Avionics Reference Document

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November 27, 2019

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2.1 Pressure Transducers

Model Number	MLH05KPSB01G
Serial Number	F8CEA38AA5
Datasheet Link	Link
Sensing Units	PSIG
Pressure Port Type	1/4-18 NPT (ANSI B1.20.1)
Accuracy	±0.25%
Pressure Range	0PSIG to 5000PSIG
Data Frequency	50Hz
Output Voltage Range	1.0 to 5.0 Volts
Input Voltage Range	8.0 to 30.0 Volts
Temperature Range	-40°to +125°Celcius

Model Number	ASUHGP1K55A1AA1A20000
Serial Number	E5C0ADEA35
Datasheet Link	Link
Sensing Units	PSIG
Pressure Port Type	3/8 Inch 24 UNF Dash 3 (SAE J514)
Accuracy	±0.25%
Pressure Range	0PSIG to 1500PSIG
Data Frequency	50Hz
Output Voltage Range	0.5 to 4.5 Volts
Input Voltage Range	8.0 to 16.0 Volts
Temperature Range	-40°to +150°Celcius

2.2 Thermocouples

Model Number	240-080
Serial Number	BB510C3CE3
Datasheet Link	Link
Type	K
Sensing Units	Celcius
Data Frequency	10Hz
Temperature Range	-73°to +150°Celcius

2.3 RTDs

Model Number	1PT100K2515
Serial Number	8105874731
Datasheet Link	Link
Type	PT100
Sensing Units	Celcius
Data Frequency	10Hz
Temperature Range	-200°to +150°Celcius

2.4 Hall Effect Sensors

Model Number	TCS40DPR
Serial Number	6D65BA9367
Datasheet Link	Link
Sensing Units	mT
Output Type	Push-Pull
Trip	±4.4mT
Release	±0.9mT
Input Voltage Range	8.0 to 16.0 Volts
Data Frequency	10Hz
Temperature Range	-40°to +150°Celcius

3 EEPROM Layouts

3.1 Layout Version IDs

VersionID	Version Name
1	Sensor Board Layout Rev 1
2	Power Distro Board Layout Rev 1

3.2 Sensor Board Layout Rev 1

Sensor Board Layout Rev 1 Page #0					
Byte #	Usage	Byte #	Usage	Byte #	Usage
0 1 2 3	Layout Rev Number	48 49 50 51	PT0 Polyfit p2	96 97 98 99	PT1 Current CanID
4 5 6 7	EEPROM Layout Compile Time	52 53 54 55	PT0 Polyfit p3	100 101 102 103	PT1 Max Voltage
8 9 10 11	Board Status	56 57 58 59	PT0 Polyfit p4	104 105 106 107	PT1 Min Voltage
12 13 14 15	Board VIN Voltage CanID	60 61 62 63	PT0 Polyfit p5	108 109 110 111	PT1 Max Value
16 17 18 19	Board current CanID	64 65 66 67	PT0 Polyfit p6	112 113 114 115	PT1 Min Value
20 21 22 23	PT0 Data CanID	68 69 70 71	PT0 Polyfit p7	116 117 118 119	PT1 Polyfit p1
24 25 26 27	PT0 Current CanID	72 73 74 75	PT0 Biquad Filter b0	120 121 122 123	PT1 Polyfit p2
28 29 30 31	PT0 Max Voltage	76 77 78 79	PT0 Biquad Filter b1	124 125 126 127	PT1 Polyfit p3
32 33 34 35	PT0 Min Voltage	80 81 82 83	PT0 Biquad Filter b2		
36 37 38 39	PT0 Max Value	84 85 86 87	PT0 Biquad Filter a1		
40 41 42 43	PT0 Min Value	88 89 90 91	PT0 Biquad Filter a2		
44 45 46 47	PT0 Polyfit p1	92 93 94 95	PT1 Data CanID		

Sensor Board Layout Rev 1 Page #1					
Byte #	Usage	Byte #	Usage	Byte #	Usage
128 129 130 131	PT1 Polyfit p4	176 177 178 179	PT1 Min Voltage	224 225 226 227	PT1 Biquad Filter b2
132 133 134 135	PT1 Polyfit p5	180 181 182 183	PT1 Max Value	228 229 230 231	PT1 Biquad Filter a1
136 137 138 139	PT1 Polyfit p6	184 185 186 187	PT1 Min Value	232 233 234 235	PT1 Biquad Filter a2
140 141 142 143	PT1 Polyfit p7	188 189 190 191	PT1 Polyfit p1	236 237 238 239	Hall Effect 0 Data CanID
144 145 146 147	PT1 Biquad Filter b0	192 193 194 195	PT1 Polyfit p2	240 241 242 243	Hall Effect 0 Current CanID
148 149 150 151	PT1 Biquad Filter b1	196 197 198 199	PT1 Polyfit p3	244 245 246 247	Hall Effect 1 Data CanID
152 153 154 155	PT1 Biquad Filter b2	200 201 202 203	PT1 Polyfit p4	248 249 250 251	Hall Effect 1 Current CanID
156 157 158 159	PT1 Biquad Filter a1	204 205 206 207	PT1 Polyfit p5	252 253 254 255	Hall Effect 2 Data CanID
160 161 162 163	PT1 Biquad Filter a2	208 209 210 211	PT1 Polyfit p6		
164 165 166 167	PT2 Data CanID	212 213 214 215	PT1 Polyfit p7		
168 169 170 171	PT2 Current CanID	216 217 218 219	PT1 Biquad Filter b0		
172 173 174 175	PT1 Max Voltage	220 221 222 223	PT1 Biquad Filter b1		

