

| setpoint | det temp | hir power | error term | Prop term | Integ term | Deriv Term | Setpoint | det temp | Heater   | error term | Prop term | Integ term | Deriv term | P Const                                                                              |
|----------|----------|-----------|------------|-----------|------------|------------|----------|----------|----------|------------|-----------|------------|------------|--------------------------------------------------------------------------------------|
| 015776   | 000000   | 000000    | 000000     | 000000    | 000000     | 000000     | 77       | 87,926   | 0        | 0          | 0         | 0          | 0          | TX: 000303 52444D 40003A<br>RX: 030002 466666<br><br>0,55                            |
|          | 015776   | 000000    | 000000     | 000000    | 000000     | 000000     | 77       | 87,926   | 0        | 0          | 0         | 0          | 0          |                                                                                      |
|          | 0155EA   | 000000    | 000212     | FFEDD     | FFFFC      | 000000     | 87       | 87,53    | 0        | 0,53       | -8,88278  | -1,5873    | 0          |                                                                                      |
|          | 0155EA   | 000000    | 000212     | FFEDD     | FFFFB      | 000000     | 87       | 87,53    | 0        | 0,53       | -8,88278  | -3,57143   | 0          |                                                                                      |
| 01545D   | 000000   | 000085    | 000085     | FFEDD     | FFFF6      | 000000     | 87       | 87,133   | 0        | 0,133      | -8,88278  | -4,7619    | 0          | I Const<br><br><br>TX: 000303 52444D 40003B<br>RX: 030002 033333<br><br>0,025        |
|          | 01545D   | 000000    | 000085     | FFEDD     | FFFF6      | 000000     | 87       | 87,133   | 0        | 0,133      | -8,88278  | -4,7619    | 0          |                                                                                      |
|          | 01545D   | 000000    | 000085     | FFEDD     | FFFF6      | 000000     | 87       | 87,133   | 0        | 0,133      | -8,88278  | -4,7619    | 0          |                                                                                      |
|          | 01545D   | 000000    | 000085     | FFEDD     | FFFF6      | 000000     | 87       | 87,133   | 0        | 0,133      | -8,88278  | -4,7619    | 0          |                                                                                      |
| 0152D0   | 000000   | 000000    | 000000     | 000000    | 000000     | 000000     | 87       | 86,736   | 0        | -0,264     | -8,88278  | -4,7619    | 0          | D Const<br><br><br>TX: 000303 52444D 40003C<br>RX: 030002 266666<br><br>0,3          |
|          | 0152D0   | 000000    | 000000     | 000000    | 000000     | 000000     | 87       | 86,736   | 0        | -0,264     | -8,88278  | -4,7619    | 0          |                                                                                      |
|          | 0152D0   | 000000    | 000000     | 000000    | 000000     | 000000     | 87       | 86,736   | 0        | -0,264     | -8,88278  | -4,7619    | 0          |                                                                                      |
|          | 0152D0   | 000000    | 000000     | 000000    | 000000     | 000000     | 87       | 86,736   | 0        | -0,264     | -8,88278  | -4,7619    | 0          |                                                                                      |
| 015143   | 00006A   | 00006A    | 00016C     | FFFF75    | FFFFF8     | 000000     | 87       | 86,339   | 3,235653 | -0,661     | 11,11111  | -4,24298   | -3,63248   | Time constant<br><br><br>TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs |
