Minolta/Land Cyclops 52 Infrared Thermometer

Inst # 20001784

Description

- The Minolta-Land Cyclops 52 is a portable thermometer designed for temperature in the range 600 to 3000° C.
- Temperature is displayed digitally.
- Digital output is available over RS-232 communication.
- Target is viewed simultaneously with the temperature display.
- Wavelength of operation chosen to give maximum freedom from errors due to emissivity.
- Emissivity compensation in range 0.1 to 1.0.
- Three operational modes – Continuous, Peak, and Valley. In the last two the readings corresponds to the highest and lowest temperature respectively during the period of operation.
- Response time 30 ms (Display 0.6 s).
- Accuracy ±0.5% reading.
- Wavelength of operation eliminates the effects of water vapor and carbon dioxide in the atmosphere and the effects of sunlight on temperature readings.
- Three calculating modes – Maximum, Mean, or Minimum of a series of readings.

Operation Notes

During operation, the Cyclops 52 displays the temperature in the digital display inside the viewfinder. When the trigger is pressed the unit attempts a reading, the display will indicate this by illuminating.

When the temperature is below 500°C the display will illuminate but will not show a number. If the temperature is between 500-600°C the number will be displayed and the illumination will blink rapidly alerting the user that this range falls outside the calibration. Between 600-3000°C the temperature will be indicated and the illumination will be constant. The LCD value is held for 30s after measurement.

The Cyclops 52 operation is detailed in the Cyclops 52/53 manual.

RS-232 Communication Notes

Measured temperature data is available from the digital output terminal in the form of ASCII code, TTL level RS-232. The connector is a Hirose HR10-10P-12P. Data output is initiated by the release of the trigger switch or external measuring request signal.

A patch cable was constructed to interface with a RS-232 port. The following connection scheme is required to communicate with the device:

Hirose Pin 2 to RS-232 Pin 2 "Receive Data"
Hirose Pin 4 to RS-232 Pin 4 "Data Terminal Ready"
Hirose Pin 7 to RS-232 Pin 5 "Signal Ground"

Table 1 shows the communication parameters to use with the Cyclops 52.

Baud Rate	300 bps
Data Bits	7
Parity	Even
Stop Bits	2.0
Flow Control	None
Termination Character	ASCII CR
Signal Level	TTL Level ONLY

Table 1. RS-232 communication parameters.

The data output is in groups of 9 bytes. The first character is non-printing with HEX value "00". The second character indicates the mode of the unit. The following two characters are the ASCII "SP", followed by four characters that indicate the temperature. In 7-bit data mode, a working solution for conversion to decimal numbers was accomplished by subtracting the ASCII decimal value of the output character from 127, giving the ASCII decimal value of the number.

Example data conversion: Suppose a query to the pyrometer gives the string "<__NNLJr", this would indicate a value of 1135°C. The ASCII decimal value of "N" is 78, subtracted from 127 gives an ASCII decimal value 49 with corresponding character "1". The ASCII decimal value of "L" is 76, subtracted from 127 gives an ASCII decimal value 51 with corresponding character "3" and so forth.

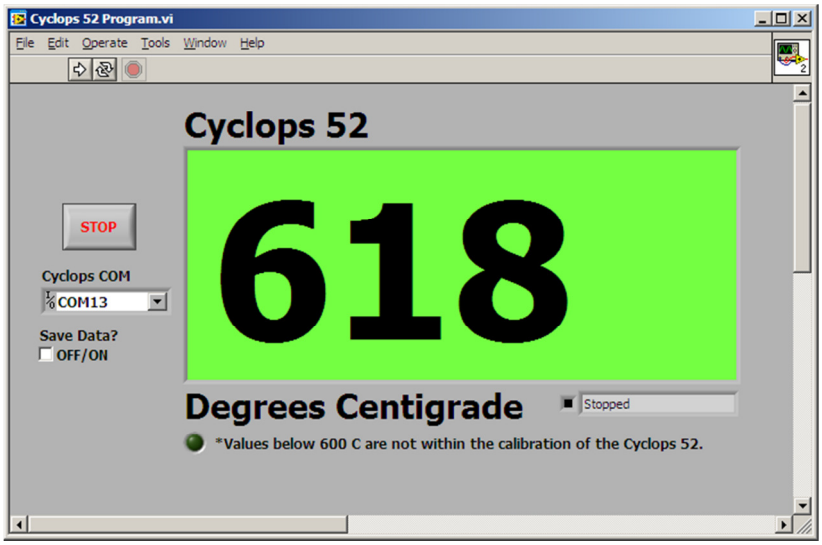
When the unit is queried and the initial reading is below 500°C, the display will illuminate but no data is output. When the measured value is between 500-3000°C data is output over the terminal connector, if the measurement then falls below 500°C the last measurement value over 500°C is output.

A LabVIEW program "Cyclops 52 Program" was constructed to communicate with the instrument. This program allows for readings to be displayed and data to be saved to a .txt file. The program also indicates when the readings are out of the calibration range of the Cyclops 52.

In the program, the small grey text display and color indicator to the right of "Degrees Centigrade" is a status indicator for the program. As the program attempts communication with the unit by raising and lowering the DTS line it will display "Requesting". If there is no reading,

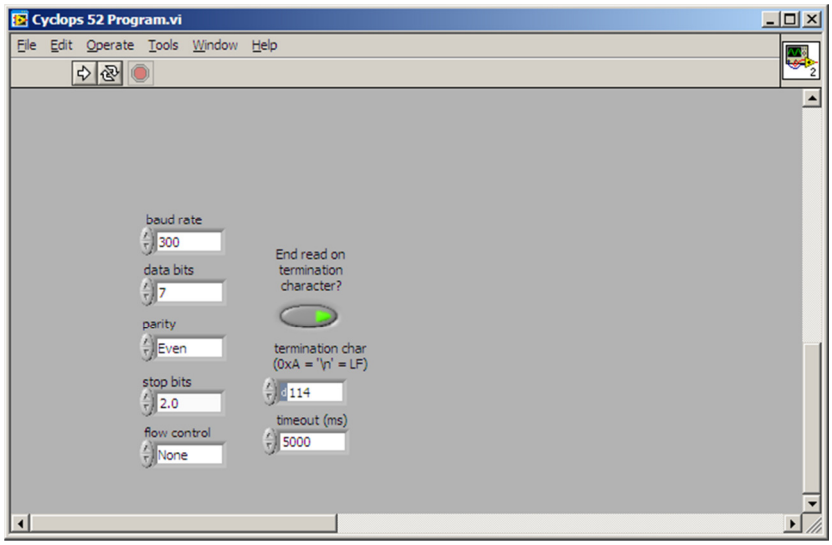
the status will display “Below range/Error”, where as if pyrometer supplies a non-zero value, it will display “Acquired.”

Again, please note: the Cyclops 52 retains the last temperature reading it measured when the temperature drops below 500°C, this values is also delivered over the data connection. **If the pyrometer was reading a value and the temperature drops below 500°C, it may continue to indicate the previous value on the LabVIEW program.**



Picture 1. LabVIEW program for Cyclops 52.

Although the communications parameters are set by default in the program, additional changes may be made by scrolling down in the program. For normal operation these values should not be changed. See picture 2.



Picture 2. Communication parameters for Cyclops 52 (scroll down in program).