Telemetry Handbook

For the HuskySat-1 Mission

Table of Contents

Telemetry Packets

AMSAT BDOT_TUMBLE_STATUS

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers.	195	29	UINT		

	Id Value: 308740128 **State** / **Value** EXTENDED / 1 STANDARD / 0			
BDOT_TUMBLE_STATUS_STATUS	bdot tumble status boolean **State** / **Value** FALSE / 0 TRUE / 1	224	1	UINT
PADDING	Padded bits for CAN data	225	63	UINT

AMSAT CMD_MTQ_BDOT

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307691553** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
CMD_MTQ_BDOT_X	bdot command for x direction	224	8	INT
CMD_MTQ_BDOT_Y	bdot command for y direction	232	8	INT
CMD_MTQ_BDOT_Z	bdot command for z direction	240	8	INT
PADDING	Padded bits for CAN data	248	40	UINT

AMSAT CMD_MTQ_FSW

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		

FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302252067** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
CMD_MTQ_FSW_X	bdot command for x direction	224	8	INT
CMD_MTQ_FSW_Y	bdot command for y direction	232	8	INT
CMD_MTQ_FSW_Z	bdot command for z direction	240	8	INT
CMD_MTQ_FSW_SC_MODE	overall satellite state **State** / **Value** TUMBLING / 0 NOT_TUMBLING_ALICE / 1 NOT_TUMBLING_BOB / 2 NOT_TUMBLING_CHARLIE / 3	248	8	UINT
PADDING	Padded bits for CAN data	256	32	UINT

AMSAT CMD_REBOOT_REQUEST

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 262152** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
CMD_REBOOT_REQUEST_DOMAIN	domain to reboot **State** / **Value** PPT / 0	224	8	UINT	

EPS	1
WHEEL	2
ESTIM	3
BDOT	4
RAHS	5
COM2	6
COM1	7
UNK	8

PADDING	Padded bits for CAN data	232	56	UINT	

AMSAT COM2_STATE

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		

DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307757552** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
COM2_STATE_UPTIME	time since least mcu reboot	224	16	UINT	s	%0.4f
COM2_STATE_QLEN	length of the queue of py files to run	240	16	UINT		
COM2_STATE_QFILESIZE	size of most recent queue file	256	16	UINT		
COM2_STATE_CURR_FILE	which fille is comm2 running rn	272	8	UINT		
COM2_STATE_HEALTH_STATE	health state codes	280	8	UINT		

AMSAT EPS_DIST_AUTOSEQ_GET_IND_RSP

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307233496** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
EPS_DIST_AUTOSEQ_GET_IND_RSP_IND	the indices, as an 8-element array	224	64	UINT

AMSAT EPS_DIST_AUTOSEQ_GET_MET_RSP

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307233497** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
EPS_DIST_AUTOSEQ_GET_MET_RSP_MET	the MET Read Conversion: value * 2.0**-15	224	32	UINT	s
PADDING	Padded bits for CAN data	256	32	UINT	

AMSAT ESTIM_MAG_UNIT_X

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449333** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		

ESTIM_MAG_UNIT_X_VAL	Unit vector of direction of magnetic field z	224	64	FLOAT	%0.4f

AMSAT ESTIM_MAG_UNIT_Y

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449334**	195	29	UINT		

State	Value
EXTENDED	1
STANDARD	0

ESTIM_MAG_UNIT_Y_VAL	Unit vector of direction of magnetic field y	224	64	FLOAT	%0.4f

AMSAT ESTIM_MAG_UNIT_Z

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		

CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449335** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
ESTIM_MAG_UNIT_Z_VAL	Unit vector of direction of magnetic field x	224	64	FLOAT	%0.4f

AMSAT ESTIM_STATE

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449336** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
ESTIM_STATE_ABOVE_GS	Are we above the ground stn? **State** / **Value** FALSE / 0 TRUE / 1	224	1	UINT
ESTIM_STATE_IN_SUN	Are we in the sun? **State** / **Value** FALSE / 0 TRUE / 1	225	1	UINT
PADDING	Padded bits for CAN data	226	62	UINT

AMSAT ESTIM_SUN_UNIT_X

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		

RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449330** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
ESTIM_SUN_UNIT_X_VAL	Unit vector of where the sun is at z	224	64	FLOAT	%0.4f

AMSAT ESTIM_SUN_UNIT_Y

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449331** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
ESTIM_SUN_UNIT_Y_VAL	Unit vector of where the sun is at y	224	64	FLOAT	%0.4f

AMSAT ESTIM_SUN_UNIT_Z

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302449332** **State** / **Value**: EXTENDED / 1; STANDARD / 0	195	29	UINT	
ESTIM_SUN_UNIT_Z_VAL	Unit vector of where the sun is at x	224	64	FLOAT	%0.4f

AMSAT GCMD_DIST_SET_PD_OVC_COM1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302252734** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
GCMD_DIST_SET_PD_OVC_COM1_OVC	Set PD Overcurrent Com1	224	32	FLOAT	
PADDING	Padded bits for CAN data	256	32	UINT	

AMSAT GENERAL_CAN_MESSAGE

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **State** / **Value** EXTENDED / 1	195	29	UINT		

	STANDARD 0				
DATA	CAN data	224	64	UINT	

AMSAT MPC_VP

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		

CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 302448674** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT
MPC_VP_STATUS	None **State** / **Value**: FALSE 0; TRUE 1	224	1	UINT
PADDING	Padded bits for CAN data	225	63	UINT

AMSAT MTQ_ACK

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307691568** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
MTQ_ACK_PHASE	specifies what state the coils are in - measurement or actuation phase **State** / **Value** MEASUREMENT_PHASE / 0 ACTUATION_PHASE / 1 PMS_PHASE / 2	224	8	INT
MTQ_ACK_SOURCE	who the mtq last listened to - bdot or fsw	232	8	INT
MTQ_ACK_LAST_BDOT_X	last bdot x command received	240	8	INT
MTQ_ACK_LAST_BDOT_Y	last bdot y command received	248	8	INT
MTQ_ACK_LAST_BDOT_Z	last bdot z command received	256	8	INT
MTQ_ACK_LAST_FSW_X	last fsw x command received	264	8	INT
MTQ_ACK_LAST_FSW_Y	last fsw y command received	272	8	INT
MTQ_ACK_LAST_FSW_Z	last fsw z command received	280	8	INT

AMSAT RC_ADCS_BDOT_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823110** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_1_SPAM_ON_X_MTQ_X	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	224	16	INT	nT
RC_ADCS_BDOT_1_SPAM_ON_X_MTQ_Y	the averages of one axis of magnetometer readings during one axis of the last spam	240	16	INT	nT

	Read Conversion: value * 73.0					
RC_ADCS_BDOT_1_SPAM_ON_X_MTQ_Z	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	256	16	INT	nT	
RC_ADCS_BDOT_1_SPAM_ON_Y_MTQ_X	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	272	16	INT	nT	

AMSAT RC_ADCS_BDOT_10

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		

DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871901** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_BDOT_10_DIPOLE_VAR_X	The variance of sent dipole commands	224	16	UINT
RC_ADCS_BDOT_10_DIPOLE_VAR_Y	The variance of sent dipole commands	240	16	UINT
RC_ADCS_BDOT_10_DIPOLE_VAR_Z	The variance of sent dipole commands	256	16	UINT
PADDING	Padded bits for CAN data	272	16	UINT

AMSAT RC_ADCS_BDOT_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN	16	16	UINT		

	Id Value: 128					
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823111** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_BDOT_2_MAG_X_MIN	X Minium reading in nT Read Conversion: value * 73.0	224	16	INT	nT	
RC_ADCS_BDOT_2_MAG_X_MAX	X Maximum reading in nT Read Conversion: value * 73.0	240	16	INT	nT	
RC_ADCS_BDOT_2_MAG_X_AVG	X Average reading in nT Read Conversion: value * 73.0	256	16	INT	nT	
RC_ADCS_BDOT_2_MAG_Y_MIN	Y Minium reading in nT Read Conversion: value * 73.0	272	16	INT	nT	

AMSAT RC_ADCS_BDOT_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823129** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_3_MAG_Y_MAX	Y Maximum reading in nT Read Conversion: value * 73.0	224	16	INT	nT

RC_ADCS_BDOT_3_MAG_Y_AVG	Y Average reading in nT Read Conversion: value * 73.0	240	16	INT	nT	
RC_ADCS_BDOT_3_MAG_Z_MIN	Z Minium reading in nT Read Conversion: value * 73.0	256	16	INT	nT	
RC_ADCS_BDOT_3_MAG_Z_MAX	Z Maximum reading in nT Read Conversion: value * 73.0	272	16	INT	nT	

AMSAT RC_ADCS_BDOT_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823130** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_4_MAG_Z_AVG	Z Average reading in nT Read Conversion: value * 73.0	224	16	INT	nT
RC_ADCS_BDOT_4_SPAM_ON_Y_MTQ_Y	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	240	16	INT	nT
RC_ADCS_BDOT_4_SPAM_ON_Y_MTQ_Z	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	256	16	INT	nT
RC_ADCS_BDOT_4_TUMBLE	Tumble Status **State** / **Value** FALSE / 0 TRUE / 1	272	1	UINT	
PADDING	Padded bits for CAN data	273	15	UINT	

AMSAT RC_ADCS_BDOT_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823196** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_5_SPAM_ON_Z_MTQ_X	the averages of one axis of magnetometer readings during one axis of the last spam	224	16	INT	nT

	Read Conversion: value * 73.0					
RC_ADCS_BDOT_5_SPAM_ON_Z_MTQ_Y	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	240	16	INT	nT	
RC_ADCS_BDOT_5_SPAM_ON_Z_MTQ_Z	the averages of one axis of magnetometer readings during one axis of the last spam Read Conversion: value * 73.0	256	16	INT	nT	
PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_ADCS_BDOT_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		

TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823216** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_6_SPAM_OFF_TIME	Current setting for the time in minutes of SPAM not being on	224	16	UINT	min
RC_ADCS_BDOT_6_SPAM_ON_TIME	Current setting for the time in minutes of SPAM being on	240	16	UINT	min
RC_ADCS_BDOT_6_SPAM_CONTROL	Current setting on whether or not spam is enabled **State** / **Value** FALSE / 0 TRUE / 1	256	1	UINT	
RC_ADCS_BDOT_6_MAX_TUMBLE_TIME	Current max tumbling time that bdot can be in until it swtiches to SLEEP_MODE automatically	257	16	UINT	min
RC_ADCS_BDOT_6_CURRENT_STATE	State that bdot is in. Chooses mode that bdot is in: 0 = NORMAL_MODE , 1 = SLEEP_MODE, 2 = SPAM_MAG_SELF_TEST, 3 = SPAM **State** / **Value** NORMAL_MODE / 0 SLEEP_MODE / 1 SPAM_MAG_SELF_TEST / 2 SPAM / 3	273	2	UINT	
RC_ADCS_BDOT_6_POP_STATUS_X	Current status of whether or not POP is enable for specified axis **State** / **Value** FALSE / 0 TRUE / 1	275	1	UINT	

