

The module of subsystem “Data acquisition”<DCON>

<i>Module:</i>	DCON
<i>Name:</i>	DCON client
<i>Type:</i>	DAQ
<i>Source:</i>	daq_DCON.so
<i>Version:</i>	0.5.0
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<i>Description:</i>	Provides an implementation of DCON-client protocol. Supports I-7000 DCON protocol.
<i>License:</i>	GPL

Contents table

The module of subsystem “Data acquisition”<DCON>	1
Introduction	1
1. General description of the protocol DCON	1
2. Module	2
2.1. Data controller	2
2.2. Parameters	3
3. Compatibility table of input/output modules of different manufacturers	5

Introduction

DCON - the protocol of controllers' family ADAM(<http://www.advantech.com/>, <http://ipc2u.ru/>), ICP DAS(<http://www.icpdas.com/>, <http://ipc2u.ru/>), RealLab(<http://www.RLDA.ru/>) and the like ones. It uses serial lines RS-485 to transfer data.

This module provides the ability of input/output of information from various devices on the protocol DCON. Also, the module implements the functions of the horizontal reservation, namely, working in conjunction with the remote station of the same level.

1. General description of the protocol DCON

DCON protocol requires one lead(requesting) device in the line (master), which can send commands to one or more driven devices (slave), referring to them by a unique address in the line. Syntax of the commands of the protocol allows the address 255 devices at one line of standard RS-485.

Initiative to exchange always comes from the leading device. Slave devices listen the line. Master request (package, the sequence of bytes) in the line and turns into a listening the line. Slave device responds to the request, which came to him.

2. Module

This module provides the ability of clear interrogation and record of input-output ports of devices that are compatible with ICP DAS I-7000. On the settings tabs of DCON module the necessary settings are inserted, and on the attributes tabs the corresponding to the given parameters variables of input-output appear.

2.1. Data controller

For addition of the DCON data source the controller is created and configured in the system OpenSCADA. Example of the configuration tab of the controller of the type is depicted in Figure 1.

