

Shop Manual

860E-1KT

DUMP TRUCK

SERIAL NUMBERS

A30036 & UP

KOMATSU®

Product: KOMATSU 860E-1KT Rigid Dump Truck Service Repair Workshop Manual(CEBM025801)

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DUMP TRUCK

860E

Machine model	Serial number
860E-1KT	A30036 and up

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Composition of shop manual

The contents of this shop manual are shown together with Form No. in a list.

Note 1: Always keep the latest version of this manual in accordance with this list and utilize accordingly.

The marks shown to the right of Form No. denote the following:

□: New module (to be filed additionally) ●: Revision (to be replaced for each Form No.)

Note 2: To file this shop manual in the special binder for management, handle it as follows:

- Place a divider on the top of each section in the file after matching the Tab No. with No. indicated next to each Section Name shown in the table below:
- File overview and other materials in sections in the order shown below and utilize them accordingly.

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13 L1B SYS: Undervoltage in SIBAS® battery for BRAM	10
14 L3C SYS: SIBAS® power supply failure 24V for pulse amplifier	11
15 L3C SYS: SIBAS® power supply failure +5V	12
16 L3C SYS: SIBAS® power supply failure +15V	13
17 L3C SYS: SIBAS® power supply failure –15V	14
18 L3C SYS: SIBAS® power supply failure +24V	15
19 L3C SYS: SIBAS® power supply failure –24V	16
21 L3C SYS: FPGA clock missing for PSU	18
22 L3C SYS: Pulse inhibit by reset in PSU from CPU	19
24 L3C SYS: General protection error (G10)	20
25 L3C SYS: Total block	21
26 L1B SYS: Permanent inhibit fault active	22
27 L1B SYS: Regular inhibit fault active	23
28 L1A SYS: GW Test stopped by A/D converter faulty	24
30 L3C DSP A: Initialization fault detected by DSP	25
31 L3C DSP A: SW-Watchdog	26
32 L3C DSP A: Initialization fault detected by CPU	27
33 L1B DSP A: SW-Traco triggered	28
34 L1B DSP A: SW-Traco full	29
35 L3C DSP A: Time slice overflow T1	30
36 L3C DSP A: Time slice overflow T2	30
37 L3C DSP A: Time slice overflow T3	30
38 L3C DSP A: Time slice overflow T4	30
39 L1A DSP A: Communication HSCX data from DSP B missing	31
40 L1A DSP A: Communication HSCX data from DSP T missing	32
41 L3C DSP A: Current offset during pulse block	33
42 L3C DSP A: Current offset during no pulse block	34
43 L3A DSP A: Overcurrent fault	35
44 L3C DSP A: Current transducer defective phase U	36
45 L3C DSP A: Current transducer defective phase W	37
48 L1A DSP A: Modulation software fault	38
49 L3A DSP A: Active current controller at limit	39

