

RS 232 communication

Configuration

DCE – TAC-I

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2. Introduction

This document shows how to enable RS232 communication on a DCE TAC-I controller.

The document includes:

- How to change parameter and which settings needs to be changed.
- Hardware updates and changes.
- What new hardware is needed.
- Cable connections.

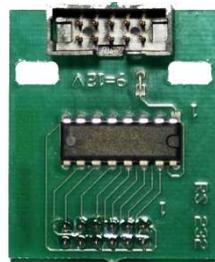
3. Communication ports

To be able to communicate with a TAC-I controller is it necessary to have a communication card installed.

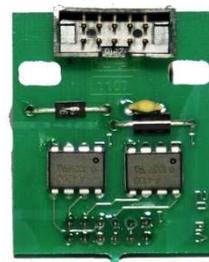
A TAC-I normally has two com port2 (Com 1 and Com 2) that can be used for serial communication. But if it has not been used for communication before or if it has been used for current loop communication is it necessary to install serial RS232 interface card or replace the current loop driver

The com ports are located on the top left side of the TAC computer.

It is easy to see if the driver card is a current loop driver or a RS232 driver:

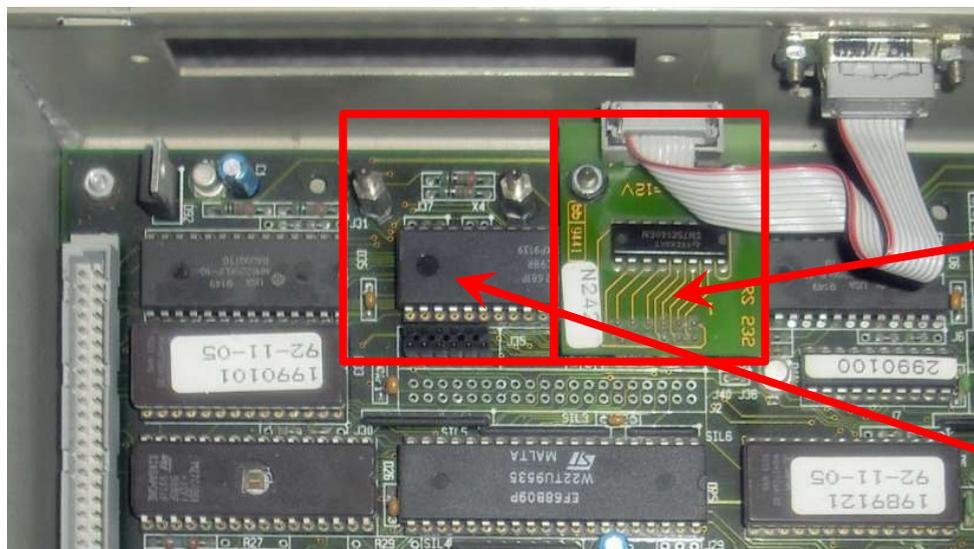


RS232 driver



Current loop driver

A correct mounted RS232 driver card must be installed as displayed in the picture beneath.



Position for com card

Installed as COM 1

Position for com card

Installed as COM 2

Normally is com 1 used but com 2 can be used if com port is already occupied for eg. communication to other turbines using the current loop driver.

Be aware that if an internal modem is installed is the RS232 interface driver card hidden beneath.

4. Parameters

The following parameters have to be set to get a TAC-I working.

- Baud rate
- Data bits
- Parity
- Stop bit
- Modem handling
- Id number

The parameters are found in the menu system:

The menu system has the following structure. It is navigated using the arrow keys and enter is used to select menu or accept a data input. Data is entered by using the cursor keys to toggle the numbers in the input field.

Dependent on the TAC-I controllers program version can the layout of the menu's be different

Please refer to the following chapters for the different layouts

Note that there are two distinct types.

The older layout has each communication protocol and port listed so that they can be activated or disabled using a 0 and 1.

The newer layout has been simplified so that the protocols are only listed one time. But the major difference is that the protocol is NOT activated or disabled BUT instead assigned directly to a port. The standard ports are 1, 2 or 3.

4.1. *NEG Micon, Vestas - TAC I*

Highlighted items are the parameters that typically need to be configured.