|          | 015143   | 000136    | 00016C     | FFFFCA    | 000000     | 000000     | 87       | 86,339   | 9,462759 | -0,661     | 11,11111  | -1,64835   | 0          |                                                                                      |
|          | 015143   | 00018B    | 00016C     | 00001F    | 000000     | 000000     | 87       | 86,339   | 12,05739 | -0,661     | 11,11111  | 0,946276   | 0          |                                                                                      |
|          | 015143   | 0001E0    | 00016C     | 000074    | 000000     | 000000     | 87       | 86,339   | 14,65201 | -0,661     | 11,11111  | 3,540904   | 0          |                                                                                      |
| 015143   | 000235   | 00016C    | 0000C9     | 0000C9    | 000000     | 000000     | 87       | 86,339   | 17,24664 | -0,661     | 11,11111  | 6,135531   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 015143   | 00028A    | 00016C     | 00011E    | 000000     | 000000     | 87       | 86,339   | 19,84127 | -0,661     | 11,11111  | 8,730159   | 0          |                                                                                      |
|          | 015143   | 0002DF    | 00016C     | 000184    | 000000     | 000000     | 87       | 86,339   | 22,4359  | -0,661     | 11,11111  | 11,84371   | 0          |                                                                                      |
|          | 015143   | 000345    | 00016C     | 0001D9    | 000000     | 000000     | 87       | 86,339   | 25,54945 | -0,661     | 11,11111  | 14,43834   | 0          |                                                                                      |
| 015143   | 00039A   | 00016C    | 00022E     | 000000    | 000000     | 000000     | 87       | 86,339   | 28,14408 | -0,661     | 11,11111  | 17,03297   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 015143   | 0003EF    | 000283     | 000000    | 000000     | 000000     | 87       | 86,339   | 30,73871 | -0,661     | 11,11111  | 19,62759   | 0          |                                                                                      |
|          | 015143   | 000444    | 00016C     | 0002D8    | 000000     | 000000     | 87       | 86,339   | 33,33333 | -0,661     | 11,11111  | 22,22222   | 0          |                                                                                      |
|          | 015143   | 000499    | 00016C     | 00032D    | 000000     | 000000     | 87       | 86,339   | 35,92796 | -0,661     | 11,11111  | 24,81685   | 0          |                                                                                      |
| 015143   | 0004EE   | 00016C    | 000382     | 000000    | 000000     | 000000     | 87       | 86,339   | 38,52259 | -0,661     | 11,11111  | 27,41148   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 015143   | 000543    | 00016C     | 0003D7    | 000000     | 000000     | 87       | 86,339   | 41,11722 | -0,661     | 11,11111  | 30,00611   | 0          |                                                                                      |
|          | 015143   | 000598    | 00016C     | 00042C    | 000000     | 000000     | 87       | 86,339   | 43,71184 | -0,661     | 11,11111  | 32,60073   | 0          |                                                                                      |
|          | 015143   | 0005ED    | 00016C     | 000481    | 000000     | 000000     | 87       | 86,339   | 46,30647 | -0,661     | 11,11111  | 35,19536   | 0          |                                                                                      |
| 015143   | 000642   | 00016C    | 0004D6     | 000000    | 000000     | 000000     | 87       | 86,339   | 48,9011  | -0,661     | 11,11111  | 37,78999   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 015143   | 000697    | 00016C     | 00052B    | 000000     | 000000     | 87       | 86,339   | 51,49573 | -0,661     | 11,11111  | 40,38462   | 0          |                                                                                      |
