COMPUTER REQUIREMENTS
FOR FMS SOFTWARE

Introduction

It is critical that a GMP environmental monitoring system operates in a reliable and stable manner. Uninterrupted data collection must be the number one priority in any monitoring system design philosophy. This means a stable software package (FMS Software) and quality computer components are a requirement.

FMS Software is broken down into three primary elements—monitor, clients, and database. All three can reside on the same computer or on different computers. Regardless of the topology chosen, good, quality computers are important to maintain the performance vital in life science and electronic manufacturing environments. For additional information on different system application recommendations, please see TSI Technical Note TCC-170—Facility Monitoring System Design Recommendations.

This technical note provides minimum computer specifications for FMS Software.

Minimum Computer Requirements

Minimum computer requirements for computers operating any combination of FMS components, including **monitor** or **database** (i.e., monitor, database, and client reside on one computer), are outlined below.

- 8 GB of RAM memory (additional 2 GB of RAM for each additional monitor added)

- *Minimum single* CPU dual core processor (physical or virtual) running at a minimum clock speed of 2.1 GHz or better [*recommended* CPU quad core processor (physical or virtual) running at a minimum clock speed of 2.5 GHz or better]

- 500 GB hard drive

  o For data integrity, consideration should be given to installing dual hard drives that are mirrored (RAID 1) on the computer where the database resides

- Operating systems (64-bit): Windows Server® 2008 R2, Windows Server® 2012 R2, Windows® Server 2016 R2, Windows® Server 2019, Windows® 10 (professional or above), Windows® 11 (professional or above), Windows® 10 IoT

- Minimum screen resolution should be at least 1152 x 864 to view all client dialogs

- Common programs such as the SQL database, monitor and Buddy monitor must be available to the monitoring LAN and the end user LAN. Since the computer with these programs installed on it requires a connection to two networks simultaneously, the computer needs to have either two network interface cards or a dual network interface card.

Minimum computer requirements for computers operating a **client only**:

- 8 GB of RAM memory

- CPU dual core processor running at a minimum clock speed of 1 GHz or better

- 80 GB hard drive

- Operating Systems (64-bit): Windows Server® 2008 R2, Windows Server® 2012 R2, Windows® Server 2016 R2, Windows® 10 (professional or above), Windows® 11 (professional or above), Windows® 10 IoT

- Minimum screen resolution should be at least 1152 x 864 to view all client dialogs

Network Switch Requirements

TSI strongly recommends that PoE network switches used to drive power to AeroTrak®+ Remote Particle Counters (7000 Series) and AeroTrak+ Remote Particle Counters with Pump (6000 series) are selected carefully due to the following requirements.

- AeroTrak+ Remote Particle Counters (7000 Series) comply with IEEE 802.3af (PoE) which can drive power up to 15.4W per port with a maximum of 12.9 W at the instrument due to cable length.

- AeroTrak+ Remote Particle Counters with Pump (6000 Series) comply with IEEE 802.3at (PoE+) which can drive power up to 30W per port with a maximum of 25.5 W at the instrument due to cable length.

- The power supply of the Ethernet switches must be correctly sized in regards of the number of instruments to be powered.

Conclusion

TSI strongly recommends that stable computers are sourced, preferably workstation or server type computers. These computers should be built with quality components that are known to work with each other and optimized for heavy hard disk drive I/O. The computer vendor will have tested the computer prior to delivery and must provide supporting documented test evidence.

The computers sole purpose should be FMS. Buying a computer from a vendor will often come with preloaded programs. TSI recommends that the computer have a clean installation of the operating system (no preloaded programs on the computer). Keeping additional programs to a minimum is important as alternate programs can degrade a computer's performance and potentially adversely impact FMS. A quality, dedicated computer is the first step toward ensuring a good, robust FMS System.

Revision History

Revision	Released	Description
F	05 June 2024	Adding Operating System supported for: • Windows 11 Pro & Enterprise Remove Windows 7® from the supported Operating Systems.