Drive system fault code table, part 2

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50 L3A DSP A: Active current reference at limit	3
51 L1A DSP A: Braking chopper controller at limit.....	4
52 L3C DSP A: Phase unbalance too large	5
53 L3A DSP A: Pulse block by DSP software.....	6
54 L3C DSP A: U/F Card defective.....	7
55 L3C DSP A: Difference in current of phase U overlimit.....	8
56 L3C DSP A: Difference in current of phase W over limit.....	9
60 L3C DSP B: Initialization fault detected by DSP	10
61 L3C DSP B: SW-Watchdog.....	11
62 L3C DSP B: Initialization fault detected by CPU	12
63 L1B DSP B: SW-Traco triggered.....	13
64 L1B DSP B: SW-Traco full	14
65 L3C DSP B: Time slice overflow T1	15
66 L3C DSP B: Time slice overflow T2	15
67 L3C DSP B: Time slice overflow T3	15
68 L3C DSP B: Time slice overflow T4	15
69 L1A DSP B: Communication HSCX data from DSP A missing.....	16
70 L1A DSP B: Communication HSCX data from DSP T missing	17
71 L3C DSP B: Current offset during pulse block	18
72 L3C DSP B: Current offset during no pulse block.....	19
73 L3A DSP B: Overcurrent fault	20
74 L3C DSP B: Current transducer defective phase V	21
75 L3C DSP B: Current transducer defective phase W	22
78 L1A DSP B: Modulation software fault	23
79 L3A DSP B: Active current controller at limit.....	24
80 L3A DSP B: Active current reference at limit	25
81 L1A DSP B: Braking chopper controller at limit.....	26
82 L3C DSP B: Phase unbalance too large	27
83 L3A DSP B: Pulse block by DSP software.....	28
84 L3C DSP B: U/F Card defective.....	29
85 L3C DSP B: Difference in current of phase V over limit.....	30
86 L3C DSP B: Difference in current of phase W over limit.....	31
90 L3C DSP T: Initialization fault detected by DSP	32
91 L3C DSP T: SW-Watchdog	33
92 L3C DSP T: Initialization fault detected by CPU.....	34
93 L1B DSP T: SW-Traco triggered	35
94 L1B DSP T: SW-Traco full	36
95 L3C DSP T: Time slice overflow T1.....	37
96 L3C DSP T: Time slice overflow T2.....	37
97 L3C DSP T: Time slice overflow T3.....	37
98 L3C DSP T: Time slice overflow T4.....	37
99 L1A DSP T: Communication HSCX data from DSP A missing	38

Drive system fault code table, part 3

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100 L1A DSP T: Communication HSCX data from DSP B missing.....	3
101 L3C DSP T: Current offset during pulse block.....	4
102 L3C DSP T: Current offset during no pulse block.....	5
103 L3A DSP T: Overcurrent fault.....	6
104 L3C DSP T: Current transducer defective phase U.....	7
105 L3C DSP T: Current transducer defective phase V.....	8
106 L3C DSP T: Current transducer defective phase W.....	9
107 L3C DSP T: Sum of output current not equal zero.....	10
108 L1A DSP T: Modulation software fault.....	11
109 L1A DSP T: Voltage controller at limit.....	12
112 L3C DSP T: Phase unbalance too large.....	13
113 L3A DSP T: Pulse block by DSP software.....	14
114 L3C DSP T: U/F Card defective.....	15
117 L3C DSP T: Crowbar fired by DSP T.....	16
119 L1C DSP T: Voltage transducer U34 not ok.....	17
120 L3C IO: Supervision bus clock.....	18
121 L3C IO: Supervision I/O clock.....	19
122 L3C IO: Incorrect FPGA version identifier.....	20
123 L3C IO: Incorrect FPGA application version identifier.....	21
124 L3C IO: Incorrect module version identifier.....	22
125 L3C/L1A IO: AD Converter faulty.....	23
126 L3C IO: GW Comparator faulty during start-up test.....	24
127 L3C IO: Test voltage not equal zero.....	25
128 L1A IO: SIBAS® Temperature out of range.....	26
129 L3C IO: Incorrect EBIN card identifier.....	27
130 L3C IO: Front plug monitoring.....	28
131 L3C IO: CPU Watchdog triggered.....	29
132 L3C IO: DSP A Watchdog triggered.....	30
133 L3C IO: DSP B Watchdog triggered.....	31
135 L3C IO: CPU Reset triggered.....	33
138 L1B IO: CPU Traco triggered.....	34
146 L3A IO: Pulse block from I/O.....	35
150 L3A IO: DC link voltage A level 1 exceeded.....	36
151 L3A IO: DC link voltage B level 1 exceeded.....	37
152 L3C IO: Trolley line overvoltage.....	38
154 L3B IO: Trolley line overcurrent.....	39
155 L2B IO: Trolley line current transducer faulty.....	40
156 L2B IO: Trolley line voltage transducer faulty.....	41
160 L3A IO: Throttle pedal out of range.....	42
161 L3A IO: Retard pedal out of range.....	43
162 L1A IO: Cruise speed control module out of range.....	44
180 L3C UWSA1: Supervision bus clock.....	45
181 L3C UWSA1: Supervision module clock.....	46
182 L3C UWSA1: Incorrect FPGA version identifier.....	47
183 L3C UWSA1: Incorrect FPGA project identifier.....	48

