Fisher-Rosemount RS3 SCI

Fisher-Rosemount RS3 SCI communication protocol

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Supported device types and versions

The protocol supports data transmission from/to the SCI (Supervisory Computer Interface) interface of the Fisher-Rosemount RS3 control system.

Communication line configuration

- communication line category: Serial, SerialOverUDP Device Redundant.
- Transmission parameters either 19200 or 38400 Baud (see the tab. nr. 1), 8 data bits, 1 stop bit, no parity.

For the correct communication of a Rosemount RS3 SCI device, these SCI parameters must be set:

Table 1

Parameter	Value
Comm Port Baud Rate	9.2 kbs or 38.4 kbs
Checksum	Yes
Data Bits and Parity	8N
XON/XOFF Control	Off
EIA Option	None
Reply Header String in Hex format	00 00 00 00
Reply Trailer String in Hex format	00 00 00 00
Mode	Async Length LSB
Data Format	IEEE
TX Gap	100 ms

Communication station configuration

- Communication protocol: **Fisher-Rosemount RS3 SCI**.
- Address parameters require to specify the **First index** and **Update Interval** parameters.
    - **First index**: A value within the interval 0..1499, address of the first I/O tag in the SCI table (Table Entry Location Number).
    - **Update interval**: Time period for the acquisition of new I/O tag values. Possible settings: cont. (continuously), 5 sec., 10 sec., 15 sec., 30 sec., 1 min., 2 min., 5 min., 15 min. and 60 min.

SCI allows configuring acquisition of 1500 system values into its table (Table entry) with different parameters (Scaling, Update interval). Table entries are allocated to individual I/O tags starting with the **First index** value. The station represents a logical set of tags with the same ***Update Interval*** parameter. Update Interval is a time period with which the SCI acquires new values from the Rosemount S3 system.

Note: As the SCI configuration allows to define the parameter Update Interval up to 300 seconds (5 min.), this setting is used for station polling periods of 15 and 60 minutes.

Station protocol parameters

The following station protocol parameters can be defined:

Table 2

Keyword	Full name	Meaning	Unit	Default value
RC	Retry Count	Request repetition count in case of a communication error.	-	2
RT	Retry Timeout	The delay between request repetitions in case of a communication error.	ms	200
WFT	Wait First Timeout	The delay after transmitting the request and before reading the response.	ms	60
WT	Wait Timeout	Delay between response readings until its finalization.	ms	200
MWR	Max Wait Retry	Repetition count of response readings until its finalization.	-	15
DEBUG	Debug Mode	If the value of the parameter is YES, the tables on the side of the SCI device are not configured during communication (deletion from tables + initialization of individual points). The parameter is used **only for debugging purposes**.	YES /NO	NO
SW	Send Weak	If the value is YES - if a new I/O tag value with an error attribute is acquired, the error number will be sent to the I/O tag value and the value is marked by the WEAK attribute. It is used for **debugging purposes only**.	YES /NO	NO

A string containing the protocol parameters is being defined as follows:

```
Keyword=value;Keyword=value; ...
```

Example:

```
SW=YES;WFT=300;
```

If a keyword with an invalid value in the initialization string is used, the corresponding default value according to the table 2 will be used.

I/O tag configuration

Possible I/O tag types: **Ai, Ao, Di, Dout**

Communication supports value acquisition of I/O tags of the following types:

- Analog values - I/O tag type AI, AO, used display scaling type “1”
- Discrete (binary) values - I/O tag type DI, DO, used internal scaling type “0”.

Further, it allows to write new values of I/O tags of the following types:

- Analog values - I/O tag type AO, used display scaling type “1”
- Discrete (binary) values - I/O tag type DO, used internal scaling type “0”.

Note:

- **Display scaling** - acquired values are equal with the RS3 system displaying
- **Internal scaling** - discrete values are represented by : 0.0 - logical 0; 1.0 - logical 1

I/O tag address parameters

- **Block Variable** - is the name of the Rosemount System 3 block variable. It is specified in string format, e.g. "=1E-75" (without quotes) for I/O tags of AI type and e.g. "=1F-25/b" for I/O tags of DI type.

Literature

- Rosemount System 3, PeerWay Interfaces Manual, Software Version 18, Release 1, October 1993

Changes and modifications

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Document revisions

- Ver. 1.0 – March 5th, 2001

Related pages:

Communication protocols