Application Description
PROCONTROL P
Communication

Coupling Module
for Coupling the PROCONTROL Station Bus
to the Advant® Fieldbus 100

87TS50-E/R5010

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1 Overview

This application description provides the information required for commissioning and configuring the 87TS50/R5010 module. Furthermore, it includes a complete description of the system messages in order to facilitate error and disturbance analyses and to detect configuration problems.

For commissioning the module, perform the following steps:
1. Configure the Ethernet interface
2. Generate a configuration list
3. Load the configuration list onto the module
4. Save the configuration list on the module
5. Start the module

Should any problems occur during commissioning, a number of diagnostic actions can be carried out with the help of the user monitor (menu diagnosis).

For instance, if not all of the signals configured are exchanged between the Advant system and the PROCONTROL system, it is recommended to search through the system messages in the system-message buffer for entries regarding the configuration-lists scan and the configuration-list processing.

System messages can be found based on their message codes by using the index list given in this application description.

2 Service and configuration interface

For configuring and servicing, the 87TS50/R5010 module is equipped with a menu-guided interface (user monitor). There are two types of monitors in use:

- Boot monitor
  - For configuring the Ethernet interface

- User monitor
  - For configuring the module
  - For displaying internal statuses and data

The boot monitor is activated directly after the module has been plugged in, by pressing a key, while the individual segments of the mode display are activated one after the other.

The user monitor is started automatically after the 87TS50 has been plugged in, provided that the module did reach at least its operating status 6 "Waiting for configuration list".

Displays can be output, via the serial RS232 interface (9-pole connector X1 on the module front), on a terminal (VT100 or higher) or a computer with terminal emulation. Displaying is also possible via the Ethernet interface (for user monitors only; BNC jack, connector X2) with the help of a monitor program.

The Ethernet interface is connected via a 50 Ω thin-wire coax cable. The distance from the last connection must exceed 180 m. The distance between 2 participants must be at least 0.5 m. In the factory, the modules are given a fixed and unique Ethernet address. The Internet address needed for communicating with a computer is set at the user monitor.

The terminal can be plugged in or removed during operation.
2.1 Configuring the Ethernet interface

Connecting the Ethernet interface to a network is optional. An Internet address must be assigned for in redundant applications.

The network address is composed of the Ethernet address and the Internet address. The Ethernet address is a fixed address on every 87TS50.

The Internet address must be selected according to the project in question, if the module is to be operated in a network, and must be entered on the 87TS50 modules and on the computer as well. In a network, each one of the modules connected must be given a different Internet address.

Please note:
- Handling of the Internet addresses is centralized.
- By setting an Internet address, a configuration list that might exist in the flash PROM will be lost. Therefore, it is advisable to configure the Ethernet interface first when commissioning the module.

When the 87TS50 is commissioned for the first time, the Internet address is set as follows:

1. Connect a VT100 terminal or personal computer with VT100 emulation to the 87TS50.
2. Plug the module into the subrack again.

Output:

3. Press any key, while the segments of the mode display are being activated one after the other. This activates the boot monitor.

Output:

   87TS50 BOOT MONITOR, REL :..., autoboot in progress
   type any key to break

4. Input of "I" deletes the DRAM (clear DRAM) and displays the current Internet address in decimal form.

Output:

   act.Internet address (dec) : 138.222.10.00
   <CR> exit, c change :

This address is exemplary.

4.1 Input of "<CR>" closes the "Internet address" menu. Proceed with step 5.

4.2 Input of "C<CR>" allows to change the Internet address in decimal form.

Output:

   Internet address (dec) --> d1.d2.d3.d4 :

Input:

   138.222.70.41 <CR>

Output:

   · AM 29F010 found
   flash clear.... ok.
   internet address (dec) 138.222.70.41

5. The following menu will appear:

   <CR> internet address , B continue autoboot :

5.1 Input of "<CR>" allows to change the Internet address again (see step 4).

5.2 Input of "B<CR>" allows to directly start the module with the current Internet address (without steps 6, 7).

6. Withdraw the module and write the configured Internet address on the Internet address label at connector X12 of that module.

7. Plug the module back into the subrack. It will now be running with the new addresses.

Please note:

<CR> stands for pressing the ENTER or RETURN key.
2.2 Configuring the module

The module is configured by loading a configuration list into the RAM. This list is generated with the help of the AP-BRIDGE configuration program and is transferred to the module. After that, the list can be saved on the module in the flash PROM (a restart will be initiated and this list is activated automatically).

The module can be started via the user interface using either a list in the RAM or one in the flash PROM. Loading a list into the RAM is possible in the "Waiting for configuration list" state only.

The list is protected by a checksum.

