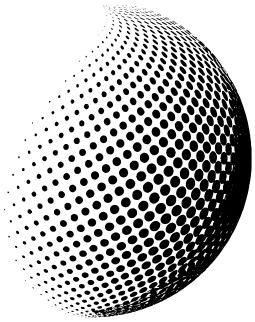

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MI48A0 APPLICATION NOTE
Output of Compensated Data

Version:	0.1
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Revision	*Date*	*Comment*
0.1	11 June 2019	Initial Release

Note

This application note assumes the reader is familiar with MI48A0 Interface Protocol.
This described functionality is supported in version 1.3.5 or higher of MI48A0 firmware.

1. Compensated Data versus Temperature Data

Compensated Data is the raw data from the ADC, delivered at the Frame interface after the following procedures:

1. Offset calibration
2. Ambient compensation for pixel offset
3. Sensitivity calibration for each pixel (flatten non flat image due to lens and normalize all different sensor sensitivity to one sensitivity)
4. PTAT Calibration (Proportionality To Absolute Temperature)
5. VDD compensation for PTAT

Temperature Data results from the conversion of *Compensated Data* to temperature according to a hard-coded proprietary look-up table.

When *Compensated Data* is output by MI48A0, the Host Microcontroller performing the readout must convert that data to temperature. This enables the use of alternative look-up table that may provide better accuracy in a specific application.

2. Output of Compensated Raw Data from MI48A0

The output of *Compensated Data* on the *Frame Interface* (SPI) of MI48A0 TIP must be enabled through the *Control Interface* (I^2C) of the MI48A0, by **setting** to 1 **bit 7** at **address 0xB1** (Frame Mode Register). The complete layout of register 0xB1 is shown below for reference.

Address	**0xB1 (Frame Mode Register)**		
Reset Value	0x00		
Field Name	*Bits*	*Access*	*Description*
Start_capture	0	RW	Writing 1 to this bit will start frame capture. When writing 0 the active frame will be stopped, no more thermal data will be provided on the frame interface. In single frame the bit will reset when capture is finished (independent if frame was read out)
Single_continuous	1	RW	If this bit is set, the MI48A0 TIP will continuously keep capturing until Start_capture is written to 0. If this bit is 0 then the MI48A0 TIP will only capture one frame. This bit will be set when there is a Capture Error.
Frame_capture_mode	2-4	RW	This register defines the format on the frame interface. 0= Full Frame Mode 1= Single Row Mode.
No header	5	RW	When this bit is set the First Header Row (explained in chapter 6) will not be transmitted and only the 80x62 pixel information will be send over SPI)
Reserved	6	N/A	Reserved
DATA_TYPE	**7**	RW	**0: output Temperature Data on the Frame Interface** **1: output Compensated Data on the Frame Interface**