- Status
- Grid
- Operation Counters
- Temperature
- **User parameters**
 - Set user parameters
 - Set date/time
 - **Set communication protocol**
 - Debug com port
 - **DCE3 com port**
 - Set to 1 for COM 1
 - Set to 2 for COM 2
 - Depends on the used port.
 - FDV 2.00 com port
 - ASCII data com port
 - Modbus com port
 - Enable WMS CIMS
 - **Alarm Call com port**
 - Set to 0
 - DCE1 com port
 - Configure DCE1/Modbus
 - **Set communication parameters**
 - **Serial port com1**
 - **Receive baud**
 - Set to 9600
 - **Transmit baud**
 - Set to 9600
 - **Data bits (7/8)**
 - Set to 8
 - **Parity (0/1/2)**
 - Set to 0
 - **Stop bit (1/2)**
 - Set to 1
 - **Modem control (0/1)**
 - Set to 0
 - **Handshake (0/1)**
 - Set to 0
 - Serial port com2
 - Serial port com3
 - **Set phone call**
 - **WTG id. no.**
 - Set to serial no
 - WTG telephone no.
 - Not used on direct com
 - Alarm call no. 1
 - Not used on direct com
 - Alarm call no. 2
 - Not used on direct com
 - Alarm call no. 3
 - Not used on direct com
 - Alarm call no. 4
 - Not used on direct com
 - Alarm call no. 5
 - Not used on direct com
 - Service call no. 1
 - Not used on direct com
 - Service call no. 2
 - Not used on direct com
 - ...
 - **Alarm port #**
 - Set to 0
 - ...
- Warning stack
- Error stack
- ...

4.2. NTK / Nordtank / Wincon - TAC I (Old version)

Highlighted items are the parameters that typically need to be configured.

- Status
- Grid
- Operation Counters
- Temperature
- **User parameters**
 - Set user parameters
 - Set date/time
 - **Set communication protocol**
 - **Serial port com1**
 - DCE1
 - DCE2
 - **DCE3** Set to 1 (If using com1)
 - **Serial port com2**
 - DCE1
 - DCE2
 - **DCE3** Set to 1 (if using com2)
 - **Serial port com3**
 - DCE1
 - DCE2
 - **DCE3** Set to 0
 - **Set communication parameters**
 - **Serial port com1**
 - **Receive baud** Set to 9600
 - **Transmit baud** Set to 9600
 - **Data bits (7/8)** Set to 8
 - **Parity (0/1/2)** Set to 0
 - **Stop bit (1/2)** Set to 1
 - **Modem control (0/1)** Set to 0
 - **Handshake (0/1)** Set to 0
 - Serial port com2
 - Serial port com3
 - **Set phone call**
 - **WTG id. no.** Set to serial no
 - WTG telephone no. Not used on direct com
 - Alarm call no. 1 Not used on direct com
 - Alarm call no. 2 Not used on direct com
 - Alarm call no. 3 Not used on direct com
 - Alarm call no. 4 Not used on direct com
 - Alarm call no. 5 Not used on direct com
 - Service call no. 1 Not used on direct com
 - Service call no. 2 Not used on direct com
 - ...
 - **Alarm port #** Set to 0
 - ...
- Warning stack
- Error stack



- ...

4.3. **NTK / Nordtank - TAC I (new version)**

Highlighted items are the parameters that typically need to be configured.

- Status
 - Grid
 - Operation Counters
 - Temperature
 - **User parameters**
 - Set user parameters
 - Set date/time
 - **Set communication protocol**
 - **Select protocol type**
 - DCE 1 com port
 - **DCE 3 com port**
 - FDV 2.00 com port
 - NT1 com port
 - **Alarm Call com port**
 - Setup DCE 1 protocol
 - **Set communication parameters**
 - **Serial port com1**
 - **Receive baud**
 - **Transmit baud**
 - **Data bits (7/8)**
 - **Parity (0/1/2)**
 - **Stop bit (1/2)**
 - **Modem control (0/1)**
 - **Handshake (0/1)**
 - Echo control (0=off)
 - Serial port com2
 - Serial port com3
 - **Set phone call**
 - **WTG id. no.**
 - WTG telephone no.
 - Alarm call no. 1
 - Alarm call no. 2
 - Alarm call no. 3
 - Alarm call no. 4
 - Alarm call no. 5
 - Service call no. 6
 - Service call no. 2
 - ...
 - **Alarm port #**
 - ...
- Warning stack
- Error stack
- ...



Set to 1 for COM 1
Set to 2 for COM 2
Depends on the used port

Set to 0

Set to 9600

Set to 9600

Set to 8

Set to 0

Set to 1

Set to 0

Set to 0

Set to serial no

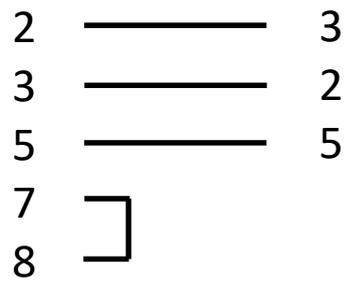
Not used on direct com
 Not used on direct com

Set to 0

5. Cables

5.1. Cable layout for F2403

Four-Faith	TAC-I
<u>DB9 Female</u>	<u>DB9 Male</u>



5.2. Cable layout for F2816 - COM 1

Four-Faith 2816		TAC-I	
<u>Terminal</u>		<u>DB9 Male</u>	
3	—————	3	White
4	—————	2	Green
5	—————	5	Brown
1 PWR		7	
2 GND		8	

5.3. Cable layout for F2816 - COM 2

Four-Faith 2816		TAC-I	
<u>Terminal</u>		<u>DB9 Male</u>	
6	—————	3	White
7	—————	2	Green
5	—————	5	Brown
1 PWR		7	
2 GND		8	

The Power (PWR) must be between +5V to +36V DC (Standard power supply is 12V DC)

An easy way to check if the wires on pin 3 and 4 (COM1) or pin 6 and 7 (COM2) is mounted correct is to measure the DC voltage on both pins in reference to GND (pin 5). If the Rx and Tx wires are mounted correct, should it be possible to measure a voltage on both pins (Above 3 volts). If there is only voltage on one pin is the wires wrong and they must be flipped.