The basic structure of a configuration list including explanations of the parameters and data listed is shown by the following example:

```
BEGIN
# list layout
# This list is an example for the 87TS50R5010 configuration
# list ID: STANDARD TESTLIST file: standard.tst 05.03.97
# list ID: STANDARD TESTLIST file: standard.tst 05.03.97
# This list is an example for the 87TS50R5010 configuration
# this list is protected by a checksum.
# the list is loaded into the RAM, this list is activated automatically.
# the list is saved on the module in the flash PROM (a restart will be initiated and this list is activated automatically).
# the list is protected by a checksum.
# global rules:
# each line is max. 64 characters long
# each line ends with CR/LF
# each line with a # character at pos. 1 is a comment line
# each line with a > character at pos. 1 continues the
# previous line
# each line with a = character at pos. 1 contains dat
# specific data
# each number is in decimal format (without leading zeros)
# the first line is marked with "BEGIN"
# the second line is marked with "LISTID", the list identi-
# fication (e.g. created by, data, project) follows
# the last line is marked with "END"
# the last line-1 is marked with (uppercase)
# "checksum=0x00000000"
# the checksum must be preinitialised to 0x00000000
# the common config data must be present before the "RDS"
# token
# parameters are separated by one or more blank characters
# indexes for datasets and telegrams must be in ascending
# order, from beginning 1
# COMMON CONFIG DATA
# basic cycletime for scanning receiving ds in ms (10..10000)
# BICYCLETIME=512
# common default values for all procontrol send telegrams
# DCSUPTI: counter supression timeinterval in ms (0..10000)
# DASUPTI: analog supression timeinterval in ms (0..10000)
# DATRES: analog threshold in 0.1% (1..68)
# DCSUPTI=200
# DASUPTI=300
# DATRES=50
# clock master address: (sy,sta,mod,reg)
# CHNDR=1,16,6,0
# start time (year,month,day,hour,minute,second,millisecond)
# TIME=95,6,16,11,23,20,100
# time status (wintertime=on, summertime=off)
# TSW=ON
# daylight saving time supression (on/off)
# DDAUS=ON
# #Af100 station address (1..80)
# AFSTA=10
# bus length (300, 600, 1200, 2000)
# ABUSLEN=2000
# timemaster function (on/off)
# AFTMAS=ON
# bus administration function (on/off)
# BUSADM=ON
# redundancy mode (on/off)
# REDM=ON
# RXD=ON
# RXD: receiving ds config data:
# RXD STA ID CYC RXDS
# =REF DA [STI1] [STI2] [VA] [MRL MRH]
# =REF DA [STI1] [STI2] [VA] [MRL MRH]
# =REF DA [STI1] [STI2] [VA] [MRL MRH]
# =REF DA [STI1] [STI2] [VA] [MRL MRH]
# =REF DA [STI1] [STI2] [VA] [MRL MRH]
# =REF DA [STI1] [STI2] [VA] [MRL MRH]
# END
```

```
Service and configuration interface

--- STLG -----------------------------------------------

STLG

--- DTLG -----------------------------------------------

DTLG

--- RTLG -----------------------------------------------

RTLG

#STI SY STA MOD REG DA [MR] [SUPTI] [THRES]
# STI: sending tlg index (1..800)
# SY : procontrol system address (0..3)
# STA: procontrol station address (1..249)
# MOD: procontrol module address (0..59)
# REG: procontrol register address (0..199)
# DA : procontrol data type (0..25, 27, 28)
# MR : procontrol measuring range (0..3)
# SUPTI: individual supression timeinterval in ms (0..10000)
# THRES: individual analog threshold in 0.1% (1..68)

# MR variants: DA 5: MR 0 (0..100%)
# DA 6: MR 0 (0..150C)
# DA 7: MR 0 (0..300C)
# DA 8: MR 0 (0..600C)
# DA 9: MR 0 (0..1000C)
# DA 10: MR 0 (0..200K)
# DA 11: MR 0 (0..150K)
# DA 12: MR 0 (0..200K)
# DA 13: MR 0 (0..300K)

# DA variants: 0..3, 8..28: DA
# 4         : DA SUPTI
# 5,6,7     : DA MR
# 5,6,7     : DA MR SUPTI THRES

# STI SY STA MOD REG DA MR SUPTI THRES -- send telegrams --

1 1 10 17 0 9
2 1 10 17 1 9
3 1 10 17 2 4
4 1 10 17 3 4 2000
5 1 10 17 4 5 0
6 1 10 17 5 4
7 1 10 17 6 4
8 1 10 17 7 5 0 1000 10
9 1 10 17 8 4
10 1 10 17 9 4
11 1 10 17 10 6 2 500 5
12 1 10 17 11 5 0
13 1 10 17 12 0
14 1 10 17 13 4
15 1 10 17 14 0
16 1 10 17 15 5 0
17 1 10 17 16 5 0
18 1 10 17 17 4

#DTLG -- destination tlg config data:
# DTI SY STA MOD REG DA [SDI1] [SDI2]
# DTI SY STA MOD REG DA SDI2
# DTI: destination tlg index (1..256)
# SY : procontrol system address (0..3)
# STA: procontrol station address (1..249)
# MOD: procontrol module address (0..59)
# REG: procontrol register address (0..199)
# DA : procontrol data type (0..25)
# SDI1: sending ds index (1..50), dat reference (1..8)
# SDI2: tlg bit (0..15), sending ds index (1..50),
#        dat reference (1..8), dat bit (0..31)
#        also optional disturbance bit reference for ai/ci

#RTLG -----------------------------------------------

RTLG

--- RTLG -----------------------------------------------

RTLG

--- RTLG -----------------------------------------------

RTLG

#RTI SY STA MOD REG DA [SDI1] [SDI2]
# RTI SY STA MOD REG DA SDI2
# RTI SY STA MOD REG DA SDI
# RTI: receive tlg index
# SY : procontrol system address (0..3)
# STA: procontrol station address (1..249)
# MOD: procontrol module address (0..59)
# REG: procontrol register address (0..199)
# DA : procontrol data type (0..25)
# SDI1: sending ds index (1..50), dat reference (1..8)
# SDI2: tlg bit (0..15), sending ds index (1..50),
#        dat reference (1..8), dat bit (0..31)
#        also optional disturbance bit reference for ai/ci
Important:

System messages with message codes assigned by the configuration-list processing and the configuration-list scanning always refer to the list existing in the module.
3 APBRIDGE configuration program

3.1 General notes

The configuration program is an Excel program (Excel 5.0 or higher). Versions for Windows 3.11 or Windows NT 4.0 are available.

Please pay attention to the updated information given in the "readme.txt" file on the installation disk.

3.2 Installing the program under Windows 3.11

• Copy file win3.11/apbr.xls onto your computer into any directory. We suggest to create a separate directory for this program. All the configuration files are written into the same directory where the Excel program file is located.

• Copy the win3.11/checksum.exe and win3.11/ts50.trm files into the c:\excel directory. You can also copy these two files into another directory. The path must be declared (c:\excel is the default path) in the APBRIDGE program, on the "Common data" worksheet.

3.3 Installing the program under Windows NT 4.0

• Copy the winnt4.0/apbr_en.xls file onto your computer into any directory. We suggest to create a separate directory for this program. All the configuration files will be written into the same directory where the Excel program file is located.

• Copy the winnt4.0/checksum.exe and winnt4.0/ts50.ht files into the c:\excel directory. You can also copy these two files into another directory. The path must be declared in the APBRIDGE program (c:\excel is the default path) on the "Common data" worksheet.

3.4 Getting started

• Start up Excel.

• Open file apbr_en.xls. The "Common data" worksheet will appear.

• Save this file with "Save As..." under a different name. Choose a name for your project. The text file that is required for loading onto the 87TS50 module and that is generated with this program, will be given the same name having ".CNF" for an extension.
3.5 Data input

3.5.1 General

Different worksheets are available for entering data. Each column of the worksheets has a specific name and contains a description. Entries are not checked by the APBRIDGE program. Checking takes place when the configuration file is loaded onto the 87TS50 coupling module.

Seen from the 87TS50, there are two directions of communication per system (Advant P and PROCONTROL).

The 87TS50 receives data from the AF100 and passes these data on to the PROCONTROL station bus. The data coming from the AF100 are listed on the “RDS A -> P” worksheet (RDS = receiving data set). The data going to the PROCONTROL station bus are listed on worksheet “STLG A -> P” (STLG = sending telegram).

The 87TS50 receives data from the PROCONTROL station bus and passes them on to the AF100. The data coming from the PROCONTROL station bus are listed on the “DTLG P -> A” worksheet (DTLG = destination telegram) and the “RTLG P -> A” worksheet (RTLG = receiving telegram). The data going to the AF100 are listed on worksheet “SDS P -> A” (SDS = sending data set).

The links between the data of the PROCONTROL station bus and the data of the AF100 need to be configured in different worksheets in the APBRIDGE program.

- From the AF100 to the PROCONTROL station bus: listed on worksheets “RDS A -> P” and “STLG A -> P”.
- From the PROCONTROL station bus to the AF100: listed on worksheets “DTLG P -> A”, “RTLG P -> A” and “SDS P -> A”.

The following hints briefly describe how to convert Boolean data.

PROCONTROL counts the bits from 0 .. n, Advant counts from 1 .. m.

- The VALUE terminal names of the data base element for Boolean data DAT(B) and of the 87TS50 differ. The following table shows how to convert correctly:

<table>
<thead>
<tr>
<th>Advant DAT(B)</th>
<th>87TS50 DAT(B)</th>
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<tbody>
<tr>
<td>VALUE</td>
<td>0</td>
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<tr>
<td>VALUE21</td>
<td></td>
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<tr>
<td>VALUE32</td>
<td>31</td>
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</tbody>
</table>

- To handle the extended data base elements AIS, AOS, DIS, and DOS correctly, use the following conversion table:

<table>
<thead>
<tr>
<th>AIS, AOS</th>
<th>87TS50</th>
<th>DIS, DOS</th>
<th>87TS50</th>
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<tbody>
<tr>
<td>DAT(IL)</td>
<td>DAT(B)</td>
<td>DAT(I)</td>
<td>DAT(B)</td>
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<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>15</td>
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<td>20</td>
<td>19</td>
<td>16</td>
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</table>
### 3.5.3 The "Common data" worksheet

The first worksheet displayed upon startup is called "Common data" and is used for entering all the general data.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
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</tbody>
</table>

In fields where no value has been entered, the default values will be used.

Please note: ON/OFF must be entered in capital letters.
3.5.4 The "RDS A -> P" worksheet

The "RDS A -> P" worksheet is used for entering data that are transferred from the AF100 to the PROCONTROL station bus. In the following, the AF100 part of data communication is described.

Values RDSI, STA, ID, CYC, RDSS, REF, DA, VA, MRL, and MRH indicate the AF100 datasets that are to be transferred to the PROCONTROL station bus.

For the Boolean data type, value STI1 determines which one of the bits of this AF100 dataset is to be transferred to which telegram and which bit is to be transferred over the PROCONTROL station bus. The link to the PROCONTROL telegram is established by the second value of STI1. This value corresponds to STI on the "STLG A -> P" worksheet.

In the case of data types int16, int32 and real32, the value STI2 establishes the link from the AF100 telegram to the PROCONTROL telegram. Value STI2 corresponds to value STI on the "STLG A -> P" worksheet.

Value RDSI must be numbered in ascending order.

Please note: ON/OFF must be entered in capital letters.
3.5.5 The "STLG A -> P" worksheet

The "STLG A -> P" worksheet is used for entering the data going from the AF100 to the PROCONTROL station bus. In the following, the PROCONTROL part of data communication is described.

Values SY, STA, MOD, REG, DA, MR, SUPTI, and THRES indicate the PROCONTROL telegram where the AF100 data are transferred to. Value STI links the values from the "RDS A -> P" worksheet with the ones on worksheet "STLG A -> P". Value STI must be numbered in ascending order.

<table>
<thead>
<tr>
<th>STI</th>
<th>SY</th>
<th>STA</th>
<th>MOD</th>
<th>REG</th>
<th>DA</th>
<th>MR</th>
