

Migration Guide to FAN31790 from MAX31790



This Migration Guide assists with migrating to Texas Instrument's FAN31790 Fan Controller from Analog Devices™ MAX31790. This document provides a high level overview of the FAN31790 and highlights any functional hardware or software differences between the two devices. The FAN31790 is intended to be a direct drop-in replacement to the MAX31790. FAN31790 is fully BOM-to-BOM and pin-to-pin compatible and has a compatible I2C interface so that there are no changes needed for existing software drivers.

FAN31790 Overview

The FAN31790 is an intelligent fan controller that can control the speed of six fans using independent PWM outputs and dedicated TACH inputs. Figure 1 shows the typical configuration for FAN31790. Required connections for normal operation are a .1µF local VDD decoupling capacitor and pull-up resistors on I2C SDA and SCL, any used PWMOUTx pins, any used TACHx pins, and the /Fan_Fail pin. The desired power-up behavior can be configured with the input pins and the /FULL_SPEED pin is used to drive all fans to 100% if a fault was detected somewhere else in the system. Optional external components are an external crystal and an additional VDD bypass capacitor.

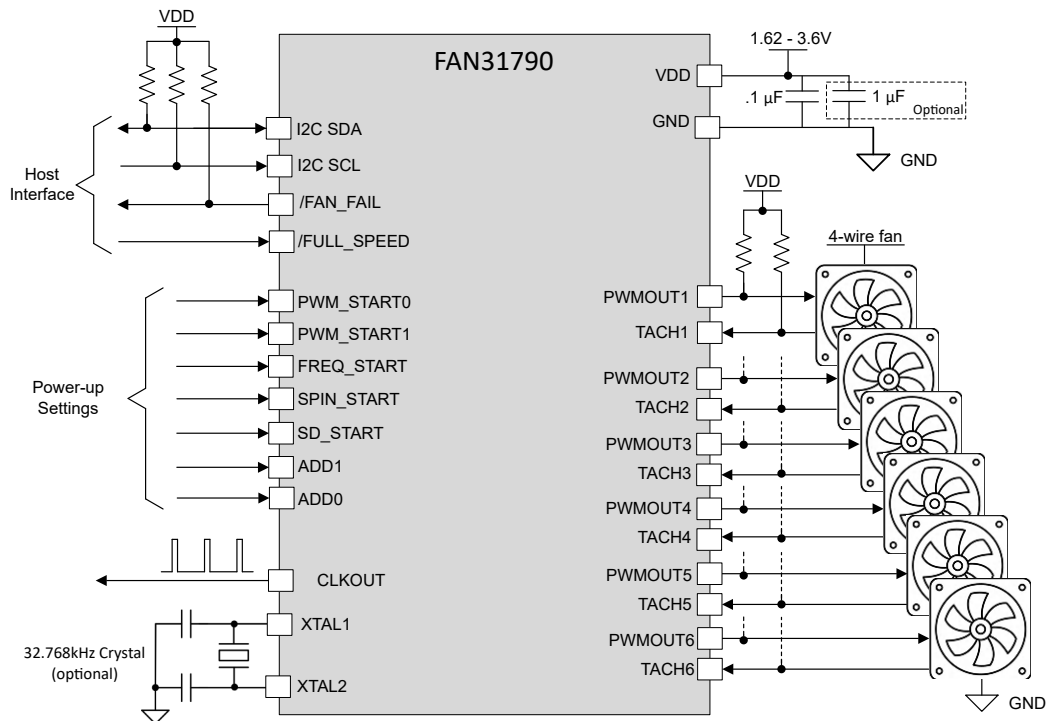


Figure 1. FAN31790 Functional Block Diagram

Hardware Differences

The only hardware difference between the fan controllers is that the Texas Instruments FAN31790 is a 1.8-3.3V device. This means that the pull-ups for the I2C bus and the fan interface pins must be pulled to 1.8-3.3V. Any current MAX31790 design that is already using 3.3V should have zero BOM changes required, as FAN31790 is BOM-to-BOM equivalent.

Table 1. Hardware Differences

| Component | MAX31790 | TI's FAN31790 |
|----------------------|------------|---------------|
| Supply voltage range | 3.0 – 5.5V | 1.62 – 3.6V |

Functional and Software Differences

There are no functional differences or software changes required when migrating from the MAX31790 to the FAN31790. I2C addresses and register map are compatible. User's can continue to use all existing software drivers.

FAN31790 does add three additional Device Revision registers at the end of the register map that have no impact on existing functionality.

| DEVICE REVISION REGISTERS | | | | | | | | | | | |
|---------------------------|-----------------------|-----|---------------|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Address | Name | R/W | Reset Value | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
| 68h | Device Major Revision | R | 0000 0001b | Initial Major Revision = 0x01 | | | | | | | |
| 69h | Device Minor Revision | R | 0000 0000b | Initial Minor Revision = 0x00 | | | | | | | |
| 6Ah | Device ID | R | 0000 0000b | Device Identifiers. 0x00 = FAN31790 | | | | | | | |

Layout Differences

There are no layout changes required when Migrating to the FAN31790 as it is pin-to-pin meaning it uses an equivalent package with identical PCB footprint.

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