6. Installation checklist

This is a checklist for the steps needed to install the GPRS modem into a turbine with a TAC-I controller. Follow the steps beneath and report the final settings to the administrator of the Alarm center server.

Step	Description	Done																		
	Hardware installation																			
1	Install the Four-Faith GPRS modem and antenna																			
2	Check if the TAC has a RS232 port If board is missing install it Note what port it is installed on Board to the right = COM1 Board to the left = COM2																			
3	Install the RS232 cable between TAC computer and the Four-Faith modem.																			
4	Power up Four-Faith modem Verify power light is on Verify that online light is coming on (Can take a minute)																			
	TAC parameter configuration:																			
5	Check the turbine id number. It is default set to 11 but it is recommended to enter the serial no of the turbine.																			
6	Check / Activate the DCE3 port on the COM port where the RS232 driver card is installed																			
7	Check the turbine port setting. Remember to check the right port number according to where it RS232 driver board are located. The port settings must be the same as the GPRS modem. Set Baud rate: Typically 9600 Baud Set data bits: Typically 8 databits Set parity: Typically set to None (0) Set stop bits: Typically 1 stop bit																			
8	Remove alarm call in the turbine by setting the Alarm port to 0																			
	Report the settings to the Alarm Center administrator for server configuration.																			
9	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="text-align: right;">Example value</td> </tr> <tr> <td>Modem device number</td> <td style="text-align: right;">11</td> </tr> <tr> <td>Modem baud rate</td> <td style="text-align: right;">9600</td> </tr> <tr> <td>Modem data bits, parity settings and stop bits</td> <td style="text-align: right;">8N1 (8, None, 1)</td> </tr> <tr> <td>Turbine name</td> <td style="text-align: right;">Test park</td> </tr> <tr> <td>Turbine id number</td> <td style="text-align: right;">11</td> </tr> <tr> <td>Turbine model</td> <td style="text-align: right;">NM-48</td> </tr> <tr> <td>Turbine size</td> <td style="text-align: right;">750</td> </tr> <tr> <td>Turbine GPS coordinates</td> <td style="text-align: right;">56.094985, 10.136058</td> </tr> </table>		Example value	Modem device number	11	Modem baud rate	9600	Modem data bits, parity settings and stop bits	8N1 (8, None, 1)	Turbine name	Test park	Turbine id number	11	Turbine model	NM-48	Turbine size	750	Turbine GPS coordinates	56.094985, 10.136058	
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7. Four Faith Signal monitoring

7.1. F2403 Signal monitoring

The Four Faith F2403 GPRS modem can be used to monitor the signal strength during installation.

This can be done on units bought after October 2014 and with firmware versions after this date.

The Signal mode is activated using a special DB9 adaptor that is inserted into the RS232 port on the Four Faith modem. When the adaptor is inserted will the online LED on the modem not display the online status anymore but instead will the signal strength be display. The signal level is illustrated by a number of blinks that is repeated every 3 seconds.

There are 5 different blink levels.

Level	Signal strength (dBm)	Quality
1	-113 -> -103	Bad
2	-101 -> -95	Marginal
3	-93 -> -85	OK
4	-83 -> -75	Good
5	-73 or higher	Excellent



The GPRS modem will not attempt to connect unless the signal strength is 2 or above but the signal should be no less than 3 or more before a stable connection can be expected.

Be aware that when the Signal tester adaptor is inserted will the modem NOT attempt to go online. The modem will return to normal operation when the adaptor is removed.

7.2. F2816 Signal monitoring

The Four Faith F2816 GPRS modem can be used to monitor the signal strength during installation.

The Signal mode is activated by pressing the signal tester button on the “Multiport interface” unit. The button has to be kept pressed during the signal testing.

If the kit is not equipped with the signal tester button can the signal mode be activated by connecting pin 11 (IO2) to the ground pin 2 or 5.

When the connection is established will the online LED on the modem not display the online status anymore but instead will the signal strength be display. The signal level is illustrated by a number of blinks that is repeated every 3 seconds.

There are 5 different blink levels.

Level	Signal strength (dBm)	Quality
1	-113 -> -103	Bad
2	-101 -> -95	Marginal
3	-93 -> -85	OK
4	-83 -> -75	Good
5	-73 or higher	Excellent



The GPRS modem will not attempt to connect unless the signal strength is 2 or above but the signal should be no less than 3 or more before a stable connection can be expected.

Be aware that when the Signal tester is active will the modem NOT show the online signal anymore. The modem will return to normal operation when the adaptor is removed.