<th>SUPTI</th>
<th>THRES</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>7</td>
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</tr>
</tbody>
</table>

- SY: system address
- STA: station address
- MOD: module address
- REG: register address
- DA: DA value
- MR: MR value
- SUPTI: SUPTI value
- THRES: THRES value
- Comments: Individual analog threshold in % (1-68)
3.5.6 The "DTLG P -> A" worksheet

The "DTLG P -> A" worksheet is used for entering the data going from the PROCONTROL station bus to the AF100. These are destination values that are not transferred cyclically. In the following, the PROCONTROL part of data communication is described.

Values DTI, SY, STA, MOD, REG, and DA indicate the PROCONTROL telegram that is to be transferred to the AF100 datasets.

For the Boolean data type, value SDI2 determines which one of the bits of this PROCONTROL telegram is to be transferred to which dataset and which bit is to be transferred over the AF100. The link to the AF100 dataset is made via the second and third value of SDI2. These values correspond to the values SDSI and REF on the "SDS P -> A" worksheet.

For data types int16, int32 and real32, value SDI1 provides the link from the PROCONTROL telegram to the AF100 telegram. Both values of SDI1 correspond to the values SDSI and REF on the "SDS P -> A" worksheet.

Value DTI must be numbered in ascending order.
3.5.7 The "RTLG P -> A" worksheet

The "RTLG P -> A" worksheet is used for entering the data going from the PROCONTROL station bus to the AF100. In the following, the PROCONTROL part of data communication is described.

Values RTI, SY, STA, MOD, REG, and DA indicate the PROCONTROL telegram that is to be transferred to AF100 datasets.

For the Boolean data type, value SDI2 declares which one of the bits of this PROCONTROL telegram is to be transferred to which dataset and which bit is to be transferred over the AF100. The link to the AF100 dataset is made via the second and third value of SDI2. These values correspond to SDSI and REF on the "SDS P -> A" worksheet.

For data types int16, int32 and real32, value SDI1 provides the link from the PROCONTROL telegram to the AF100 telegram. Both values of SDI1 correspond to the values SDSI and REF on the "SDS P -> A" worksheet.
3.5.8 The "SDS P -> A" worksheet

The "SDS P -> A" worksheet is used for entering the data going from the PROCONTROL station bus to the AF100. In the following, the AF100 part of data communication is described.

Values ID, CYC, SDSS, DA, VA, MRL, and MRH indicate the AF100 dataset where the PROCONTROL telegram is transferred to. The values SDSI and REF combine the values of worksheets "DTLG P -> A" and "RTLG P -> A" with the values on worksheet "SDS P -> A".

Please note: ON/OFF must be entered in capital letters.

The references must always be entered in separate rows.
3.6 Program structure

This figure shows the structure of the APBRIDGE program. The program offers one menu item, "Coupler", with two sub-items.

The first subitem "Generate file" generates a configuration file for the 87TS50 which includes all data from all of the worksheets. The CHECKSUM program is started, and the checksum is indicated at the end of the configuration file.

The second subitem "Copy file" starts the Windows terminal program:

- Windows 3.11
  Terminal (terminal.exe) using configuration file TS50.TRM
- Windows NT 4.0
  Hyperterminal (hypertrm.exe) using configuration file TS50.HT

The configuration file can be loaded onto the 87TS50 coupling module using menu item "Transfers" and subitem "Send text file...".

The connection between computer (COM1) and coupling module (X1) is established via a RS232 cable (cf. "Service and configuration interface").

3.7 Sample configuration session
(under Windows 3.11)

- Enter the configuration data in the Excel data sheets.
- Connect coupling module to PC via serial link.
- Copy file onto coupling module: Coupler -> Copy file => terminal TS50.TRM icon.
- Open terminal icon and login user monitor (password: abb).
- Select "Configuration list" menu.
  Select "Load":
  Press function key "~":
  Select "Transfers -> Send Text File" (German version: "Übertragung -> Textdatei senden").
  Select "Filename".
- Type in "V" to save the new list or "A" to start the coupling module with the new list.
- Check the current system messages in the diagnosis menu for possible configuration errors. For further explanations on the reported messages, cf. Section 5 "System messages".
4 How to operate the user monitor

4.1 General notes

The following abbreviations and terms are used in the user monitor displays:

Advant Power

ci	Advant Fieldbus 100 interface

cycle	Transmission interval of a peripheral dataset element
ds	Peripheral dataset element
dat	Data element
ident	Identification number of a peripheral dataset element
me	Module error
pe	Process error
ref	Reference number of a data element
se	System error
size	Size of a peripheral dataset element

PROCONTROL

da	Data type
db	Disturbance bit
ssu	Sending suppressed
thresh	Threshold
ti	Time interval
tlg	Telegram
trm	Transmission mode

Other abbreviations

adr	Address
alloc	Allocation
ps	Processing
rnr	Receive monitoring
sta	Station
valid	Data are configured and are being processed

4.2 Login

The module can be configured from the user monitor which also allows to read and display internal statuses and data of the 87TS50. For displaying, a serial interface (X1 on the module front) of a terminal or a computer with terminal emulation, or an Ethernet interface (X2) of a networked computer loaded with a monitor program can be used. Loading a configuration list can be done with the help of a terminal emulation only.

The monitor is started up automatically after the 87TS50 has been plugged in and operating state 6 "Waiting for configuration list" has been reached. The cable for connecting the serial interface can be plugged in or removed during operation. The monitor program on the networked computer can be started or stopped during operation. The monitor program is called with the following command:

"umon <Internet address>"
For example: "umon 138.222.70.41"

and is available on every POS/PMS system. Upon input of the command, a window will be opened on the computer and the connection to the 87TS50 is set up. After starting the 87TS50, the user has to log in first. This is done by pressing any key at the terminal or computer. After that, enter the user monitor password (abb). After this entry has been successful, you may enter a project name or change it if need be. This name will be indicated on all of the screen outputs.

The present firmware version of the processing software is displayed during the login procedure.
4.3 Menu overview

- **Login**
  - Main menu
    - **Advant <-> Procontrol overview**
    - **Advant -> Procontrol**
      - Receive DATs
        - Station overview
        - DAT overview
        - DAT
        - Sending TLGs
          - Register overview
            - Register
    - **Procontrol -> Advant**
      - Destination TLGs
        - Register overview
          - Register
      - Receive TLGs
        - Station overview
        - Module overview
        - Register overview
          - Register
      - Sending DATs
        - DAT overview
          - DAT
  - **Configuration list**
    - Global overview
    - Show (RAM)
    - Show (Flash)
    - Load
    - Save
    - Start
    - Stop
  - **Default values**
  - **Diagnosis**
    - System message
    - Procontrol module
    - Procontrol system register
    - Advant own station status
    - Advant partner station status
    - Advant module
    - Advant channel overview
    - Advant channel
  - **Date & time**
  - **Special tools**
    - Remote login user monitor
  - **Logout user monitor**
4.4 Screen layout

Current information for receiving and processing telegrams and data elements. The information is updated cyclically based on the bus cycle time and the largest data-element cycle time, provided that the module is in the "connected" state. The values displayed for the changed data elements (sending dat items changed) are derived from the sum of the changed process signals per data element.

4.5 Menu descriptions and screen outputs

4.5.1 Advant Power <-> PROCONTROL overview

Current display
Operating state

Redundancy status (display only for redundant applications)
A=Module active
P=Module passive

Bus systems
Connect status
D=Disconnected
C=Connected

Current menu on the monitor
Menu-related tasks
Input prompt

Current menu
on the monitor
Menu-related
tasks
Current menu
on the monitor
Menu-related
tasks
Current menu
on the monitor
Menu-related
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Current menu
on the monitor
Menu-related
tasks
Current menu
on the monitor
Menu-related
tasks
4.5.2 Advant Power -> PROCONTROL overview

4.5.2.1 Receive data element menu
4.5.2.1.1 Station overview

Overview of the Advant Fieldbus 100 stations reported by the 87TS50. In this example, only data elements from Advant Power station 12 are received.

<table>
<thead>
<tr>
<th>Ident</th>
<th>Valid</th>
<th>Size</th>
<th>Cycle</th>
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</thead>
<tbody>
<tr>
<td>123456789012345678901234567890123456789012345678901234567890</td>
<td>X,X,........2........3........4........5</td>
<td>44</td>
<td>99</td>
</tr>
</tbody>
</table>

4.5.2.1.2 Data elements overview

Overview of the data elements of an Advant Power station reported by the 87TS50. In this example, data elements with reference numbers 1...7 and 1...8 of the peripheral dataset elements 1 and 3 are reported.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Type</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ref 1</td>
<td>B R</td>
<td></td>
</tr>
<tr>
<td>ref 2</td>
<td>B R</td>
<td></td>
</tr>
<tr>
<td>ref 3</td>
<td>I R</td>
<td></td>
</tr>
<tr>
<td>ref 4</td>
<td>L R</td>
<td>I=int16</td>
</tr>
<tr>
<td>ref 5</td>
<td>R R</td>
<td>R=real</td>
</tr>
<tr>
<td>ref 6</td>
<td>R R</td>
<td></td>
</tr>
<tr>
<td>ref 7</td>
<td>B R</td>
<td>B=boolean</td>
</tr>
<tr>
<td>ref 8</td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valid</th>
<th>Size [byte]</th>
<th>Cycle [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>X;valid, £=valid with rnr, _=invalid</td>
<td>1=4, 2=8, 3=16, 4=32</td>
<td>0=1, 1=2, 2=4, 3=8, 4=16, 5=32, 6=64, 7=128</td>
</tr>
</tbody>
</table>

<CR> exit, R repeat, P previous, N next, G goto: 1
4.5.2.1.3 Data element

The display for a data element that is to be received shows the allocation of the data to the telegram and the current statuses of the Advant Fieldbus 100 interface and the processing section.

In this example, bit 15 of this Boolean data element is transmitted to bit 15 of the telegram having module address 17 / register 4.

4.5.2.2 Send telegram menu

The display for a data element that is to be received shows the allocation of the data to the telegram and the current statuses of the Advant Fieldbus 100 interface and the processing section.

In this example, bit 15 of this Boolean data element is transmitted to bit 15 of the telegram having module address 17 / register 4.
4.5.2.2.1 Register overview

Overview of all registers sent by the 87TS50.

4.5.2.2.2 Register

The display of a register that is to be sent shows how the data elements are allocated to this telegram and indicates the current statuses of station-bus interface and processing section.

The analog telegram in this example consists of two data elements of the Advant Power system.
4.5.3 PROCONTROL -> Advant Power menu

4.5.3.1 Destination telegram menu
4.5.3.1.1 Register overview

This overview shows the destination telegrams that are to be received by the 87TS50. In this example, registers 0..3 and 255 will be transferred to the Advant Power system.

4.5.3.1.2 Register