RC_ADCS_BDOT_6_POP_STATUS_Y	Current status of whether or not POP is enable for specified axis **State** / **Value**: FALSE 0; TRUE 1	276	1	UINT
RC_ADCS_BDOT_6_POP_STATUS_Z	Current status of whether or not POP is enable for specified axis **State** / **Value**: FALSE 0; TRUE 1	277	1	UINT
RC_ADCS_BDOT_6_GAIN_OVR_STATUS_X	None **State** / **Value**: FALSE 0; TRUE 1	278	1	UINT
RC_ADCS_BDOT_6_GAIN_OVR_STATUS_Y	None **State** / **Value**: FALSE 0; TRUE 1	279	1	UINT
RC_ADCS_BDOT_6_GAIN_OVR_STATUS_Z	None **State** / **Value**: FALSE 0; TRUE 1	280	1	UINT
RC_ADCS_BDOT_6_MAG_CONTROL	Shows the current state of magnetometer control on bdot. Choose the best fit magnetometer from ground. 0 = Auto, 1 = MAG_BDOT, 2 = MAG_SP1, 3 = MAG_SP2 **State** / **Value**: AUTO_MODE 0; BDOT_MODE 1; SP1_MODE 2; SP2_MODE 3	281	2	UINT
PADDING	Padded bits for CAN data	283	5	UINT

AMSAT RC_ADCS_BDOT_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set	195	29	UINT		

	of headers. **Id Value: 308871793** **State** / **Value** EXTENDED / 1 STANDARD / 0					
RC_ADCS_BDOT_7_SPAM_MAGNITUDE_X	None	224	8	INT		
RC_ADCS_BDOT_7_SPAM_MAGNITUDE_Y	None	232	8	INT		
RC_ADCS_BDOT_7_SPAM_MAGNITUDE_Z	None	240	8	INT		
RC_ADCS_BDOT_7_SPAM_OFF_X_MTQ_X	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	248	16	INT	nT	
RC_ADCS_BDOT_7_SPAM_OFF_X_MTQ_Y	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	264	16	INT	nT	
RC_ADCS_BDOT_7_DIPOLE_GAIN_X	None Read Conversion: value / 100.0	280	8	UINT		

AMSAT RC_ADCS_BDOT_8

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871794** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_8_SPAM_OFF_X_MTQ_Z	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	224	16	INT	nT
RC_ADCS_BDOT_8_SPAM_OFF_Y_MTQ_X	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	240	16	INT	nT
RC_ADCS_BDOT_8_SPAM_OFF_Y_MTQ_Y	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	256	16	INT	nT
RC_ADCS_BDOT_8_SPAM_OFF_Y_MTQ_Z	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	272	16	INT	nT

AMSAT RC_ADCS_BDOT_9

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers.	195	29	UINT		

	Id Value: 308871795 **State** / **Value** EXTENDED / 1 STANDARD / 0					
RC_ADCS_BDOT_9_SPAM_OFF_Z_MTQ_X	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	224	16	INT	nT	
RC_ADCS_BDOT_9_SPAM_OFF_Z_MTQ_Y	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	240	16	INT	nT	
RC_ADCS_BDOT_9_SPAM_OFF_Z_MTQ_Z	Last spam reading with mtq off 1/73 nT Read Conversion: value * 73.0	256	16	INT	nT	
RC_ADCS_BDOT_9_DIPOLE_GAIN_Y	None Read Conversion: value / 100.0	272	8	UINT		
RC_ADCS_BDOT_9_DIPOLE_GAIN_Z	None Read Conversion: value / 100.0	280	8	UINT		

AMSAT RC_ADCS_BDOT_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871780** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_BDOT_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_ADCS_BDOT_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_ADCS_BDOT_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C

RC_ADCS_BDOT_H1_SYSRSTIV	Reason for reset	272	8	UINT

State	Value
NO_INTERRUPT_PENDING	0
(BOR)_BROWNOUT	2
(BOR)_RSTIFG_RST/NMI	6
(BOR)_LPMX.5_WAKE_UP	8
(BOR)_SECURITY_VIOLATION	10
(BOR)_SVSHIFG_SVSH_EVENT	14
(POR)_PMMSWPOR_SOFTWARE_POR	20
(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22
(PUC)_WDTPW_PASSWORD_VIOLATION	24
(PUC)_FRCTLPW_PASSWORD_VIOLATION	26
(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28
(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40
(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42
(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44
(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46

RC_ADCS_BDOT_H1_RESET_COUNT	Reset Count	280	8	UINT

AMSAT RC_ADCS_BDOT_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		

RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871789** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_BDOT_H2_CANRXERROR	the BDOT MCP's RX error buffer	224	8	UINT
PADDING	Padded bits for CAN data	232	56	UINT

AMSAT RC_ADCS_ESTIM_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823148** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
PADDING	Padded bits for CAN data	224	64	UINT	

AMSAT RC_ADCS_ESTIM_10

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823189** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_ESTIM_10_SUN_Y	y component of unit vector from spacecraft to sun	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_ESTIM_11

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823190** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		

RC_ADCS_ESTIM_11_SUN_Z	z component of unit vector from spacecraft to sun	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_ESTIM_12

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823191**	195	29	UINT		

State	Value
EXTENDED	1
STANDARD	0

RC_ADCS_ESTIM_12_MAG_X	x component of unit vector of the direction of the magnetic field	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_ESTIM_13

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		

CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823192** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_ESTIM_13_MAG_Y	y component of unit vector of the direction of the magnetic field	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_ESTIM_14

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823193** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_ESTIM_14_MAG_Z	z component of unit vector of the direction of the magnetic field	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_ESTIM_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper	128	32	UINT		

	4 bytes of the timestamp.					
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823149** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_2_POS_X	Inertial position that the ADCS system thinks the satellite is at	224	64	FLOAT	m	%0.1f

AMSAT RC_ADCS_ESTIM_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR	32	64	UINT		

	hardware/software.					
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823150** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_3_POS_Y	Inertial position that the ADCS system thinks the satellite is at	224	64	FLOAT	m	%0.1f

AMSAT RC_ADCS_ESTIM_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823151** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_4_POS_Z	Inertial position that the ADCS system thinks the satellite is at	224	64	FLOAT	m	%0.1f

AMSAT RC_ADCS_ESTIM_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		

RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823152** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_5_VEL_X	The inertial velocity the satellite thinks we have	224	64	FLOAT	m/s	%0.4f

AMSAT RC_ADCS_ESTIM_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823153** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_6_VEL_Y	The inertial velocity the satellite thinks we have	224	64	FLOAT	m/s	%0.4f

AMSAT RC_ADCS_ESTIM_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823154** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_7_VEL_Z	The inertial velocity the satellite thinks we have	224	64	FLOAT	m/s	%0.4f

AMSAT RC_ADCS_ESTIM_8

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: PacketTimeSecondsConversion					
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823155** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_ESTIM_8_EPOCH	Epoch used in position and velocity calculation Read Conversion: value >> 8	224	40	UINT	s	%.0f

RC_ADCS_ESTIM_8_SGP4_FLAG	Flag telling what mode ESTIM is propagating the orbit in	264	8	INT
RC_ADCS_ESTIM_8_SC_IN_SUN	Boolean indicating whether the s/c thinks it is in the sun or not. **State** / **Value** FALSE / 0 TRUE / 1	272	1	UINT
RC_ADCS_ESTIM_8_SC_ABOVE_GS	Boolean indicating whether the s/c thinks it is above the UW ground station or not. **State** / **Value** FALSE / 0 TRUE / 1	273	1	UINT
RC_ADCS_ESTIM_8_TLE_ID	TLE ID valid bit **State** / **Value** FALSE / 0 TRUE / 1	274	1	UINT
PADDING	Padded bits for CAN data	275	13	UINT

AMSAT RC_ADCS_ESTIM_9

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823188** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_ESTIM_9_SUN_X	x component of unit vector from spacecraft to sun	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_ESTIM_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		

RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823201** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_ESTIM_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_ADCS_ESTIM_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_ADCS_ESTIM_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0	256	16	INT	C

Limits Response:	Slacklimitresponse

RC_ADCS_ESTIM_H1_SYSRSTIV	Reason for reset	272	8	UINT

State	Value
NO_INTERRUPT_PENDING	0
(BOR)_BROWNOUT	2
(BOR)_RSTIFG_RST/NMI	6
(BOR)_LPMX.5_WAKE_UP	8
(BOR)_SECURITY_VIOLATION	10
(BOR)_SVSHIFG_SVSH_EVENT	14
(POR)_PMMSWPOR_SOFTWARE_POR	20
(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22
(PUC)_WDTPW_PASSWORD_VIOLATION	24
(PUC)_FRCTLPW_PASSWORD_VIOLATION	26
(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28
(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40
(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42
(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44
(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46

RC_ADCS_ESTIM_H1_RESET_COUNT	Reset Count	280	8	UINT

AMSAT RC_ADCS_ESTIM_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f
	Read Conversion: PacketTimeSecondsConversion					
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string)	0	0	DERIVED		
	Read Conversion: PacketTimeFormattedConversion					
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f
	Read Conversion: ReceivedTimeSecondsConversion					

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823210** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_ESTIM_H2_CANRXERROR	Estim MCP's RX error buffer	224	8	UINT
PADDING	Padded bits for CAN data	232	56	UINT

AMSAT RC_ADCS_MPC_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823156** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
PADDING	Padded bits for CAN data	224	64	UINT	

AMSAT RC_ADCS_MPC_10

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format

PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823165** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_MPC_10_OMEGA_Y	None	224	64	FLOAT	r/s	%0.3f

AMSAT RC_ADCS_MPC_11

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823166** **State** / **Value**	195	29	UINT		

	EXTENDED	1					
	STANDARD	0					
RC_ADCS_MPC_11_OMEGA_Z	None		224	64	FLOAT	r/s	%0.3f

AMSAT RC_ADCS_MPC_12

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		

CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823167** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
PADDING	Padded bits for CAN data	224	64	UINT

AMSAT RC_ADCS_MPC_13

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR	176	16	UINT		

	hardware/software.			
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823168** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
PADDING	Padded bits for CAN data	224	64	UINT

AMSAT RC_ADCS_MPC_14

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823169** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
PADDING	Padded bits for CAN data	224	64	UINT

AMSAT RC_ADCS_MPC_15

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		

TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823170** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_MPC_15_SC_MODE	The current operating mode of the ADCS system	224	8	UINT
RC_ADCS_MPC_15_POINT_TRUE	Proportion of samples where attitude is within 20 degrees of commanded vector	232	8	UINT
PADDING	Padded bits for CAN data	240	48	UINT

