



THERMO SCIENTIFIC M-PULSE^e MULTI-PATH ULTRASONIC FLOW MEASUREMENT SYSTEM TRAINING COURSE OUTLINE

Session	Module 1	Module 2	Module 3	Lunch
Time	8:00 – 8:15 am	8:15 – 9:15 am	9:15 - 11:30 am	11:30 - 12:30 pm
Day 1	Course Basics Welcome Introductions Get Acquainted Course Objectives Detailed Course Agenda	Product Information Product Overview Specifications Functional Capabilities Theory of Operation: Flow Measurement Ultrasonic Path Flow Computer Enclosure Measurements Inputs Components User Interface Keypad Displays Facility Tour	Hardware Meter Basics: Meter Body Junction Box Boards: Connector Board Ultrasonic I/O Bd CPU Board Transducer Barrier Bd AC Power Input Protection Bd LCD ESD Protection Bd Keypad ESD Protection Bd Transducers Transducer Mounting Transducer Placement AC Line Filter Serial Communications Flow Conditioning Spare Parts Review Test Your Knowledge	Approximate Time

Session	Module 4 (Hands-On)	Module 5 (Hands-On)	Module 6 (Hands-On)	Module 7 (Hands-On)
Time	12:30 - 1:30 pm	1:30 - 3:00 pm	3:00 - 4:00 pm	4:00 – 5:00 pm
Day 1	<p>Hardware Installation</p> <p>Installation Basics: Mounting the <u>Thermo Scientific M-PULSe Multi-Path Ultrasonic Flow Measurement System</u> Mounting Guidelines Meter Body Alignment</p> <p>Unidirectional Flow Minimum Recommended Pipe Lengths</p> <p>Bidirectional Flow Minimum Recommended Pipe Lengths</p> <p>Flow Computer Pole Mount Wall & Rack Mount</p> <p>Wiring Instructions: Cable Connections at the Meter Cable Connections at the Flow Computer</p> <p>Power Connections: AC Power</p> <p>Transducer Installation: Transducer Removal Transducer Replacement Transducer Wiring Instructions</p> <p>Wiring Diagram Review</p>	<p>Software (Programming)</p> <p>User Interface Display Display List Display Annunciator</p> <p>Menu Screens Edit Screens Date & Time</p> <p>Quick Start Communications User Access System Clock</p>	<p>Maintenance</p> <p>Maintenance Schedule Flow Computer Enclosure CPU Board Assembly I/O Calibrations</p> <p>Complete Service</p> <p>Upgrades: AutoCONFIG Firmware</p> <p>Test Your Knowledge</p>	<p>Troubleshooting</p> <p>Alarms: Interpreting Alarms Ultrasonic Module Alarms System Error</p> <p>User Access Communication I/O Problems Ultrasonic Signals</p> <p>Call Thermo Scientific</p>