The display of a received destination register shows how the data are allocated to the data element and indicates the current statuses of station-bus interface and processing section. In this example, bit 0 of the destination telegram is transferred to bit 15 of data element 1 of the peripheral dataset element 3. If the receive monitoring function has responded - as shown in this example - the data of the station-bus interface (tlg data, tlg od(ba) and tlg rs(ba) are still in their initial state.
4.5.3.2 Receive telegram menu

4.5.3.2.1 Station overview

Overview of the stations on the PROCONTROL bus that are reported by the 87TS50. In this example, only the telegrams of station 10 are indicated, and the receive monitoring function has responded for at least one of the telegrams.
4.5.3.2.2 Module overview

Overview the modules of one particular station that are reported by the 87TS50. In this example, only the telegrams of module 9 are listed, and the receive monitoring function has responded for at least one of the telegrams.

4.5.3.2.3 Register overview

Overview of the registers of one particular module that are reported by the 87TS50. In this example, telegrams 0...13 of module 9 are listed, and the receive monitoring function has responded for telegrams 10...13.
4.5.3.2.4 Register

The display of a received register shows how the data are allocated to the data element and indicate the current statuses of the station-bus interface and processing section. In this example, the analog telegram is transferred onto data element 5 of the peripheral dataset element 1, and the disturbance bit of this analog telegram is transferred onto bit 16 of data element 1 of the peripheral dataset element 1.

4.5.3.3 Send-data element menu
**4.5.3.3.1 Data element overview**

Overview of the data elements that are to be sent by the 87TS50. In this example, the data elements (ref) 1...5, 1 and 3, as well as 1...8 of the peripheral dataset elements (ident) 1, 2 and 3 are being sent.

**4.5.3.3.2 Data element**

The display of a data element that is to be sent shows how the data of the telegram are allocated and indicates the statuses of the Advant Fieldbus 100 interface and the processing section.

In this example, bit 15 of the telegram is transferred onto bit 15 of data element 2 of the peripheral dataset element 1.
4.5.4 Configuration lists menu

4.5.4.1 General overview

The general overview displays the current configuration status of the 87TS50. It shows whether the module is operating with the memory-resident list in the flash memory or with the volatile list in the RAM memory, or whether maybe a new list has been loaded into the RAM memory of the module. In this example, the module is using the memory-resident list. There is no volatile list available.
4.5.4.2 Displaying the RAM configuration list

In this example, displaying a list is not possible, since no list has been loaded into the RAM.

4.5.4.3 Displaying the FLASH configuration list

This configuration list is displayed with line numbers. It is possible to page through the list, to get to certain line numbers, or to search for (find) a certain text sample.
4.5.4.4 Loading the configuration list

As a rule, a configuration list can be loaded onto the RAM memory only if the processing operation has stopped. When loading a list, attention is to be paid to the fact that the "list check" must result in an OK. If this should not be the case, the module cannot be started with this list and the erroneous list will be discarded.

4.5.4.5 Storing the configuration list

The list stored in the RAM memory will be stored as a resident list in the flash memory. Please note that the module will run through a restart in this case.
4.5.4.6 Starting the "Processing with configuration list"

This menu item is used to select and start the configuration list that is to be activated. Please note that the module will start with the list selected last in the case of a restart as well. When the module is disconnected from power supply and plugged in again, it will always start with the list in the flash memory. If there is no list in the flash memory, the module will remain in the "Waiting for configuration list" state.

4.5.4.7 Stopping the "Processing with configuration list"
4.5.5 Overview of the status and processing parameters

Current statuses and processing parameters.

4.5.6 Diagnosis menu
4.5.6.1 System messages

The system-message buffer displays information, warnings and errors. For investigating module restarts, it is possible to perform a post mortem analysis. For this purpose, select the "post mortem" line after selecting menu item "System messages": For displaying the current system messages, select "actual".

Explanation of 'global info':
- maxindex: Max. index of a system message in the buffer (corresponds to max. number of entries).
- actindex: Index of the current buffer entry.
- actentry: Absolute message counter.

Explanation of 'entry info':
- entry: Absolute message number of the related system message.
- msgcode: System message coding, used for identifying the message.
- msg: Indicating the message.

For a detailed description of all of the possible system messages please refer to Section 5 "Concept of system messages".

Type any key to break: ▼
4.5.6.2 PROCONTROL module diagnosis

Current diagnostic status and meaning of the annunciations on the front plate of the station bus interface and the processing section.

4.5.6.3 Contents of PROCONTROL system registers

Contents of one of the 87TS50 system registers (register 246).
4.5.6.4 Advant Power station status of module

The station status of the partner module can be displayed only if the module is in redundant mode.

4.5.6.5 Advant Power station status of partner module

The station status of the partner module can be displayed only if the module is in redundant mode.
4.5.6.6 Advant Power module diagnosis

Current diagnostic status of the Advant Fieldbus 100 interface. This display is based on the type of representation used in Advant Power. In this example, the Advant Fieldbus 100 interface is not operating in redundant mode, i.e. a 87TS50–TK515–TC625–AF100 connection is either interrupted at the time or not established at all.

4.5.6.7 Overview of Advant Power transmission channel

Overview and current diagnostic status of the transmission channels. The display is based on the type of representation used in Advant Power. The Advant Fieldbus 100 interface uses three types of channels:

- Type 0: Module
- Type 1: Flash memory
- Type 53: Peripheral dataset element
4.5.6.8 Advant Power transmission channel

Display of the current diagnostic status of a peripheral dataset element. The display is based on the type of representation used in Advant Power. In this example, the selected dataset element is active and has no diagnostic message pending. As an alternative, either the diagnostic status of the station status (with station addresses of own module or of partner module) can be displayed or the module diagnosis status (with instance =1).

4.5.7 Date and time

Current date, current time, and time status.
4.5.8 System analysis (special tools)

This menu is intended only for special, internal 87TS50 system analyses, and is therefore not accessible for general use.

4.5.9 Using the “user monitor” via the network

Logging into the “user monitor” of another 87TS50 via Ethernet. Please note that no configuration list can be loaded in this mode.

4.5.10 Terminating the user monitor session

In order to prevent unauthorized use of the user monitor, a session should be terminated with “Logout user monitor” in the main menu.
5 System messages

5.1 General notes

System messages are logged in the internal system message buffer of the 87TS50. A message consists of the following parts:

Message code

This code identifies the message. The messages in this publication are grouped to functional classes. To find a message quickly, refer to the 'index of message codes' at the end of this publication.

Time stamp

The time stamp indicates the time when the message was generated.

Severity code

Each message contains a severity code. The same message code can be sent with different severity codes. This publication describes all the codes possible for every message. The abbreviation for the particular severity code is indicated in angle brackets (> <).

The meaning of the codes:

- Fatal Error ( >f< )
  After this message, proper operation of the 87TS50 cannot be guaranteed. Some action by the user is required.

- Nonfatal Error ( >e< )
  It may occur that data is lost by the 87TS50. Normally, an action by the user is not required, since the module will handle such problems automatically.

- Warning ( >w< )
  Something in the module is not working as usual. There might be some configuration errors or inconsistent module states. All of the signals and functionalities that are configured correctly are working without any problems or data losses.

- Informational ( >i< )
  These messages are intended to inform the user about the current module state.

Internet address

Each message contains the Internet address of the module generating that message.

Process identification and function identification code

These two items identify that particular software segment of the 87TS50 that has generated this message.

Message text

This text is a plain-text explanation of the message. It may also include parameters. For these parameters, the C-notation will be used. This way, the parameter placeholder in the strings can be identified by its first character.
### 5.2 Explanation of system messages

The messages are grouped to the following functional classes:

- VRTX system call messages
- Common start/shutdown and miscellaneous messages
- Interrupt service handler messages
- Receive telegram processing messages
- Supervision messages
- Send telegram processing messages
- Communication messages
- Configuration list processing messages
- Configuration list scanning messages
- Temperature measuring messages
- Cyclic redundancy check messages
- Virtual field interface messages
- Special test messages

#### 5.2.1 VRTX system call messages

<table>
<thead>
<tr>
<th>Message code</th>
<th>Message text</th>
<th>Severity code</th>
<th>Explanation</th>
<th>User action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T_VX_TCREA</strong></td>
<td>vrtx call: sc_tcreate( task: 0x%08x, tid: %03d, pri: %03d, error: 0x%08x )</td>
<td>Error</td>
<td>The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers an 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.</td>
<td>If this error should occur after system restart please contact the ABB service department.</td>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>T_VX_TPRIO</strong></td>
<td>vrtx call: sc_tpriority( tid: %03d, pri: %03d, error: 0x%08x )</td>
<td>Error</td>
<td>The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.</td>
<td>If this error should occur after system restart, please contact the ABB service department.</td>
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<tr>
<td><strong>T_VX_STCREA</strong></td>
<td>vrtx call: sys_sc_tcreate( task: 0x%08x, tid: %03d, pri: %03d, error: 0x%08x )</td>
<td>Error</td>
<td>The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.</td>
<td>If this error should occur after system restart, please contact the ABB service department.</td>
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<tbody>
<tr>
<td><strong>T_VX_TINQU</strong></td>
<td>vrtx call: sc_tinquiry( info[0]: %03d, info[1]: %03d, tid: %03d, error: 0x%08x )</td>
<td>Error</td>
<td>The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.</td>
<td>If this error should occur after system restart, please contact the ABB service department.</td>
</tr>
</tbody>
</table>
System messages

Message code: T_VX_TDELE
Message text: vrtx call: sc_tdelete( tidpri: %03d, code: 0x%02x, error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_QPOST
Message text: vrtx call: sc_qpost( qid: %03d, msgp: 0x%08x, error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_LOCK
Message text: vrtx call: sc_lock()
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_QPEND
