

Config Register

The 16-bit register can be used to control the ADS1116/8 operating mode, input selection, data rate, PGA settings, and comparator modes. The register format is shown in the table below.

BIT	15	14	13	12	11	10	9	8
NAME	OS	MUX2	MUX1	MUX0	PGA2	PGA1	PGA0	MODE

BIT	7	6	5	4	3	2	1	0
NAME	DR2	DR1	DR0	TS_MODE	PULL_UP_EN	NOP1	NOP0	CNV_RDY_FL

OS: Operational status/single-shot conversion start

This bit determines the operational status of the device. This bit can only be written when in power-down mode.

For a write status:

0 : No effect

1 : Begin a single conversion (when in power-down mode)

For a read status:

0 : Device is currently performing a conversion

1 : Device is not currently performing a conversion

MUX[2:0]: Input multiplexer configuration

These bits configure the input multiplexer. They serve no function on the ADS1116/4.

000 : AINP = AIN0 and AINN = AIN1 (default)

001 : AINP = AIN0 and AINN = AIN3

010 : AINP = AIN1 and AINN = AIN3

011 : AINP = AIN2 and AINN = AIN3

100 : AINP = AIN0 and AINN = GND

101 : AINP = AIN1 and AINN = GND

110 : AINP = AIN2 and AINN = GND

111 : AINP = AIN3 and AINN = GND

PGA[2:0]: Programmable gain amplifier configuration (ADS1118 only)

These bits configure the programmable gain amplifier. They serve no function on the ADS1116.

000 : FS = $\pm 6.144V$

001 : FS = $\pm 4.096V$

010 : FS = $\pm 2.048V$ (default)

011 : FS = $\pm 1.024V$

100 : FS = $\pm 0.512V$

101 : FS = $\pm 0.256V$

110 : FS = $\pm 0.256V$

111 : FS = $\pm 0.256V$

MODE: Device operating mode

This bit controls the current operational mode of the ADS1116/8.

0 : Continuous conversion mode

1 : Power-down single-shot mode (default)

DR[2:0]: Data rate

These bits control the data rate setting.

- 000 : 8SPS
- 001 : 16SPS
- 010 : 32SPS
- 011 : 64SPS
- 100 : 128SPS (default)
- 101 : 250SPS
- 110 : 475SPS
- 111 : 860SPS

TS_MODE: Temperature sensor mode (ADS1118 only)

This bit configures the ADC to convert temperature or input signals. It should be left as '0' in the ADS1116.

- 0 : ADC mode (default)
- 1 : Temperature sensor mode

PULL_UP_EN: Pull-up enable

This bit enables a weak pull-up resistor on the DOUT pin. When enabled, a 400kΩ resistor connects the bus line to supply. When disabled, the DOUT pin floats.

- 0 : Pull-up resistor disabled on DOUT pin (default)
- 1 : Pull-up resistor enabled on DOUT pin

NOP: No operation

The NOP bits control whether data are written to the Configuration register or not. In order for data to be written to the Configuration register, the NOP bits must be written as '01'. Any other value written to the NOP bits results in a NOP command. This means that DIN can be held high or low during SCLK pulses without data being written to the Configuration register.

- 00 : Invalid data, do not update the contents of the Configuration register.
- 01 : Valid data, update the Configuration register (default)
- 10 : Invalid data, do not update the contents of the Configuration register.
- 11 : Invalid data, do not update the contents of the Configuration register.

CNV_RDY_FL: Conversion ready flag

This bit is active low and indicates when data are ready from the converter. When it is high, a conversion is not yet ready and is in process. The purpose of the conversion ready flag bit is to return the DOUT pin line to a high state to prepare for the falling edge from new data.

- 0 : Data ready, no conversion in progress
- 1 : Data not ready, conversion in progress (default)