The FLIR TrafiSense AI is an advanced, AI-powered thermal traffic sensor designed for reliable detection and classification of road users in complex urban environments. Leveraging edge-based AI technology and high-resolution thermal imaging, it delivers 24/7 detection capabilities, ensuring accurate performance in all lighting and weather conditions—from complete darkness to intense sunlight. The system provides critical data such as position, speed, and heading of vehicles, pedestrians, and bicyclists, supporting enhanced intersection control, situational awareness, and safety monitoring. With features like virtual loop configuration, dry contact integration, and API-based connectivity, TrafiSense AI enables real-time adaptive traffic management, queue length monitoring, and detailed traffic analytics. It also supports optional modules for Wi-Fi-based travel time monitoring, predictive traffic systems, and comprehensive reporting tools, making it a versatile solution for smarter city planning and improved traffic efficiency.