Beckhoff PLC GUS Standard Interface

The Beckhoff PLC GUS Standard Interface has been designed as a bi-directional interface between the Beckhoff PLC and the supervisory program. The interface consists of two parts:
- One part runs on the Beckhoff PLC system and incorporates the state machine, according to the GUS Standard Interface definition. This part also maps the required parameters and I/O onto a data structure for the transmission of the actual data values to the supervisory program and/or to set the value of a given mapped I/O or parameter.
- The second part runs on the Windows® PC, where the supervisory program is installed. It uses the functionality of the TwinCAT ADS to exchange the GUS Standard Interface commands and the data.
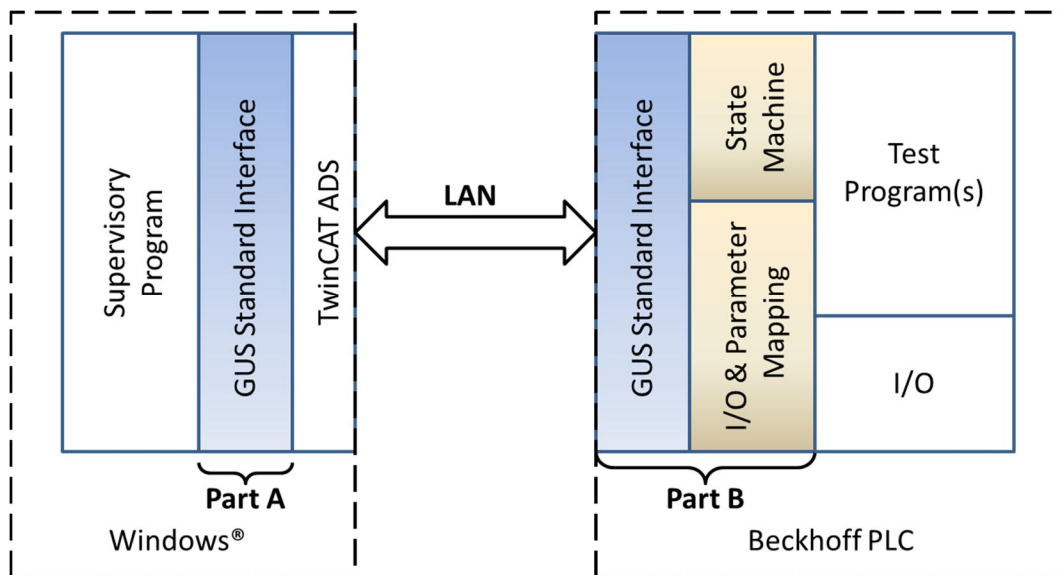
The supervisory program controls the execution of the test programs in the PLC by means of the GUS Standard Interface commands. Several test programs can be stored in the PLC. When the supervisory program sends the command "GUS_PrepareTest" with the name of the test program as a parameter, the PLC will execute this test program in the "run" state. The values of all I/O's and parameters that are mapped in the interface are available to the supervisory program. The names of these I/O's or parameters can be displayed and can be used in the script of the supervisory program.

By means of the command "GUS_SetParameter" a mapped output or parameter can be given a certain value that might be required to control a test. Such output can be analog or digital (relay or opto-coupler output) or any value (Boolean, integer or real) for a mapped parameter or e.g. a setpoint of a PID controller.

There is no need to map all I/O's or variables from the PLC test programs to the GUS Standard Interface. Only I/O's and/or the parameters, required to control a test, need to be mapped.

Following I/O's and parameters for the Beckhoff PLC are foreseen in the interface:

- 8x Digital Inputs
- 8x Digital Outputs
- 2x PID controllers with:
    - Actual value (Analog Input)
    - Setpoint
    - Control output (Analog Output)
- 4x Integers
- 4x Variables (reals)
- 4x Booleans

Each I/O or parameter can be defined as read only, can be assigned an engineering unit or can be hidden from the GUS Standard Interface. Further definitions like the minimum and maximum value, number of decimals, etc., follow the XML scheme GusDeviceInfo.xsd as referenced on www.gus-interface.com .

Certain parameters are "read only" by definition like the inputs, actual values of the PID's, etc. Even so, digital I/O's or booleans have no engineering unit per definition. The I/O and parameter map is included in part B of the implementation of the GUS Standard Interface and is user defined.