Opracowanie: W. Kubicki

Exercise 9-4

Remote control of the custom application

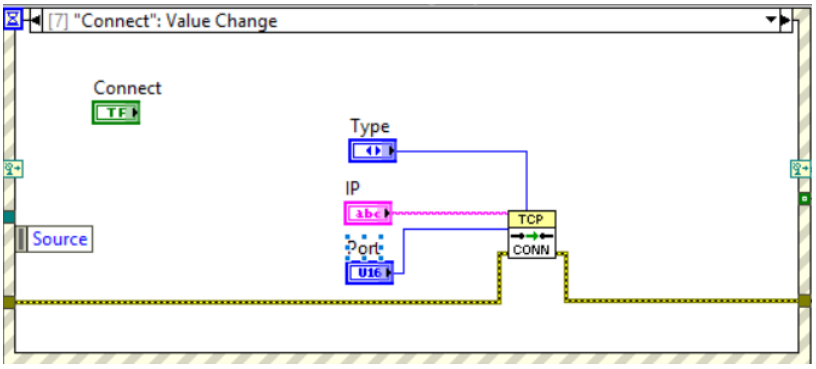
9-4.1 Update events generated by TCP controls and indicators:

a) Send queue message with connection **Type** (server/client) and socket (**IP** and **Port**) to TCP module when user clicks **Connect** boolean control on TCP tab on UI. Add **Connect.vi** API from TCP module library and connect controls according to Fig. 1a. Check code of this API.

b) Send disconnection queue message to TCP module when user clicks **Disconnect** Boolean button (Fig. 1b). Similarly as before, add **Disconnect.vi** API and check the code it executes.

c) Analyse UI event in EHL when user clicks **Remote control** boolean button. What happens in ***Remote control*** case of PLC? Next, skip to ***Read DAQ Data*** case of PLC and update the code which controls Barrel position of the Model depending on Remote control status (Fig. 2).

a)



b)

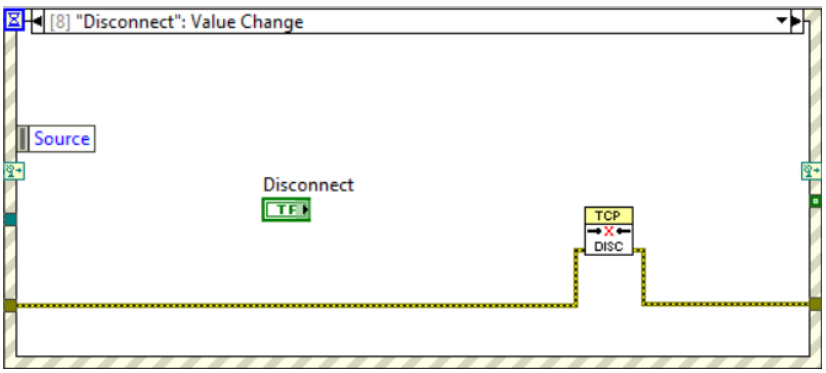


Fig. 1. UI EHL with the code of value change event of:
a) Connect boolean control, b) Disconnect Boolean control

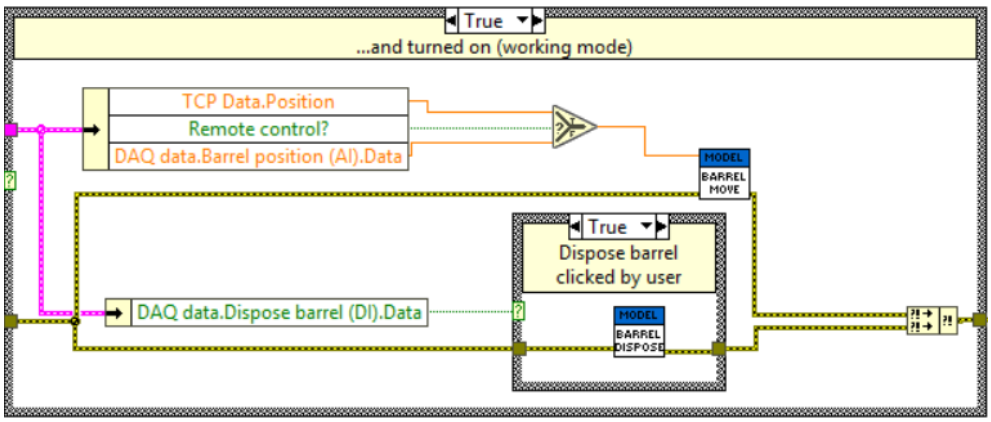


Fig. 2. Part of Read DAQ Data case of PLC

9-4.2 Handle timeout and disconnect errors for data reading in TCP module:

a) Open ***Read case*** of TCP module and update ***Error case*** for timeout error (code 56) according to Fig. 3.

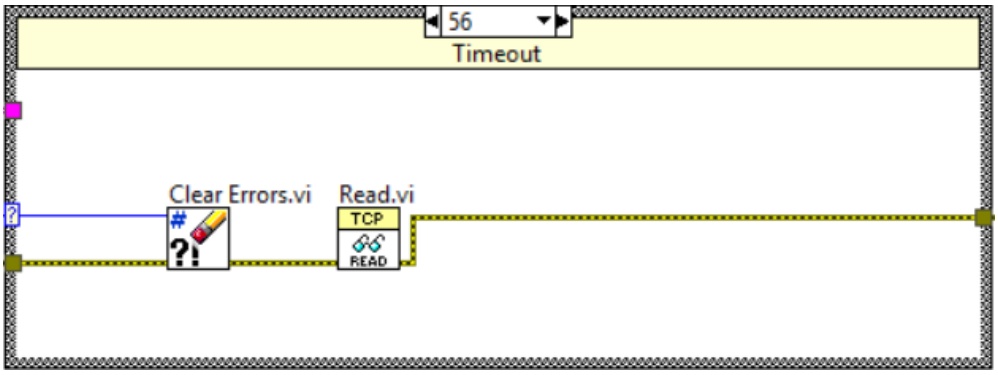


Fig. 3. Part of Error case in the Read case of TCP

b) Update ***Error case*** for disconnection error (code 66) according to Fig 4.