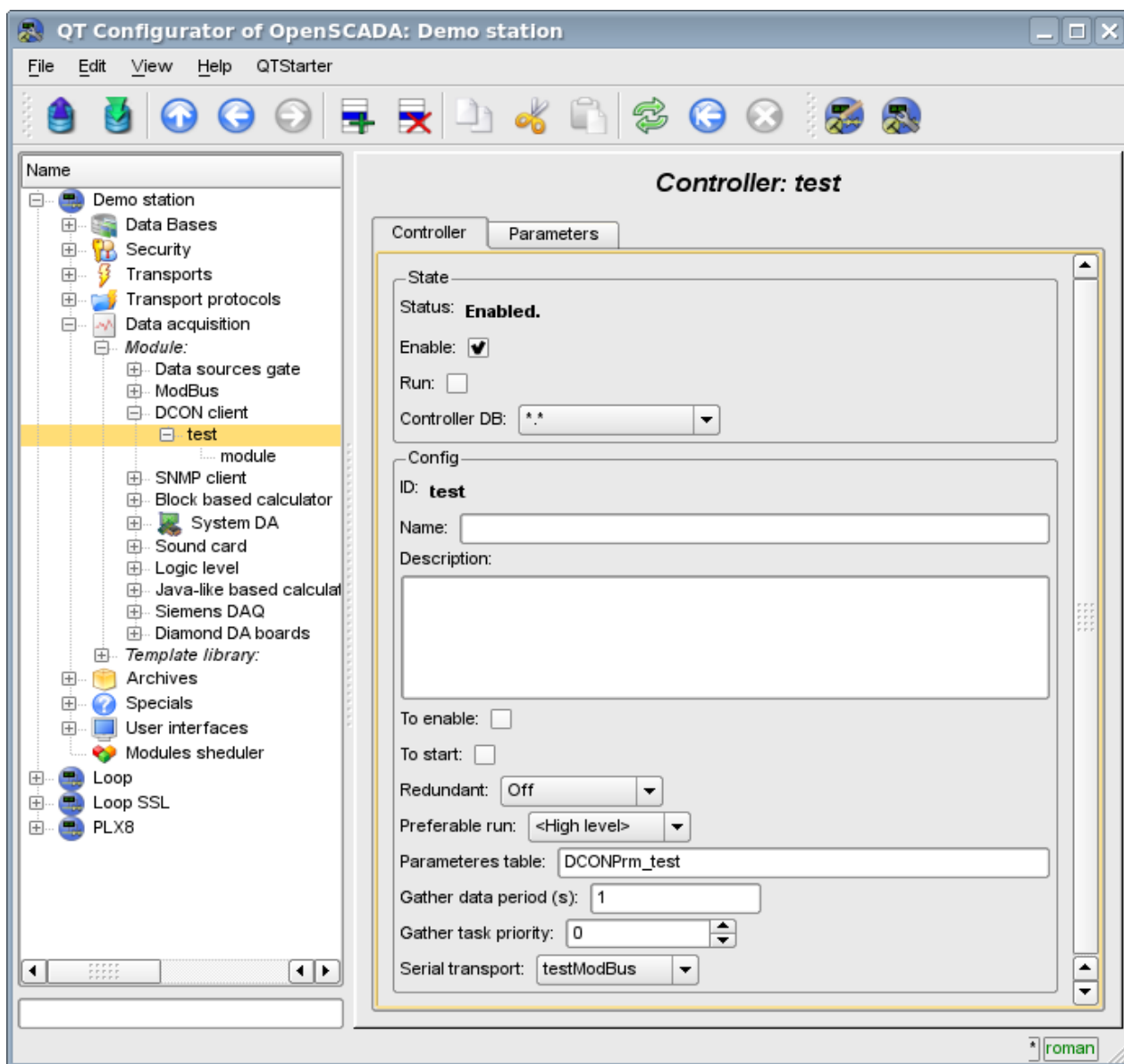


Fig.1. Configuration tab of the controller.

From this tab you can set:

- The state of the controller, as follows: Status, «Enable», «Run» and the name of the database containing the configuration.
- Id, name and description of the controller.
- The state, in which the controller must be translated at boot: «To enable» and «To start».
- Horizontal mode of redundancy and performance preference of the controller.
- Name of table to store the configuration of the parameters of the controller.
- The period and the priority of the task of data acquisition.
- Name of the outgoing transport of serial interface configured in the module of transport "Serial".

2.2. Parameters

Module *DCON* provides only one type of parameters - "Standard". On the parameters tab you can set:

- The state of the parameter "Enable": requires disabling-enabling for the changes on this tab take effect.
- Id, name and description of the parameter.
- The state, in which the parameter must be translated at boot: "To enable".
- Address of the device in the RS-485 network. In decimal from 0 to 255.
- Flag of the checksum control. It must match to the specified in the I/O device.
- The host signal. It is provided for the control of the host by the devices of the network. It must match the watchdog settings of the devices.
- The method of the analog inputs (AI) reading or the lack thereof.
- The range of the analog inputs (AI). It participates in the work only for the given method of the analog inputs reading and should match the device settings.
- The method of analog outputs (AO) writing or the lack thereof.
- The range of the analog outputs (AO). It participates in the work only for the given method of analog outputs writing and should match the device settings.
- The method of the digital inputs (DI) reading or the lack thereof.
- The method of digital outputs (DO) writing or the lack thereof.
- The method of the counter inputs (CI) reading or the lack thereof.

