SPECIFICATIONS

ELECTRICAL

Input Power
- 26 VDC +5% - 20%, 300mA with one viewing head
- (24 VDC when not using battery backup)
  (100mA for each additional V.H.)

Power to Viewing Head
- +26VDC, fused @ 0.25A
- Self-Check +14.3VDC for 0.2 sec., 0V for 0.8 sec., cycling

ENVIRONMENTAL

Ambient Tempertaure
- 0°C to + 50°C

CABLE (from P520 Signal Processor to Viewing Heads)
- 4 Conductor, # 18AWG, one wire shielded
  with braided shield for flame signal.

OUTPUTS

Flame Relay
- 2 Form C Contacts

Self-Checking Relay
- 1 Form C Contact

Contact Ratings:
Max switching power 60W, 100VA
Max switching voltage 220V AC, DC
Max switching current 2A

Analog Flame Signal
- 0-20 or 4-20 mA current output for remote meters,
  360Ω max resistance.

Power to Viewing Head
- +26 VDC, Self Reseting fused, 0.25A
- +14.3 VDC Pulsing 0.2 Sec “ON” 0.8 Sec “OFF”

INPUTS

Channel Select (Isolated Input*)
- V_{IN} 7.5-30 VDC range (Input R=3900Ω)
  26 VDC, 6.4mA
  10 VDC, 2.3mA

Flame Signal from V.H.
- V_{IN} 7.5-30 VDC range (Input R=3900Ω)
  13.6 VDC, 3.2mA

Serial Communication

RS-422 (Differential)
4800 or 9600 Baud
- Input/Output circuits photocoupler isolated
  from P520 power supplies and ground
- Baud rate selectable from front panel of P520

* Requires two wires

For more details, please contact:

IRIS Systems Inc.

Sales and Applications
7583 Vantage Place
Delta, BC., V4G 1A5
1-800-667-$I_4R_7I_4S_7$
1-604-584-$I_4R_7I_4S_7$
Fax: 1-604-581-9790

Manufacturing
4944-113th Avenue N.
Clearwater, FL., 33760
1-727-545-3900
Fax: 1-727-547-9589

Web Site: www.iris-systems.com

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IRIS

WORLD LEADER IN FLAME MONITORING

APPLICATIONS

DISCRIMINATES BETWEEN ALL TYPES OF BURNER FLAMES

- POWER UTILITY BOILERS
- INDUSTRIAL POWER BOILERS

DISCRIMINATES BETWEEN MAIN FLAME AND UNWANTED BACKGROUND

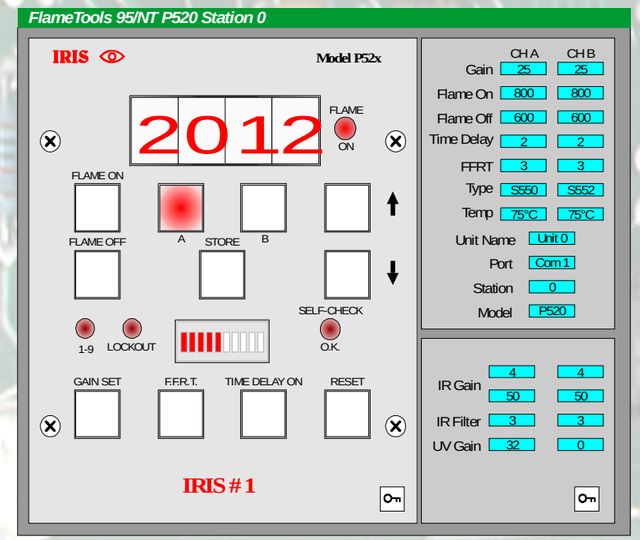
- LIQUOR RECOVERY BOILERS
- GRATE FIRED BOILERS
- LIME KILNS

IN THE PROCESS INDUSTRIES

- CLAUS REACTORS (H_2S)
- DUCT BURNERS
- HYDROGEN BURNERS
- CO BOILERS
- GAS TURBINES

GENERAL DESCRIPTION

The IRIS Model P520 is a state of the art flame signal processor. It is designed to be used with the IRIS 500 flame monitoring viewing heads. The P520 microprocessor controlled device does the same thing as the Model 500, but does it much better. The front panel of the P520 plug-in module is shown actual size on the cover page. Note the two LED (light emitting diode) displays: a four digit readout, and a bar graph, both representing flame signal strength. In addition, there are three discrete LED's and 11 push button switches.



HOW IT WORKS

The flame signal from the viewing heads is a pulsing signal. The number of pulses is proportional to the flame signal strength. These pulses are uniform in amplitude and width but random in time between pulses.

The pulsing nature of this signal eliminates the need for an analog to digital conversion in the signal processor. Also, the transmission of pulses makes all the flicker type detectors compatible with the UV type flame detector, an inherent pulsing device, i.e.., the UV tube emits pulses when exposed to UV radiation. The pulsing signal from the viewing heads is fed directly to the embedded microprocessor which processes the data.