184 L3C UWSA1: GW Comparator faulty during start-up test	49
185 L1A UWSA1: ADC Faulty	50
186 L3C UWSA1: Configuration failure	51
187 L1A UWSA1: Hardware failure counter / processor	52
188 L3A UWSA1: Peak current protection active	53
189 L3D UWSA1: Peak current protection pulse start	54
190 L3D UWSA1: Number of peak current protection >limit	55
191 L3D UWSA1: Supervision switching frequency	56
193 L1A UWSA1: Overvoltage level 1 exceeded	57
196 L3D UWSA1: Limit 5 overcurrent phase U	58
197 L3D UWSA1: Limit 5 overcurrent phase V	58
198 L3D UWSA1: Limit 5 overcurrent phase W	58
199 L3D UWSA1: Limit 5 overvoltage DC bus	59

Drive system fault code table, part 4

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201 L3D UWSA1: Checkback INVA1 L1U faulty	4
202 L3D UWSA1: Checkback INVA1 L1L faulty	4
203 L3D UWSA1: Checkback INVA1 L2U faulty	4
204 L3D UWSA1: Checkback INVA1 L2L faulty	4
205 L3D UWSA1: Checkback INVA1 L3U faulty	4
206 L3D UWSA1: Checkback INVA1 L3L faulty	4
207 L3D UWSA1: Checkback chopper A faulty	4
210 L3C UWSB1: Supervision bus clock	5
211 L3C UWSB1: Supervision module clock	6
212 L3C UWSB1: Incorrect FPGA version identifier	7
213 L3C UWSB1: Incorrect FPGA project identifier	8
214 L3C UWSB1: GW Comparator faulty during start-up test	9
215 L1A UWSB1: ADC Faulty	10
216 L3C UWSB1: Configuration failure	11
217 L1A UWSB1: Hardware failure counter / processor	12
218 L3A UWSB1: Peak current protection active	13
219 L3D UWSB1: Peak current protection pulse start	14
220 L3D UWSB1: Number of peak current protection >limit	15
221 L3D UWSB1: Supervision switching frequency	16
223 L1A UWSB1: Overvoltage level 1 exceeded	17
226 L3D UWSB1: Limit 5 overcurrent phase V	18
227 L3D UWSB1: Limit 5 overcurrent phase U	18
228 L3D UWSB1: Limit 5 overcurrent phase W	18
229 L3D UWSB1: Limit 5 overvoltage DC bus	19
231 L3D UWSB1: Checkback INVB1 L1U Faulty	20
232 L3D UWSB1: Checkback INVB1 L1L Faulty	20
233 L3D UWSB1: Checkback INVB1 L2U Faulty	20
234 L3D UWSB1: Checkback INVB1 L2L Faulty	20
235 L3D UWSB1: Checkback INVB1 L3U Faulty	20
236 L3D UWSB1: Checkback INVB1 L3L Faulty	20
237 L3D UWSB1: Checkback chopper B Faulty	20

