Convir
IR2 Series 2-Colour Ratio Fibre-Optic Infrared Temperature Measurement and Control System

- Temperature Range from 300°C up to 3000°C
- High Quality
- 5 Year Warranty
- Ethernet and RS232/485 Available
- Full Autotune PID Control
- Adjustable Focus Field of View from 20 cm to over 4 m
- Fast Response Time up to 10 ms
- Unique Built-in "Through-the-Lens" Laser Sighting
- High Accuracy 0.2% of Full Scale
- Two Colour or Single Colour Operation
- Fibre Optic Cable Assembly is Field Replaceable
- 1, 2 or 3 m Fibre Optic Cable Assemblies
- Embedded Internet on all Models!

The Convir IR2™ Series is the state-of-the-art instrument for difficult and demanding high temperature (300°C-3000°C) applications. It is ideally suited for measurement and control applications involving metals, glass, semiconductors and more. The IR2 is extremely fast and accurate with a response time of 10 ms and accuracy of 0.2% of full scale. Despite its extraordinary technological sophistication and performance, the IR2 is also incredibly user friendly and simple to configure.

2-COLOUR RATIO MEASUREMENT
The IR2 measures temperature using a 2-colour ratio technique in which a temperature is computed from the ratio of two different infrared frequencies, unlike a standard infrared thermometer that measures the absolute amount of infrared energy. The 2-colour ratio technique is essential for accurate measurements in many common applications: when the target is obscured by smoke or steam, when the target is viewed through a window or screen that reduces energy, or when the emissivity of the target is unknown or changes.

Unlike a standard infrared thermometer that determines an average temperature for everything within its field of view, the IR2 does not require that the target completely fill the lens field of view as long as the temperature of the

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IR2P 1/8 DIN Panel Mount

IR2C Cast Aluminium Enclosure

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target is higher than the background or material in the foreground.This capability allows the IR2 lens to be installed farther from the target, or outside a window or screen as well as more accurately measure temperatures of small and moving targets. The IR2 can also be switched to one-colour operation if required.

CAST ALUMINIUM OR PANEL MOUNT ENCLOSURE
The IR2 is available in two practical packages: The IR2C model is an extremely rugged cast aluminium enclosure (with IP65 rating) that can be mounted on any surface and is powered by 20-36 V AC/DC. The IR2P model is a 1/8 DIN panel mount package with an IP65 front bezel for rack or cabinet mounting with other instrumentation, and runs on 90-240 V AC/DC power.

FULL PID CONTROL
The IR2 is much more than the typical infrared transmitter. It is a complete autotune PID TEMPERATURE CONTROLLER in a single extremely compact enclosure (an important, unique feature). The IR2 features a totally programmable analogue output that can be programmed within a range of 0 to10 V DC or 0 to 20 mA. The analogue output is selectable as either a control output or as a calibrated retransmission of the temperature. The IR2 also offers a choice of two Form C (SPDT) Relays or Solid State Relays for controlling or alarms. The control functions feature the full suite of capabilities from simple on-off to full Proportional Integral Derivative (PID) control. Instead of connecting a simple infrared transmitter to a separate temperature controller, the IR2 can do it all.

BIG, BRIGHT DISPLAY
The IR2 features a big, bright LED dual display. The smaller numbers display the set points or alarm points. The larger numbers (a full 21 mm, high) display the measured temperature. The display can be programmed to change colour between GREEN, AMBER, and RED at any set point or alarm point and the change in colour is quickly seen from a distance.

FIBRE OPTICS
The IR2 comes complete with a compact IP65 lens and a flexible fibre optic cable assembly. With the IR2 it's possible to measure the temperature of targets that would simply not be visible with conventional instruments. The fibre optic cable and lens allows the instrument electronics to be kept away from the target environment where it would be subjected to higher temperatures, smoke, dust, steam or powerful electromagnetic emissions such as generated by induction heating.