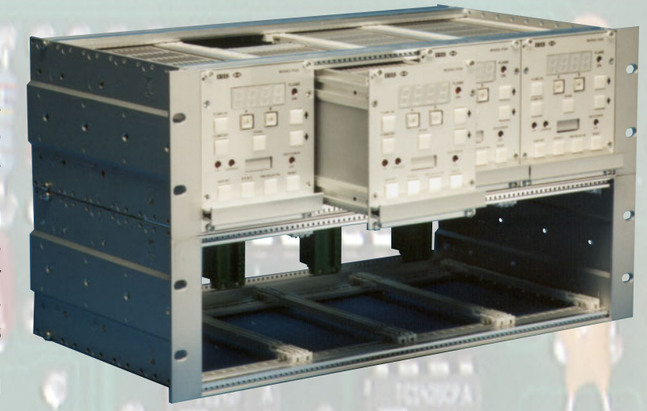
The P520 is a combined digital and analog processor. The pulsing signal is processed in exactly the same way as the D504 digital board processes data. The same four digit set-points are used along with the same four digit signal strength display. The pulsing signal from the viewing head is converted to an analog signal in a similar manner to the A513 analog board and the same bar graph display is used along with the same remote meter output. The same gain setting format is used, 00 to 99, for the analog output.

LOCAL OR REMOTE PROGRAMMING

It is possible, for example, to program the FLAME ON and FLAME OFF set-points locally (from the front panel) or remotely (from a host computer) using FlameTools 95/NT software. The P520 communicates with the remote computer through its RS-422 to RS-232 converter at either 4800 or 9600 baud selectable at the P520 processor front panel.

A AND B SETTINGS

There are two complete sets of set-points, gain settings and time delays that can be programmed, either



locally or remotely. These are called set A and set B or channel A and channel B. Either channel can be selected at the output connector to choose different settings for different fuels. For example, when channel A is chosen, the illuminated push button A is lighted. When channel B is chosen, push button B is lighted.

EASY TO PROGRAM

It is very easy to program the set-points. To see the digital FLAME ON set-point, simply press the FLAME ON button. The current FLAME ON set-point number will immediately display. It will stay for about 3-4 seconds, then automatically switch back to the normal flame monitor operating mode. When it is displayed, the setting can be changed by raising or lowering the number with the up or down arrow buttons. When the desired set-point number is reached, it can be stored by pressing the STORE button.

EEPROM MEMORY AND SOFTWARE

The memory used to store the settings is an EEPROM which will not lose its stored data when the power goes off. The EEPROM used allows 100,000 program changes. The settings also can be programmed from a remote computer. Software is available for this programming as well as for gathering data from each P520. For example, the computer can request from each P520 its current set-points, gain settings and time delay settings or its current flame signal reading.

SAME FUNCTIONS A513 D504

The same basic functions available with the existing M502 Mother Board, A513 Analog Board and D504 Digital Board are incorporated into the P520. It is effectively an analog signal processor and a digital signal processor, all in one package. The functions are implemented in an entirely different way however. The embedded microprocessor controls everything.

PACKAGING

The P520 is a plug-in module designed to conform to the DIN 41494 19 inch card frame system. (Euro Card.) The plug-in module is 30 high and 21HP wide (5.06 x 4.18 inches). The photo shows four modules in a 19 inch card frame. The module is compatible with two basic card frames: those for use with back planes and those for use with card connectors. When the back plane type is used, the P520 module must be terminated with a rear back plane PC board, available as an accessory. When the card connector type is used, the proper barrier terminal/Euro Card connector, also available as an accessory, must be used. In both cases, the viewing head and field connections are made to barrier terminals at the rear of the card frame.

SELF CHECKING FEATURE

A unique self-checking circuit monitors the P520 program. This can best be described as a "dual mode watch dog timer." There are two principal outputs from this circuit which are implemented using relays. One output is called SELF-CHECKING and the other FLAME RELAY. The SELF-CHECKING has one FORM C set of contacts. The FLAME RELAY output has two FORM C sets of contacts. When the SELF CHECKING output is energized, the P520 is on and running O.K. The SELF-CHECKING LED on the front panel will be turning on and off (blinking). The FLAME RELAY is energized when the P520 detects flame. The FLAME ON LED on the front panel will be ON. What is unique is that the principal output (FLAME RELAY) is an integral part of this self-checking circuit. Any component failure or program failure in the P520 will cause both these outputs to de-energize or fail safe.

P520 POWER

The P520 module requires an external power supply. It should have an output of 26VDC (24VDC when not using battery backup) at 200mA (300mA if used with the model S550 viewing head) with an additional 100mA for each viewing head used. The power goes first to the P520, then through a self resetting fuse to feed the viewing head(s).