AX5 Measurement

The FLIR AX5 camera provides registers that can be used to convert object signal values to temperature. For each measurement range (or gain mode) there is a set of register values that is used for this conversion.

Register name	Type
R	Integer
B	Float
F	Float
O	Float

Please note that these registers will be automatically updated when switching between high gain mode and low gain mode.

The formula for calculating temperature is:

T (in Kelvin) = B / log(R/(S − O) + F)

where S is the 14-bit object signal value acquired during frame grabbing with register **PixelFormat** equal to *Mono14*. Log(x) is the base-e logarithm of the x parameter.

The FLIR GEV Demo 1.3 sample illustrates how to apply this conversion formula.

You also have the possibility to do your own one-point calibration by adjusting the offset value (register **O**) by pointing the camera at some well-known temperature. Knowing the temperature, you can then calculate the offset value and update the **O** register.

```
O = S - (R / (exp(B/T_KNOWN) - F))
```

The FLIR GEV Demo 1.3 sample illustrates how to perform this kind of calibration. Please note that you will need to save the current settings if you want the new offset value to be persistent. Use the command register **SensorSetDefaults** to set all current settings as power on defaults.

There are three additional registers that also affect the measurement values. These registers are grouped together as Object Parameter registers. These registers affect the transformation of detector signal values to object signal values.

ReflectedTemperature	The estimated ambient temperature for the target objects.
ObjectEmissivity	The target object emissivity factor. Default value is 1.0
EstimatedTransmission	Estimated transmission factor for external optics and atmosphere between camera and object. Default value is 1.0.

Note. The default values for the object parameters are set to values that will have no impact on the conversion between detector signal values and object signal values.