AMSAT RC_ADCS_MPC_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED		

	Read Conversion: ReceivedCountConversion				
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823157** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_MPC_2_SC_QUAT_1	The first element of the attitude quaternion of the spacecraft	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_MPC_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823158** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_MPC_3_SC_QUAT_2	The second element of the attitude quaternion of the spacecraft	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_MPC_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823159** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_MPC_4_SC_QUAT_3	The third element of the attitude quaternion of the spacecraft	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_MPC_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: PacketTimeSecondsConversion				
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823160** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_MPC_5_SC_QUAT_4	The fourth element of the attitude quaternion of the spacecraft	224	64	FLOAT	%0.4f

AMSAT RC_ADCS_MPC_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823161** **State** / **Value** EXTENDED / 1	195	29	UINT		

	STANDARD	0					
RC_ADCS_MPC_6_OMEGA_MIN	None		224	64	FLOAT	r/s	%0.3f

AMSAT RC_ADCS_MPC_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		

CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823162** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT		
RC_ADCS_MPC_7_OMEGA_MAX	None	224	64	FLOAT	r/s	%0.3f

AMSAT RC_ADCS_MPC_8

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR	176	16	UINT		

	hardware/software.					
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823163** **State** / **Value** EXTENDED: 1 STANDARD: 0	195	29	UINT		
RC_ADCS_MPC_8_OMEGA_AVG	None	224	64	FLOAT	r/s	%0.3f

AMSAT RC_ADCS_MPC_9

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823164** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_MPC_9_OMEGA_X	None	224	64	FLOAT	r/s	%0.3f

AMSAT RC_ADCS_MPC_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		

TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871778** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT	
RC_ADCS_MPC_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_ADCS_MPC_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_ADCS_MPC_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C
RC_ADCS_MPC_H1_SYSRSTIV	Reason for reset **State** / **Value**: NO_INTERRUPT_PENDING 0; (BOR)_BROWNOUT 2; (BOR)_RSTIFG_RST/NMI 6	272	8	UINT	

	(BOR)_LPMX.5_WAKE_UP	8				
	(BOR)_SECURITY_VIOLATION	10				
	(BOR)_SVSHIFG_SVSH_EVENT	14				
	(POR)_PMMSWPOR_SOFTWARE_POR	20				
	(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22				
	(PUC)_WDTPW_PASSWORD_VIOLATION	24				
	(PUC)_FRCTLPW_PASSWORD_VIOLATION	26				
	(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28				
	(PUC)_PERIPHERAL_AREA_FETCH	30				
	(PUC)_PMMPW_PMM_PWD_VIOLATION	32				
	(PUC)_MPUPW_MPU_PWD_VIOLATION	34				
	(PUC)_CSPW_CS_PASSWORD_VIOLATION	36				
	(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38				
	(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40				
	(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42				
	(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44				
	(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46				
RC_ADCS_MPC_H1_RESET_COUNT	Reset Count		280	8	UINT	

AMSAT RC_ADCS_MPC_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		

FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871787** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_MPC_H2_CANRXERROR	the MPC MCP's RX error buffer	224	8	UINT
PADDING	Padded bits for CAN data	232	56	UINT

AMSAT RC_ADCS_MTQ_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED		

	Read Conversion: ReceivedTimeFormattedConversion			
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871691** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
PADDING	Padded bits for CAN data	224	64	UINT

AMSAT RC_ADCS_MTQ_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: ReceivedTimeSecondsConversion			
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871692** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_MTQ_2_BDOT_X_AVG	Average X BDOT command	224	8	INT
RC_ADCS_MTQ_2_BDOT_X_MAX	Max X BDOT command	232	8	INT
RC_ADCS_MTQ_2_BDOT_X_MIN	Min X BDOT command	240	8	INT
RC_ADCS_MTQ_2_BDOT_Y_AVG	Average Y BDOT command	248	8	INT
RC_ADCS_MTQ_2_BDOT_Y_MAX	Max Y BDOT command	256	8	INT
RC_ADCS_MTQ_2_BDOT_Y_MIN	Min Y BDOT command	264	8	INT
RC_ADCS_MTQ_2_BDOT_Z_AVG	Average Z BDOT command	272	8	INT

RC_ADCS_MTQ_2_BDOT_Z_MAX	Max Z BDOT command	280	8	INT

AMSAT RC_ADCS_MTQ_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871693**	195	29	UINT		

State	Value
EXTENDED	1
STANDARD	0

RC_ADCS_MTQ_3_BDOT_Z_MIN	MinZ BDOT command	224	8	INT
RC_ADCS_MTQ_3_FSW_X_AVG	Average X FSW command	232	8	INT
RC_ADCS_MTQ_3_FSW_X_MAX	Max X FSW command	240	8	INT
RC_ADCS_MTQ_3_FSW_X_MIN	Min X FSW command	248	8	INT
RC_ADCS_MTQ_3_FSW_Y_AVG	Average Y FSW command	256	8	INT
RC_ADCS_MTQ_3_FSW_Y_MAX	Max Y FSW command	264	8	INT
RC_ADCS_MTQ_3_FSW_Y_MIN	Min Y FSW command	272	8	INT
RC_ADCS_MTQ_3_FSW_Z_AVG	Average Z FSW command	280	8	INT

AMSAT RC_ADCS_MTQ_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		

TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871694** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_MTQ_4_FSW_Y_MAX	Max Z FSW command	224	8	UINT
RC_ADCS_MTQ_4_FSW_Z_MIN	Min Z FSW command	232	8	UINT
RC_ADCS_MTQ_4_DUTY_X1_AVG	Average X Duty	240	8	UINT
RC_ADCS_MTQ_4_DUTY_X2_AVG	Average X Duty	248	8	UINT
RC_ADCS_MTQ_4_DUTY_Y1_AVG	Average Y Duty	256	8	UINT
RC_ADCS_MTQ_4_DUTY_Y2_AVG	Average Y Duty	264	8	UINT
RC_ADCS_MTQ_4_DUTY_Z1_AVG	Average Z Duty	272	8	UINT
RC_ADCS_MTQ_4_DUTY_Z2_AVG	Average Z Duty	280	8	UINT

AMSAT RC_ADCS_MTQ_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871695** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_MTQ_5_FSW_IGNORE	Flight Software Ignore **State** / **Value** FALSE / 0 TRUE / 1	224	8	UINT
RC_ADCS_MTQ_5_RESET_COUNTS	Number of resets	232	8	UINT
RC_ADCS_MTQ_5_CMDS_X_VAR	Variance in BDot's dipole commands	240	16	UINT
RC_ADCS_MTQ_5_CMDS_Y_VAR	Variance in BDot's dipole commands	256	16	UINT
RC_ADCS_MTQ_5_CMDS_Z_VAR	Variance in BDot's dipole commands	272	16	UINT

AMSAT RC_ADCS_MTQ_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871774**	195	29	UINT		

State	Value
EXTENDED	1
STANDARD	0

RC_ADCS_MTQ_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_ADCS_MTQ_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_ADCS_MTQ_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C
RC_ADCS_MTQ_H1_SYSRSTIV	Reason for reset	272	8	UINT	

State	Value
NO_INTERRUPT_PENDING	0
(BOR)_BROWNOUT	2
(BOR)_RSTIFG_RST/NMI	6
(BOR)_LPMX.5_WAKE_UP	8
(BOR)_SECURITY_VIOLATION	10
(BOR)_SVSHIFG_SVSH_EVENT	14
(POR)_PMMSWPOR_SOFTWARE_POR	20
(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22
(PUC)_WDTPW_PASSWORD_VIOLATION	24
(PUC)_FRCTLPW_PASSWORD_VIOLATION	26
(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28
(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40
(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42
(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44

	(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL 46				
RC_ADCS_MTQ_H1_RESET_COUNT	Reset Count	280	8	UINT	

AMSAT RC_ADCS_MTQ_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		

CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871783** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT
RC_ADCS_MTQ_H2_CANRXERROR	the MTQ MCP's RX error buffer	224	8	UINT
PADDING	Padded bits for CAN data	232	56	UINT

AMSAT RC_ADCS_SP_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823131** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
PADDING	Padded bits for CAN data	224	64	UINT

AMSAT RC_ADCS_SP_10

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the	128	32	UINT		

	upper 4 bytes of the timestamp.					
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823140** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_10_MAG1_Y_AVG	Magnetometer 1 Y axis avg Read Conversion: value * 73	224	16	INT	nT	
RC_ADCS_SP_10_MAG1_Z_MIN	Magnetometer 1 Z axis min Read Conversion: value * 73	240	16	INT	nT	
RC_ADCS_SP_10_MAG1_Z_MAX	Magnetometer 1 Z axis max Read Conversion: value * 73	256	16	INT	nT	
RC_ADCS_SP_10_MAG1_Z_AVG	Magnetometer 1 Z axis avg Read Conversion: value * 73	272	16	INT	nT	

AMSAT RC_ADCS_SP_11

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: ReceivedTimeSecondsConversion				
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823141** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_SP_11_MAG2_X_MIN	Magnetometer 2 X axis min Read Conversion: value * 73	224	16	INT	nT
RC_ADCS_SP_11_MAG2_X_MAX	Magnetometer 2 X axis max Read Conversion: value * 73	240	16	INT	nT
RC_ADCS_SP_11_MAG2_X_AVG	Magnetometer 2 X axis avg Read Conversion: value * 73	256	16	INT	nT

RC_ADCS_SP_11_MAG2_Y_MIN	Magnetometer 2 Y axis min Read Conversion: value * 73	272	16	INT	nT	

AMSAT RC_ADCS_SP_12

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		

CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823142** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_SP_12_MAG2_Y_MAX	Magnetometer 2 Y axis max Read Conversion: value * 73	224	16	INT	nT
RC_ADCS_SP_12_MAG2_Y_AVG	Magnetometer 2 Y axis avg Read Conversion: value * 73	240	16	INT	nT
RC_ADCS_SP_12_MAG2_Z_MIN	Magnetometer 2 Z axis min Read Conversion: value * 73	256	16	INT	nT
RC_ADCS_SP_12_MAG2_Z_MAX	Magnetometer 2 Z axis max Read Conversion: value * 73	272	16	INT	nT

AMSAT RC_ADCS_SP_13

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823143** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_SP_13_MAG2_Z_AVG	Magnetometer 2 Z axis avg Read Conversion: value * 73	224	16	INT	nT
RC_ADCS_SP_13_SUNA_MIN	Minimum alpha value from the sun sensor Read Conversion: value * 60.0/32767	240	16	INT	deg
RC_ADCS_SP_13_SUNA_MAX	Maximum alpha value from the sun sensor Read Conversion: value * 60.0/32767	256	16	INT	deg
RC_ADCS_SP_13_SUNA_AVG	Average alpha value from the sun sensor Read Conversion: value * 60.0/32767	272	16	INT	deg

