

PMT Signal Offset Correction

ScanImage acquires voltage signals on each of the enabled input channels. Ideally, the voltage value of 0 would correspond to case of zero signal, i.e. zero detected photons. In reality however, the input digitizer channel and connected detector electronics (e.g. PMT amplifiers) combine to exhibit:

- A non-zero offset value
- A distribution of noise values centered on the non-zero offset value

ScanImage can measure and, optionally, subtract/correct these offset values. Measured offset values are stored in the header (metadata) of saved ScanImage TIF images, within the property 'channelOffsets'. If offset correction is applied by ScanImage (or applied by user in post-processing) a histogram of image data will show a symmetric noise distribution centered on zero (with half negative values) and a positive signal distribution.

ScanImage offset measurements are obtained with:

- Scanner parked in its housing
- Shutter closed (if shutter is configured in Machine Data File)
- Beam modulation fully attenuated (if Beam modulation channel(s) are configured in Machine Data File)



Measuring Accurate Offsets

Because measured channel offset includes circuitry connected to input channel, for typical PMT-based input channels, the offset values will depend on:

- whether PMT is on or off
- PMT gain level applied

IMPORTANT: Offset values should be measured with input circuitry set exactly as will be used during subsequent imaging (e.g. with PMT on and at imaging gain level)

ScanImage offset measurements can be obtained at various times:

Manually	<ul style="list-style-type: none">• Press Read Offsets anytime to update offset value.
Automatically at start of each acquisition (FOCUS, GRAB, or LOOP)	<ul style="list-style-type: none">• Enable Auto Read checkbox to select this option.• NOTE: This option defaults to TRUE in ScanImage 5