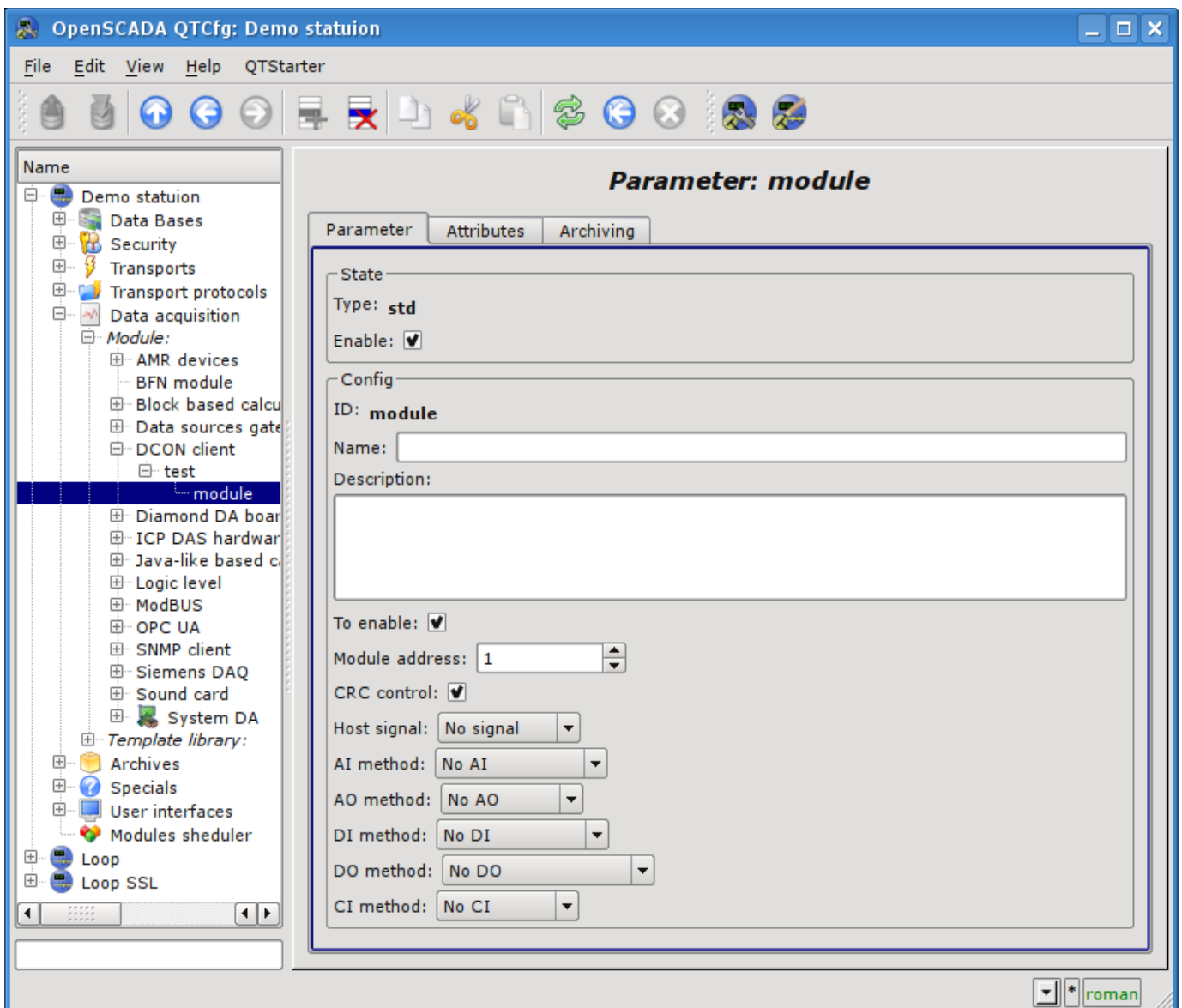


Fig.2. Configuration tab of the parameter.

In accordance with the settings of the parameter and the interrogation and creation of the attributes is carried out(Fig. 3).