AMSAT RC_ADCS_SP_14

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format

PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED	%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823144** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_SP_14_SUNB_MIN	Minimum beta value from the sun sensor Read Conversion: value * 60.0/32767	224	16	INT	deg

RC_ADCS_SP_14_SUNB_MAX	Maximum beta value from the sun sensor Read Conversion: value * 60.0/32767	240	16	INT	deg
RC_ADCS_SP_14_SUNB_AVG	Average beta value from the sun sensor Read Conversion: value * 60.0/32767	256	16	INT	deg
RC_ADCS_SP_14_SUN_VALID	Sum of last 255 processed sun sensor valid bits	272	8	UINT	
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_ADCS_SP_15

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		

DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823145** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_15_IMU_VALID	Sum of last 255 processed imu valid bits	224	8	UINT		
RC_ADCS_SP_15_IMU_X_MIN	IMU X axis min Read Conversion: value * 0.004375	232	16	INT	deg/s	%0.2f
RC_ADCS_SP_15_IMU_X_MAX	IMU X axis max Read Conversion: value * 0.004375	248	16	INT	deg/s	%0.2f
RC_ADCS_SP_15_IMU_X_AVG	IMU X axis avg Read Conversion: value * 0.004375	264	16	INT	deg/s	%0.2f
PADDING	Padded bits for CAN data	280	8	UINT		

AMSAT RC_ADCS_SP_16

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED		

	Read Conversion: ReceivedTimeFormattedConversion						
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED			
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT			
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT			
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT			
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT			
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT			
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT			
DLC	Date Length Count from the CAN message.	168	8	UINT			
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT			
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT			
CANID_RTR	RTR value.	193	1	UINT			
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT			
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823146** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT			
RC_ADCS_SP_16_IMU_Y_MIN	IMU Y axis min Read Conversion: value * 0.004375	224	16	INT	deg/s	%0.2f	
RC_ADCS_SP_16_IMU_Y_MAX	IMU Y axis max Read Conversion: value * 0.004375	240	16	INT	deg/s	%0.2f	
RC_ADCS_SP_16_IMU_Y_AVG	IMU Y axis avg Read Conversion: value * 0.004375	256	16	INT	deg/s	%0.2f	
RC_ADCS_SP_16_IMU_Z_MIN	IMU Z axis min Read Conversion: value * 0.004375	272	16	INT	deg/s	%0.2f	

AMSAT RC_ADCS_SP_17

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers.	195	29	UINT		

Id Value: 307823147

State	Value
EXTENDED	1
STANDARD	0

RC_ADCS_SP_17_IMU_Z_MAX	IMU Z axis max Read Conversion: value * 0.004375		224	16	INT	deg/s	%0.2f
RC_ADCS_SP_17_IMU_Z_AVG	IMU Z axis avg Read Conversion: value * 0.004375		240	16	INT	deg/s	%0.2f
RC_ADCS_SP_17_I2C_RESULT_MAG_1	None		256	8	UINT		
RC_ADCS_SP_17_I2C_RESULT_MAG_2	None		264	8	UINT		
RC_ADCS_SP_17_I2C_RESULT_IMU	None		272	8	UINT		
RC_ADCS_SP_17_I2C_RESULT_SUN	None		280	8	UINT		

State	Value
NO_ERROR	0
START_TIMEOUT	1
STOP_TIMEOUT	2
NACK	3
TRANSMIT_TIMEOUT	4

State	Value
NO_ERROR	0
START_TIMEOUT	1
STOP_TIMEOUT	2
NACK	3
TRANSMIT_TIMEOUT	4

State	Value
NO_ERROR	0
START_TIMEOUT	1
STOP_TIMEOUT	2
NACK	3
TRANSMIT_TIMEOUT	4

State	Value
NO_ERROR	0
START_TIMEOUT	1

STOP_TIMEOUT	2
NACK	3
TRANSMIT_TIMEOUT	4

AMSAT RC_ADCS_SP_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		

CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823132** **State** / **Value**: EXTENDED / 1; STANDARD / 0	195	29	UINT		
RC_ADCS_SP_2_IMUP_X_MIN	Processed IMU X axis min Read Conversion: value * 0.004375	224	16	INT	deg/s	%0.2f
RC_ADCS_SP_2_IMUP_X_MAX	Processed IMU X axis max Read Conversion: value * 0.004375	240	16	INT	deg/s	%0.2f
RC_ADCS_SP_2_IMUP_X_AVG	Processed IMU X axis avg Read Conversion: value * 0.004375	256	16	INT	deg/s	%0.2f
RC_ADCS_SP_2_IMUP_Y_MIN	Processed IMU Y axis min Read Conversion: value * 0.004375	272	16	INT	deg/s	%0.2f

AMSAT RC_ADCS_SP_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823133** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_3_IMUP_Y_MAX	Processed IMU Y axis max Read Conversion: value * 0.004375	224	16	INT	deg/s	%0.2f
RC_ADCS_SP_3_IMUP_Y_AVG	Processed IMU Y axis avg Read Conversion: value * 0.004375	240	16	INT	deg/s	%0.2f
RC_ADCS_SP_3_IMUP_Z_MIN	Processed IMU Z axis min Read Conversion: value * 0.004375	256	16	INT	deg/s	%0.2f
RC_ADCS_SP_3_IMUP_Z_MAX	Processed IMU Z axis max Read Conversion: value * 0.004375	272	16	INT	deg/s	%0.2f

AMSAT RC_ADCS_SP_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format

PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823134** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_4_IMUP_Z_AVG	Processed IMU Z axis avg	224	16	INT	deg/s	%0.2f

	Read Conversion:	value * 0.004375					
RC_ADCS_SP_4_SUN_X_MIN	Sun Sensor X axis min		240	16	INT	u	%0.4f
	Read Conversion:	value * 3.051757e-5					
RC_ADCS_SP_4_SUN_X_MAX	Sun Sensor X axis max		256	16	INT	u	%0.4f
	Read Conversion:	value * 3.051757e-5					
RC_ADCS_SP_4_SUN_X_AVG	Sun Sensor X axis avg		272	16	INT	u	%0.4f
	Read Conversion:	value * 3.051757e-5					

AMSAT RC_ADCS_SP_5

Item Name	Description		Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)		0	0	DERIVED		%0.6f
	Read Conversion:	PacketTimeSecondsConversion					
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string)		0	0	DERIVED		
	Read Conversion:	PacketTimeFormattedConversion					
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)		0	0	DERIVED		%0.6f
	Read Conversion:	ReceivedTimeSecondsConversion					
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)		0	0	DERIVED		
	Read Conversion:	ReceivedTimeFormattedConversion					
RECEIVED_COUNT	COSMOS packet received count		0	0	DERIVED		
	Read Conversion:	ReceivedCountConversion					
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)		0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**		16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.		32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.		96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.		128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823135** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_5_SUN_Y_MIN	Sun Sensor Y axis min Read Conversion: value * 3.051757e-5	224	16	INT	u	%0.4f
RC_ADCS_SP_5_SUN_Y_MAX	Sun Sensor Y axis max Read Conversion: value * 3.051757e-5	240	16	INT	u	%0.4f
RC_ADCS_SP_5_SUN_Y_AVG	Sun Sensor Y axis avg Read Conversion: value * 3.051757e-5	256	16	INT	u	%0.4f
RC_ADCS_SP_5_SUN_Z_MIN	Sun Sensor Z axis min Read Conversion: value * 3.051757e-5	272	16	INT	u	%0.4f

AMSAT RC_ADCS_SP_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823136** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_6_SUN_Z_MAX	Sun Sensor Z axis max Read Conversion: value * 3.051757e-5	224	16	INT	u	%0.4f
RC_ADCS_SP_6_SUN_Z_AVG	Sun Sensor Z axis avg Read Conversion: value * 3.051757e-5	240	16	INT	u	%0.4f
RC_ADCS_SP_6_MAG1_VALID	Sum of last 255 processed mag valid bits	256	8	UINT		
RC_ADCS_SP_6_MAG2_VALID	Sum of last 255 processed mag valid bits	264	8	UINT		
RC_ADCS_SP_6_MAG1_X_MIN	Magnetometer 1 X axis min Read Conversion: value * 73	272	16	INT	nT	

AMSAT RC_ADCS_SP_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823137**	195	29	UINT		

State	Value
EXTENDED	1
STANDARD	0

RC_ADCS_SP_7_MAG1_VAR_X	None	224	16	UINT
RC_ADCS_SP_7_MAG1_VAR_Y	None	240	16	UINT
RC_ADCS_SP_7_MAG1_VAR_Z	None	256	16	UINT
PADDING	Padded bits for CAN data	272	16	UINT

AMSAT RC_ADCS_SP_8

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823138** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_ADCS_SP_8_MAG2_VAR_X	None	224	16	UINT
RC_ADCS_SP_8_MAG2_VAR_Y	None	240	16	UINT
RC_ADCS_SP_8_MAG2_VAR_Z	None	256	16	UINT
PADDING	Padded bits for CAN data	272	16	UINT

AMSAT RC_ADCS_SP_9

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		

TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823139** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_ADCS_SP_9_MAG1_X_MAX	Magnetometer 1 X axis max Read Conversion: value * 73	224	16	INT	nT	
RC_ADCS_SP_9_MAG1_X_AVG	Magnetometer 1 X axis avg Read Conversion: value * 73	240	16	INT	nT	
RC_ADCS_SP_9_MAG1_Y_MIN	Magnetometer 1 Y axis min Read Conversion: value * 73	256	16	INT	nT	
RC_ADCS_SP_9_MAG1_Y_MAX	Magnetometer 1 Y axis max Read Conversion: value * 73	272	16	INT	nT	

AMSAT RC_ADCS_SP_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871776** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_SP_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C

RC_ADCS_SP_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_ADCS_SP_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C
RC_ADCS_SP_H1_SYSRSTIV	Reason for reset	272	8	UINT	

State	Value
NO_INTERRUPT_PENDING	0
(BOR)_BROWNOUT	2
(BOR)_RSTIFG_RST/NMI	6
(BOR)_LPMX.5_WAKE_UP	8
(BOR)_SECURITY_VIOLATION	10
(BOR)_SVSHIFG_SVSH_EVENT	14
(POR)_PMMSWPOR_SOFTWARE_POR	20
(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22
(PUC)_WDTPW_PASSWORD_VIOLATION	24
(PUC)_FRCTLPW_PASSWORD_VIOLATION	26
(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28
(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40
(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42
(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44
(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46

