**The System Registers in the FPGA Current as of 2-17-22**

**Register Maps**

**Sensor Data Register Map**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Address** | **Name** | **B7** | **B6** | **B5** | **B4** | **B3** | **B2** | **B1** | **B0** | **Hex** |
| **0x01** | **PRXSNSA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x02** | **PRXSNSB** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x03** | **PRXSNSC** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x04** | **PRXSNSD** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x05** | **LDRSNSH** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x06** | **LDRSNSL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x07** | **ACCLXH** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x08** | **ACCLXL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x09** | **ACCLYH** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x0A** | **ACCLYL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x0B** | **ACCLZH** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x0C** | **ACCLZL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x0D** | **WHL1ROTR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x0E** | **WHL2ROTR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x0F** | **WHL3ROTR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x10** | **WHL4ROTR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x11** | **WHL5ROTR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x12** | **WHL6ROTR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x13** | **BAT1TMPA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x14** | **BAT1TMPB** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x15** | **BAT2TMPA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x16** | **BAT2TMPB** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x17** | **BAT3TMPA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x18** | **BAT3TMPB** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x19** | **BAT1CHGC** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x1A** | **BAT2CHGC** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x1B** | **BAT3CHGC** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x1C** | **BAT1VLT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x1D** | **BAT2VLT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x1E** | **BAT3VLT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x1F** | **MTR1TMP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x20** | **MTR2TMP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x21** | **MTR3TMP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x22** | **MTR4TMP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x23** | **MTR5TMP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x24** | **MTR6TMP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x25** | **MTR1CURR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x26** | **MTR2CURR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x27** | **MTR3CURR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x28** | **MTR4CURR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x29** | **MTR5CURR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x2A** | **MTR6CURR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **Address** | **Name** | **B7** | **B6** | **B5** | **B4** | **B3** | **B2** | **B1** | **B0** | **Hex** |

Filled in Values are the Register Default Values

**Control Data Register Map**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Address** | **Name** | **B7** | **B6** | **B5** | **B4** | **B3** | **B2** | **B1** | **B0** | **Hex** |
| **0x30** | **LDRGIMX** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x80 |
| **0x31** | **LDRGIMY** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x80 |
| **0x32** | **WHL1THR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x33** | **WHL2THR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x34** | **WHL3THR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x35** | **WHL4THR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x36** | **WHL5THR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x37** | **WHL6THR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x38** | **WHLGTHR** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x00 |
| **0x39** | **BAT1MODE** | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0x70 |
| **0x3A** | **BAT2MODE** | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0x70 |
| **0x3B** | **BAT3MODE** | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0x70 |
| **0x3C** | **BATGMODE** | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0x70 |
| **Address** | **Name** | **B7** | **B6** | **B5** | **B4** | **B3** | **B2** | **B1** | **B0** | **Hex** |

Filled in Values are the Register Default Values

**Interrupt Limit Data Register Map**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Address** | **Name** | **B7** | **B6** | **B5** | **B4** | **B3** | **B2** | **B1** | **B0** | **Hex** |
| **0x60** | **PRXS1LIM** | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0x4B |
| **0x61** | **PRXS2LIM** | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0x4B |
| **0x62** | **PRXS3LIM** | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0x4B |
| **0x63** | **PRXS4LIM** | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0x4B |
| **0x64** | **MTRGTMPH** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x80 |
| **0x65** | **MTRGTMPL** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0x04 |
| **0x66** | **MTRGCLIM** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0x02 |
| **0x67** | **BATGTALH** | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0x8C |
| **0x68** | **BATGTALL** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0x04 |
| **0x69** | **BATGTBLH** | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0x8C |
| **0x6A** | **BATGTBLL** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0x04 |
| **0x6B** | **BATGVLH** | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0xD8 |
| **0x6C** | **BATGVLL** | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0x8F |
| **0x6D** | **BATGDCLM** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x80 |
| **0x6E** | **BATGCCLM** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0x80 |
| **Address** | **Name** | **B7** | **B6** | **B5** | **B4** | **B3** | **B2** | **B1** | **B0** | **Hex** |