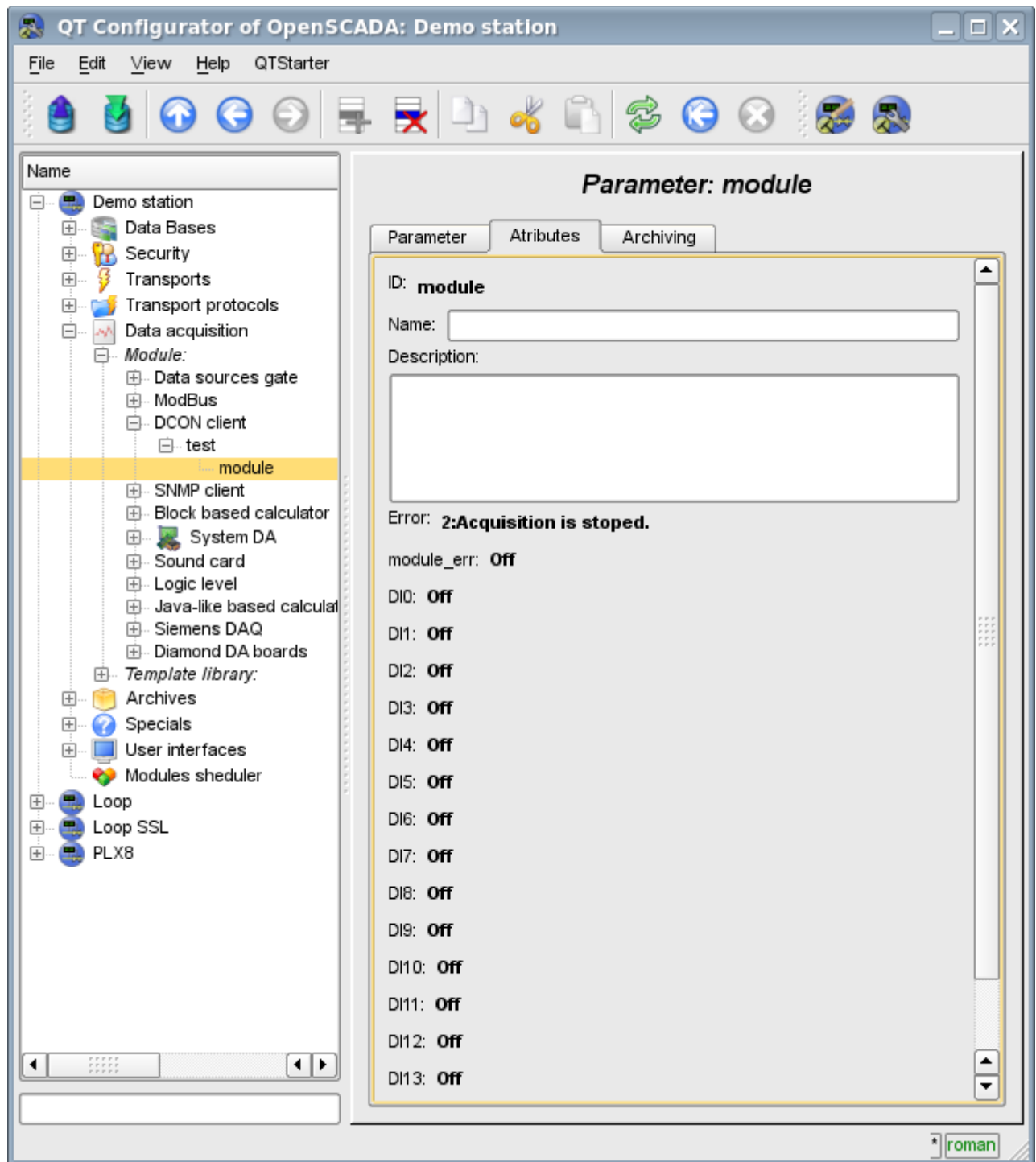


Fig.3. Tab of the attributes of the parameter.