RC_ADCS_SP_H1_RESET_COUNT	Reset Count	280	8	UINT	

AMSAT RC_ADCS_SP_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: PacketTimeSecondsConversion				
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871785** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_ADCS_SP_H2_CANRXERROR	SP MCP's RX error buffer	224	8	UINT	
PADDING	Padded bits for CAN data	232	56	UINT	

AMSAT RC_EPS_BATT_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 309920256** **State** **Value**	195	29	UINT		

	EXTENDED	1				
	STANDARD	0				
RC_EPS_BATT_1_ACC_CHARGE_AVG	None		224	16	UINT	
RC_EPS_BATT_1_VOLTAGE_AVG	None		240	16	UINT	V
	Read Conversion:	23.6 * value / 65535				
PADDING	Padded bits for CAN data		256	32	UINT	

AMSAT RC_EPS_BATT_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f
	Read Conversion: PacketTimeSecondsConversion					
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string)	0	0	DERIVED		
	Read Conversion: PacketTimeFormattedConversion					
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f
	Read Conversion: ReceivedTimeSecondsConversion					
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string)	0	0	DERIVED		
	Read Conversion: ReceivedTimeFormattedConversion					
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED		
	Read Conversion: ReceivedCountConversion					
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871681** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_EPS_BATT_2_NODE_V_MIN	Voltage at the node between batteries Read Conversion: value * 0.004	224	16	UINT	V	%.4f
RC_EPS_BATT_2_NODE_V_MAX	Voltage at the node between batteries Read Conversion: value * 0.004	240	16	UINT	V	%.4f
RC_EPS_BATT_2_NODE_V_AVG	Voltage at the node between batteries Read Conversion: value * 0.004 Limits [DEFAULT]: RL/2.6 YL/2.9 YH/3.65 RH/3.85 Limits Response: Slacklimitresponse	256	16	UINT	V	%.4f
PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_EPS_BATT_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		

RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871682** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_EPS_BATT_3_CURRENT_MIN	Minimum battery current seen since last min/max reset Read Conversion: (value - 32767) / 3276.7	224	16	UINT	A	%.4f
RC_EPS_BATT_3_CURRENT_MAX	Maximum battery current seen since last min/max reset Read Conversion: (value - 32767) / 3276.7	240	16	UINT	A	%.4f
RC_EPS_BATT_3_CURRENT_AVG	Average current into or out of the battery Read Conversion: (value - 32767) / 3276.7 Limits [DEFAULT]: RL/-10.0 YL/-8.0 YH/4.5 RH/6.0 Limits Response: Slacklimitresponse	256	16	UINT	A	%.4f
RC_EPS_BATT_3_BATT_TEMP_AVG	Battery temperature indicated by TMP36 mounted to the	272	8	INT	C	

	batteries. Read Conversion: value - 50 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse			
PADDING	Padded bits for CAN data	280	8	UINT

AMSAT RC_EPS_BATT_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		

CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823107** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT		
RC_EPS_BATT_4_VOLTAGE_MIN	Battery voltage from the coulomb counter on the battery board. Most accurate but only on when the EPS power domain is on. Read Conversion: 23.6 * value / 65535	224	16	UINT	V	%.4f
RC_EPS_BATT_4_VOLTAGE_MAX	Battery voltage from the coulomb counter on the battery board. Most accurate but only on when the EPS power domain is on. Read Conversion: 23.6 * value / 65535	240	16	UINT	V	%.4f
RC_EPS_BATT_4_VOLTAGE_AVG	Battery voltage from the coulomb counter on the battery board. Most accurate but only on when the EPS power domain is on. Read Conversion: 23.6 * value / 65535 Limits [DEFAULT]: RL/6.0 YL/6.0 YH/7.3 RH/7.7 Limits Response: Slacklimitresponse	256	16	UINT	V	%.4f
RC_EPS_BATT_4_BALANCER_STATE	State of the battery balancer. enabeling the battery balancer only gives it permission to ballance. **State** / **Value**: FALSE 0; TRUE 1	272	1	UINT		
RC_EPS_BATT_4_HEATER_STATE	State of the battery heater switch **State** / **Value**: FALSE 0; TRUE 1	273	1	UINT		
RC_EPS_BATT_4_HEATER_AUTO_STATE	None **State** / **Value**: FALSE 0	274	1	UINT		

	TRUE 1				
RC_EPS_BATT_4_BAL_AUTO_STATE	None **State** / **Value** FALSE 0 TRUE 1	275	1	UINT	
PADDING	Padded bits for CAN data	276	12	UINT	

AMSAT RC_EPS_BATT_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871684** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_EPS_BATT_5_NODE_C_MIN	Current into the node between batteries. Indicates battery ballancing state. Read Conversion: value / 327.68	224	16	INT	A	%.4f
RC_EPS_BATT_5_NODE_C_MAX	Current into the node between batteries. Indicates battery ballancing state. Read Conversion: value / 327.68	240	16	INT	A	%.4f
RC_EPS_BATT_5_NODE_C_AVG	Current into the node between batteries. Indicates battery ballancing state. Read Conversion: value / 327.68 Limits [DEFAULT]: RL/-10.0 YL/-8.0 YH/4.5 RH/6.0 Limits Response: Slacklimitresponse	256	16	INT	A	%.4f
RC_EPS_BATT_5_BATT_TEMP_MIN	Battery temperature indicated by TMP36 mounted to the batteries. Read Conversion: value - 50	272	8	INT	C	
RC_EPS_BATT_5_BATT_TEMP_MAX	Battery temperature indicated by TMP36 mounted to the batteries. Read Conversion: value - 50	280	8	INT	C	

AMSAT RC_EPS_BATT_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f

PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871685** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_BATT_6_STATUS	State of charge status register	224	8	UINT	
RC_EPS_BATT_6_CTRL	State of charge from coulomb counter on battery board	232	8	UINT	
RC_EPS_BATT_6_LAST_CHARGE	The MET of last full battery charge Read Conversion: value * 2.0**-8	240	40	UINT	s

PADDING	Padded bits for CAN data	280	8	UINT

AMSAT RC_EPS_BATT_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
ACC_CHARGE_MIN	Read Conversion: packet.read('RC_EPS_BATT_7_ACC_CHARGE_MIN') * 2 ** (2 * ((System.telemetry.value("AMSAT", "RC_EPS_BATT_6", "RC_EPS_BATT_6_CTRL") & 0b00111000) >> 3)) * 17 / 24576	0	0	DERIVED	mAH	
ACC_CHARGE_AVG	Read Conversion: packet.read('RC_EPS_BATT_7_ACC_CHARGE_AVG') * 2 ** (2 * ((System.telemetry.value("AMSAT", "RC_EPS_BATT_6", "RC_EPS_BATT_6_CTRL") & 0b00111000) >> 3)) * 17 / 24576	0	0	DERIVED	mAH	
ACC_CHARGE_MAX	Read Conversion: packet.read('RC_EPS_BATT_7_ACC_CHARGE_MAX') * 2 ** (2 * ((System.telemetry.value("AMSAT", "RC_EPS_BATT_6", "RC_EPS_BATT_6_CTRL") & 0b00111000) >> 3)) * 17 / 24576	0	0	DERIVED	mAH	
RC_EPS_BATT_7_VOLTAGE_DIFF	Read Conversion: (1000 * System.telemetry.value("AMSAT", "RC_EPS_BATT_4", "RC_EPS_BATT_4_VOLTAGE_AVG") - (2 * System.telemetry.value("AMSAT", "RC_EPS_BATT_2", "RC_EPS_BATT_2_NODE_V_AVG")))	0	0	DERIVED	mV	%.4f

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823194** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_EPS_BATT_7_ACC_CHARGE_MIN	Acumulated charge minimum	224	16	UINT
RC_EPS_BATT_7_ACC_CHARGE_MAX	Accumulated charge maximum	240	16	UINT
RC_EPS_BATT_7_ACC_CHARGE_AVG	Accumulated charge avg	256	16	UINT
PADDING	Padded bits for CAN data	272	16	UINT

AMSAT RC_EPS_BATT_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: ReceivedTimeSecondsConversion				
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871781** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_BATT_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_EPS_BATT_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0	240	16	INT	C

	Limits Response: Slacklimitresponse					
RC_EPS_BATT_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C	
RC_EPS_BATT_H1_SYSRSTIV	Reason for reset	272	8	UINT		
RC_EPS_BATT_H1_RESET_COUNT	Reset Count	280	8	UINT		

State	Value
NO_INTERRUPT_PENDING	0
(BOR)_BROWNOUT	2
(BOR)_RSTIFG_RST/NMI	6
(BOR)_LPMX.5_WAKE_UP	8
(BOR)_SECURITY_VIOLATION	10
(BOR)_SVSHIFG_SVSH_EVENT	14
(POR)_PMMSWPOR_SOFTWARE_POR	20
(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22
(PUC)_WDTPW_PASSWORD_VIOLATION	24
(PUC)_FRCTLPW_PASSWORD_VIOLATION	26
(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28
(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40
(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42
(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44
(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46

AMSAT RC_EPS_BATT_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string)	0	0	DERIVED		

	Read Conversion: PacketTimeFormattedConversion				
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871790** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_BATT_H2_CANRXERROR	the Batt MCP's RX error buffer	224	8	UINT	
PADDING	Padded bits for CAN data	232	56	UINT	

AMSAT RC_EPS_DIST_1

		Bit	Bit	Data	

Item Name	Description	Offset	Size	Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 309330499** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		

RC_EPS_DIST_1_BATT_V_AVG	None Read Conversion: 7.21698125 * value / 4096	224	16	UINT	V	
RC_EPS_DIST_1_COM1_C_AVG	None	240	16	UINT		
RC_EPS_DIST_1_TEMP_AVG	None Read Conversion: value / 100.0	256	16	UINT	C	
PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_EPS_DIST_10

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823180** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_10_BDOT_STATE	BDOT domain state **State** / **Value** ON (GREEN) / 0 OFF_MANUAL (YELLOW) / 1 OFF_OVERCURRENT (RED) / 2 OFF_BATT_UNDERVOLTAGE (RED) / 3 OFF_INITIAL (YELLOW) / 4 OFF_AUTOSHUTOFF (RED) / 5 UNKNOWN (RED) / 6	224	8	UINT	
RC_EPS_DIST_10_BDOT_C_MIN	BDOT domain current minimum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	232	16	INT	A
RC_EPS_DIST_10_BDOT_C_MAX	BDOT domain current maximum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	248	16	INT	A
RC_EPS_DIST_10_BDOT_C_AVG	BDOT domain current average Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	264	16	INT	A
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_DIST_11

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823181** **State** / **Value** EXTENDED / 1	195	29	UINT		

	STANDARD: 0					
RC_EPS_DIST_11_BDOT_V_MIN	BDOT domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V	
RC_EPS_DIST_11_BDOT_V_MAX	BDOT domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	240	16	UINT	V	
RC_EPS_DIST_11_BDOT_V_AVG	BDOT domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V	
PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_EPS_DIST_12