|          | 015143   | 0006EC    | 00016C     | 000580    | 000000     | 000000     | 87       | 86,339   | 54,09035 | -0,661     | 11,11111  | 42,97924   | 0          |                                                                                      |
|          | 015143   | 000741    | 00016C     | 0005D5    | 000000     | 000000     | 87       | 86,339   | 56,68498 | -0,661     | 11,11111  | 45,57387   | 0          |                                                                                      |
| 015143   | 000796   | 00016C    | 00062A     | 000000    | 000000     | 000000     | 87       | 86,339   | 59,27961 | -0,661     | 11,11111  | 48,1685    | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 015143   | 0007EB    | 00016C     | 00067F    | 000000     | 000000     | 87       | 86,339   | 61,87424 | -0,661     | 11,11111  | 50,76313   | 0          |                                                                                      |
|          | 015143   | 000840    | 00016C     | 0006D4    | 000000     | 000000     | 87       | 86,339   | 64,46886 | -0,661     | 11,11111  | 53,35775   | 0          |                                                                                      |
|          | 015143   | 000895    | 00016C     | 000729    | 000000     | 000000     | 87       | 86,339   | 67,06349 | -0,661     | 11,11111  | 55,95238   | 0          |                                                                                      |
| 015143   | 0008EA   | 00016C    | 00078F     | 000000    | 000000     | 000000     | 87       | 86,339   | 69,68612 | -0,661     | 11,11111  | 59,06593   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 015143   | 0009A5    | 00016C     | 0007E4    | 000000     | 000000     | 87       | 86,339   | 72,7167  | -0,661     | 11,11111  | 61,66056   | 0          |                                                                                      |
|          | 015143   | 000950    | 00016C     | 000839    | 000000     | 000000     | 87       | 86,339   | 75,3663  | -0,661     | 11,11111  | 64,25519   | 0          |                                                                                      |
|          | 015143   | 0009FA    | 00016C     | 00088E    | 000000     | 000000     | 87       | 86,339   | 77,96093 | -0,661     | 11,11111  | 66,84982   | 0          |                                                                                      |
| 0152D0   | 000A3E   | 00016C    | 0008D2     | 000000    | 000000     | 000000     | 87       | 86,736   | 80,03663 | -0,264     | 11,11111  | 68,92552   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 0152D0   | 000A3E    | 00016C     | 0008D2    | 000000     | 000000     | 87       | 86,736   | 80,03663 | -0,264     | 11,11111  | 68,92552   | 0          |                                                                                      |
|          | 0155EA   | 000A3E    | 00016C     | 0008D2    | 000000     | 000000     | 87       | 87,53    | 80,03663 | 0,133      | 11,11111  | 68,92552   | 0          |                                                                                      |
|          | 0155EA   | 000A3E    | 00016C     | 0008D2    | 000000     | 000000     | 87       | 87,53    | 80,03663 | 0,133      | 11,11111  | 68,92552   | 0          |                                                                                      |
| 0155EA   | 00072D   | 000212    | FFEDD      | 000850    | 000000     | 000000     | 87       | 87,53    | 58,05861 | 0,53       | -8,88278  | 66,94139   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 0155EA   | 0006EC    | 000212     | FFEDD     | 00080F     | 000000     | 87       | 87,53    | 56,07448 | 0,53       | -8,88278  | 64,95726   | 0          |                                                                                      |