Message text: vrtx call: sc_qpend( qid: %03d, timeout: %08d, msgp: 0x%08x , error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_ULOCK
Message text: vrtx call: sc_unlock()
Severity code: Informational
Explanation: Operating system call information.
User action: No user action required.

Message code: T_VX_QINQU
Message text: forts call: sc_qinquiry( qid: %03d, countp: 0%08d, error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. Until the The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_GBLOC
Message text: vrtx call: sc_gblock( pid: %03d, blockp: 0x%08x, error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_QACCE
Message text: vrtx call: sc_qaccept( qid: %03d, msgp: 0x%08x , error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: T_VX_RBLOC
Message text: vrtx call: sc_rblock( pid: %03d, blockp: 0x%08x, error: 0x%08x )
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.
**Message code:** T_VX_QCREA  
**Message text:** vrtx call: sc_qcreate( qid: %03d, qsize: %03d, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_FCREA  
**Message text:** vrtx call: sc_fcreate( groupid: %03d, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_FPOST  
**Message text:** vrtx call: sc_fpost( groupid: %03d, mask: 0x%08x, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_FPEND  
**Message text:** vrtx call: sc_fpend( groupid: %03d, timeout: %08d, mask: 0x%08x, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_QCLEA  
**Message text:** vrtx call: sc_qclear( groupid: %03d, mask: 0x%08x, pmask: 0x%08x, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_DELAY  
**Message text:** vrtx call: sc_delay( timeout: %08d )  
**Severity code:** Informational  
**Explanation:** Information on operating system call.  
**User action:** No user action required.

**Message code:** T_VX_GTIME  
**Message text:** vrtx call: sc_gtime( ): %08d )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_PEND  
**Message text:** vrtx call: sc_pend( mboxp: 0x%08x, timeout: %08d, msg: 0x%08x, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code:** T_VX_POST  
**Message text:** vrtx call: sc_post( mboxp: 0x%08x, msg: 0x%08x, error: 0x%08x )  
**Severity code:** Error  
**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.  
**User action:** If this error should occur after system restart, please contact the ABB service department.
Message code: **T_VX_PCREA**
Message text: `vrtx call: sc_pcreate(pid: %03d, paddr: 0x%08x, bsize: %03d, error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_VX_SCREA**
Message text: `vrtx call: sc_screate(sem_init: %08d, opt: %03d, sem_id: %08d, error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_VX_SDELE**
Message text: `vrtx call: sc_sdelete(sem_id: %08d, opt: %03d, error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_VX_SPEND**
Message text: `vrtx call: sc_spend(sem_id: %08d, timeout: %08d, error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_VX_SPOST**
Message text: `vrtx call: sc_spost(sem_id: %08d, error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_TX_SOCKET**
Message text: `txn call: socket(error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_TX_BIND**
Message text: `txn call: bind(error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_TX_LISTEN**
Message text: `txn call: listen(error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_TX_ACCEPT**
Message text: `txn call: accept(error: 0x%08x)`
Severity code: Error
Explanation: The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.
5 System messages

**Message code: T_TX_CLOSE**

**Message text:** tnx call: close( error: 0x%08x )

**Severity code:** Error

**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.

**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code: T_TX_CONNECT**

**Message text:** tnx call: connect( error: 0x%08x )

**Severity code:** Error

**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.

**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code: T_TX_SEND**

**Message text:** tnx call: send( error: 0x%08x )

**Severity code:** Error

**Explanation:** The displayed VRTX system function on the 87TS50 module returns an error message. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.

**User action:** If this error should occur after system restart, please contact the ABB service department.

**Message code: T_RTL_MALLOC**

**Message text:** rtl call: malloc: memory block ptr = 0x%08x, size = %d bytes )

**Severity code:** Error

**Explanation:** There is not enough system memory space available.

**User action:** Please contact the ABB service department.

**Message code: T_RTL_FREE**

**Message text:** rtl call: free: memory block ptr = 0x%08x )

**Severity code:** Informational

**Explanation:** A memory block is put back into the system memory pool.

**User action:** Since this message is some type of 'Trace message', disable the corresponding trace flag for that task whose taskid has been reported in the message.

**Message code: T_RTL_FOPEN**

**Message text:** rtl call: fdopen( descr: %08d, streamp: 0x%08x )

**Severity code:** Error

**Explanation:** There are no system resources available for opening a stream.

**User action:** Please contact the ABB service department.

**Message code: T_RTL_FCLOSE**

**Message text:** rtl call: fclose( streamp: 0x%08x, error: 0x%08x )

**Severity code:** Error

**Explanation:** The stream specified by the streampointer cannot be closed.

**User action:** Please contact the ABB service department.

**Message code: T_RTL_FSEEK**

**Message text:** rtl call: fseek( streamp: 0x%08x, offset: %08d, ptrname: %08d, error: 0x%08x )

**Severity code:** Error

**Explanation:** The stream position specified for the streampointer cannot be set.

**User action:** Please contact the ABB service department.

**Message code: T_RTL_FTELL**

**Message text:** rtl call: ftell( streamp: 0x%08x, current position: 0x%08x )

**Severity code:** Error

**Explanation:** The position for the specified streampointer cannot be read.

**User action:** Please contact the ABB service department.

**Message code: T_IFX_INSTAL**

**Message text:** ifx call: ifx_install( namep: 0x%08x, driverp: 0x%08x, error: 0x%08x )

**Severity code:** Error

**Explanation:** A file cannot be installed.

**User action:** Please contact the ABB service department.

**Message code: T_IFX_OPEN**

**Message text:** ifx call: ifx_open( pathnamep: 0x%08x, accmode: %08d, descr: %08d, error: 0x%08x )

**Severity code:** Error

**Explanation:** A descriptor cannot be opened.

**User action:** Please contact the ABB service department.

**Message code: T_IFX_CLOSE**

**Message text:** ifx call: ifx_close( descr: %08d, error: 0x%08x )

**Severity code:** Error

**Explanation:** A descriptor cannot be closed.

**User action:** Please contact the ABB service department.

**Message code: T_IFX_MOUNT**

**Message text:** ifx call: ifx_mount( namep: 0x%08x, devnamep: 0x%08x, managerp: 0x%08x, error: 0x%08x )

**Severity code:** Error

**Explanation:** The device manager cannot be mounted.

**User action:** Please contact the ABB service department.
Message code: **T_IFX_WRITE**
Message text: ifx call: ifx_write( descr: %08d, reqcnt: %08d,
actcnt: %08d, error: 0x%08x )
Severity code: Error
Explanation: A device cannot be written on.
User action: Please contact the ABB service department.

Message code: **T_IFX_ASTART**
Message text: ifx call: ifx_astart( descr: %08d, fncode:
%08d, error: 0x%08x )
Severity code: Error
Explanation: An asynchronous request cannot be started.
User action: Please contact the ABB service department.

Message code: **T_IFX_AWAIT**
Message text: ifx call: ifx_wait( descr: %08d, timeout:
%08d, error: 0x%08x )
Severity code: Error
Explanation: Waiting for an asynchronous request has not been successful.
User action: Please contact the ABB service department.

Message code: **T_IFX_ACANCL**
Message text: ifx call: ifx_acancel( descr: %08d, error:
0x%08x )
Severity code: Error
Explanation: Cancelation of an asynchronous request has not been successful.
User action: Please contact the ABB service department.

Message code: **T_IFX_IOCTL**
Message text: ifx call: ifx_ioctl( descr: %08d, opcode: %08d,
error: 0x%08x )
Severity code: Error
Explanation: An I/O control operation has not been successful.
User action: Please contact the ABB service department.
5.2.2 Common start/shutdown and miscellaneous messages

**Message code: T_STARTUP**
Message text: task start, release: %d.%d, date: %04d %04d
Severity code: Informational
Explanation: A 87TS50 task on the 87TS50 module producing this message was started. The current release and release date are indicated in the message.
User action: No user action required.

**Message code: T_SHUTDOWN**
Message text: task shutdown
Severity code: Error, Informational
Explanation: A 87TS50 task on the 87TS50 module producing this message was stopped. To find out the reason for this and to identify the right user action, analyze the messages before and after this message.
User action: No user action required.

**Message code: T_SYSREGRERR**
Message text: readsysreg rtn error (reg: %d, val: %d) error: 0x%08x
Severity code: Error
Explanation: A 87TS50 system register could not be read. This register is one of the PROCONTROL module status registers as diagnostic register 246. If such registers cannot be processed, error may occur in the PROCONTROL module communication. This error may be caused by defective or errored software or hardware. This error does not affect telegram/dataset processing.
User action: Restart the 87TS50. Should the error still occur after this, please contact the ABB service department.

**Message code: T_SYSREGSERR**
Message text: setsysreg rtn error (reg: %d, val: %d, operation: %d) error: 0x%08x
Severity code: Error
Explanation: A 87TS50 system register could not be written. This register is one of the PROCONTROL module status registers as diagnostic register 246. If such registers cannot be processed, errors in PROCONTROL module communication might occur. This error may be caused by defective or errored software or hardware. This error does not affect telegram/dataset processing.
User action: Restart the 87TS50. Should the error still occur after this, please contact the ABB service department.

**Message code: T_BASTART**
Message text: ba sysmsg, ba start, release: %d.%d, date: %04d %04d
Severity code: Informational
Explanation: The 87TS50 bus interface was started. The message indicates the release number of the software implemented on the 87TS50 module. In addition, the start date is indicated.
User action: No user action required.

**Message code: T_BAOSTATERR**
Message text: ba error, baorder: %d, ba rtn status: %d, timeout(0=ok/1=timeout): %d
Severity code: Error
Explanation: An order from the processing section has been aborted or there was no response by the bus interface.
User action: Analyze previous system messages. If no hints can be found, restart the 87TS50. Should the error still occur after this, please contact the ABB service department.

**Message code: T_BAODRTNERR**
Message text: ba error, baorder: %d, suborder: %d, ba rtn status(1=ok/0=error): %d, vrtx error: 0x%08x
Severity code: Error
Explanation: An order from the processing section has been aborted by the bus interface or a vrtx error has occurred. The following list explains orders and suborders that may have been given previous to this message:

- baorder/suborder
  - 4/1 => load address list offline/load address list
  - 4/2 => load address list offline/insert address list
  - 12/1 => send source telegram/insert telegram
  - 12/2 => send source telegram/delete telegram

User action: Analyze previous system messages. If no hints can be found, restart the 87TS50. Should the error still occur after this, please contact the ABB service department.

**Message code: T_BARTNERR**
Message text: ba error, order(1=connect/0=disconnect): %d, ba rtn status(1=ok/0=error): %d, vrtx error: 0x%08x
Severity code: Error
Explanation: An order from the processing section has been aborted by the bus interface or a vrtx error has occurred.
