The description of the PESCA Instrument control system is presented. The PESCA Instrument has been designed and built with the purpose of studying the Solar Energetic Particles and the Anomalous Cosmic Rays from hydrogen to iron in the energy range 1.5-50 MeV/uma and will be part of the Russian PHOTON satellite payload. The instrument comprises two different blocks: the PESCA Instrument Amplification and Shaping Electronics (PIASE), for the amplification and analog to digital conversion, and the PESCA Instrument Control and Acquisition System (PICAS), for the control of the whole instrument. A system has been mounted to control and test PESCA instrument. It allows the complete control over the instrument, verification and validation of PESCA instrument (unit tests, integration tests and system tests) and PESCA calibration, from a single PC under Linux operating system.