|          | 0155EA   | 0006AB    | 000212     | FFEDD     | 0007CE     | 000000     | 87       | 87,53    | 52,10623 | 0,53       | -8,88278  | 62,97314   | 0          |                                                                                      |
|          | 0155EA   | 00066A    | 000212     | FFEDD     | 455252     | 000000     | 87       | 87,53    | 50,1221  | 0,53       | -8,88278  | 60,98901   | 0          |                                                                                      |
| 0155EA   | 000629   | 000212    | FFEDD      | 00074C    | 000000     | 000000     | 87       | 87,53    | 48,13797 | 0,53       | -8,88278  | 57,02076   | 0          | TX: 000303 52444D 400039<br>RX: 030002 001388<br><br>5 secs                          |
|          | 0155EA   | 0005E8    | 000212     | FFEDD     | 00070B     | 000000     | 87       | 87,53    | 46,15385 | 0,53       | -8,88278  | 55,03663   | 0          |                                                                                      |
|          | 0155EA   | 0005A7    | 000212     | FFEDD     | 0006CA     | 000000     | 87       | 87,53    | 44,16972 | 0,53       | -8,88278  | 53,0525    | 0          |                                                                                      |
|          | 0155EA   | 000566    | 000212     | FFEDD     | 000689     | 000000     | 87       | 87,53    | 42,18559 | 0,53       | -8,88278  | 51,06838   | 0          |                                                                                      |
| 0155EA   | 000525   | 000212    | FFEDD      | 000648    | 000000     | 000000     | 87       | 87,53    | 40,20147 | 0,53       | -8,88278  | 49,08425   | 0          |                                                                                      |

|        |        |        |        |        |        |    |        |          |        |          |          |   |
|--------|--------|--------|--------|--------|--------|----|--------|----------|--------|----------|----------|---|
| 0155EA | 0004E4 | 000212 | FFEDD  | 000607 | 000000 | 87 | 87,53  | 38,21734 | 0,53   | -8,88278 | 47,10012 | 0 |
| 0155EA | 0004A3 | 000212 | FFEDD  | 0005B9 | 000000 | 87 | 87,53  | 36,23321 | 0,53   | -8,88278 | 44,71917 | 0 |
| 0155EA | 000455 | 000212 | FFEDD  | 000578 | 000000 | 87 | 87,53  | 33,85226 | 0,53   | -8,88278 | 42,73504 | 0 |
| 0155EA | 000414 | 000212 | FFEDD  | 000537 | 000000 | 87 | 87,53  | 31,86813 | 0,53   | -8,88278 | 40,75092 | 0 |
| 0155EA | 0003D3 | 000212 | FFEDD  | 0004F6 | 000000 | 87 | 87,53  | 29,884   | 0,53   | -8,88278 | 38,76679 | 0 |
| 0155EA | 000392 | 000212 | FFEDD  | 0004B5 | 000000 | 87 | 87,53  | 27,89988 | 0,53   | -8,88278 | 36,78266 | 0 |
| 0155EA | 000351 | 000212 | FFEDD  | 000474 | 000000 | 87 | 87,53  | 25,91575 | 0,53   | -8,88278 | 34,79853 | 0 |
| 0155EA | 000310 | 000212 | FFEDD  | 000433 | 000000 | 87 | 87,53  | 23,93162 | 0,53   | -8,88278 | 32,81441 | 0 |
| 0155EA | 0002CF | 000212 | FFEDD  | 0003F2 | 000000 | 87 | 87,53  | 21,9475  | 0,53   | -8,88278 | 30,83028 | 0 |
| 0155EA | 00028E | 000212 | FFEDD  | 0003B1 | 000000 | 87 | 87,53  | 19,96337 | 0,53   | -8,88278 | 28,84615 | 0 |
| 0155EA | 00024D | 000212 | FFEDD  | 000370 | 000000 | 87 | 87,53  | 17,97924 | 0,53   | -8,88278 | 26,86203 | 0 |
| 0155EA | 00020C | 000212 | FFEDD  | 00032F | 000000 | 87 | 87,53  | 15,99512 | 0,53   | -8,88278 | 24,8779  | 0 |
| 0155EA | 0001CB | 000212 | FFEDD  | 0002EE | 000000 | 87 | 87,53  | 14,01099 | 0,53   | -8,88278 | 22,89377 | 0 |
| 0155EA | 00018A | 000212 | FFEDD  | 0002AD | 000000 | 87 | 87,53  | 12,02686 | 0,53   | -8,88278 | 20,90965 | 0 |