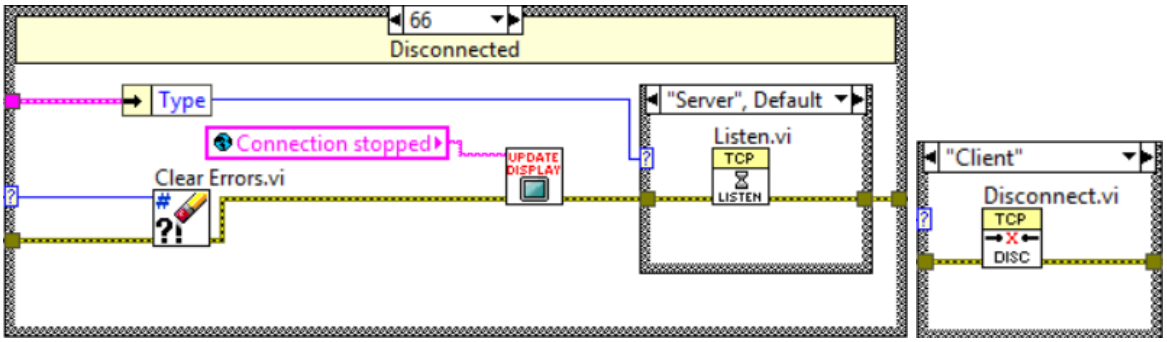


Fig. 4. Part of Error case in the Read case of TCP

9-4.3 Parse commands:

Update code in ***Parse case*** of TCP. Use **regular expressions** and **Match Pattern** functions (Fig. 5).

a) Check syntax of received command:

- exclamation mark
- instruction **!instruction(parameter);**
- parentheses (with optional parameter)
- semicolon

b) For proper command format, isolate **instruction** from the command

c) From the remaining substring of command, isolate **parameter**

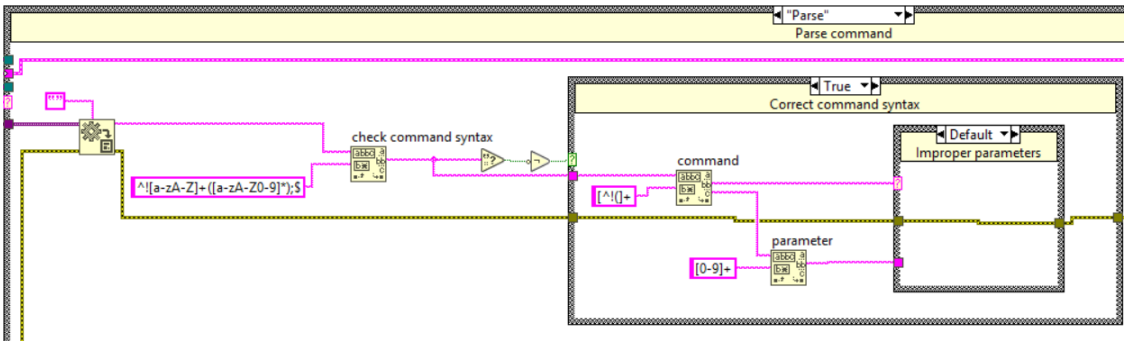


Fig. 5. Part of Parse case in TCP

9-4.4 Apply actions to the Model:

Update instruction case of the Parse case to apply proper actions to the Model or PLC, according to Table 1. Exemplary code is presented in Fig. 6.

Table 1. Commands and related actions performed by the PLC

Instruction	Parameter	Action
start		start PLC proces
pos	<*number*>	move barrel to position *number*
disp		dispose barrel
flow	<*number*>	change flow speed to *number*
stop		stop PLC proces
exit		quit PLC app

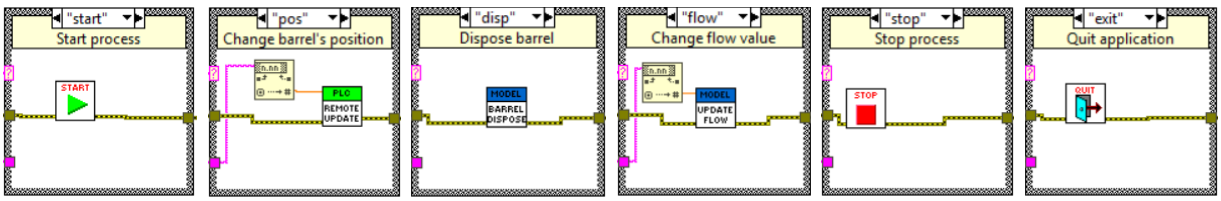


Fig. 6. Exemplary code of instruction case in Parse case of TCP

Run the application in server mode: set proper port, turn on remote control and then connect from the neighbour computer using telnet terminal. Send commands and analyse reactions. Finally, run another instance of PLC custom application on the another computer and verify remote control. Disconnect, change server to client and vice versa and repeat the tests.