Filled in Values are the Register Default Values

|  |
| --- |
| **Don't Care Value** |
| **Read/Write Capable** |
| **Read Only** |

**Register Descriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Register Address** | **Short Name** | **Register Name** | **Functionality** |
| **Description** | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x01 | PRXSNS1 | Proximity Sensor 1 | Read Only |
| 8 bit unsigned value representing the distance measurement of the proximity sensor within the 0 to 50cm range. | | | |

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| --- | --- | --- | --- |
| 0x02 | PRXSNS | Proximity Sensor 2 | Read Only |
| 8 bit unsigned value representing the distance measurement of the proximity sensor within the 0 to 50cm range. | | | |

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| --- | --- | --- | --- |
| 0x03 | PRXSNS3 | Proximity Sensor 3 | Read Only |
| 8 bit unsigned value representing the distance measurement of the proximity sensor within the 0 to 50cm range. | | | |

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| --- | --- | --- | --- |
| 0x04 | PRXSNS4 | Proximity Sensor 4 | Read Only |
| 8 bit unsigned value representing the distance measurement of the proximity sensor within the 0 to 50cm range. | | | |

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| --- | --- | --- | --- |
| 0x05 | LDRSNSH | LIDAR Sensor High | Read Only |
| Upper 8 bits of the 16 bit unsigned measurement value of the LIDAR sensor. | | | |

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| --- | --- | --- | --- |
| 0x06 | LDRSNSL | LIDAR Sensor Low | Read Only |
| Lower 8 bits of the 16 bit unsigned measurement value of the LIDAR sensor. | | | |

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| --- | --- | --- | --- |
| 0x07 | ACCLXH | Accelerometer X-Axis High | Read Only |
| Upper 8 bits of the 16 bit unsigned X-axis measurement value of the Accelerometer. | | | |

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| --- | --- | --- | --- |
| 0x08 | ACCLXL | Accelerometere X-Axis Low | Read Only |
| Lower 8 bits of the 16 bit unsigned X-axis measurement value of the Accelerometer. | | | |

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| --- | --- | --- | --- |
| 0x09 | ACCLYH | Accelerometer Y-Axis High | Read Only |
| Upper 8 bits of the 16 bit unsigned Y-axis measurement value of the Accelerometer. | | | |

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| --- | --- | --- | --- |
| 0x0A | ACCLYL | Accelerometer Y-Axis Low | Read Only |
| Lower 8 bits of the 16 bit unsigned Y-axis measurement value of the Accelerometer. | | | |

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| --- | --- | --- | --- |
| 0x0B | ACCLZH | Accelerometer Z-Axis High | Read Only |
| Upper 8 bits of the 16 bit unsigned Z-axis measurement value of the Accelerometer. | | | |

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| --- | --- | --- | --- |
| 0x0C | ACCLZL | Accelerometer Z-Axis Low | Read Only |
| Lower 8 bits of the 16 bit unsigned Z-axis measurement value of the Accelerometer. | | | |

