

NAME

imx_wdog - device driver for the NXP i.MX5 and i.MX6 watchdog timer

SYNOPSIS

To compile this driver into the kernel, place the following line in your kernel configuration file:

```
device imxwdt
```

Alternatively, to load the driver as a module at boot time, place the following line in loader.conf(5):

```
imx_wdog_load="YES"
```

DESCRIPTION

The **imx_wdog** driver provides watchdog(4) support for the watchdog timer present on NXP i.MX5 and i.MX6 processors. The i.MX watchdog hardware supports programmable timeouts ranging from 0.5 to 128 seconds, in half-second increments. Once activated, the watchdog hardware cannot be deactivated, but the timeout period can be changed to any valid non-zero value.

At power-on, a special 16-second ‘power-down timer’ mode is automatically enabled by the hardware. It will assert the external WDOG_B signal, which may be connected to external hardware that causes the system to reset or power-down. The power-down timer is often reset by the boot loader (typically U-Boot). If the power-down timer is still active at the time when the normal watchdog is first enabled, the **imx_wdog** driver automatically disables it.

The **imx_wdog** driver supports the FDT *fsl,external-reset* property by enabling the assertion of the WDOG_B external timeout signal when the property is present. When running this way, the need to reset the system due to watchdog timeout is signaled by driving the WDOG_B line low; some external entity is expected to assert the chip’s POR pin in response. The **imx_wdog** driver attempts to backstop this external reset by scheduling an interrupt to occur as well. The interrupt handler waits 1 second for the external reset to occur, then it triggers a normal software reset. Note that the WDOG_B signal can be configured to use a variety of pins on the chip. For the *fsl,external-reset* property to be effective, the signal must be connected to an appropriate pin by the system’s FDT pinctrl data.

The **imx_wdog** driver supports the FDT *timeout-secs* property by enabling the watchdog as soon as the driver attaches, using the given timeout value. This extends watchdog protection to much of the system startup process, but it still requires that watchdogd(4) be configured to service the watchdog.

SEE ALSO

fdt(4), watchdog(4), watchdog(8), watchdogd(8), watchdog(9)

HISTORY

The **imx_wdog** driver first appeared in FreeBSD 10.0.