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		

FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823182** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_12_ESTIM_STATE	ESTIM domain state **State** / **Value** ON (GREEN) / 0 OFF_MANUAL (YELLOW) / 1 OFF_OVERCURRENT (RED) / 2 OFF_BATT_UNDERVOLTAGE (RED) / 3 OFF_INITIAL (YELLOW) / 4 OFF_AUTOSHUTOFF (RED) / 5 UNKNOWN (RED) / 6	224	8	UINT	
RC_EPS_DIST_12_ESTIM_C_MIN	ESTIM domain current minimum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	232	16	INT	A
RC_EPS_DIST_12_ESTIM_C_MAX	ESTIM domain current maximum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15	248	16	INT	A

	Limits Response: Slacklimitresponse				
RC_EPS_DIST_12_ESTIM_C_AVG	ESTIM domain current average Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	264	16	INT	A
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_DIST_13

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823183** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_EPS_DIST_13_ESTIM_V_MIN	ESTIM domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V	
RC_EPS_DIST_13_ESTIM_V_MAX	ESTIM domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	240	16	UINT	V	
RC_EPS_DIST_13_ESTIM_V_AVG	ESTIM domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V	
PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_EPS_DIST_14

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: ReceivedTimeSecondsConversion			
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823184** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_EPS_DIST_14_EPS_STATE	EPS domain state **State** / **Value** ON (GREEN) / 0 OFF_MANUAL (YELLOW) / 1 OFF_OVERCURRENT (RED) / 2 OFF_BATT_UNDERVOLTAGE (RED) / 3 OFF_INITIAL (YELLOW) / 4 OFF_AUTOSHUTOFF (RED) / 5 UNKNOWN (RED) / 6	224	8	UINT

RC_EPS_DIST_14_EPS_C_MIN	EPS domain current minimum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	232	16	INT	A
RC_EPS_DIST_14_EPS_C_MAX	EPS domain current maximum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	248	16	INT	A
RC_EPS_DIST_14_EPS_C_AVG	EPS domain current average Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	264	16	INT	A
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_DIST_15

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		

TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823185** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_15_EPS_V_MIN	EPS domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_DIST_15_EPS_V_MAX	EPS domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	240	16	UINT	V
RC_EPS_DIST_15_EPS_V_AVG	EPS domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V
PADDING	Padded bits for CAN data	272	16	UINT	

AMSAT RC_EPS_DIST_16

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823186** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		

RC_EPS_DIST_16_PPT_STATE	PPT domain state **State** / **Value**: ON (GREEN) 0; OFF_MANUAL (YELLOW) 1; OFF_OVERCURRENT (RED) 2; OFF_BATT_UNDERVOLTAGE (RED) 3; OFF_INITIAL (YELLOW) 4; OFF_AUTOSHUTOFF (RED) 5; UNKNOWN (RED) 6	224	8	UINT	
RC_EPS_DIST_16_PPT_C_MIN	PPT domain current minimum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.1 YL/0.25 YH/0.4 RH/0.5 Limits Response: Slacklimitresponse	232	16	INT	A
RC_EPS_DIST_16_PPT_C_MAX	PPT domain current maximum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.1 YL/0.25 YH/0.4 RH/0.5 Limits Response: Slacklimitresponse	248	16	INT	A
RC_EPS_DIST_16_PPT_C_AVG	PPT domain current average Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.1 YL/0.25 YH/0.4 RH/0.5 Limits Response: Slacklimitresponse	264	16	INT	A
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_DIST_17

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823187** **State** / **Value**: EXTENDED / 1; STANDARD / 0	195	29	UINT	
RC_EPS_DIST_17_PPT_V_MIN	PPT domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_DIST_17_PPT_V_MAX	PPT domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	240	16	UINT	V

RC_EPS_DIST_17_PPT_V_AVG	PPT domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V
PADDING	Padded bits for CAN data	272	16	UINT	

AMSAT RC_EPS_DIST_18

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		

CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823323** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_18_BDOT_OCP_THRESH	BDOT current threshold Read Conversion: value / 20.0	224	9	UINT	A
RC_EPS_DIST_18_COM2_OCP_THRESH	COM2 current threshold Read Conversion: value / 20.0	233	9	UINT	A
RC_EPS_DIST_18_EPS_OCP_THRESH	EPS current threshold Read Conversion: value / 20.0	242	9	UINT	A
RC_EPS_DIST_18_ESTIM_OCP_THRESH	ESTIM current threshold Read Conversion: value / 20.0	251	9	UINT	A
RC_EPS_DIST_18_PPT_OCP_THRESH	PPT current threshold Read Conversion: value / 20.0	260	9	UINT	A
RC_EPS_DIST_18_RAHS_OCP_THRESH	RAHS current threshold Read Conversion: value / 20.0	269	9	UINT	A
PADDING	Padded bits for CAN data	278	10	UINT	

AMSAT RC_EPS_DIST_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823172** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_2_UV_STATE	Undervoltage State **State** / **Value** NORMAL / 0 UNDERVOLTAGE / 1	224	8	UINT	
RC_EPS_DIST_2_MET	Mission elapsed time first 4 bytes Read Conversion: value >> 8	232	40	UINT	s

PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_EPS_DIST_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of	195	29	UINT		

	headers. **Id Value: 307823173** **State** / **Value** EXTENDED / 1 STANDARD / 0				
RC_EPS_DIST_3_BATT_V_MIN	Battery voltage minimum Read Conversion: 7.21698125 * value / 4096 Limits [DEFAULT]: RL/5.2 YL/5.8 YH/7.3 RH/7.7 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_DIST_3_BATT_V_MAX	Battery voltage maximum Read Conversion: 7.21698125 * value / 4096 Limits [DEFAULT]: RL/5.2 YL/5.8 YH/7.3 RH/7.7 Limits Response: Slacklimitresponse	240	16	UINT	V
RC_EPS_DIST_3_BATT_V_AVG	Battery voltage average Read Conversion: 7.21698125 * value / 4096 Limits [DEFAULT]: RL/5.2 YL/5.8 YH/7.3 RH/7.7 Limits Response: Slacklimitresponse	256	16	UINT	V
PADDING	Padded bits for CAN data	272	16	UINT	

AMSAT RC_EPS_DIST_4

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED		

	Read Conversion: ReceivedCountConversion				
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871750** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_4_COM1_STATE	COM1 domain state **State** / **Value** ON (GREEN) / 0 OFF_MANUAL (YELLOW) / 1 OFF_OVERCURRENT (RED) / 2 OFF_BATT_UNDERVOLTAGE (RED) / 3 OFF_INITIAL (YELLOW) / 4 UNKNOWN (RED) / 5	224	8	UINT	
RC_EPS_DIST_4_COM1_C_MIN	COM1 domain current minimum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	232	16	INT	A
RC_EPS_DIST_4_COM1_C_MAX	COM1 domain current maximum	248	16	INT	A

Read Conversion:	value / 2048.0
Limits [DEFAULT]:	RL/0.01 YL/0.08 YH/0.12 RH/0.15
Limits Response:	Slacklimitresponse

RC_EPS_DIST_4_COM1_C_AVG	COM1 domain current average Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: Slacklimitresponse	264	16	INT	A
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_DIST_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR	160	8	UINT		

	hardware/software.				
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823175** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_5_COM1_V_MIN	COM1 domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_DIST_5_COM1_V_MAX	COM1 domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	240	16	UINT	V
RC_EPS_DIST_5_COM1_V_AVG	COM1 domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V
PADDING	Padded bits for CAN data	272	16	UINT	

AMSAT RC_EPS_DIST_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		

RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823176** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_6_COM2_STATE	COM2 domain state **State** / **Value** ON (GREEN) / 0 OFF_MANUAL (YELLOW) / 1 OFF_OVERCURRENT (RED) / 2 OFF_BATT_UNDERVOLTAGE (RED) / 3 OFF_INITIAL (YELLOW) / 4	224	8	UINT	

OFF_AUTOSHUTOFF (RED)	5
UNKNOWN (RED)	6

RC_EPS_DIST_6_COM2_C_MIN	COM2 domain current minimum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.07 YL/0.095 YH/0.135 RH/0.2 Limits Response: Slacklimitresponse	232	16	INT	A
RC_EPS_DIST_6_COM2_C_MAX	COM2 domain current maximum Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.07 YL/0.095 YH/0.135 RH/0.2 Limits Response: Slacklimitresponse	248	16	INT	A
RC_EPS_DIST_6_COM2_C_AVG	COM2 domain current average Read Conversion: value / 2048.0 Limits [DEFAULT]: RL/0.07 YL/0.095 YH/0.135 RH/0.2 Limits Response: Slacklimitresponse	264	16	INT	A
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_DIST_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		

LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823177** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_7_COM2_V_MIN	COM2 domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_DIST_7_COM2_V_MAX	COM2 domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	240	16	UINT	V
RC_EPS_DIST_7_COM2_V_AVG	COM2 domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V
PADDING	Padded bits for CAN data	272	16	UINT	

AMSAT RC_EPS_DIST_8

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823178** **State** / **Value** EXTENDED / 1	195	29	UINT		

	STANDARD | 0					
RC_EPS_DIST_8_RAHS_STATE	RAHS domain state **State** | **Value** ON (GREEN) | 0 OFF_MANUAL (YELLOW) | 1 OFF_OVERCURRENT (RED) | 2 OFF_BATT_UNDERVOLTAGE (RED) | 3 OFF_INITIAL (YELLOW) | 4 OFF_AUTOSHUTOFF (RED) | 5 UNKNOWN (RED) | 6	224	8	UINT		
RC_EPS_DIST_8_RAHS_C_MIN	RAHS domain current minimum Read Conversion: | value / 2048.0 Limits [DEFAULT]: | RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: | Slacklimitresponse	232	16	INT	A	
RC_EPS_DIST_8_RAHS_C_MAX	RAHS domain current maximum Read Conversion: | value / 2048.0 Limits [DEFAULT]: | RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: | Slacklimitresponse	248	16	INT	A	
RC_EPS_DIST_8_RAHS_C_AVG	RAHS domain current average Read Conversion: | value / 2048.0 Limits [DEFAULT]: | RL/0.01 YL/0.08 YH/0.12 RH/0.15 Limits Response: | Slacklimitresponse	264	16	INT	A	
PADDING	Padded bits for CAN data	280	8	UINT		

AMSAT RC_EPS_DIST_9

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: | PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: | PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: ReceivedTimeSecondsConversion				
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823179** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_DIST_9_RAHS_V_MIN	RAHS domain voltage minimum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_DIST_9_RAHS_V_MAX	RAHS domain voltage maximum Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0	240	16	UINT	V