240 L3C UWSA2: Supervision bus clock	21
241 L3C UWSA2: Supervision module clock	22
242 L3C UWSA2: Incorrect FPGA version identifier	23
243 L3C UWSA2: Incorrect FPGA project identifier	24
244 L3C UWSA2: GW Comparator faulty during start-up test	25
245 L1A UWSA2: ADC Faulty	26
246 L3C UWSA2: Configuration failure	27
247 L1A UWSA2: Hardware failure counter / processor	28
248 L3A UWSA2: Peak current protection active	29
249 L3D UWSA2: Peak current protection pulse start	30
250 L3D UWSA2: Number of peak current protection >limit	31
251 L3D UWSA2: Supervision switching frequency	32
253 L1A UWSA2: Overvoltage level 1 exceeded	33
256 L3D UWSA2: Limit 5 overcurrent phase U1	34
257 L3D UWSA2: Limit 5 overcurrent phase V1	34
258 L3D UWSA2: Limit 5 overcurrent phase W1	34
259 L3D UWSA2: Limit 5 overvoltage DC bus	35
261 L3D UWSA2: Checkback INVA2 L1U faulty	36
262 L3D UWSA2: Checkback INVA2 L1L faulty	36
263 L3D UWSA2: Checkback INVA2 L2U faulty	36
264 L3D UWSA2: Checkback INVA2 L2L faulty	36
265 L3D UWSA2: Checkback INVA2 L3U faulty	36
266 L3D UWSA2: Checkback INVA2 L3L faulty	36
267 L3D UWSA2: Checkback chopper C faulty	36
270 L3C UWSB2: Supervision bus clock	37
271 L3C UWSB2: Supervision module clock	38
272 L3C UWSB2: Incorrect FPGA version identifier	39
273 L3C UWSB2: Incorrect FPGA project identifier	40
274 L3C UWSB2: GW Comparator faulty during start-up test	41
275 L1A UWSB2: ADC Faulty	42
276 L3C UWSB2: Configuration failure	43
277 L1A UWSB2: Hardware failure counter / processor	44
278 L3A UWSB2: Peak current protection active	45
279 L3D UWSB2: Peak current protection pulse start	46
280 L3D UWSB2: Number of peak current protection >limit	47
281 L3D UWSB2: Supervision switching frequency	48
283 L1A UWSB2: Overvoltage level 1 exceeded	49
286 L3D UWSB2: Limit 5 overcurrent phase V1	50
287 L3D UWSB2: Limit 5 overcurrent phase U1	50
288 L3D UWSB2: Limit 5 overcurrent phase W1	50
289 L3D UWSB2: Limit 5 overvoltage DC bus	51
291 L3D UWSB2: Checkback INVB2 L1U Faulty	52
292 L3D UWSB2: Checkback INVB2 L1L Faulty	52
293 L3D UWSB2: Checkback INVB2 L2U Faulty	52
294 L3D UWSB2: Checkback INVB2 L2L Faulty	52
295 L3D UWSB2: Checkback INVB2 L3U Faulty	52

296 L3D UWSB2: Checkback INVB2 L3L Faulty	52
297 L3D UWSB2: Checkback chopper D Faulty	52

Drive system fault code table, part 5

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300 L3C UWSST: Supervision bus clock	4
301 L3C UWSST: Supervision module clock	5
302 L3C UWSST: Incorrect FPGA version identifier	6
303 L3C UWSST: Incorrect FPGA project identifier	7
304 L3C UWSST: GW Comparator faulty during start-up test	8
305 L1A UWSST: ADC Faulty	9
306 L3C UWSST: Configuration failure	10
307 L1A UWSST: Hardware failure counter / processor	11
308 L3A UWSST: Peak current protection active	12
310 L3D UWSST: Number of peak current protection >limit	13
311 L3D UWSST: Supervision switching frequency	14
314 L3C UWSST: Crowbar is fired without command	15
316 L3D UWSST: Limit 5 overcurrent phase U	16
317 L3D UWSST: Limit 5 overcurrent phase V	16
318 L3D UWSST: Limit 5 overcurrent phase W	16
319 L3D UWSST: Limit 5 overvoltage DC bus	17
321 L3D UWSST: Checkback INVST L1U Faulty	18
322 L3D UWSST: Checkback INVST L1L Faulty	18
323 L3D UWSST: Checkback INVST L2U Faulty	18
324 L3D UWSST: Checkback INVST L2L Faulty	18
325 L3D UWSST: Checkback INVST L3U Faulty	18
326 L3D UWSST: Checkback INVST L3L Faulty	18
327 L3C UWSST: Checkback crowbar faulty	19
330 L1A BUS: CAN Communication failure	20
331 L1A BUS: Serial link communication failure	21
332 L1A BUS: Truck is over loaded	22
333 L1B TR: Transient traco is triggered	23
334 L1B TR: Transient traco is full	24
340 L1A ETM: ADC Failure for ETM1	25
341 L1A ETM: ADC Failure for ETM2	26
342 L1A ETM: ADC Failure for ETM3	27
343 L1A ETM: ADC Failure for ETM4	28
344 L1A MEFA: ADC Failure	29
345 L3C HL: Gate unit power supply A defective	30
346 L3C HL: Gate unit power supply B defective	31
351 L1A DRZ: LIMP Mode A active	32
352 L1A DRZ: Limp mode B active	33
353 L1A DRZ: Low battery voltage	34
354 L1B BUS: Engine floor input increasing minimum engine speed	35
355 L1B DM: Data store switch pressed	36
356 L1B DM: Diagnosis memory configuration failure	37
357 L1B DM: Diagnosis memory occupation > 75%	38