User action: Analyze previous system messages. If no hints can be found, restart the 87TS50. Should the error still occur after this, please contact the ABB service department.
**Message code: T_CIRTNERR**
Message text: ci error, order(1=connect/0=disconnect): %d
Severity code: Error
Explanation: An order from the processing section to the AF100 communication interface has not been successful.
User action: Analyze previous system messages. If no hints can be found, restart the 87TS50. Should the error still occur after this, please contact the ABB service department.

**Message code: T_BADTASKID**
Message text: task which is not in supervision called supervision routine. taskid: %d
Severity code: Warning
Explanation: This is a coding error in the 87TS50 software. A task on the 87TS50 tries to set its supervisor flag although it is not being monitored by the supervision task. This does not affect receiving and sending of telegrams.
User action: Call the ABB service department.

**Message code: T_EXCEPT_ERR**
Message text: exceptionhandler, exception in task, taskid: %d excoffset: %d
Severity code: Error
Explanation: A task on the 87TS50 module has encountered an unexpected error situation. The messages before and after this message show what has happened so far.
User action: Analyze the messages before and after this message.

**Message code: T_EXCEPT_DLT**
Message text: exceptionhandler, delete task, taskid: %d reason: 0x%04x
Severity code: Error
Explanation: A task on the 87TS50 module generating this message was canceled by the exception handler. This error triggers a 87TS50 restart. The following list indicates possible causes of the error:
- 0x9999 => Parity error
- 0xaaaa => Address error
- 0xbbbb => Bus error
User action: Please contact the ABB service department.

**Message code: T_LOCKERROR**
Message text: lock error, lockdata: 0x%02x at addr: 0x%08x, error (1=lock/2=unlock): %d
Severity code: Error
Explanation: The interlocking time preset for a 87TS50 register has been exceeded by the bus interface. This problem is solved automatically, however, data intended for the telegram stored under the register address displayed may be lost.
User action: No user action required.

**Message code: T_SYSTIMEINV**
Message text: system time invalid, year: %d, month: %d, day: %d, msec: %d
Severity code: Error
Explanation: One or more segments of the system time are outside of the admissible range.
User action: Check whether the PROCONTROL system clock is working correctly (including sending of time telegrams to the PROCONTROL bus).

**Message code: T_SYSTIMEVAL**
Message text: system time is now valid
Severity code: Informational
Explanation: This is the OK message following a T_SYSTIMEINV message.
User action: No user action required.
### 5.2.3 Interrupt service handler messages

**Message code: T_NAORD**

- **Message text:** try to send not allowed order: %d to isr handler task
- **Severity code:** Warning
- **Explanation:** A task tried to send an inadmissible order to the isr handler task. This order will be ignored. This is an internal 87TS50 software problem which does not affect telegram/dataset processing.
- **User action:** Please contact the ABB service department.

**Message code: T_NAORDV**

- **Message text:** try to send order: %03d from task with tid: %03d to isr handler task
- **Severity code:** Warning
- **Explanation:** An unauthorized task tried to send an order to the isr handler task. This order will be ignored. This is an internal 87TS50 software problem which does not affect telegram/dataset processing.
- **User action:** Please contact the ABB service department.

**Message code: T_NAORDR**

- **Message text:** try to get rtn for order: %03d from task with tid: %03d from isr handler task
- **Severity code:** Warning
- **Explanation:** An unauthorized task on the 87TS50 module tried to get a response from the isr handler task for a certain order. This order will be ignored. This is an internal 87TS50 software problem which does not affect telegram/dataset processing.
- **User action:** Please contact the ABB service department.

**Message code: T_VECUNKN**

- **Message text:** bad vector: %d send to isr handler task
- **Severity code:** Error
- **Explanation:** An unknown message has been generated by the bus interface and sent to the processing section.
- **User action:** Please contact the ABB service department.

**Message code: T_BADDSTORDR**

- **Message text:** receive bad destination tlg order from ba, reg no: %02d out of range (%02d..%02d)
- **Severity code:** Error
- **Explanation:** An invalid destination-telegram register address has been indicated in a destination-telegram order from the bus interface to the processing section. This destination-telegram order will not be executed by the processing section.
- **User action:** Please contact the ABB service department.

**Message code: T_BADDSTORDV**

- **Message text:** receive bad destination tlg order from ba, reg: %02d invalid
- **Severity code:** Error
- **Explanation:** A destination telegram order from the bus interface to the processing section contains a destination telegram register that is not valid in the destination-register receive memory. This destination-telegram order will not be processed by the processing section.
- **User action:** Please contact the ABB service department.

**Message code: T_BADDSTORDV**

- **Message text:** receive bad destination tlg order from ba, reg: %02d invalid
- **Severity code:** Error
- **Explanation:** A destination telegram order from the bus interface to the processing section contains a destination telegram register that is not valid in the destination-register receive memory. This destination-telegram order will not be processed by the processing section.
- **User action:** Please contact the ABB service department.

**Message code: T_FIFOOVERFL**

- **Message text:** ba sysmsg, receive section fault (fifo overflow)
- **Severity code:** Error
- **Explanation:** The internal telegram FIFO in the 87TS50 module is overflown. Telegram data were lost.
- **User action:** Check whether the module’s telegram/dataset throughput is within the admissible range (cf. Section ‘Technical Data’ in the Module Description).
Message code: **T_WARMSTART**

Message text: ba sysmsg, newstart bus interface, reason: 0x%4x
Severity code: Informational
Explanation: After a fatal error, the bus interface has performed a restart. Analyze the preceding messages to identify the cause. The following list indicates the possible causes for a bus interface (BA) restart:
- 0x0000 => Initial value
- 0x1111 => Fatal breakdown
- 0x2222 => Hardware watchdog
- 0x3333 => Software watchdog
- 0x4444 => Stack pointer error
- 0x5555 => Interrupt vector/timer error
- 0x6666 => PROT device address error
- 0x7777 => VA watchdog/Vcc supervisor
- 0x8888 => SSE mode
- 0x9999 => SSE overrun
- 0xaaaa => AP mode
- 0xbbbb => Address pointer table error
- 0xcccc => AP device address error
- 0xdddd => AP address list error
- 0xeeee => SAB16 mode
- 0xffff => PS input buffer error
User action: No user action required.

Message code: **T_CONN_ABORT**

Message text: ba sysmsg, connect aborted, reason: %d
Severity code: Error
Explanation: A connect order was aborted by the bus interface. The reason for this is indicated in the order. The following list gives the codes of possible causes:
- 1 => Parameter NOADR in connect order out of range
- 2 => Station bus failure
- 3 => Recording fifo overflow
- 4 => Station address not in ascending order for cyclic operation, e.g. first bus telegram for a cyclic station call is sent in event mode
- 5 => Timeout. No cyclic telegrams received for 15 seconds
- 6 => Address list overflow in first station recorded, e.g. filling level in connect order is too low
User action: Check the preceding messages to analyze these problems.

Message code: **T_REMBUS_OUT**

Message text: ba sysmsg, procontrol remote bus fault
Severity code: Error
Explanation: The PROCONTROL remote-bus connection is disturbed. It is not possible to receive any telegrams from outside of the station where the 87TS50 module is installed.
User action: Check the PROCONTROL hardware. As soon as the connection is okay again, the telegrams from outside the 87TS50 station will be received again automatically.

Message code: **T_STABUS_OUT**

Message text: ba sysmsg, procontrol station bus fault
Severity code: Error
Explanation: Fatal error on the station bus. This station cannot receive any data.
User action: Check the PROCONTROL hardware. As soon as the station bus is okay again, telegram data receiving will continue automatically.

Message code: **T_BUS_NOW_OK**

Message text: ba sysmsg, procontrol remote/station bus ok
Severity code: Informational
Explanation: The remote-bus connection is okay again after a failure.
User action: No user action required.

Message code: **T_TLGCNT_NOK**

Message text: ba sysmsg, addrlist generation fault, act/prev cyclecnt: %d, diff: %d, detected at sta: %d(prev) and sta: %d(act)
Severity code: Warning
Explanation: An inconsistency has been detected while the address list was being generated. For address list generation, a number of generations are performed. If the number of telegrams received differs every time this message is produced, the reason for this could be that modules were added to or removed from the PROCONTROL bus while the first address list was being generated.
User action: No user action required.

Message code: **T_ADLIST_FUL**

Message text: ba sysmsg, addrlist full, learning stopped
Severity code: Error
Explanation: The internal 87TS50 address list is full. The 87TS50 cannot receive any new telegrams.
User action: This message should not occur with this 87TS50 application. Please contact the ABB service department.
5 System messages

5.2.4 Receive telegram processing messages

Message code: **T_CHKSUM_NOK**

Message text: ba sysmsg, addrlst checksum error, calculated: 0x%08x, received: 0x%08x
Severity code: Error
Explanation: The checksum of the predefined address list calculated by the bus interface differs from the checksum calculated by the processing section. The address list will not be activated by the bus interface.
User action: Withdraw the 87TS50 module and plug it in again. If the error should still occur, there is a hardware or software error on the module, and the module needs to be replaced.

Message code: **T_ADLL_ABORT**

Message text: ba sysmsg, addrlst rejected, reason: %d
Severity code: Error
Explanation: A connect order has been aborted by the bus interface. The reason for this is indicated in the order. The following list gives the codes of possible causes:
1 => Address list pointer error
2 => Receive register address error
3 => Address list overflow
User action: This message should not occur with this 87TS50 application. Please contact the ABB service department.

Message code: **T_BADFIFOSRA**

Message text: bad tlg index in fifo entry: sra=%d val=0x%X rs=0x%X time=0x%X
Severity code: Error
Explanation: Problems with the bus interface. FIFO receive register address out of range. This error could mean that the software of the 87TS50 is defective or that there is a coding error. All the other telegrams will be processed as usual.
User action: Reconnect the 87TS50 to eliminate this error. Should this error occur again, please contact the ABB service department.

Message code: **T_FIFOCONFUS**

Message text: bad entry in fifo header: status: 0x%02x rdidx: 0x%04x wr-idx: 0x%04x max-idx: 0x%04x
Severity code: Error
Explanation: Inconsistent data in FIFO header on the 87TS50 module producing this message. The software on the 87TS50 module is defective or contains a coding error. The cause of this error could also be a hardware error on the 87TS50 module. This error message triggers a 87TS50 restart.
User action: Please contact the ABB service department.

Message code: **T_BADFIFOSTA**

Message text: bad tlg status in fifo entry: sra=%d val=0x%X rs=0x%X time=0x%X
Severity code: Error