	Limits Response: Slacklimitresponse					
RC_EPS_DIST_9_RAHS_V_AVG	RAHS domain voltage average Read Conversion: value * 0.004 Limits [DEFAULT]: RL/0.5 YL/3.0 YH/7.0 RH/10.0 Limits Response: Slacklimitresponse	256	16	UINT	V	
PADDING	Padded bits for CAN data	272	16	UINT		

AMSAT RC_EPS_DIST_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		

FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871779** **State** / **Value** EXTENDED: 1 STANDARD: 0	195	29	UINT	
RC_EPS_DIST_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_EPS_DIST_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_EPS_DIST_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C
RC_EPS_DIST_H1_SYSRSTIV	Reason for reset **State** / **Value** NO_INTERRUPT_PENDING: 0 (BOR)_BROWNOUT: 2 (BOR)_RSTIFG_RST/NMI: 6 (BOR)_LPMX.5_WAKE_UP: 8 (BOR)_SECURITY_VIOLATION: 10 (BOR)_SVSHIFG_SVSH_EVENT: 14 (POR)_PMMSWPOR_SOFTWARE_POR: 20 (PUC)_WDTIFG_WATCHDOG_TIMEOUT: 22 (PUC)_WDTPW_PASSWORD_VIOLATION: 24 (PUC)_FRCTLPW_PASSWORD_VIOLATION: 26 (PUC)_UNCORRECTABLE_FRAM_BIT_ERR: 28	272	8	UINT	

(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40
(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42
(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44
(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46

RC_EPS_DIST_H1_RESET_COUNT	Reset Count	280	8	UINT

AMSAT RC_EPS_DIST_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		

CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871788** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_EPS_DIST_H2_CANRXERROR	the Dist MCP's RX error buffer	224	8	UINT
PADDING	Padded bits for CAN data	232	56	UINT

AMSAT RC_EPS_GEN_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		

TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT
DLC	Date Length Count from the CAN message.	168	8	UINT
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823120** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_EPS_GEN_1_PNL_1_ENABLED	whether gen panel 1 is enabled **State** / **Value** DISABLED (RED) / 0 ENABLED (GREEN) / 1	224	1	UINT
RC_EPS_GEN_1_PNL_2_ENABLED	whether gen panel 2 is enabled **State** / **Value** DISABLED (RED) / 0 ENABLED (GREEN) / 1	225	1	UINT
RC_EPS_GEN_1_PNL_3_ENABLED	whether gen panel 3 is enabled **State** / **Value** DISABLED (RED) / 0 ENABLED (GREEN) / 1	226	1	UINT
RC_EPS_GEN_1_PNL_1_CHARGING	whether gen panel 1 is charing **State** / **Value** NOTCHARGING (YELLOW) / 0 CHARGING (GREEN) / 1	227	1	UINT

RC_EPS_GEN_1_PNL_2_CHARGING	whether gen panel 2 is charing **State** / **Value**: NOTCHARGING (YELLOW) 0; CHARGING (GREEN) 1	228	1	UINT
RC_EPS_GEN_1_PNL_3_CHARGING	whether gen panel 3 is charing **State** / **Value**: NOTCHARGING (YELLOW) 0; CHARGING (GREEN) 1	229	1	UINT
PADDING	Padded bits for CAN data	230	58	UINT

AMSAT RC_EPS_GEN_10

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		

TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 309920562** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_10_PNL_1_POWER_AVG	None Read Conversion: value * 3 / 3276.8	224	16	UINT	W
RC_EPS_GEN_10_PNL_2_POWER_AVG	None Read Conversion: value * 3 / 3276.8	240	16	UINT	W
RC_EPS_GEN_10_PNL_3_POWER_AVG	None Read Conversion: value * 3 / 3276.8	256	16	UINT	W
PADDING	Padded bits for CAN data	272	16	UINT	

AMSAT RC_EPS_GEN_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f

RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823121** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_2_PNL_1_VOLTAGE_MIN	Panel 1 Voltage min Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_GEN_2_PNL_1_VOLTAGE_MAX	Panel 1 Voltage max Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0	240	16	UINT	V

	Limits Response: Slacklimitresponse					
RC_EPS_GEN_2_PNL_1_VOLTAGE_AVG	Panel 1 Voltage avg Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	256	16	UINT	V	
RC_EPS_GEN_2_PNL_2_VOLTAGE_MIN	Panel 2 Voltage min Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	272	16	UINT	V	

AMSAT RC_EPS_GEN_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is	128	32	UINT		

	the upper 4 bytes of the timestamp.				
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823122** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_3_PNL_2_VOLTAGE_MAX	Panel 2 Voltage max Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_GEN_3_PNL_2_VOLTAGE_AVG	Panel 2 Voltage avg Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	240	16	UINT	V
RC_EPS_GEN_3_PNL_3_VOLTAGE_MIN	Panel 3 Voltage min Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	256	16	UINT	V
RC_EPS_GEN_3_PNL_3_VOLTAGE_MAX	Panel 3 Voltage max Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	272	16	UINT	V

AMSAT RC_EPS_GEN_4

	Bit	**Bit**	**Data**

Item Name	Description	Offset	Size	Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823123** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		

RC_EPS_GEN_4_PNL_3_VOLTAGE_AVG	Panel 3 Voltage avg Read Conversion: value * 0.004 Limits [DEFAULT]: RL/3.0 YL/9.0 YH/17.0 RH/18.0 Limits Response: Slacklimitresponse	224	16	UINT	V
RC_EPS_GEN_4_PNL_1_CURRENT_MIN	Panel 1 Current min Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.3 RH/0.4 Limits Response: Slacklimitresponse	240	16	INT	A
RC_EPS_GEN_4_PNL_1_CURRENT_MAX	Panel 1 Current max Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.3 RH/0.4 Limits Response: Slacklimitresponse	256	16	INT	A
RC_EPS_GEN_4_PNL_1_CURRENT_AVG	Panel 1 Current avg Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.3 RH/0.4 Limits Response: Slacklimitresponse	272	16	INT	A

AMSAT RC_EPS_GEN_5

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count	0	0	DERIVED		

	Read Conversion: ReceivedCountConversion				
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823124** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_5_PNL_2_CURRENT_MIN	Panel 2 Current min Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.45 RH/0.6 Limits Response: Slacklimitresponse	224	16	INT	A
RC_EPS_GEN_5_PNL_2_CURRENT_MAX	Panel 2 Current max Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.45 RH/0.6 Limits Response: Slacklimitresponse	240	16	INT	A
RC_EPS_GEN_5_PNL_2_CURRENT_AVG	Panel 2 Current avg Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.45 RH/0.6 Limits Response: Slacklimitresponse	256	16	INT	A

RC_EPS_GEN_5_PNL_3_CURRENT_MIN	Panel 3 Current min Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.3 RH/0.4 Limits Response: Slacklimitresponse	272	16	INT	A

AMSAT RC_EPS_GEN_6

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		

CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823125** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_6_PNL_3_CURRENT_MAX	Panel 3 Current max Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.3 RH/0.4 Limits Response: Slacklimitresponse	224	16	INT	A
RC_EPS_GEN_6_PNL_3_CURRENT_AVG	Panel 3 Current avg Read Conversion: value * 1.5 / 32768 Limits [DEFAULT]: RL/0.003 YL/0.05 YH/0.3 RH/0.4 Limits Response: Slacklimitresponse	240	16	INT	A
RC_EPS_GEN_6_PNL_1_POWER_MIN	Panel 1 Current min Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/3.0 RH/4.0 Limits Response: Slacklimitresponse	256	16	INT	W
RC_EPS_GEN_6_PNL_1_POWER_MAX	Panel 1 Current max Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/3.0 RH/4.0 Limits Response: Slacklimitresponse	272	16	INT	W

AMSAT RC_EPS_GEN_7

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string)	0	0	DERIVED		

	Read Conversion: PacketTimeFormattedConversion				
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823126** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_7_PNL_1_POWER_AVG	Panel 1 Current avg Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/3.0 RH/4.0 Limits Response: Slacklimitresponse	224	16	INT	W

RC_EPS_GEN_7_PNL_2_POWER_MIN	Panel 2 Current min Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/6.0 RH/7.0 Limits Response: Slacklimitresponse	240	16	INT	W
RC_EPS_GEN_7_PNL_2_POWER_MAX	Panel 2 Current max Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/6.0 RH/7.0 Limits Response: Slacklimitresponse	256	16	INT	W
RC_EPS_GEN_7_PNL_2_POWER_AVG	Panel 2 Current avg Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/6.0 RH/7.0 Limits Response: Slacklimitresponse	272	16	INT	W

AMSAT RC_EPS_GEN_8

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		

TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823127** **State** / **Value** EXTENDED: 1 STANDARD: 0	195	29	UINT	
RC_EPS_GEN_8_PNL_3_POWER_MIN	Panel 3 Current min Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/3.0 RH/4.0 Limits Response: Slacklimitresponse	224	16	INT	W
RC_EPS_GEN_8_PNL_3_POWER_MAX	Panel 3 Current max Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/3.0 RH/4.0 Limits Response: Slacklimitresponse	240	16	INT	W
RC_EPS_GEN_8_PNL_3_POWER_AVG	Panel 3 Current avg Read Conversion: value * 3 / 3276.8 Limits [DEFAULT]: RL/0.06 YL/1.0 YH/3.0 RH/4.0 Limits Response: Slacklimitresponse	256	16	INT	W
RC_EPS_GEN_8_PNL_1_TEMP_MIN	Panel 1 Temp min Read Conversion: value - 50 Limits [DEFAULT]: RL/17.0 YL/19.5 YH/23.0 RH/25.0 Limits Response: Slacklimitresponse	272	8	INT	C
PADDING	Padded bits for CAN data	280	8	UINT	

AMSAT RC_EPS_GEN_9

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823128**	195	29	UINT		

State	Value
EXTENDED	1
STANDARD	0

RC_EPS_GEN_9_PNL_1_TEMP_MAX	Panel 1 Temp max	224	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_1_TEMP_AVG	Panel 1 Temp avg	232	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_2_TEMP_MIN	Panel 2 Temp min	240	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_2_TEMP_MAX	Panel 2 Temp max	248	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_2_TEMP_AVG	Panel 2 Temp avg	256	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_3_TEMP_MIN	Panel 3 Temp min	264	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_3_TEMP_MAX	Panel 3 Temp max	272	8	INT	C

Read Conversion:	value - 50
Limits [DEFAULT]:	RL/17.0 YL/19.5 YH/23.0 RH/25.0
Limits Response:	Slacklimitresponse

RC_EPS_GEN_9_PNL_3_TEMP_AVG	Panel 3 Temp avg Read Conversion: value - 50 Limits [DEFAULT]: RL/17.0 YL/19.5 YH/23.0 RH/25.0 Limits Response: Slacklimitresponse	280	8	INT	C

