Pointwatch Transfer Data Curve Users Guide

Det–Tronics model PIR9400 Pointwatch IR Gas Detector is provided with five, field–selectable "standard gas" signal processing program settings. These settings are provided for detection and measurement of methane, ethane, propane, ethylene, and propylene gases, and are defined as **linearized** Pointwatch gas measurement outputs. This means that the Pointwatch is capable of providing an analog signal output that is directly proportional to the %LEL concentration for these gases, provided the proper gas setting has been selected, **and** the Pointwatch has been calibrated with the proper calibration gas type. The rotary selector switch for the standard gas settings is located within the Pointwatch detector housing, and requires device disassembly for access.

In addition to the five standard gases mentioned, the Pointwatch is capable of detecting and measuring many other hydrocarbon gases and vapors. Although linear Pointwatch outputs are not offered for most of these gases, an accurate gas concentration measurement is easily determined by using a cross–reference data sheet defined as a **transfer curve***. The transfer curve data sheet is always based upon the following:

1. The data applies to **one (1)** specific gas/vapor type only.
2. The data is collected at a specific test temperature**
3. The data compares actual hazardous gas concentration in % LEL to the Pointwatch signal output level, using all five standard gas settings.

The transfer data is used by the customer to select the optimum Pointwatch standard gas selection setting, and to select Low, Medium, and High alarm thresholds (using the Infiniti transmitter, R8471 controller, or other external signal receiver) at the correct actuation setpoints. This will ensure external alarm response action occurs when required at the jobsite.

It is important to note that whenever using transfer data, the Pointwatch analog signal output and any real–time visual display of that output, such as a digital display or bar graph, will be offset by a value shown on the transfer data curve, and therefore must be externally correlated by the viewer.

Each gas transfer data form will include five (5) different curves (one for each standard linearized output setting), and are easily identified by referring to the curve legend on the form. **The optimum setting/curve is generally the one that provides the closest signal correlation across the desired gas measurement range, and also ensures the offset in the Pointwatch signal output versus gas concentration is an over–reading, as opposed to an unsafe, under–reading.**

Ideally, at 50% of full scale Pointwatch output (12 ma signal level) the detected gas level will equal 50% LEL gas concentration, and this relationship will remain proportional throughout the gas measurement range. In reality however, transfer curve data is non–linear, and will result in varying offsets levels from proportional linearity throughout the gas measurement range. See example on the following page.

* Specific application details are required before transfer curve data can be provided.

** Significant differences in ambient hazard area temperature as compared to test temperature may impact transfer curve accuracy.

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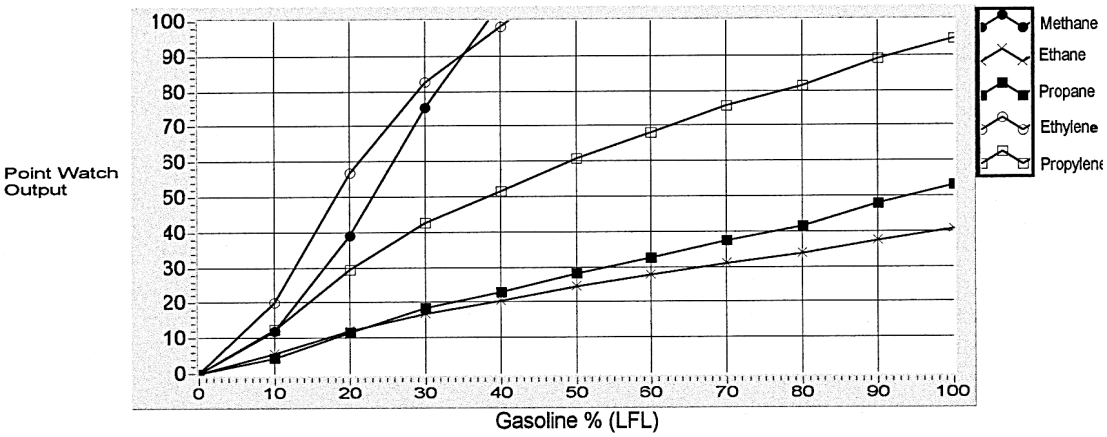
GAS TRANSFER DATA

Test date 11/5/97
Gas type Gasoline
%LFL 1.4

POINTWATCH GAS RESPONSE CURVES



Gas Data Table

25	25	25	25	25	25	25	25	25	25	25	Test Temp.
0	10	20	30	40	50	60	70	80	90	100	%LFL
0	12	39	75	105	NA	NA	NA	NA	NA	NA	Methane
0	6	12	17	21	24	28	31	34	38	41	Ethane
0	4	12	18	23	28	33	38	42	48	53	Propane
-0	20	57	83	98	114	NA	NA	NA	NA	NA	Ethylene
0	13	29	43	52	61	68	76	81	89	95	Propylene

To use the transfer curve data, find the concentration (in % LFL) for the gas of interest on the horizontal axis of the graph. Follow the vertical line up from that point until it intersects with a gas response curve. From the point of intersection, follow the horizontal line directly to the left until it intersects with the vertical axis of the graph. The point of intersection with the vertical axis represents Pointwatch output (0-100%LEL reading, or 4–20 ma proportionally) in response to the actual gas concentration at the installation using that particular linearized output setting.

In the above example for gasoline vapor detection, the typical recommended Pointwatch standard gas setting and calibration gas to use is propylene. Note that when using this setting and cal gas type, at 50%LEL gasoline concentration at the jobsite, the Pointwatch signal output will be 60% or 13.6ma. The propane and ethane settings would not be recommended as the signal output level is much less than actual gas concentration in the field. The methane and ethylene settings are acceptable, but will result in much higher readings than actually is present in the field.

Please contact your local Det–Tronics Sales Representative or the Det–Tronics Customer Support department for additional information.

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