358 L1B DM: Diagnosis memory full	39
359 L1B DM: Test event	40
360 L2A EXT: Main blower air flow supervision	41
361 L2A EXT: Minimum engine speed supervision	42
362 L1A EXT: Main blower pressure switch malfunction.....	43
363 L1A EXT: Shift lever supervision	44
364 L2A EXT: Engine derate protection active.....	45
365 L1A EXT: Truck external plug monitoring	46
366 L1A EXT: Grid dry mode active	47
367 L3A EXT: DC Power off mod request (rest switch on).....	48
368 L1A EXT: Steering encoder defective.....	49
369 L1A EXT: Doppler sensor defective.....	50
370 L1A EXT: Auto lube control defective	51
372 L1A EXT: Service brake pressed at high speed	52
373 L1A EXT: Service brake on above speed limit	53
374 L1A EXT: Anti-roll control malfunction	54
375 L3B BEF: CB301 Circuit breaker defective	55
376 L3B BEF: K303/K304 Contactor defective	56
382 L3B BEF: K103 Feedback defective	57
383 L3B BEF: K105 Feedback defective	58
384 L1A BEF: K107 Feedback defective	59
385 L1A BEF: K109 Feedback defective	60
386 L1A BEF: K111 Feedback defective	61
387 L1A BEF: Limp mode selector defective	62
388 L2B BEF: CB113 Tripped	63
390 L3D IUW: Output current supervision INV A	64
391 L3D IUW: Output current supervision INV B	65
392 L3B IUW: Precharge supervision 1	66
393 L3B IUW: Precharge supervision 2	67
394 L3A IUW: DC Link undervoltage	68
395 L2B IUW: Trolley line undervoltage	69
397 L3B IUW: Field regulator current setpoint supervision	70
398 L2B IUW: Field regulator output current supervision.....	71
399 L3B IUW: Alternator overcurrent protection	72

Drive system fault code table, part 6

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400 L2C IUW: Alternator overload warning	3
401 L2B IUW: Alternator overload protection	4
402 L3C IUW: Alternator AC current sensor faulty.....	5
403 L2A IUW: DC Link voltage out of range in propel.....	6
404 L3A IUW: DC Link voltage out of range retard	7
405 L3A IUW: DC Link voltage out of range for ST operation.....	8
406 L3B IUW: DC Link controller supervision	9
407 L2C IUW: Motor torque square T supervision	10
408 L2C IUW: Motor current square T supervision	11
409 L1A IUW: DC Link discharge time exceeded limit.....	12

410 L2B IUW: Ground fault at positive DC link detected	13
411 L2B IUW: Ground fault at negative DC link detected	14
412 L2B IUW: Ground fault at AC side detected	15
413 L2B IUW: Ground fault	16
414 L3C IUW: Chopper A current supervision	17
415 L3C IUW: Chopper B current supervision	18
416 L3C IUW: Chopper C current supervision	19
417 L3C IUW: Chopper D current supervision	20
418 L3D IUW: Output current supervision INV ST	21
419 L2A IUW: Vehicle overspeed supervisionN	22
419 L2A IUW: Vehicle overspeed supervisionN	22
420 L1A IUW: DC Link voltage sensor A faulty	23
421 L1A IUW: DC Link voltage sensor B faulty	24
422 L3C IUW: ST Inverter failure	25
423 L3B IUW: DC Grid fan circuit failure	26
424 L2B IUW: Cooling water pressure out of range	27
425 L2B IUW: Cooling water level out of range	28
426 L1A IUW: Water pump motor overtemperature	29
427 L1A IUW: Retard limit supervision	30
428 L1A DRZ: Front wheel A speed sensor supervision	31
429 L1A DRZ: Front wheel B speed sensor supervision	32
430 L3D DRZ: Motor A speed sensor supervision	33
431 L3D DRZ: Motor B speed sensor supervision	34
432 L3C DRZ: Alternator speed sensor supervision	35
433 L2A DRZ: Motor A maximum speed exceeded	36
434 L2A DRZ: Motor B maximum speed exceeded	37
435 L1A DRZ: Alternator maximum speed exceeded	38
436 L3A DRZ: Motor A/B rotation inconsistency	39
437 L3A DRZ: Motor A torque supervision	40
438 L3A DRZ: Motor B torque supervision	41
439 L3C SIV: Start-up sequence can't pass due to GUPS failure	42
440 L3C SIV: Start-up sequence can't pass due to K103/K105 failure	43
441 L3C SIV: Start-up sequence can't pass due to IGBT failure	44
442 L3C SIV: Start-up sequence can't pass due to CB301 OR K303 failure	45
443 L3C SIV: Start-up sequence can't pass due to crowbar failure	46
447 L1A SIV: Direct trolley engage sequence supervision	47
448 L1A SIV: Direct trolley disengage sequence supervision	48