Both the stainless steel lens assembly and rugged cable assembly can be replaced in the field without returning the instrument for re-calibration (a unique feature). The lens can operate in ambient temperatures up to 200°C without external cooling. The variable focus lens can focus on targets from any distance between 200 mm to more than 4 m. The 25:1 field of view is ideal for most applications.

Calex also offers a wide selection of compatible application-specific lens assemblies and fibre optic probes.

UNIQUE BUILT IN LASER SIGHT
The IR2 features a unique built-in "through-the-lens" laser that shows the operator precisely what the lens is seeing (spot size). This innovative laser illuminates the precise spot on the target that the lens is viewing, and allows the operator to focus on the target with absolute precision. The laser can be turned on to sight the target and off to make a measurement with the simple push button on the front panel, or remotely via network or serial communications.

GENERAL SPECIFICATIONS

Accuracy	0.2% of Full Scale
Repeatability	0.2% of Full Scale
Temperature Resolution	1 Deg
Temperature Range	
- R1	300 to 1300°C
- R2	600 to 1800°C
- R3	1000 to 3000°C
Response Time	10 mS (0 to 63% of final value)
Spectral Response	0.8 to 1.7µm
IR Temperature Measurement	Selectable Between Single Colour & Dual Colour
Emissivity	Adjustable 0.1 to 1.0 (Single colour)
Slope	Adjustable 0.85 to 1.15 (Two Colour)
Optical Field of view	25:1, Adjustable Focus from 200 mm to more than 4 m distance
Dimensions (Optical Assembly)	Ø 20 x 62 mm Maximum Length
Fibre Cable	1 m std, 2 and 3 m available
Power	
IR2P	90 to 240 V AC
IR2C	20 to 36 V AC/DC

GENERAL SPECIFICATIONS (CONTINUED)

Operating Ambient Temperature	
Controller	0 to 50°C
Optical Assembly	0 to 200°C, without cooling required
Display	Three Colour Dual Display (AMBER, GREEN, and RED), Programmable
Environmental Rating	IP65 (Both the Optical Assembly and the Front Panel)
Serial Communication	RS232 and RS485/422 or Ethernet and RS485/422/MODBUS
Controller	ON / OFF or PID Controller with Autotune
Outputs	Two Control or Alarm Outputs
Output Type	Analogue voltage or current, relay, DC Pulse
Laser Sighting	Built-into the Controller for Optical assembly alignment
Wavelength (Colour)	650 nm (RED)
Operating Distance	20 cm to 4 m
Maximum Laser Power Output	4.5 mW
Safety Classification	Class 3A
FDA Classification	Complies with 21 CFR Chapter 1, Subchapter J
Beam Diameter	Smallest Spot Size 8 mm (20 cm/25, Minimal focus distance is 20 cm)
Laser Power Switch	Set via the Controller Menu
Laser Indicator	Displays on the Controller

TO ORDER (SPECIFY MODEL NO.)

Model Number	Description
IR2P-[Range]-[Output]-[Network] IR2C-[Range]-[Output]-[Network]	1⁄8 DIN Panel mount enclosure Cast aluminium enclosure
Range (Select One)	
300 600 1000	300 to 1300°C 600 to 1800°C 1000 to 3000°C
Output Options (Select One)	
53 43 33	1 Programmable Analogue Output selectable as either control or retransmission of process value 0 to 10 V DC or 0 to 10 mA, plus one (1) SPDT Relay 2 pulsed 10 V DC Outputs 2 SPDT Relays
Network Options	
C24 C4EI	Isolated RS-232 and RS-485/422. 300 to 19.2k Baud (if required) Ethernet with Embedded Web Server +Isolated RS-485/422/ MODBUS

* Other output combinations are available.
Ordering Example: iR2C-1000-53-C4EI is a 2-Colour Infrared Temperature Controller in a rugged cast aluminium enclosure, Temperature range 1000 to 3000°C, Programmable Analogue Output, 1 SPDT Form C relay, and Ethernet, RS-485/422/MODBUS.