| 0155EA | 000149 | 000212 | FFEDD  | 00026C | 000000 | 87 | 87,53  | 10,04274 | 0,53   | -8,88278 | 18,92552 | 0 |
| 0155EA | 000108 | 000212 | FFEDD  | 00022B | 000000 | 87 | 87,53  | 8,058608 | 0,53   | -8,88278 | 16,94139 | 0 |
| 0155EA | 0000C7 | 000212 | FFEDD  | 0001EA | 000000 | 87 | 87,53  | 6,074481 | 0,53   | -8,88278 | 14,95726 | 0 |
| 0155EA | 000086 | 000212 | FFEDD  | 0001A9 | 000000 | 87 | 87,53  | 4,090354 | 0,53   | -8,88278 | 12,97314 | 0 |
| 0155EA | 000045 | 000212 | FFEDD  | 000168 | 000000 | 87 | 87,53  | 2,106227 | 0,53   | -8,88278 | 10,98901 | 0 |
| 0155EA | 000004 | 000212 | FFEDD  | 000127 | 000000 | 87 | 87,53  | 0,1221   | 0,53   | -8,88278 | 9,004884 | 0 |
| 0155EA | 000000 | 000212 | FFEDD  | 0000E6 | 000000 | 87 | 87,53  | 0        | 0,53   | -8,88278 | 7,020757 | 0 |
| 0155EA | 000000 | 000212 | FFEDD  | 000098 | 000000 | 87 | 87,53  | 0        | 0,53   | -8,88278 | 4,639805 | 0 |
| 0155EA | 000000 | 000212 | FFEDD  | 000057 | 000000 | 87 | 87,53  | 0        | 0,53   | -8,88278 | 2,655678 | 0 |
| 0155EA | 000000 | 000212 | FFEDD  | 000016 | 000000 | 87 | 87,53  | 0        | 0,53   | -8,88278 | 0,671551 | 0 |
| 01545D | 000000 | 00085  | FFEDD  | FFFFB5 | 000000 | 87 | 87,53  | 0        | 0,133  | -8,88278 | -1,31258 | 0 |
| 01545D | 000000 | 00085  | FFEDD  | FFFFBB | 000000 | 87 | 87,133 | 0        | 0,133  | -8,88278 | -2,10623 | 0 |
| 01545D | 000000 | 00085  | FFEDD  | FFFFBB | 000000 | 87 | 87,133 | 0        | 0,133  | -8,88278 | -2,10623 | 0 |
| 0152D0 | 000000 | FFFEF8 | FFEDD  | FFFFBB | 000000 | 87 | 86,736 | 0        | -0,264 | -8,88278 | -2,10623 | 0 |
| 0152D0 | 000000 | FFFEF8 | FFEDD  | FFFFBB | 000000 | 87 | 86,736 | 0        | -0,264 | -8,88278 | -2,10623 | 0 |
| 0152D0 | 000000 | FFFEF8 | FFEDD  | FFFFBB | 000000 | 87 | 86,736 | 0        | -0,264 | -8,88278 | -2,10623 | 0 |
| 0152D0 | 000000 | FFFEF8 | FFEDD  | FFFFBB | 000000 | 87 | 86,736 | 0        | -0,264 | -8,88278 | -2,10623 | 0 |
| 015143 | 00015A | FFFD6B | 00016C | FFFFEE | 000000 | 87 | 86,339 | 10,56166 | -0,661 | 11,1111  | -0,54945 | 0 |
| 015143 | 0001AF | FFFD6B | 00016C | 000043 | 000000 | 87 | 86,339 | 13,15629 | -0,661 | 11,1111  | 2,045177 | 0 |
| 015143 | 000204 | FFFD6B | 00016C | 000098 | 000000 | 87 | 86,339 | 15,75092 | -0,661 | 11,1111  | 4,639805 | 0 |
| 015143 | 000259 | FFFD6B | 00016C | 0000ED | 000000 | 87 | 86,339 | 18,34554 | -0,661 | 11,1111  | 7,234432 | 0 |
| 015143 | 0002AE | FFFD6B | 00016C | 000142 | 000000 | 87 | 86,339 | 20,94017 | -0,661 | 11,1111  | 9,82906  | 0 |
| 015143 | 000303 | FFFD6B | 00016C | 0001A8 | 000000 | 87 | 86,339 | 23,5348  | -0,661 | 11,1111  | 12,94261 | 0 |
| 015143 | 000369 | FFFD6B | 00016C | 0001FD | 000000 | 87 | 86,339 | 26,64835 | -0,661 | 11,1111  | 15,53724 | 0 |
| 015143 | 0003BE | FFFD6B | 00016C | 000252 | 000000 | 87 | 86,339 | 29,24298 | -0,661 | 11,1111  | 18,13187 | 0 |
| 015143 | 000413 | FFFD6B | 00016C | 0002A7 | 000000 | 87 | 86,339 | 31,83761 | -0,661 | 11,1111  | 20,7265  | 0 |
| 015143 | 000468 | FFFD6B | 00016C | 0002FC | 000000 | 87 | 86,339 | 34,43223 | -0,661 | 11,1111  | 23,32112 | 0 |
| 015143 | 0004BD | FFFD6B | 00016C | 000351 | 000000 | 87 | 86,339 | 37,02686 | -0,661 | 11,1111  | 25,91575 | 0 |
| 0152D0 | 0004DF | FFFEF8 | 00016C | 000373 | 000000 | 87 | 86,736 | 38,06471 | -0,264 | 11,1111  | 26,9536  | 0 |
| 0152D0 | 0004DF | FFFEF8 | 00016C | 455252 | 000000 | 87 | 86,736 | 38,06471 | -0,264 | 11,1111  | -373448  | 0 |
| 0152D0 | 0004DF | FFFEF8 | 00016C | 000373 | 000000 | 87 | 86,736 | 38,06471 | -0,264 | 11,1111  | 26,9536  | 0 |
| 0152D0 | 0004DF | FFFEF8 | 00016C | 000373 | 000000 | 87 | 86,736 | 38,06471 | -0,264 | 11,1111  | 26,9536  | 0 |
| 0152D0 | 0004DF | FFFEF8 | 00016C | 000373 | 000000 | 87 | 86,736 | 38,06471 | -0,264 | 11,1111  | 26,9536  | 0 |
| 0152D0 | 0004DF | FFFEF8 | 00016C | 000373 | 000000 | 87 | 86,736 | 38,06471 | -0,264 | 11,1111  | 26,9536  | 0 |