Sensor Board Layout Rev 1 Page #2					
Byte #	Usage	Byte #	Usage	Byte #	Usage
256		304		352	
257	Hall Effect 2	305	TC1 Biquad Filter	353	RTD1 Biquad Filter
258	Current CanID	306	a2	354	a2
259		307		355	
260		308		356	
261	TC0 Data CanID	309	RTD0 Data CanID	357	
262		310		358	
263		311		359	
264		312		360	
265	TC0 Biquad Filter	313	RTD0 Biquad Filter	361	
266	b0	314	b0	362	
267		315		363	
268		316		364	
269	TC0 Biquad Filter	317	RTD0 Biquad Filter	365	
270	b1	318	b1	366	
271		319		367	
272		320		368	
273	TC0 Biquad Filter	321	RTD0 Biquad Filter	369	
274	b2	322	b2	370	
275		323		371	
276		324		372	
277	TC0 Biquad Filter	325	RTD0 Biquad Filter	373	
278	a1	326	a1	374	
279		327		375	
280		328		376	
281	TC0 Biquad Filter	329	RTD0 Biquad Filter	377	
282	a2	330	a2	378	
283		331		379	
284		332		380	
285	TC1 Data CanID	333	RTD1 Data CanID	381	
286		334		382	
287		335		383	
288		336			
289	TC1 Biquad Filter	337	RTD1 Biquad Filter		
290	b0	338	b0		
291		339			
292		340			
293	TC1 Biquad Filter	341	RTD1 Biquad Filter		
294	b1	342	b1		
295		343			
296		344			
297	TC1 Biquad Filter	345	RTD1 Biquad Filter		
298	b2	346	b2		
299		347			
300		348			
301	TC1 Biquad Filter	349	RTD1 Biquad Filter		
302	a1	350	a1		
303		351			

3.3 Power Distro Board Layout Rev 1

Power Distro Board Layout Rev 1 Page #0					
Byte #	Usage	Byte #	Usage	Byte #	Usage
0	Board Status	48		96	
1		49		97	
2		50		98	
3		51		99	
4	Offboard Battery Voltage CANID	52		100	
5		53		101	
6		54		102	
7		55		103	
8	Offboard Battery Current CANID	56		104	
9		57		105	
10		58		106	
11		59		107	
12	Onboard Battery Voltage CANID	60		108	
13		61		109	
14		62		110	
15		63		111	
16	Onboard Battery Current CANID	64		112	
17		65		113	
18		66		114	
19		67		115	
20	Helix Loop CW Voltage CANID	68		116	
21		69		117	
22		70		118	
23		71		119	
24	Helix Loop CW Current CANID	72		120	
25		73		121	
26		74		122	
27		75		123	
28	Helix Loop CCW Voltage CANID	76		124	
29		77		125	
30		78		126	
31		79		127	
32	Helix Loop CCW Current CANID	80			
33		81			
34		82			
35		83			
36		84			
37		85			
38		86			
39		87			
40		88			
41		89			
42		90			
43		91			
44		92			
45		93			
46		94			
47		95			

4 CAN IDs

4.1 ID 0 - Clock Sync

Frequency: 50Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False	0 to 4294967295	Milliseconds	UTC time

4.2 ID 1 - Emergency Signal

Frequency: 50Hz

Byte	Bit	Signed	Range	Units	Description
0		False			Status
	0-1				System Status

4.3 ID 100 - Helium Pressure

Frequency: 50Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		False		PSIG	Helium Pressure

4.4 ID 101 - Lox Pressure

Frequency: 50Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		False		PSIG	LOX Pressure

4.5 ID 102 - Methane Pressure

Frequency: 50Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		False		PSIG	Methane Pressure

4.6 ID 103 - Chamber Pressure

Frequency: 50Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		False		PSIG	Chamber Pressure

4.7 ID 200 - Helium Fill Valve

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4		False		Open/Closed	Helium Fill Valve State

4.8 ID 201 - LOX Fill Valve

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4		False		Open/Closed	LOX Fill Valve State

4.9 ID 202 - Methane Fill Valve

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4		False		Open/Closed	Methane Fill Valve State

4.10 ID 300 - Helium Tank Temperature

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		Celcius	Helium Tank Temperature

4.11 ID 301 - LOX Tank Temperature

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		Celcius	LOX Tank Temperature

4.12 ID 302 - Methane Tank Temperature

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		Celcius	Methane Tank Temperature

4.13 ID 303 - Nozzle Temperature

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		Celcius	Nozzle Temperature

4.14 ID 304 - Upper Air Frame Temperature

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		Celcius	Upper Air Frame Temperature

4.15 ID 400 - Helium PT Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	Helium PT Current

4.16 ID 401 - LOX PT Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	LOX PT Current

4.17 ID 402 - Methane PT Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	Methane PT Current

4.18 ID 403 - Chamber PT Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	Chamber PT Current

4.19 ID 404 - Helium Fill Hall Effect Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	Helium Fill Hall Effect Current

4.20 ID 405 - LOX Fill Hall Effect Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	LOX Fill Hall Effect Current

4.21 ID 406 - Methane Fill Hall Effect Current

Frequency: 10Hz

Byte	Bit	Signed	Range	Units	Description
0-3		False		Milliseconds	UTC time
4-5		True		milliamps	Methane Fill Hall Effect Current