Temperature Monitoring System Logfile structure.

Every 15 seconds the system logs the temperature values to a binary data file of the format:

No. of records
Time stamp
Sensor 1 value
Sensor 2 value
...
Sensor 24 value
Timestamp
Sensor 1 value
Sensor 2 value
...
Sensor 24 value

## 5.7 Telescope Simulator Global Variables.

<b>Name</b>	<b>Description</b>	<b>Data type</b>
Control	Assign control of Telescope Sim to Local or Remote Panel	Boolean
Motor On/Off	Turn motor on or off	Boolean
Home	Move actuators to HOME position	Boolean
EngYZ	Engage YZ Move button	Boolean
YPos	Y Position Input Box	Integer (U32)
ZPos	Z Position Input Box	Integer (U32)
AxisNum	Axis Number selection	Integer (U8)
InclAxis?	Include Axis? button	Boolean
CommInput	Command Input	String
EngComm	Engage Command button	Boolean
DispInp	Displacement input box	Integer (U32)
InclDisp?	Include Displacement? button	Boolean
ReqAxPos	Requested axes positions	Integer (U32)
ActAxPos	Actual axes positions	Integer (U32)
CodRet	Coding Returned (If command has requested a return)	String
Indicator	Indicator button to show which mode control is in (Local/Remote)	Boolean