TELEDYNE API
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Application Note

# Multichannel Stream Selector Option for the 480L Industrial Hygiene Ozone Monitor

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**Figure 1: Model 480L Ozone Monitor**

Ozone gas is used for cleaning, purifying and other purposes in many industrial hygiene applications. At low levels, ozone gas is harmless and present in the air we breathe every day. At higher levels, ozone can negatively affect human health. Protecting people in the workplace is always a top priority, so monitoring ozone applications for leaks is imperative. The preferred method of monitoring for harmful ozone exposure is to use the Teledyne API (TAPI) 480L UV photometric ozone monitor.

The 480L is an extremely stable analyzer that is ideal for critical low-level ppm safety and process applications. In applications where ozone gas is used in multiple locations, the 480L has optional 3 and 6 channel versions available.

## Multi-channel Stream Selector Option

The 480L multi-channel stream selector option gives the user the ability to monitor up to 3 or 6 different locations with one instrument. This allows for a couple of advantages: cost-savings and simplifying communications if the instrument is reporting back to a PC or other external device. Some unique features of the 480L multi-channel stream selector option are the ability to program individual dwell times and specific alarm settings for each channel. This programming is easily done from the front panel of the instrument from a user-friendly graphical interface, with no potentiometer or blind adjustments required.

## Individual Channel Settings

The 480L multi-channel stream selector option provides the ability to program each of the 3 or 6 channels independently, making it possible to efficiently monitor all channels. The user can program different sample time durations for each channel, from 60 to 360 seconds, from the front panel. This feature is very handy to compensate for sample locations varying in distance from the 480L. If a channel



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doesn't need to be monitored, then the user can disable it through the front panel interface.

The Model 480L can also provide warning signals in case ozone levels are close to or above safe exposure limits. 'Hi' and 'Hi-Hi' alarms for two levels of safety alerts can be programmed from the front panel. Each channel's alarm threshold is programmed individually and can be anywhere from 0.01 to 1000 ppm. The status of these alarms is available via the graphical display. Note that the alarms default to a 'latching' state, meaning they will not automatically reset when the alarm condition is removed. Changing the setting to 'non-latching' allows the 480L to reset the alarm state as soon as the alarmed channel is sampled with an ozone level below the alarm set point.

### Understanding the Channel Alarm Relays

The 480L alarms are extremely important as they indicate potentially dangerous levels of ozone for people. For the multichannel version, each channel has its own set of 3 isolated output signals. You can find a description of each in Table 1 below. Signal #1, for stream ID, will activate anytime that stream is being sampled. Signal #2 and #3 will activate if the ozone concentration for a stream exceeds the Hi or Hi-Hi alarm setting.

| Signal # | Function | Meaning |
|---|---|---|
| 1 | Stream ID | Stream X is active |
| 2 | Hi Alarm | Stream X Hi Alarm is active |
| 3 | Hi-Hi Alarm | Stream X Hi-Hi Alarm is active |

**Table 1: Channel Signal Descriptions**

Global status relays are also available when using the multi-channel stream option. Table 2 shows the description for these relays. These can be used to notify someone or something that an alarm condition is occurring on one of the channels or that all channels are OK. These are especially useful when a general or global alert is needed to cover all channels.

| Signal # | Function | Normal Operating State |
|---|---|---|
| 1 | System OK Diagnostic | On |
| 2 | Global Hi Alarm* | Off |
| 3 | Global Hi-Hi Alarm* | Off |
| * The state of the global alarm represents all the Hi or Hi-Hi alarm states OR'd together, i.e. if the Hi alarm for one or more of the sample streams is activated, then the Global Hi alarm will be activated. | | |

**Table 2: Global Signal Functions for Multi-Stream Configs**

Remember that the alarms in the Model 480L are set by default to 'latching.' The alarm must be reset manually by acknowledging and resetting the alarm on the front panel. The alarm cannot be reset if the ozone reading for that channel, or all channels for the global alarms, has not

come down below the alarm set point. Non-latching alarms will automatically reset when the alarm condition is removed.

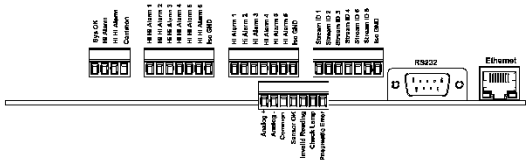


**Figure 2: Rear Panel Electrical I/O Connections**

## Conclusion

TAPI's 480L with the multi-channel stream selector option is designed to be easily set up and customized for each application. Independent channel settings for sample duration times and alarm threshold settings allow the user to optimize the 480L for their application conveniently from the front panel. Multiple status outputs, relays and digital communication options help ensure clear communication of an issue and ultimately a safer workplace.

For more information, documentation and related software, please visit the 480L product page on the TAPI website at: www.teledyne-api.com/products/process-ozone-instruments/480l or contact our sales team at: api-sales@teledyne.com.