The goal of this thesis is to implement firmware for the Optical Measurement and Calibration Device, which was designed and constructed in CESNET. The purpose of the device is to simplify the calibration of various fibre-optical networking devices, used in CESNET infrastructure. The thesis includes an overview of the internal structure and communication interfaces within the device, which is than used for designing and implementing the firmware. The results are demonstrated on realistic hardware, by running the measurement on an existing optical component. The produced firmware will serve as a basis for the development of more advanced devices in CESNET.