3. Compatibility table of input/output modules of different manufacturers

№	IO (DCON Method)	NILAP (http://www.rlda.ru/)	ICPDAS (http://www.icpdas.com/)	Advantech (http://www.advantech.com/)
1	1AI(#AA)	NL-1RTD	I-7013	ADAM-4011, 4013, 4012, 4016
2	1AI(#AA) - 3DO(^AADOVVV)	NL-1RTD		
3	4AI(#AA)	NL-4RTD		
4	4AI(#AA) - 3DO(^AADOVVV)	NL-4RTD, CL-4RTD		
5	1AI(#AA) - 1DI(@AADI) - 2DO(@AADO)		I-7011, I-7012, I-7014	
6	1AI(#AA) - 1DI(@AADI) - 4DO(@AADO)		I-7016P	
7	2AI(#AA) - 1DI(@AADI) - 4DO(@AADO)		I-7016	
8	8AI(#AA) - 6DO(@AADODD)		I-7005	
9	3AI(#AA)		I-7033	
10	6AI(#AA)		I-7015	ADAM-4015
11	8AI(#AA)	NL-8AI, NL-8TI	I-7017, I-7018, I-7019R	ADAM-4017, ADAM-4018, ADAM-4019
12	8AI(#AA) - 2DO(^AADOVVV)	CL-8TI		
13	8AI(#AA) - 3DO(^AADOVVV)	NL-8AI, NL-8TI, CL- 8AI		
14	10AI(#AA)		I-7017Z, I-7018Z	
15	16AI(#AA^AA)	NL-8AI		
16	16AI(#AA^AA) - 3DO(^AADOVVV)	NL-8AI, RL-16AIF		
17	20AI(#AA)		I-7017Z	
18	1AO(#AA)	NL-1AO	I-7021	ADAM-4021
19	2AO(#AA)	NL-2AO, CL-2AO	I-7022	ADAM-4022
20	4AO(#AA)	NL-4AO, CL-4AO	I-7024	ADAM-4024
21	14DI(@AA)		I-7041	
22	16DI(@AA)	NL-16DI, NL-16HV	I-7051, I-7053	ADAM-4051, ADAM-4053
23	16DI(@AA) - 2DO(^AADOVVV)	NL-16DI, NL-16HV, CL- 16DI		
24	8DI(@AA,FF00)	NL-8DI	I-7052, I-7058, I-7059	ADAM-4052
25	8DI(@AA) - 2DO(^AADOVVV)	NL-8DI, CL-8DI		
26	2DO(@AA,0300)	NL-2R		
27	4DO(@AA,0F00)	NL-4R, NL-4DO, CL- 4DO		ADAM-4060
28	3DI(@AA) - 4DO(@AA,0F00)	NL-4DO		
29	8DO(@AA,FF00)	NL-8R, NL-8DO, RL- 8RC, CL-8DO, CL-8RC		ADAM-4068, ADAM-4069

№	IO (DCON Method)	NILAP (http://www.rlda.ru/)	ICPDAS (http://www.icpdas.com/)	Advantech (http://www.advantech.com/)
30	3DI(@AA) - 8DO(@AA,FF00)	NL-8DO		
31	13DO(@AA,1FFF)		I-7042	
32	16DO(@AA,FFFF)	NL-16DO, CL-16DO	I-7043, I-7045	
33	3DI(@AA) - 16DO(@AA,FFFF)	NL-16DO		
34	4DI(@AA) - 8DO(@AA,FF)		I-7044	
35	7DI(@AA) - 8DO(@AA,FF)		I-7050	ADAM-4050
36	8DI(@AA) - 8DO(@AA,FF)		I-7055	ADAM-4055
37	4DI(@AA) - 4DO(@AA,F)		I-7060	
38	12DO(@AA,0FFF)		I-7061	
39	8DI(@AA) - 3DO(@AA,7)		i-7063	
40	4DI(@AA) - 5DO(@AA,1F)		I-7065	
41	7DO(@AA,7F)		I-7066, I-7067	
42	2CI(#AA)	NL-2C		ADAM-4080
43	2CI(#AA) - 2DO(@AADO0D)		I-7080	
44	2CI(#AA) - 4DO(@(^)AADO0D)	NL-2C		
45	3CI(#AA)		I-7083	