

T300 Series for Extractive CEMS CO Monitoring

November 2018

In continuous emissions monitoring systems or CEMS, compliance with U.S. EPA 40 CFR Part 60 and 40 CFR Part 75, or similar international regulations, and effective process control are the top priorities. For those reasons, a CEMS must be reliable, accurate and serviceable. The Teledyne API (TAPI) T Series instrument platform was designed to exceed your CEMS needs by focusing on reliability, data availability, serviceability, intuitive user software and knowledgeable technical support. The T Series advanced NumaView™ software is included at no extra charge and includes a user customizable touch-screen interface, real-time graphing, preventative maintenance and diagnostic functions, making it simple and efficient to verify the instruments are working correctly.

Carbon monoxide (CO) emissions monitoring is one common CEMS requirement in the US and internationally. TAPI's family of CO instruments covers a wide range of source emission requirements for your CEMS. Table 1 shows the undiluted ranges and lowest detectable limit for each model.

Data Availability

Extensive research and development has gone into the T Series line of gas instruments to ensure high uptime and data capture to a CEMS



Figure 1: T300M - Mid-range CO Instrument

PLC or data acquisition system. Several features have been built into the T Series to maximize effectiveness in a CEMS including the T300U trace CO analyzer's automatic reference method, or AREF feature, that periodically zeros the instrument to prevent drift and ensure data accuracy. Additionally, a dilution ratio can be entered into the instrument software for dilution CEMS which allows the display to automatically compensate for sample dilution, providing actual gas concentration in the stack. This makes it easier to quickly verify the concentration measurements match what is expected.

Carbon Compounds Instruments			
Gas	Model	Ranges (Min/Max)	LDL
CO Carbon Monoxide	T300U	0-100 ppb / 0-100 ppm	<20 ppb
	T300	0-1 ppm / 0-1,000 ppm	<0.04 ppm
	T300M	0-5 ppm / 0-5,000 ppm	0.2 ppm

Table 1: T Series CO Instruments with undiluted ranges and LDL

System Integration

Several communication options in the T Series allow for seamless integration into most CEMS. They include: Ethernet, RS232, USB and analog output communications hardware combined with MODBUS and Hessen communication protocols. Figure 2 shows a typical CO instrument rear panel. Digital status output assignments as well as polarity can be defined by the user. Remote monitoring and control are also possible using TAPI software called NumaView™ Remote, provided at no additional charge. A built-in data acquisition system in the T Series can store up to two years' worth of data and provide valuable troubleshooting information which helps get to the source of the problem quickly.



Figure 2: Rear Panel of T300M

Serviceability

Over 30 years of gas monitoring experience has resulted in an instrument with one of the lowest maintenance requirements in the industry. Simply following the short list of preventative maintenance required for the T300 series is all that is required to keep the instrument running at peak performance. Take it one step further and utilize the predictive

maintenance features of the T Series to prevent the instrument from experiencing unplanned downtime. Obtaining maintenance kits and spare parts for annual maintenance and basic repairs is now easier than ever with TAPI's new webstore. Check it out by visiting: store.teledyne-api.com.

Analytical Data

NumaView™ software comes standard with several troubleshooting features. One-touch, real-time graphing allows the user to display a real-time graph of the instrument concentration or any other selectable diagnostic variable from the dashboard screen. This feature allows the operator to troubleshoot an issue, internal or external, to the CO instrument efficiently. See Figure 3 for an example of a T300 sample flow real-time graph. A similar feature is available for zero and span gas calibrations. The user can monitor the concentration and stability simultaneously, ensuring the proper time to zero and span the instrument, improving and accelerating the procedure. The internal data acquisition system or iDAS function can be set to record conditionally when a user-defined event has occurred. Custom alerts, which can be applied to any measurement or test variable, can be set up to alert the user of any event within the analyzer. For example, the RCEL (reference cell pressure) variable can be monitored to alert the user of required maintenance including correct timing for a pump rebuild.

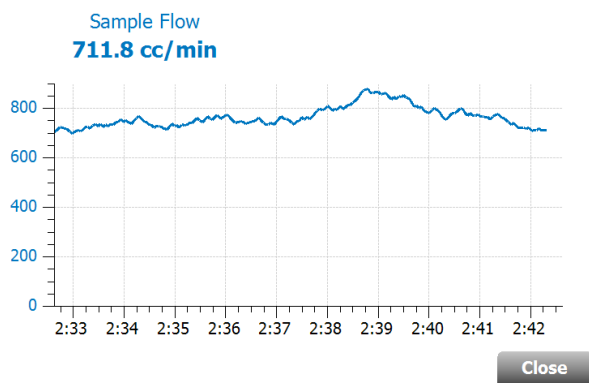


Figure 3: Real Time Graphing of T300 Sample Flow Rate

Health Status Report

TAPI's exclusive new 'Health Status Report' feature in the T Series allows the user to download all 'health' related variables from the instrument in seconds, which can be stored and analyzed for later use. Taking periodic readings of the instrument diagnostic functions or 'health' variables is mandatory for most instrument QA/QC programs and this feature removes the hassle of recording this data manually. The report can also be forwarded to TAPI's technical support group to expedite the initial evaluation of an instrument when a question or issue arises.

Optional CO₂/O₂ Sensors

In many cases, CO₂ and/or O₂ measurements are required by a CEMS. To save cost and rack space, the T300 and T300M have options for an O₂ or CO₂ sensor that comes installed inside the instrument. The range is 0-20% for the CO₂ sensor and 0-100% for the O₂ sensor.

Instrument Expertise

TAPI has a reputation for delivering 'world-class' technical support that is included FREE of charge for the lifetime of the instrument. Contact them anytime during normal business hours by phone or email without having to pay additional fees for a quick response. TAPI's expert technical engineers can assist you with anything from basic troubleshooting to service notes that will enhance your experience and keep your instrument operating and providing data. They also offer factory training and customized on-site training that can be tailored to user experience level. Visit TAPI's website at www.teledyne-api.com for more information.

The TAPI T Series CO analyzers are designed to meet all your CEMS gas instrument needs by supplying quality reliable data when you need it. To discover all the benefits of the T Series CEMS instruments, please contact Teledyne API sales at: api-sales@teledyne.com.