Drive system fault code table, part 7

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450 L1A TMP: SIBAS® Temperature < low limit	4
451 L1A TMP: SIBAS® Temperature > warning limit	5
452 L3B TMP: SIBAS® Temperature > shutdown limit	6
453 L3A TMP: IGBT Module A101 temperature < low limit	7
454 L2C TMP: IGBT Module A101 temperature > APRS limit	8
455 L3A TMP: IGBT Module A101 temperature > shutdown limit	9
456 L3A TMP: IGBT Module A102 temperature < low limit	10

457 L2C TMP: IGBT Module A102 temperature > APRS limit	11
458 L3A TMP: IGBT Module A102 temperature > shutdown limit	12
459 L3A TMP: IGBT Module A201 temperature < low limit	13
460 L2C TMP: IGBT Module A201 temperature > APRS limit	14
461 L3A TMP: IGBT Module A201 temperature > shutdown limit	15
462 L3A TMP: IGBT Module A202 temperature < low limit	16
463 L2C TMP: IGBT Module A202 temperature > APRS limit	17
464 L3A TMP: IGBT Module A202 temperature > shutdown limit	18
465 L3A TMP: ST Module temperature < low limit	19
466 L2C TMP: ST Module temperature > warning limit	20
467 L3A TMP: ST Module temperature > shutdown limit	21
468 L2B TMP: SR Module temperature < low limit	22
469 L2C TMP: SR Module temperature > warning limit	23
470 L2B TMP: SR Module temperature > shutdown limit	24
471 L2C TMP: Wheel motor A stator temperature > APRS limit	25
472 L3A TMP: Wheel motor A stator temperature > shutdown limit	26
473 L2C TMP: Wheel motor B Stator temperature > APRS limit	27
474 L3A TMP: Wheel motor B stator temperature shutdown limit	28
475 L2C TMP: Wheel motor A, DE bearing temperature > warning limit	29
476 L3A TMP: Wheel motor A, DE bearing temperature > shutdown limit	30
477 L2C TMP: Wheel motor A NDE bearing temperature > warning limit	31
478 L3A TMP: Wheel motor A NDE bearing temperature > shutdown limit	32
479 L2C TMP: Wheel motor B DE bearing temperature > warning limit	33
480 L3A TMP: Wheel motor B DE bearing temperature > shutdown limit	34
481 L2C TMP: Wheel motor B NDE bearing temperature > warning limit	35
482 L3A TMP: Wheel motor B NDE bearing temperature > shutdown limit	36
483 L2C TMP: Alternator stator temperature > APRS limit	37
484 L2B TMP: Alternator stator temperature > shutdown limit	38
485 L2C TMP: Alternator bearing temperature > warning limit	39
486 L2B TMP: Alternator bearing temperature > shutdown limit	40
487 L1A TMP: Cooling water inlet temperature < low limit	41
488 L2C TMP: Cooling water inlet temperature > warning limit	42
489 L2B TMP: Cooling water inlet temperature > shutdown limit	43
490 L1A TMP: Cooling water outlet temperature < low limit	44
491 L2C TMP: Cooling water outlet temperature > warning limit	45
492 L2B TMP: Cooling water outlet temperature > shutdown limit	46
493 L1A TMP: Cooling water delta T too high	47
495 L2C TMP: Inverter cab temperature > warning limit	48
496 L2B TMP: Inverter cab temperature > shutdown limit	49
497 L2C TMP: Inside cooler outlet temperature > warning limit	50
498 L2B TMP: Inside cooler outlet temperature > shutdown limit	51
499 L1A TMP: Main blower motor stator temperature > warning limit	52
500 L1A TMP: Main blower motor stator temperature > shutdown limit	53
505 L1A TMP: Wheel motor A rotor temperature > limit	54
506 L1A TMP: Wheel motor B rotor temperature > limit	55
508 L1A ETM1: Alternator PT100 open circuit	56