AMSAT RC_EPS_GEN_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		

CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871775** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_EPS_GEN_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_EPS_GEN_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_EPS_GEN_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C
RC_EPS_GEN_H1_SYSRSTIV	Reason for reset **State** / **Value** NO_INTERRUPT_PENDING / 0 (BOR)_BROWNOUT / 2 (BOR)_RSTIFG_RST/NMI / 6 (BOR)_LPMX.5_WAKE_UP / 8 (BOR)_SECURITY_VIOLATION / 10 (BOR)_SVSHIFG_SVSH_EVENT / 14 (POR)_PMMSWPOR_SOFTWARE_POR / 20 (PUC)_WDTIFG_WATCHDOG_TIMEOUT / 22 (PUC)_WDTPW_PASSWORD_VIOLATION / 24 (PUC)_FRCTLPW_PASSWORD_VIOLATION / 26 (PUC)_UNCORRECTABLE_FRAM_BIT_ERR / 28 (PUC)_PERIPHERAL_AREA_FETCH / 30 (PUC)_PMMPW_PMM_PWD_VIOLATION / 32 (PUC)_MPUPW_MPU_PWD_VIOLATION / 34 (PUC)_CSPW_CS_PASSWORD_VIOLATION / 36	272	8	UINT	

	(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38			
	(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40			
	(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42			
	(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44			
	(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46			
RC_EPS_GEN_H1_RESET_COUNT	Reset Count	280	8	UINT	

AMSAT RC_EPS_GEN_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		

CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT
CANID_RTR	RTR value.	193	1	UINT
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871784** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT
RC_EPS_GEN_H2_CANRXERROR	GEN MCP's RX error buffer	224	8	UINT
PADDING	Padded bits for CAN data	232	56	UINT

AMSAT RC_PPT_1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the	128	32	UINT		

	upper 4 bytes of the timestamp.					
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823112** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
RC_PPT_1_FIRE_COUNT	Total number of times the PPT has fired	224	16	UINT		
RC_PPT_1_FAULT_COUNT	PPT fault count	240	16	UINT		
RC_PPT_1_LAST_MAIN_CHARGE	Main Charge Time Average Read Conversion: value * 2.0**-15	256	16	UINT	s	
RC_PPT_1_SMT_WAIT_TIME	None Read Conversion: value * 2.0**-15	272	16	UINT	s	

AMSAT RC_PPT_2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		

RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823113** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
RC_PPT_2_MAIN_CHARGE_TIME	None Read Conversion: value * 2.0**-15	224	16	UINT	s
RC_PPT_2_MAIN_IGN_DELAY	None Read Conversion: value * 2.0**-15	240	16	UINT	s
RC_PPT_2_IGN_CHARGE_TIME	None Read Conversion: value * 2.0**-15	256	16	UINT	s
RC_PPT_2_COOLDOWN_TIME	None Read Conversion: value * 2.0**-15	272	16	UINT	s

AMSAT RC_PPT_3

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 307823114** **State** / **Value** EXTENDED / 1	195	29	UINT		

	STANDARD	0				
PADDING	Padded bits for CAN data		224	64	UINT	

AMSAT RC_PPT_H1

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		

CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871773** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT	
RC_PPT_H1_TEMP_MIN	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	224	16	INT	C
RC_PPT_H1_TEMP_MAX	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	240	16	INT	C
RC_PPT_H1_TEMP_AVG	Temperature of MSP Read Conversion: value / 100.0 Limits [DEFAULT]: RL/15.0 YL/20.0 YH/30.0 RH/35.0 Limits Response: Slacklimitresponse	256	16	INT	C
RC_PPT_H1_SYSRSTIV	Reason for reset	272	8	UINT	

State	Value
NO_INTERRUPT_PENDING	0
(BOR)_BROWNOUT	2
(BOR)_RSTIFG_RST/NMI	6
(BOR)_LPMX.5_WAKE_UP	8
(BOR)_SECURITY_VIOLATION	10
(BOR)_SVSHIFG_SVSH_EVENT	14
(POR)_PMMSWPOR_SOFTWARE_POR	20
(PUC)_WDTIFG_WATCHDOG_TIMEOUT	22
(PUC)_WDTPW_PASSWORD_VIOLATION	24
(PUC)_FRCTLPW_PASSWORD_VIOLATION	26
(PUC)_UNCORRECTABLE_FRAM_BIT_ERR	28
(PUC)_PERIPHERAL_AREA_FETCH	30
(PUC)_PMMPW_PMM_PWD_VIOLATION	32
(PUC)_MPUPW_MPU_PWD_VIOLATION	34
(PUC)_CSPW_CS_PASSWORD_VIOLATION	36
(PUC)_MPUSEGIPIFGENCAPIPMEMSEG	38
(PUC)_MPUSEGIIFGINFOMEMSEGVIOL	40

	(PUC)_MPUSEG1IFG_SEG_1_MEM_VIOL	42			
	(PUC)_MPUSEG2IFG_SEG_2_MEM_VIOL	44			
	(PUC)_MPUSEG3IFG_SEG_3_MEM_VIOL	46			
RC_PPT_H1_RESET_COUNT	None	280	8	UINT	

AMSAT RC_PPT_H2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		

CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 308871782** **State** / **Value**: EXTENDED 1; STANDARD 0	195	29	UINT
RC_PPT_H2_CANRXERROR	the PPT MCP's RX error buffer	224	8	UINT
RC_PPT_H2_LAST_FIRE_RESULT	The result of the last PPT fire **State** / **Value**: FIRE_SUCCESSFUL 0; NO_MAIN_CHARGE 1; NO_MAIN_DISCHARGE 2	232	2	UINT
PADDING	Padded bits for CAN data	234	54	UINT

AMSAT SENSORPROC_IMU

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		

TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 335872066** **State** / **Value**: EXTENDED / 1; STANDARD / 0	195	29	UINT		
SENSORPROC_IMU_X	Sun Angle x Read Conversion: value * 0.004375	224	16	INT	deg/s	%0.2f
SENSORPROC_IMU_Y	Sun Angle y Read Conversion: value * 0.004375	240	16	INT	deg/s	%0.2f
SENSORPROC_IMU_Z	Sun Angle z Read Conversion: value * 0.004375	256	16	INT	deg/s	%0.2f
SENSORPROC_IMU_VALID	Sun Angle Validity **State** / **Value**: FALSE / 0; TRUE / 1	272	1	UINT		
PADDING	Padded bits for CAN data	273	15	UINT		

AMSAT SENSORPROC_MAG

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch)	0	0	DERIVED		%0.6f

	Read Conversion: PacketTimeSecondsConversion				
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED	
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED	%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED	
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED	
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT	
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT	
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT	
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 335872067** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
SENSORPROC_MAG_X	Sun Angle x	224	16	INT	nT

	Read Conversion: value * 73					
SENSORPROC_MAG_Y	Sun Angle y Read Conversion: value * 73	240	16	INT	nT	
SENSORPROC_MAG_Z	Sun Angle z Read Conversion: value * 73	256	16	INT	nT	
SENSORPROC_MAG_VALID	Sun Angle Validity **State** / **Value**: FALSE 0; TRUE 1	272	1	UINT		
SENSORPROC_MAG_BDOT_VALID	Whether the reading is valid for bdot	273	1	UINT		
PADDING	Padded bits for CAN data	274	14	UINT		

AMSAT SENSORPROC_MAG2

Item Name	Description	Bit Offset	Bit Size	Data Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		

TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT	
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT	
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT	
DLC	Date Length Count from the CAN message.	168	8	UINT	
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT	
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT	
CANID_RTR	RTR value.	193	1	UINT	
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT	
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 335872068** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT	
SENSORPROC_MAG2_X	None Read Conversion: value * 73	224	16	INT	nT
SENSORPROC_MAG2_Y	None Read Conversion: value * 73	240	16	INT	nT
SENSORPROC_MAG2_Z	None Read Conversion: value * 73	256	16	INT	nT
SENSORPROC_MAG2_VALID	None **State** / **Value** FALSE / 0 TRUE / 1	272	1	UINT	
SENSORPROC_MAG2_BDOT_VALID	Whether the reading is valid for bdot	273	1	UINT	
PADDING	Padded bits for CAN data	274	14	UINT	

AMSAT SENSORPROC_SUN

		Bit	**Bit**	**Data**

Item Name	Description	Offset	Size	Type	Units	Format
PACKET_TIMESECONDS	COSMOS Packet Time (UTC, Floating point, Unix epoch) Read Conversion: PacketTimeSecondsConversion	0	0	DERIVED		%0.6f
PACKET_TIMEFORMATTED	COSMOS Packet Time (Local time zone, Formatted string) Read Conversion: PacketTimeFormattedConversion	0	0	DERIVED		
RECEIVED_TIMESECONDS	COSMOS Received Time (UTC, Floating point, Unix epoch) Read Conversion: ReceivedTimeSecondsConversion	0	0	DERIVED		%0.6f
RECEIVED_TIMEFORMATTED	COSMOS Received Time (Local time zone, Formatted string) Read Conversion: ReceivedTimeFormattedConversion	0	0	DERIVED		
RECEIVED_COUNT	COSMOS packet received count Read Conversion: ReceivedCountConversion	0	0	DERIVED		
LENGTH	Length of TCP-ized CAN message (always 36/0x24 bytes)	0	16	UINT		
FIXED_TYPE	Fixed message type for CAN **Id Value: 128**	16	16	UINT		
TAG	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	32	64	UINT		
TIMESTAMP_L	Timestamp of the CAN message, in microseconds. This is the lower 4 bytes of the timestamp.	96	32	UINT		
TIMESTAMP_H	Timestamp of the CAN message, in microseconds. This is the upper 4 bytes of the timestamp.	128	32	UINT		
CHANNEL	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	160	8	UINT		
DLC	Date Length Count from the CAN message.	168	8	UINT		
FLAGS	NOT USED in current PCAN-Ethernet Gateway DR hardware/software.	176	16	UINT		
CANID_PADDING	Fixed value of 0 - reserved.	192	1	UINT		
CANID_RTR	RTR value.	193	1	UINT		
CANID_TYPE	Indicates whether the message is a standard or extended frame.	194	1	UINT		
CANID_ID	The ID (normal or extended) portion of the 'CAN ID' set of headers. **Id Value: 335872065** **State** / **Value** EXTENDED / 1 STANDARD / 0	195	29	UINT		
SENSORPROC_SUN_X	Sun Angle x	224	16	INT		

SENSORPROC_SUN_Y	Sun Angle y	240	16	INT
SENSORPROC_SUN_Z	Sun Angle z	256	16	INT
SENSORPROC_SUN_VALID	Sun Angle Validity **State** / **Value** FALSE / 0 TRUE / 1	272	1	UINT
PADDING	Padded bits for CAN data	273	15	UINT