



Application Note

AN001013

Mira130

Using the Sensor in Triggered Mode

v1-00 • 2021-Feb-03

Content Guide

| | | | | | |
|----------|------------------------------|----------|----------|-----------------------------------|----------|
| 1 | Introduction | 3 | 3 | Revision Information | 7 |
| 2 | Trigger Modes..... | 4 | 4 | Legal Information..... | 8 |
| 2.1 | One Frame Trigger Mode..... | 4 | | | |
| 2.2 | Continuous Trigger Mode..... | 5 | | | |

1 Introduction

Mira130 supports 3 operation modes: normal mode, one frame trigger mode and continuous trigger mode.

We usually provide a normal mode configuration, and the other two operation modes can be converted by setting registers. Two trigger modes are available:

- One frame trigger mode: Pulse determines start of exposure.
- Continuous trigger mode: Pulse determines start of readout.

Continuous trigger mode can achieve maximum frame rate because exposure and data output overlap.

The exposure and data output of the single frame trigger mode are serial, and the longer the exposure time, the lower the frame rate.

2 Trigger Modes

2.1 One Frame Trigger Mode

Figure 1:
One Frame Trigger Mode

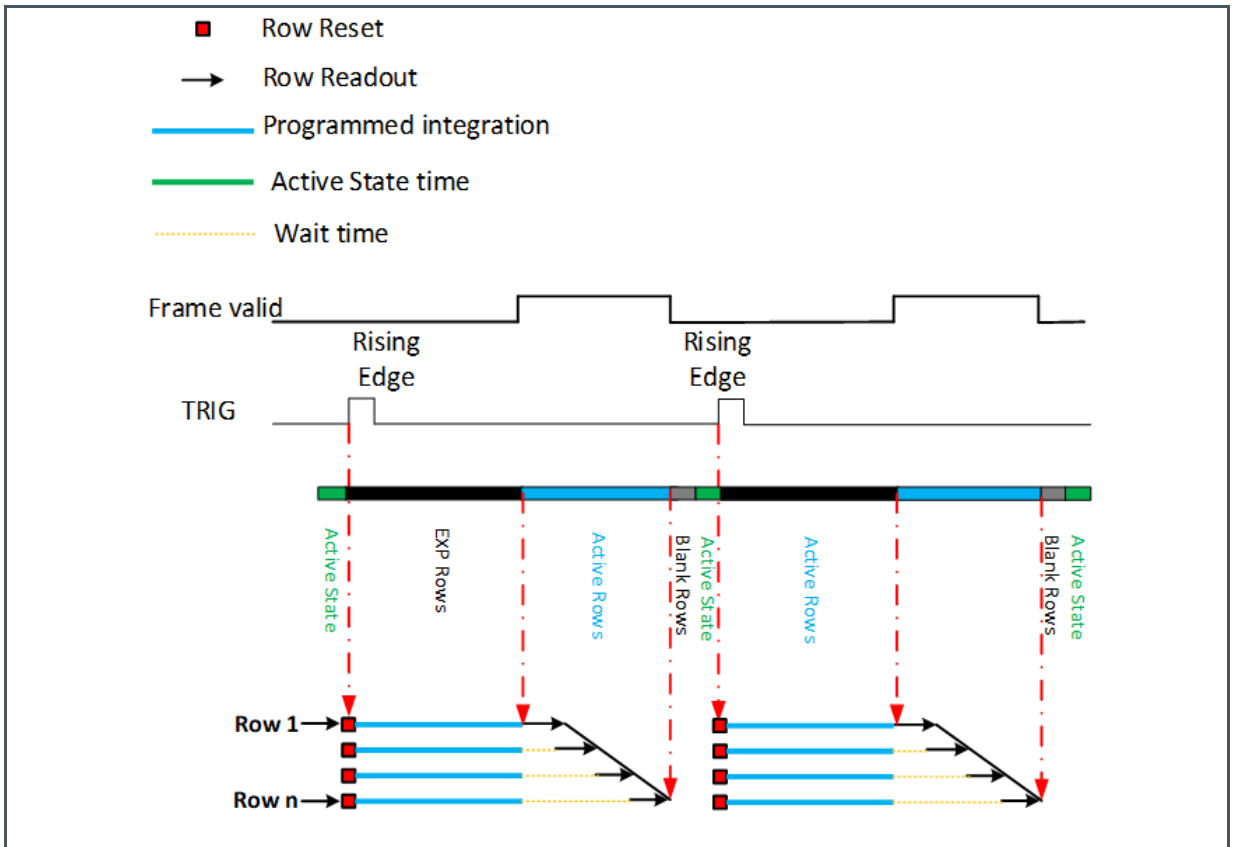


Figure 2:
One Frame Trigger Registers

| Address | Default | Set | Description |
|-------------|---------|-------|--|
| 0x300a[2:1] | 0x66 | 2'b01 | io_fsycn_open |
| 0x3222[1] | 0x00 | 1'b1 | Bit[1]:r_slave_mode 1-Slave mode 0-Master mode |
| 0x3223[2] | 0x40 | 1'b0 | Bit[2]:vsync_end_man_en |
| 0x3231[5] | 0x08 | 1'b0 | r_tc_r_pos_rst_op |

| Address | Default | Set | Description |
|---------|---------|------|--------------------------------------|
| 0x3225 | 0x00 | 0x04 | tc_cs_rst |
| 0x3226 | 0x06 | 0x04 | Bit[7:0]:Rows Before Read , for ini |
| 0x3227 | 0x06 | 0x04 | Bit[7:0]:Rows Before Read , for trig |
| 0x322b | 0x02 | 0x0b | Bit[7:0]:vsync_end_cs[7:0] |
| 0x3228 | 0x00 | 0x00 | Bit[7:0]: Blank Rows |
| 0x3229 | 0x02 | 0x02 | Bit[7:0]: Blank Rows |
| 0x320e | 0x05 | 0x3f | Bit[7:0]:vts[15:8] |
| 0x320f | 0x46 | 0xff | Bit[7:0]:vts[7:0] |

