

# **IMPLEMENTATION OF A CONTROLLER UNIT BASED ON THE ISO 11783 STANDARD FOR AUTOMATIC MEASUREMENT OF THE ELECTRICAL CONDUCTIVITY OF THE SOIL**

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## **ABSTRACT**

The standard ISO11783 represent a rapidly growing and increasingly important segment of the agricultural industry. Associated to this, the implementation of the ISO 11783 for different agricultural application is being studied. This study aimed an implementation ISO11783 based communication system for an agricultural implement for measurement the electrical conductivity of the soil. A prototype system was developed for this purpose using the four-point method, consisting of an electrical current injection module and two electronic voltmeters. The prototype was integrated to an ISO1783 Electronic Control Unit to provide the communication among the implement (Implement ECU), a Virtual Terminal (VT) and a Task Controller (TC). The VT provides the user interface on the tractor and therefore plays a significant role in the overall standard. Masks are defined according the standard for the output and input of data, and these can be displayed on the VT. The Implement ECU provides all information and control instructions needed for the input and output of data over the VT using the data combined into an Object Pool (binary instruction). The TC is used as control unit responsible for the sending, receiving and logging of process data. The TC controls the implement and some control data are fed into the TC, which are then transferred to Implement ECU for executing the measurements. A special parameter group is defined for controlling implements and exchanging data. The automatic measurements are made and the data are logged with GPS coordinates. A set test was performed for measuring the real time operating system characteristics

related with communication network. Some experiments were performed in order to evaluate the automatic measurements based on the communication recording capacity, jitters and delays. The results show the feasibility of the proposed approach that is going to embed to operate in the field.

**Keywords:** ISO11783, ECU, automatic measurement, electrical conductivity

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