Explanation: Problems with the bus interface. The register status rs is not admissible for the respective FIFO receive register address. If this error should occur, the 87TS50 software might be defective or there may be a coding error. All the other telegrams will be processed as usual.
User action: Reconnect the 87TS50 to eliminate this error. Should this error occur again, please contact the ABB service department.

Message code: **T_FIFOFREE**

Message text: receive section ok (fifo free)
Severity code: Informational
Explanation: The telegram data FIFO on the 87TS50 module is free again, following an overflow. Receive telegram processing is running without data losses.
User action: No user action required.

Message code: **T_FIFOFREE**

Message text: receive section ok (fifo free)
Severity code: Informational
Explanation: The telegram data FIFO on the 87TS50 module is free again, following an overflow. Receive telegram processing is running without data losses.
User action: No user action required.

Message code: **T_BLKCREAERR**

Message text: resource error: block create for sta: %d mod: %d reg: %d da: %d aborted
Severity code: Error
Explanation: The 87TS50 module address list is full. No more telegrams can be received from PROCONTROL. The displayed telegram has not been added to the address list. The telegrams that are already stored in the address list are received and processed as usual.
User action: This message should not occur with this 87TS50 application. Please contact the ABB service department.
Message code: **T_BLKMEMBERR**
Message text: block member count mismatch: for sta: %d mod: %d reg: %d members: %d
Severity code: Error
Explanation: The PROCONTROL bus has received a telegram that cannot be processed. This telegram will be ignored.
User action: If this message is generated often, check the PROCONTROL bus. Something could be wrong there (e.g. a defective module may be send telegrams to the remote/station bus that cannot be processed).

Message code: **T_DSCMDTMOUS**
Message text: dataset command timeout, cmd (0=active/1=passive/2=delete): %d timeout: %d ms
Severity code: Error
Explanation: This timeout indicates that the time since the beginning and the end of the dataset-write control command has elapsed for one or several send datasets.
User action: Check whether a bus administrator is active on the Advant Fieldbus 100. Stop and start the coupling module again with the current configuration list.

### 5.2.5 Supervision messages

Message code: **T_TSKOFFLINE**
Message text: offline flag group: 0x%08x, group mask: 0x%08x
Severity code: Error
Explanation: A monitored 87TS50 task has been terminated. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_TSKTIMEOUT**
Message text: online flag group: 0x%08x, group mask: 0x%08x timeout: %d sec
Severity code: Error
Explanation: The 87TS50 supervisor detects a task not operating properly. This error message triggers a 87TS50 restart. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this error should occur after system restart, please contact the ABB service department.

Message code: **T_TSKMISSING**
Message text: task not found, taskid: %d
Severity code: Informational
Explanation: A non-critical 87TS50 task has been terminated. The task will be restarted again automatically. Non-critical tasks do not participate in telegram/dataset processing.
User action: No user action required.

Message code: **T_TSKRESTART**
Message text: task restart, taskid: %d
Severity code: Informational
Explanation: A non-critical 87TS50 task was restarted. This message is sent after T_TSKMISSING.
User action: No user action required.

Message code: **T_TSKDELETE**
Message text: task delete by suvi, taskid: %d
Severity code: Informational
Explanation: A task on the 87TS50 module has been terminated by the supervisor task. Check the preceding messages to analyze the error.
User action: No user action required.

Message code: **T_BATIMEOUT**
Message text: timeout bus interface
Severity code: Error
Explanation: The 87TS50 supervisor task receives no life signal from the bus interface. Consequently, a fatal error is detected in this software segment. The 87TS50 module producing this message will be restarted automatically.
User action: Please contact the ABB service department.

Message code: **T_BAWARMSTRT**
Message text: newstart bus interface
Severity code: Error
Explanation: The bus interface restarts automatically because a non-recoverable error situation has been detected.
User action: Please contact the ABB service department.

Message code: **T_SYSHUTDOWN**
Message text: new start module, reason: 0x%4x
Severity code: Informational
Explanation: The 87TS50 module restarts, because a non-recoverable error has been detected (see preceding error messages). The following list gives the possible causes of a restart. These causes will also be indicated in the message:
- 0x2222 => Software startup
- 0x6666 => Watchdog error
- 0x7777 => TCP/IP error
- 0x8888 => Warmstart bus interface
- 0xdddd => Task offline
- 0xFFFF => Task timeout
User action: No user action required.
Message code: T_TNXSIGNAL
Message text: received tnx signal: 0x%02x for socket: 0x%02x
Severity code: Error
Explanation: An error in the Ethernet connection has been detected by the 87TS50 TCP/IP interface. The 87TS50 triggers a restart.

User action: Check Ethernet connection.

Message code: T_TNXPANIC
Message text: received tnx panic, panicnumber: 0x%02x
Severity code: Error
Explanation: An error in the TCP/IP interface of the 87TS50 module has been detected. This error message triggers a 87TS50 restart.
User action: Check the Ethernet connection.

0x0d SIGPIPE, write on pipe that is not being read
0x10 SIGURG, critical condition ('out of band' message) on socket
0x17 SIGIO, possible input/output on socket
5.2.6 Send telegram processing messages

Message code: T_BADSRCOORD
Message text: send tlg order(insert/delete) with number of tlg: %d ->max(%d)
Severity code: Warning
Explanation: A send telegram order with too many telegram members was sent to the send telegram output task. This order is ignored. The reason for this could either be defective or errored 87TS50 software or a hardware defect on the module.
User action: If this message should occur after a system restart, please contact the ABB service department.

Message code: T_UNKSRCOORD
Message text: send tlg order(1=insert/2=delete): %d unknown, tlg number: %d
Severity code: Warning
Explanation: An unknown send telegram order was received by the send telegram output task. The order is ignored.
User action: If this message should occur after a system restart, please contact the ABB service department.

Message code: T_BADPMODADR
Message text: send tlg order(mod: %d, reg: %d) bad module address, ownmod: %d, tlg number: %d
Severity code: Warning
Explanation: An order with an inadmissible module address was sent to the 87TS50 module. The order is ignored.
User action: If this message should occur after a system restart please contact the ABB service department.

Message code: T_BADPREGADR
Message text: send tlg order(mod: %d, reg: %d) bad register address, tlg number: %d
Severity code: Warning
Explanation: An order with an inadmissible register address was sent to the 87TS50 module. The order is ignored.
User action: If this message should occur after a system restart, please contact the ABB service department.

Message code: T_BADPDAVAL
Message text: send tlg order(mod: %d, reg: %d, da: %d) bad data type value, tlg number: %d
Severity code: Warning
Explanation: An order with an inadmissible data type was received by the send-telegram output task. The order is ignored.
User action: If this message should occur after a system restart, please contact the ABB service department.

Message code: T_BADSRCHAIN
Message text: pointer error in sendtlg list at addr: 0x%08x (mod: %d, reg: %d), tlg number: %d
Severity code: Error
Explanation: A pointer error has been detected in the send-telegram list. If this error should occur, the 87TS50 software might be defective or there may be a coding error. Other telegrams might not be processed as usual.
User action: Reconnect the 87TS50 module to eliminate this error. Should this error occur again, please contact the ABB service department.

Message code: T_ORDSTNEXEC
Message text: send tlg order stop not executable
Severity code: Warning
Explanation: The order has not been executed. The reason for this is a previous error.
User action: Check the preceding system messages to find out the reason for this message.

Message code: T_ORDINNEXEC
Message text: send tlg order insert(mod: %d, reg: %d) not executable, tlg number: %d
Severity code: Warning
Explanation: The order has not been executed. The reason for this is a previous error.
User action: Check the preceding system messages to find out the reason for this message.

Message code: T_ORDDLNEXEC
Message text: send tlg order delete(mod: %d, reg: %d) not executable, tlg number: %d
Severity code: Warning
Explanation: The order has not been executed. The reason for this may be a previous error, deletion of a non-existent register, or deletion of an already deleted register.
User action: This message should not occur with this 87TS50 application. Please contact the ABB service department.
5.2.7 Communication messages

**Message code: T_SETCONSERR**

Message text: order(1=connect/0=disconnect): %d request mask: 0x%08x, response mask: 0x%08x, timeout: %d msec

Severity code: Error

Explanation: The order has not been responded to by one or more tasks. Pay attention to difference between mask and response mask. The task id corresponds to the bit position in the mask.

User action: Check whether the 87TS50 is properly connected to the bus systems. Check whether earlier system messages can provide a hint. Try to start the 87TS50 again from the user monitor (configuration list menu: start) again. If the message occurs again despite of these measures, please contact the ABB service department.

**Message code: T_GETFDTATMO**

Message text: firstdataprocessing timeout: request mask: 0x%08x, response mask: 0x%08x, timeout: %d msec

Severity code: Error

Explanation: This timeout indicates that the time since beginning and end of the first data processing session has elapsed for one or several tasks. The bit positions on the request mask represent the task ids. The 87TS50 does not enter the 'Data processing active' state.

User action: Check the connection to the PROCONTROL system and the Advant Fieldbus 100. Try to start the coupling module again with the current configuration list.

**Message code: T_REDMODON**

Message text: redundancy mode on, redundancy state (0=passive/1=active): %d

Severity code: Informational

Explanation: This message indicates the connect parameter of the redundancy mode and informs about the current redundancy status.

User action: No user action required.

**Message code: T_REDMODOFF**

Message text: redundancy mode off

Severity code: Informational

Explanation: This message indicates the connect parameter of the redundancy mode.

User action: No user action required.

**Message code: T_SW_PASSIVE**

Message text: switch redundancy state from active to passive

Severity code: Informational

Explanation: The PROCONTROL station, where the 87TS50 is located, has changed its redundancy status, and the 87TS50 sending this message is now passive.

User action: No user action required.

**Message code: T_SW_ACTIVE**

Message text: switch redundancy state from passive to active

Severity code: Informational

Explanation: The PROCONTROL station, where the 87TS50 is located, has changed its redundancy status, and the 87TS50 sending this message is now active.

User action: No user action required.

**Message code: T_SW_ACT_ERR**

Message text: cannot switch redundancy state from passive to active

Severity code: Error

Explanation: The 87TS50 will become the active redundant module, but the station status of the partner module indicates that the partner module is already the active one.