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| --- | --- | --- | --- |
| 0x0D | WHL1ROTR | Wheel 1 Rotation Rate | Read Only |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 are the unsigned rotations per minute value. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x0E | WHL2ROTR | Wheel 2 Rotation Rate | Read Only |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 are the unsigned rotations per minute value. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x0F | WHL3ROTR | Wheel 3 Rotation Rate | Read Only |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 are the unsigned rotations per minute value. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x10 | WHL4ROTR | Wheel 4 Rotation Rate | Read Only |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 are the unsigned rotations per minute value. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x11 | WHL5ROTR | Wheel 5 Rotation Rate | Read Only |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 are the unsigned rotations per minute value. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x12 | WHL6ROTR | Wheel 6 Rotation Rate | Read Only |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 are the unsigned rotations per minute value. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x13 | BAT1TMPA | Battery 1 Temperature Sensor A | Read Only |
| Temperature sensor reading for the battery core cell array. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x14 | BAT1TMPB | Battery 1 Temperature Sensor B | Read Only |
| Temperature sensor reading for battery charge controller. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x15 | BAT2TMPA | Battery 2 Temperature Sensor A | Read Only |
| Temperature sensor reading for the battery core cell array. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x16 | BAT2TMPB | Battery 2 Temperature Sensor B | Read Only |
| Temperature sensor reading for battery charge controller. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x17 | BAT3TMPA | Battery 3 Temperature Sensor A | Read Only |
| Temperature sensor reading for the battery core cell array. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x18 | BAT3TMPB | Battery 3 Temperature Sensor B | Read Only |
| Temperature sensor reading for battery charge controller. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x19 | BAT1CHGC | Battery 1 Charging Current | Read Only |
| Battery charging current reading. This 8 bit unsigned value corresponds to a range between 0 Amps and 5 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x1A | BAT2CHGC | Battery 2 Charging Current | Read Only |
| Battery charging current reading. This 8 bit unsigned value corresponds to a range between 0 Amps and 5 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x1B | BAT3CHGC | Battery 3 Charging Current | Read Only |
| Battery charging current reading. This 8 bit unsigned value corresponds to a range between 0 Amps and 5 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x1C | BAT1VLT | Battery 1 Voltage | Read Only |
| Battery voltage reading. The 8 bit value corresponds to a range between 2V and 5V | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x1D | BAT2VLT | Battery 2 Voltage | Read Only |
| Battery voltage reading. The 8 bit value corresponds to a range between 2V and 5V | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x1E | BAT3VLT | Battery 3 Voltage | Read Only |
| Battery voltage reading. The 8 bit value corresponds to a range between 2V and 5V | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x1F | MTR1TMP | Motor 1 Temperature Sensor | Read Only |
| Motor temperature reading in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x20 | MTR2TMP | Motor 2 Temperature Sensor | Read Only |
| Motor temperature reading in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x21 | MTR3TMP | Motor 3 Temperature Sensor | Read Only |
| Motor temperature reading in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x22 | MTR4TMP | Motor 4 Temperature Sensor | Read Only |
| Motor temperature reading in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x23 | MTR5TMP | Motor 5 Temperature Sensor | Read Only |
| Motor temperature reading in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x24 | MTR6TMP | Motor 6 Temperature Sensor | Read Only |
| Motor temperature reading in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x25 | MTR1CURR | Motor 1 Current Draw | Read Only |
| Current draw reading for the Motor. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x26 | MTR2CURR | Motor 2 Current Draw | Read Only |
| Current draw reading for the Motor. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x27 | MTR3CURR | Motor 3 Current Draw | Read Only |
| Current draw reading for the Motor. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x28 | MTR4CURR | Motor 4 Current Draw | Read Only |
| Current draw reading for the Motor. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x29 | MTR5CURR | Motor 5 Current Draw | Read Only |
| Current draw reading for the Motor. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x2A | MTR6CURR | Motor 6 Current Draw | Read Only |
| Current draw reading for the Motor. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x2B | HTR1TMP | Heater 1 Temperature | Read Only |
| Temperature reading for the hardware heating element in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x2C | HTR2TMP | Heater 2 Temperature | Read Only |
| Temperature reading for the hardware heating element in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x2D | HTR3TMP | Heater 3 Temperature | Read Only |
| Temperature reading for the hardware heating element in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x2E | HTR4TMP | Heater 4 Temperature | Read Only |
| Temperature reading for the hardware heating element in Celcius. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x30 | LDRGIMX | LIDAR Gimbal Rotation Horizontal | Read/Write |
| Bit 7 is the direction of the rotation.  0 = CW (relative to motor axis facing up away from the base mounted motor)  1 = CCW (relative to motor axis facing up away from the base mounted motor)  Bits 6 downto 0 are for the rotation amount. The unit can move in 1.8 degree increments for as much as 180 degrees in either direction per command. The values are not absolute but are relative to the current position of the motor. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x31 | LDRGIMY | LIDAR Gimbal Rotation Vertical | Read/Write |
| Bit 7 is the direction of the rotation.  0 = CW (relative to motor axis facing away from the yoke mounted motor)  1 = CCW (relative to motor axis facing away from the yoke mounted motor)  Bits 6 downto 0 are for the rotation amount. The unit can move in 1.8 degree increments for as much as 180 degrees in either direction per command. The values are not absolute but are relative to the current position of the motor. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x32 | WHL1THR | Wheel 1 Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x33 | WHL2THR | Wheel 2 Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x34 | WHL3THR | Wheel 3 Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x35 | WHL4THR | Wheel 4 Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x36 | WHL5THR | Wheel 5 Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x37 | WHL6THR | Wheel 6 Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x38 | WHLGTHR | GLOBAL Wheel Throttle | Read/Write |
| Bit 7 is the direction value.  0 = Forward.  1 = Reverse.  Bits 6 downto 0 represent the throttle percentage value from 0% to 100%. Writing values above 100 default to 100. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x39 | BAT1MODE | Battery 1 Control Settings | Read/Write |
| Bit 7 is the charging system engage.  0 = charging off  1 = charging on  Bit 6 is the charging voltage level.  0 = 3.98V  1 = 4.2V  Bits 5 downto 4 are the charging current selection.  00 = 2.6 Amps  01 = 3.2 Amps  10 = 3.95 Amps  11 = 3.2 Amps  Bit 3 is the output control for the battery.  0 = battery disconnected.  1 = battery connected.  Bits 2 downto 0 are Don’t Cares. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 0x3A | BAT2MODE | Battery 2 Control Settings | Read/Write |
| Bit 7 is the charging system engage.  0 = charging off  1 = charging on  Bit 6 is the charging voltage level.  0 = 3.98V  1 = 4.2V  Bits 5 downto 4 are the charging current selection.  00 = 2.6 Amps  01 = 3.2 Amps  10 = 3.95 Amps  11 = 3.2 Amps  Bit 3 is the output control for the battery.  0 = battery disconnected.  1 = battery connected.  Bits 2 downto 0 are Don’t Cares. | | | |

