This paper presents a distributed, compressive multiple human tracking system based on binary pyroelectric infrared (PIR) sensor networks. The goal of our research is to develop an energy-efficient, low-data-throughput infrared surveillance system for various indoor applications. The compressive measurements are achieved by using techniques of (1) multiplex binary sensing and (2) space encoding. The target positions are reconstructed from the binary compressive measurements through (1) an expectation-maximization (EM) framework for space decoding, (2) representing the prior knowledge of target / sampling geometries with statistical parameters, and (3) hierarchical space encoding / decoding for multiple targets tracking. A wireless networked PIR sensor system is designed to demonstrate the improved sensing efficiency and system scalability of the proposed distributed multiple human tracking system. The proposed compressive tracking framework can be extended to various binary sensing modalities.