



MLX81350/52/54 Application Note

Using Generic I/O's

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Using Generic I/O's

1 Goal

This document describes the various use cases for MLX81350, MLX81352 and MLX81354 I/O's.

2 General purpose I/O's

2.1 Unused I/O's

The I/O's the MLX81350, MLX81352 and MLX81354 can be connected/configured as stated below when unused:

IO	MLX81350		MLX81352/MLX81354	
	PCB-Connection	SW-Configuration	PCB-Connection	SW-Configuration
IO[0] HV	Floating	Output – Low	Floating	Output – Low
IO[1] LV	Grounded	Input (default) with DISREC = 1	Grounded	Input (default) with DISREC = 1
	Floating	Output – Low	Floating	Output – Low
IO[2] LV	Floating	Output – Low	Grounded	Input (default) with DISREC = 1
			Floating	Output – Low
IO[3] LV	Grounded	Input (default) with DISREC = 1	Grounded	Input (default) with DISREC = 1
	Floating	Output – Low	Floating	Output – Low
IO[4] LV			Grounded	Input (default) with DISREC = 1
			Floating	Output – Low
IO[5] LV			Grounded	Input (default) with DISREC = 1
			Floating	Output – Low
IO[6] LV			Grounded	Input (default) with DISREC = 1
			Floating	Output – Low
IO[7] LV			Floating	Output – Low

Table 1: IO configuration in case unused

Note: Floating unused I/O's gives the option to use the I/O for debugging. For EMC, these floating I/O should be configured as output, at '0' (Low).

Note: By default, all the I/O are configured after Power-up as "Input". The DISREC-bits for each of these ports are '0', which enables a small pull-up current (~50µA). By setting DISREC to '1', it will disable this small pull-up current.

2.2 I/O as output.

Any I/O can be used as digital output.

- IO[0] support both LV and HV/OD mode:
 - IO[0] can be used in a LV push-pull mode; For this the IO0_LV_ENABLE bit must be set '1'.
 - IO[0] also has a HV/OD (Open Drain) feature; In this case IO0_LV_ENABLE is cleared to '0' and IO0_OD_ENABLE is set to '1'
- The other I/O's, IO[3:1] for 81350 and IO[7:1] for 81352/54, have a push-pull output.
 - IO[2] for the 81350 can also be used together with the OD-feature, by setting IOX_OD_ENABLE to '1'.
 - IO[7] for the 81352/54 can also be used together with the OD-feature, by setting IOX_OD_ENABLE to '1'.

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2.3 I/O as digital input

Any of the I/O's can be used as digital input.

- IO[0] support both LV as HV level input.
 - IO[0] in LV-mode: IO0_LV_ENABLE can be set to '1'.
 - IO[0] in HV-mode: IO_LV_ENABLE must be cleared to '0'.
 - The logical '1' level is at 2.4V and above (See datasheet).
- The other I/O's, IO[3:1] for 81350 and IO[7:1] for 81352/54, can only be used in LV-mode.

Important Notice: IO[2] (for 81350) or IO[7] (for 81352 and 81354) is used at IC power-up for a very short time (~1ms) as test-interface output. If this IO is used as input (default state of IC), the circuitry attached should allow this I/O to be switched shortly to VDDA (3.3V).

2.4 I/O as analogue input

Any of the I/O's can be used as analogue input. To use the analogue mode, the DISREC bit of the IO must be set to '1' (to disable the receiver).

- IO[0] support both LV as HV level input.
 - IO[0] in LV-mode: IO0_LV_ENABLE must be set to '1'. The ADC channel 'IO[0]/2.2' (8) should be selected to get the analogue voltage on the ADC input.
 - IO[0] in HV-mode: IO_LV_ENABLE must be cleared to '0'. The ADC channel 'IO[0]/26' (17) should be selected to get the analogue voltage on the ADC input.
- The other I/O's, IO[3:1] for 81350 and IO[7:1] for 81352/54, can only be used in LV-mode. The ADC channels IO[x]/2.2 (8, 9, 10, and for 81352/54 also: 21, 22, 23, 24)

Important Notice: IO[2] (for 81350) or IO[7] (for 81352 and 81354) is used at IC power-up for a very short time (~1ms) as test-interface output. If this IO is used as analogue input, the circuitry attached should allow this I/O to be switched shortly to VDDA (3.3V).

3 Revision history

Revision	Date	Change history
001	16-Feb-26	Initial version; Corrected ADC voltage dividers.

Table 2 – Revision history

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