510 L1A ETM1: Grid blower statoR PT100 open circuit	56
511 L1A ETM1: Inverter CAB PT100 open circuit	56
512 L1A ETM1: Ambient PT100 open circuit	56
513 L1A ETM1: Heater exchanger PT100 open circuit	56
514 L1A ETM1: Cooling water inlet PT100 open circuit	56
515 L1A ETM1: Cooling water outlet PT100 open circuit	56
516 L1A ETM2: Motor A NDE Bearing PT100 open circuit	57
517 L1A ETM2: Motor A DE Bearing PT100 open circuit	57
518 L1A ETM2: Motor B NDE Bearing PT100 open circuit	57
519 L1A ETM2: Motor B DE Bearing PT100 open circuit	57
520 L1A ETM2: Alternator Bearing PT100 open circuit	57
521 L1A ETM2: Motor A stator PT100 open circuit	57
522 L1A ETM2: Motor B stator PT100 open circuit	57
523 L1A ETM2: Motor inlet air PT100 open circuit	57
524 L1A ETM3: IGBT Module A101 PT100 open circuit	58
525 L1A ETM3: IGBT Module A102 PT100 open circuit	58
526 L1A ETM3: IGBT Module A103 PT100 open circuit	58
527 L1A ETM3: IGBT Module A104 PT100 open circuit	58
528 L1A ETM3: IGBT Module A201 PT100 open circuit	58
529 L1A ETM3: IGBT Module A202 PT100 open circuit	58
530 L1A ETM3: IGBT Module A203 PT100 open circuit	58
531 L1A ETM3: IGBT Module A204 PT100 open circuit	58
532 L1A ETM3: ST Module PT100 open circuit	59
533 L1A ETM3: SR Module PT100 open circuit	59
534 L1A ETM3: Channel 7 PT100 open circuit	59
535 L1A ETM3: Channel 8 PT100 open circuit	59
536 L1A ETM4: Channel 1 PT100 open circuit	60
537 L1A ETM4: Channel 2 PT100 open circuit	60
538 L1A ETM4: Channel 3 PT100 open circuit	60
539 L1A ETM4: Channel 4 PT100 open circuit	60
540 L1A ETM4: Channel 5 PT100 open circuit	60
541 L1A ETM4: Channel 6 PT100 open circuit	60
542 L1A ETM4: Channel 7 PT100 open circuit	60
543 L1A ETM4: Channel 8 PT100 open circuit	60
544 L1A ETM4: ST Module PT100 open circuit	60
544 L1A ETM4: SR Module PT100 open circuit	60
550 L3A TMP: Inverter A module temperature < low limit	61
551 L2C TMP: Inverter A module temperature > APRS limit	62
552 L3A TMP: Inverter A module temperature > shutdown limit	63
552 L3A TMP: Inverter A module temperature > shutdown limit	63
553 L3A TMP: Inverter B module temperature < low limit	64
554 L2C TMP: Inverter B module temperature > APRS limit	65
555 L3A TMP: Inverter B module temperature > shutdown limit	66
556 L3A TMP: Chopper A module temperature < low limit	67
557 L2C TMP: Chopper A module temperature > APRS limit	68
558 L3A TMP: Chopper A module temperature > shutdown limit	69

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