



# TECHNICAL NOTE

## CMS5000 Integration

### INTRODUCTION

The CMS5000 has several integration methods. It is important to differentiate between the integration required for control of the instrument and the integration required to collect data from the CMS5000. System control of the CMS5000 is accomplished through either the Ethernet Port or the 19 pin I/O Fischer connector. Data collection is only accomplished through the Ethernet Port, which includes a wireless option.

It is ultimately the user's responsibility to define the integration methods. INFICON will guide users through standard integration support and will work with users to recommend preferred integrators if extensive integration support is necessary.

### ETHERNET

When using the Ethernet Port for integration, the following options can be used for data retrieval:

- TCP/IP Connection (Static IP Address)
- Network Drive (Map-able)
- File Transfer Protocol (FTP) server

The CMS5000 can be directly controlled through TCP/IP communications using the wired Ethernet connection. This option allows the user to directly connect the CMS5000 to the PC in order to manually operate the CMS5000 from a nearby location. Additionally, the CMS5000 has a wireless connection. The wireless connection is ad hoc; only one PC can be connected to the CMS5000 at a time. These are the current communication options that are available with the HAPSITE product line.

### CMS5000 Network Drive

Using the CMS5000 Network Drive enables the CMS5000 to act as a file server. All connected users can access data files directly. No system control options are available so this is only useful for collecting run data after a method has been completed.

### File Transfer Protocol (FTP)

File Transfer Protocol (FTP) will automatically upload the data files from the CMS5000 to another remote computer through a TCP/IP network. A key item to consider here is access security and firewalls that may prevent automatic uploading of data. This option is only to upload data and no control functions exist through the FTP protocol.

### Application Programming Interface (API)

When using the Ethernet Port for integration, the Application Programming Interface (API) can be used for data retrieval and system automation. The CMSAPI is a simple C/C++ programming interface that provides software programmers access to the CMS5000's basic control and status functions from within their applications over TCP/IP. The CMSAPI is not a stand-alone application; it is used by programmers to build their own applications. Integration with this option allows for starting of methods, viewing system status, and data retrieval. As with any API, the software is in constant development, so contact the factory for the latest updates. When using the API, a recommended integrator will likely be involved.

### 19 PIN I/O FISCHER CONNECTOR

When using the 19 Pin I/O Fischer connector, a command, such as starting a method, will be initiated when the assigned pin is grounded. The 19 pin I/O Fischer connector has four inputs to start methods that

are identified in the software configuration. The six output relay connections are currently undefined at this time, but offer the capability to send status and alarm conditions to the local system controller.

**INTEGRATION CONSIDERATIONS**

This section defines the terms involved in a Supervisory Control and Data Acquisition (SCADA) system, which is often part of the existing infrastructure at a facility. The integrator should be able to connect the CMS5000 to the SCADA system using the Ethernet or the I/O connector.

**Supervisory Control and Data Acquisition (SCADA)**

When integrating the CMS5000 into an industrial setting, such as a water treatment plant, the CMS5000 may be monitored and controlled by Supervisory Control and Data Acquisition (SCADA) system. Using a SCADA system, the data will be relayed from the CMS5000 to a programmable logic controller (defined below) to a SCADA center or master station, which is a host of computers or servers which oversees the automation of the on-site equipment.

**Programmable Logic Controller (PLC)**

A programmable logic controller (PLC) or programmable controller is the part of the SCADA system that is used to automate and control processes in an industrial plant. The PLC is designed for multiple inputs and output arrangements. A PLC is used instead of a general-use computer, because it can operate in an extended range of temperatures, has increased immunity to electrical noise, and increased resistance to vibration and impact.

For example, if the CMS5000 was integrated via the Ethernet to alarm because the VOC concentration was over the defined limit, this data would be relayed to a PLC. The PLC would then relay this information onto the SCADA center, where an operator would look at the data. Also, the SCADA system may be programmed to start or halt a subsequent water treatment action, based upon the alarm. See the diagram below. (Please note that the I/O connector does not have an alarm function at this time.)