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| 0x3B | BAT3MODE | Battery 3 Control Settings | Read/Write |
| Bit 7 is the charging system engage.  0 = charging off  1 = charging on  Bit 6 is the charging voltage level.  0 = 3.98V  1 = 4.2V  Bits 5 downto 4 are the charging current selection.  00 = 2.6 Amps  01 = 3.2 Amps  10 = 3.95 Amps  11 = 3.2 Amps  Bit 3 is the output control for the battery.  0 = battery disconnected.  1 = battery connected.  Bits 2 downto 0 are Don’t Cares. | | | |

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| 0x3C | BATGMODE | GLOBAL Battery Control Settings | Read/Write |
| Bit 7 is the charging system engage.  0 = charging off  1 = charging on  Bit 6 is the charging voltage level.  0 = 3.98V  1 = 4.2V  Bits 5 downto 4 are the charging current selection.  00 = 2.6 Amps  01 = 3.2 Amps  10 = 3.95 Amps  11 = 3.2 Amps  Bit 3 is the output control for the battery.  0 = battery disconnected.  1 = battery connected.  Bits 2 downto 0 are Don’t Cares. | | | |

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| 0x3D | HTR1LVL | Heater 1 Power Level | Read/Write |
| Bit 7 is to turn heater on.  0 = off  1 = on  Bits 6 downto 0 are the power level percentage between 0% to 100%. Writing levels above 100 default to 100. | | | |

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| 0x3E | HTR2LVL | Heater 2 Power Level | Read/Write |
| Bit 7 is to turn heater on.  0 = off  1 = on  Bits 6 downto 0 are the power level percentage between 0% to 100%. Writing levels above 100 default to 100. | | | |

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| 0x3F | HTR3LVL | Heater 3 Power Level | Read/Write |
| Bit 7 is to turn heater on.  0 = off  1 = on  Bits 6 downto 0 are the power level percentage between 0% to 100%. Writing levels above 100 default to 100. | | | |

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| 0x40 | HTR4LVL | Heater 4 Power Level | Read/Write |
| Bit 7 is to turn heater on.  0 = off  1 = on  Bits 6 downto 0 are the power level percentage between 0% to 100%. Writing levels above 100 default to 100. | | | |

