Fisher-Rosemount RS3 RNI

Fisher-Rosemount RS3 RNI communication protocol

Supported device types and versions

The protocol implementation supports reading and writing data into the Fisher-Rosemount RS3 system by means of RNI Ethernet network driver (Remote Network Interface) -a TCP/IP network communication is used.

Communication uses the following methods for data acquisition from RNI:

- **DDS:** Dynamic Data Server – acquisition of process tag values on-change.
- **RW Services:** Read/Write Services – used for writing values into RS3.

The methods are described in the **Fisher-Rosemount Systems RNI Programmer's Manual** documentation, Software Version 2.3, April 1997.

Communication line configuration

- communication line category: **API**,
- For the other parameters - see the D2000 System configuration.

Communication station configuration

- Communication protocol: **Fisher-Rosemount RNI**.
- Station address consists of the following parameters :
    - **RNI Name** – RNI name allows finding RNI IP address (in the Windows NT OS, the name together with the IP address is stored in the file %SystemRoot%\system32\drivers\etc\hosts)
    - **Name** – user access name (it is configured together with access rights on the boot PC for RNI in the userfile.cfg file – see the RNI configuration manual)
    - **Password** – password to given access menu

You must pay attention when you select the user's access right (D2000 KOM) - if writing to RS3 is required, the user access rights must be CONFIGURE.

I/O tag configuration

Possible types: **Ai, Ao, Ci, Co, Di, Do, TiA**

The address is the name or address of the I/O RS3 tag. For analog I/O tags, the address can be defined in the following forms:

SYSTEM_3_TAG_NAME
SYSTEM_3_ADDRESS
SYSTEM_3_TAG_NAME.COMMAND
SYSTEM_3_ADDRESS.COMMAND

For example:

AI-701 - AI-701 tag output (Q)

=1H-01 - output (Q) of tag =1H-01

AI-701.B - B input of AI-701 tag

=7A-02.@ - all @ flags of tag =7A-02 as a 16-bit unsigned integer

For digital tags, the I/O address can be defined in the following forms:

SYSTEM_3_TAG_NAME.COMMAND\FLAG
SYSTEM_3_ADDRESS.COMMAND\FLAG

Or if COMMAND is @:

SYSTEM_3_TAG_NAME.@FLAG
SYSTEM_3_ADDRESS.@FLAG

For example:

```
AI-702.U\d

=1H-1.U\c

AI-702.@e

=1H-1.@a
```

Note:

1. The RS3 tag name is each valid tag name.
2. RS3 address is in *=NXXNNN* form for I/O blocks and in *=NX-NN* form for control blocks, where N is a number and X is a character.
3. System flags and 'User' flags that are read as analog values are represented by a 16-bit unsigned integer.

The following table contains valid ‘command’ names for RNIDDE. The first column contains the short name of RS3 I/O tag as the letter **T**, the tag name is followed by the character (.) and a ‘command‘.

Item name	D2000 type	I/O	Comment
T or T.Q	AI, AO	I/O	Output Value
T.VS	CI	I	System Flags – all
T.MD	CI, CO	I/O	Block Mode
T.A up to T.O	AI, AO	I/O	Input Values
T.U	CI, CO	I/O	User Flags – all
T.U\a up to T.U\p or T.Ua up to T.Up or T.a up to T.p	DI, DO	I/O	User Flag – individually
T.@	CI	I/O	Discrete Inputs – all
T.@a up to T.@p	DI	I/O	Discrete Input – individually
T.TS	CI	I	T System Flags
T.UMD	CI	I	User Modes
T.SA up to T.SO	CI	I	System Flags A – O
T.UA up to T.UO	CI	I	User Flags A – O
T.ATP	AI	I	Auto Tune Phase
T.AGF	AI	I	Actual Gain Factor
T.CGF	AI	I	Calculated Gain Factor
T.AIT	AI	I	Actual Integral Time
T.CIT	AI	I	Calculated Integral Time
T.ADT	AI	I	Actual Derivate Time
T.CDT	AI	I	Calculated Derivate Time

When you configure an I/O tag, you must select one of four radio buttons (UR1 to UR4) to assign the I/O tag to one of the **Update Rate** groups. The **Update Rate** groups are used by the DDS service and they define a period of reading data from the RS3. The **Update Rate** groups are configured on the booting computer in the dds.cfg file.

Literature

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Changes and modifications

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Document revisions

- Ver. 1.1 – February 9th, 2000 – Document update.

Related pages:

Communication protocols