## *ABSTRACT*

*Programmable Logic Control (PLC) is one of the control system that is easy to program and commonly used by the industry around the world. The use of PLC in industry environment usually requires a lot of sensors used as inputs and actuator used as outputs. Those inputs and outputs need various voltage supply. It could be analog or digital voltage. Therefore, those inputs and outputs would need an extended I/O module to add the lack of amount of inputs and outputs from the main PLC.*

*The Extended Analog I/O module is a module that is used to extend the capacity and amount of analog inputs/outputs on the main PLC. This module consists of ADC (Analog to Digital Converter), Microcontroller, and DAC (Digital to Analog Converter). The design of this Extended I/O module is based on MCU ARM STM32.*

*The Extended Analog I/O Module that is designed on this final project has the specifications of 4 analog inputs with the voltage level of 0-5V, and 2 analog outputs with the voltage level of 0-5V. This Extended Analog I/O module uses a power supply which is taken from the main PLC with the voltage level of 3,3V and 5V. The error accuration value of ADC internal microcontroller STM32F103RET6 is 6,82927 %. The result of the implementation is not working properly.*



***Keyword : Programmable Logic Controller (PLC), Extendedmodul I/O analog, STM32***