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| 0x60 | PRXS1LIM | Proximity Sensor 1 Interrupt Trigger Level | Read/Write |
| 8 bit unsigned value representing the minimum distance value where an interrupt is triggered. The value is within the range of 0 to 50cm divided into 256 intervals. | | | |

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| 0x61 | PRXS2LIM | Proximity Sensor 2 Interrupt Trigger Level | Read/Write |
| 8 bit unsigned value representing the minimum distance value where an interrupt is triggered. The value is within the range of 0 to 50cm divided into 256 intervals. | | | |

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| 0x62 | PRXS3LIM | Proximity Sensor 3 Interrupt Trigger Level | Read/Write |
| 8 bit unsigned value representing the minimum distance value where an interrupt is triggered. The value is within the range of 0 to 50cm divided into 256 intervals. | | | |

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| 0x63 | PRXS4LIM | Proximity Sensor 4 Interrupt Trigger Level | Read/Write |
| 8 bit unsigned value representing the minimum distance value where an interrupt is triggered. The value is within the range of 0 to 50cm divided into 256 intervals. | | | |

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| 0x64 | MTRGTMPH | GLOBAL Motor Temperature MAX Limit | Read/Write |
| GLOBAL motor maximum temperature value where an interrupt is triggered when the temperature is equal to or greater than the value listed here. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

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| 0x65 | MTRGTMPL | GLOBAL Motor Temperature MIN Limit | Read/Write |
| GLOBAL motor minimum temperature value where an interrupt is triggered when the temperature is equal to or less than the value listed here. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

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| 0x66 | MTRGCLIM | GLOBAL Motor Current Limit | Read/Write |
| GLOBAL motor maximum current draw value where an interrupt is triggered. This 8 bit unsigned value corresponds to a range between 0 Amps and 15 Amps. | | | |

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| 0x67 | BATGTALH | GLOBAL Battery Temp A MAX Limit | Read/Write |
| GLOBAL battery maximum temperature value where an interrupt is triggered when the reading of temperature sensor A is equal to or greater than the value listed here. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

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| 0x68 | BATGTALL | GLOBAL Battery Temp A MIN Limit | Read/Write |
| GLOBAL battery minimum temperature value where an interrupt is triggered when the reading of temperature sensor A is equal to or less than the value listed here. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

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| 0x69 | BATGTBH | GLOBAL Battery Temp B MAX Limit | Read/Write |
| GLOBAL battery maximum temperature value where an interrupt is triggered when the reading of temperature sensor B is equal to or greater than the value listed here. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

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| 0x6A | BATGTBL | GLOBAL Battery Temp B MIN Limit | Read/Write |
| GLOBAL battery minimum temperature value where an interrupt is triggered when the reading of temperature sensor B is equal to or less than the value listed here. The 8 bit unsigned value corresponds to a temperature range between -30 degrees Celcius to 225 degrees Celcius. | | | |

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| 0x6B | BATGVLH | GLOBAL Battery Voltage MAX Limit | Read/Write |
| GLOBAL battery maximum voltage reading where an interrupt is triggered when the reading is equal to or greater than the value listed here. The 8 bit value corresponds to a range from 2V to 5V. | | | |

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| 0x6C | BATGVLL | GLOBAL Battery Voltage MIN Limit | Read/Write |
| GLOBAL battery minimum voltage reading where an interrupt is triggered when the reading is equal to or less than the value listed here. The 8 bit value corresponds to a range from 2V to 5V. | | | |

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| 0x6D | BATGDCLM | GLOBAL Battery Discharge Current Limit | Read/Write |
| Global battery discharge current limit where an interrupt is triggered when the measured value is equal to or greater than the value listed. This 8 bit unsigned value corresponds to a range between 0 Amps and 20 Amps. | | | |

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| 0x6E | BATGCCLM | GLOBAL Battery Charging Current Limit | Read/Write |
| Global battery charge current limit where an interrupt is triggered when the measured value is equal to or greater than the value listed. This 8 bit unsigned value corresponds to a range between 0 Amps and 5 Amps. | | | |