2.2 Continuous Trigger Mode

Figure 3:
Continuous Trigger Mode

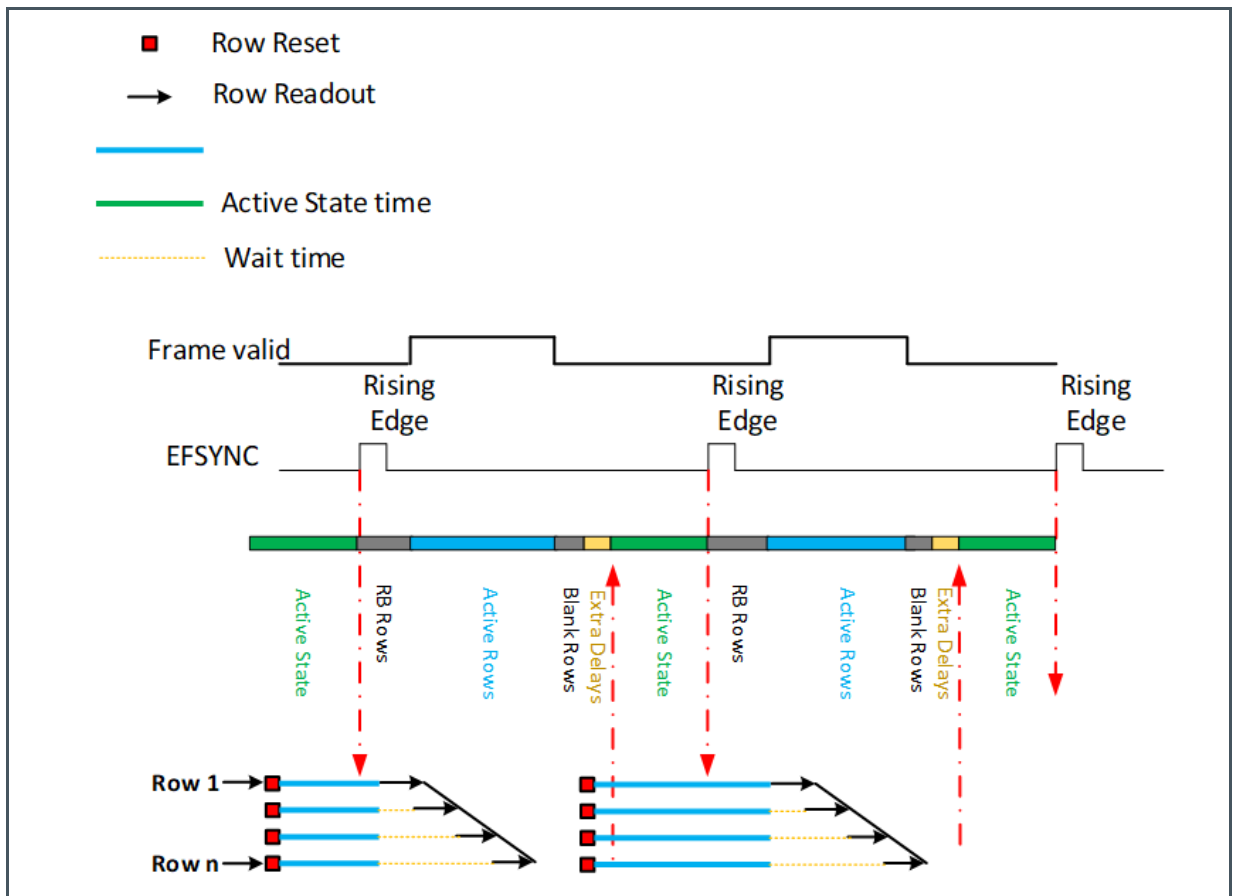


Figure 4:
Continuous Trigger Registers

| Address | Default | Set | Description |
|-------------|---------|-------|--|
| 0x300a[2:1] | 0x66 | 2'b01 | io_fsycn_open |
| 0x3222[1] | 0x00 | 1'b1 | Bit[1]:r_slave_mode 1-Slave mode 0-Master mode |
| 0x3223[2] | 0x40 | 1'b1 | Bit[2]:vsync_end_man_en |
| 0x3231[5] | 0x08 | 1'b1 | r_tc_r_pos_rst_op |
| 0x3225 | 0x00 | 0x04 | tc_cs_rst |
| 0x3226 | 0x06 | 0x06 | Bit[7:0]:Rows Before Read , for ini |
| 0x3227 | 0x06 | 0x06 | Bit[7:0]:Rows Before Read , for trig |
| 0x322b | 0x02 | 0x0b | Bit[7:0]:vsync_end_cs[7:0] |
| 0x3228 | 0x00 | - | Bit[7:0]: Active Rows + Blank Rows = VTS - RB Rows |
| 0x3229 | 0x02 | - | |



Information

Please note that if you change the trigger frequency, you need to adjust the VTS to match the frame rate and then set the register {0x3228,0x3229} value = VTS-6.

3 Revision Information

| Changes from previous version to current revision v1-00 | Page |
|---|------|
| Initial version | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

- Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
- Correction of typographical errors is not explicitly mentioned.

4 Legal Information

Copyrights & Disclaimer

Copyright ams AG, Tobelbader Strasse 30, 8141 Premstaetten, Austria-Europe. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Information in this document is believed to be accurate and reliable. However, ams AG does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Applications that are described herein are for illustrative purposes only. ams AG makes no representation or warranty that such applications will be appropriate for the specified use without further testing or modification. ams AG takes no responsibility for the design, operation and testing of the applications and end-products as well as assistance with the applications or end-product designs when using ams AG products. ams AG is not liable for the suitability and fit of ams AG products in applications and end-products planned.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data or applications described herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

ams AG reserves the right to change information in this document at any time and without notice.

RoHS Compliant & ams Green Statement

RoHS Compliant: The term RoHS compliant means that ams AG products fully comply with current RoHS directives. Our semiconductor products do not contain any chemicals for all 6 substance categories plus additional 4 substance categories (per amendment EU 2015/863), including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, RoHS compliant products are suitable for use in specified lead-free processes.

ams Green (RoHS compliant and no Sb/Br/Cl): ams Green defines that in addition to RoHS compliance, our products are free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material) and do not contain Chlorine (Cl not exceed 0.1% by weight in homogeneous material).

Important Information: The information provided in this statement represents ams AG knowledge and belief as of the date that it is provided. ams AG bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. ams AG has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. ams AG and ams AG suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Headquarters

ams AG
Tobelbader Strasse 30
8141 Premstaetten
Austria, Europe
Tel: +43 (0) 3136 500 0

Please visit our website at www.ams.com

Buy our products or get free samples online at www.ams.com/Products

Technical Support is available at www.ams.com/Technical-Support

Provide feedback about this document at www.ams.com/Document-Feedback

For sales offices, distributors and representatives go to www.ams.com/Contact

For further information and requests, e-mail us at ams_sales@ams.com