TITLE:

METHOD FOR AUTOMATIC TRANSLATION OF LADDER LOGIC TO A SMT-BASED MODEL CHECKER IN A NETWORK

ABSTRACT

The present invention relates to a method for automatic translation of ladder logic to a SMT-based model checker in a network comprising defining the topology of the network as an enriched network topology based on packets exchanged in the network, extracting a program from the packets relating to a PLC in the network and identifying inputs, outputs, variables and a ladder diagram of the PLC, translating the inputs, outputs, variables and ladder diagram into a predefined formal model, being a circuit-like SMT-based model checker. The translating comprises translating the set of data types of the program according to a predefined model set of data types, translating the inputs, outputs, and variables, translating comparators and arithmetic operators of the ladder diagram into a plurality of predefined model functions of the circuit-like SMT-based model checker, translating contacts and coils of the ladder diagram according to predefined model recursive procedures.

FIG. 1