User action: The partner module may be defective. Check the partner module.

**Message code: T_PROCSTART**

Message text: module starts processing with config. list from (0=ram/1=flash): %d, list id: here follows the actual list id

Severity code: Informational

Explanation: This message informs about the configuration list: active list (RAM or FLASH), list id of the active list

User action: No user action required.

**Message code: T_PROCNOSTRT**

Message text: module cannot start processing with config. list from (0=ram/1=flash): %d, no config. list loaded

Severity code: Warning

Explanation: There has been an attempt to start the 87TS50 with an unavailable configuration list.

User action: Load a configuration list onto the 87TS50 and start the module with this list.
**Message code: T_DSCNFTMOUT**

**Message text:** dataset configuration timeout, timeout: %d ms

**Severity code:** Error

**Explanation:** This timeout indicates that the time since the beginning and the end of the dataset configuration session has elapsed for one or several send datasets.

**User action:** Check whether a bus administrator is active on the Advant Fieldbus 100. Stop the coupling module with the current configuration list and start it again.

**Message code: T_RDSPARTNER**

**Message text:** partner module station status (1=missing/0=received again): %d

**Severity code:** Error (if missing), Informational (if received again)

**Explanation:** Message sent by the receive monitoring function indicating the status of the redundant partner module. The ST/SG LEDs are set/reset according to the receive monitoring status. A redundancy switchover might take place.

**User action:** Check the Advant Fieldbus 100 connection for the redundant 87TS50 pair. Check the system message buffer for previous system messages that may provide additional hints.

**Message code: T_RDSOWNMISS**

**Message text:** partner module as dataset owner missing

**Severity code:** Error

**Explanation:** The partner module, which the send datasets belong to, cannot be reached.

**User action:** Check the Advant Fieldbus 100 connection for the redundant 87TS50 pair.

**Message code: T_RDSCHKMISM**

**Message text:** partner module configuration list checksum mismatch

**Severity code:** Error

**Explanation:** The checksum of the partner-module configuration list is not identical with the checksum of own configuration list.

**User action:** Load the redundant module pair with the same configuration list.

**Message code: T_CI520_STAT**

**Message text:** ci 520

**Severity code:** Error

**Explanation:** These are status messages upon requests sent to the Advant Fieldbus 100 interface.

**User action:** Check whether the 87TS50 is properly connected to the bus systems. Check whether earlier system messages can provide a hint. There might be an 87TS50 hardware defect: Replace the module.
### 5.2.8 Configuration list processing messages

<table>
<thead>
<tr>
<th>Message code</th>
<th>Message text</th>
<th>Severity code</th>
<th>Explanation</th>
<th>User action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T_ADL_ASSIGN</strong></td>
<td>ba address list: item: sy: %d, sta: %d, mod: %d, reg: %d already assigned, ba addresslist indexes: %d and %d</td>
<td>Error</td>
<td>There are two items on the address list for the bus interface having the same PROCONTROL address (station, system, module, register).</td>
<td>Check the configuration list for the PROCONTROL address indicated. Please contact the ABB service department.</td>
</tr>
<tr>
<td><strong>T_RTI_ASSIGN</strong></td>
<td>config. list: rti: %d, sta: %d, mod: %d, reg: %d already assigned at rti: %d</td>
<td>Error</td>
<td>The PROCONTROL address (station, module, register) for the indicated receive telegram index has already been assigned to a previous receive telegram index. The configuration data for this receive telegram index are rejected.</td>
<td>Check and correct the configuration list for the PROCONTROL address indicated.</td>
</tr>
<tr>
<td><strong>T_RDS_ASSIGN</strong></td>
<td>config. list: rdsi: %d, sta: %d, id: %d already assigned at rdsi: %d</td>
<td>Error</td>
<td>The Advant Power address (station, identifier) for the indicated receive dataset index has already been assigned to a previous receive dataset index. The configuration data for this receive dataset index are rejected.</td>
<td>Check and correct the configuration list for the Advant Power address indicated.</td>
</tr>
<tr>
<td><strong>T_STI_ASSIGN</strong></td>
<td>config. list: sti: %d, sta: %d, mod: %d, reg: %d already assigned at sti: %d</td>
<td>Error</td>
<td>The PROCONTROL address (station, module, register) for the indicated send telegram index has already been assigned to a previous send telegram index. The configuration data for this send telegram index are rejected.</td>
<td>Check and correct the configuration list for the PROCONTROL address indicated.</td>
</tr>
<tr>
<td><strong>T_WSIS_ASSIGN</strong></td>
<td>config. list: wsi: %d, sta: %d, mod: %d, reg: %d already assigned at wsi: %d</td>
<td>Error</td>
<td>The Advant Power address (station, module, register) for the indicated send dataset index has already been assigned to a previous send dataset index. The configuration data for this send dataset index are rejected.</td>
<td>Check and correct the configuration list for the Advant Power address indicated.</td>
</tr>
<tr>
<td><strong>T_SDI_BITASI</strong></td>
<td>config. list: rti: %d, sdi(tlg bit: %d, snd ds index: %d, dat ref: %d, dat bit: %d) already assigned</td>
<td>Error</td>
<td>The dat bit in the send dataset index for the indicated receive telegram index has already been assigned to a previous receive telegram index. The configuration data for this send dataset index are rejected.</td>
<td>Check and correct the send dataset index for the receive telegram index indicated.</td>
</tr>
<tr>
<td><strong>T_SDI_TLGASI</strong></td>
<td>config. list: sti: %d, wsi: %d already assigned</td>
<td>Error</td>
<td>The dat reference in the send dataset index for the indicated receive telegram index has already been assigned to a previous receive telegram index. The configuration data for this send dataset index are rejected.</td>
<td>Check and correct the send dataset index for the receive telegram index indicated.</td>
</tr>
<tr>
<td><strong>T_SDI_INDEX</strong></td>
<td>config. list: rti: %d, sdi(tlg bit: %d, snd ds index: %d, dat ref: %d, dat bit: %d) already assigned</td>
<td>Error</td>
<td>The dat bit in the send dataset index for the indicated receive telegram index has already been assigned to a previous receive telegram index. The configuration data for this send dataset index are rejected.</td>
<td>Check and correct the send dataset index for the receive telegram index indicated.</td>
</tr>
<tr>
<td><strong>T_SDI_INDEX</strong></td>
<td>config. list: rti: %d, sti(tlg bit: %d, snd ds index: %d, dat ref: %d, dat bit: %d) already assigned</td>
<td>Error</td>
<td>The telegram bit in the send telegram index for the indicated receive dataset index has already been assigned to a previous receive dataset index. The configuration data for this send dataset index are rejected.</td>
<td>Check and correct the send dataset index for the receive telegram index indicated.</td>
</tr>
<tr>
<td><strong>T_SDI_INDEX</strong></td>
<td>config. list: rti: %d, wsi: %d already assigned</td>
<td>Error</td>
<td>The Advant Power address (station, module, register) for the indicated send dataset index has already been assigned to a previous send dataset index. The configuration data for this send dataset index are rejected.</td>
<td>Check and correct the send dataset index for the receive telegram index indicated.</td>
</tr>
</tbody>
</table>
Message code: **T_STI_TLGAIS**
Message text: config. list: rdsi: %d, dat ref: %d, sti(snd tlg index: %d) already assigned
Severity code: Error
Explanation: The send telegram index for the indicated receive dataset index has already been assigned to a previous receive dataset index. The configuration data for this send telegram index are rejected.
User action: Check and correct the send telegram index for the receive dataset index indicated.

Message code: **T_RTI_BITASI**
Message text: config. list: rti: %d, sta: %d, mod: %d, reg: %d, tlg bit: %d already assigned
Severity code: Error
Explanation: The telegram bit in the PROCONTROL address for the indicated receive telegram index has already been assigned to a previous receive telegram index. The configuration data for this telegram bit are rejected.
User action: Check and correct the telegram bit or the PROCONTROL address for the receive telegram index indicated.

Message code: **T_RDS_BITASI**
Message text: config. list: rdsi: %d, sta: %d, id: %d, dat ref: %d, dat bit: %d already assigned
Severity code: Error
Explanation: The dat bit in the Advant Power address for the indicated receive dataset index has already been assigned to a previous receive dataset index. The configuration data for this dat bit are rejected.
User action: Check and correct the dat bit or the Advant Power address for the receive telegram index indicated.

Message code: **T_SDI_DBMISM**
Message text: config. list: rti: %d, tlg data type: %d, cannot assigned to dat data type(I=1,L=2,B=3,R=4): %d, variant a:sd(si snd ds ind: %d, dat ref: %d) variant b:sd(tlg bit: %d, snd ds ind: %d, dat ref: %d)
Severity code: Error
Explanation: The sending dat's data type does not match the data type of the receive telegram. The configuration data for this send dataset index are rejected.
User action: Correct the telegram bit for the receive data types.

Message code: **T_STI_DBMISM**
Message text: config. list: rdsi: %d, dat ref: %d, cannot assigned to tlg data type: %d, sti(snd tlg ind: %d)
Severity code: Error
Explanation: The bit of a Boolean dat cannot be assigned to the specified telegram bit in the analog/counter telegram. The telegram bit is not a disturbance bit. The configuration data for this send telegram index are rejected.
User action: Correct the telegram bit for the receive dataset index indicated.

Message code: **T_STI_TLGMOD**
Message text: config. list: rdsi: %d, dat ref: %d, sti(snd tlg index: %d) mod adr: %d, out of range (%d..%d)
Severity code: Error
Explanation: The PROCONTROL module address for the specified send telegram index is not within the valid range. The configuration data for this send telegram index are rejected.
User action: Compare the module address indicated for the send telegram index with the PROCONTROL address and correct it.

Message code: **T_STI_BITMOD**
Message text: config. list: rdsi: %d, dat ref: %d, sti(dat bit: %d, snd tlg ind: %d, tlg bit: %d) mod adr: %d, out of range (%d..%d)
Severity code: Error
Explanation: The PROCONTROL module address for the specified send dat is not within the valid range. The configuration data for this send dat are rejected.
User action: Check and correct the module address specified for the send dat.

Message code: **T_STI_TLGMOD**
Message text: config. list: rdsi: %d, dat ref: %d, sti(snd tlg index: %d) mod adr: %d, out of range (%d..%d)
Severity code: Error
Explanation: The PROCONTROL module address for the specified send telegram index is not within the valid range. The configuration data for this send telegram index are rejected.
User action: Compare the module address specified for the send telegram index with the PROCONTROL module location and correct it.
5 System messages

Message code: **T_STI_BITDA**
Message text: config. list: rdsi: %d, dat ref: %d, sti(dat bit: %d, snd tlg ind: %d, tlg bit: %d) tlg da: %d not allowed
Severity code: Error
Explanation: The telegram data type for the specified send telegram index is not admissible. The configuration data for this send telegram index are rejected.
User action: See module description for admissible PRO-CONTROL telegram data types.

Message code: **T_STI_TLGDA**
Message text: config. list: rdsi: %d, dat ref: %d, sti(snd tlg index: %d) tlg da: %d not allowed
Severity code: Error
Explanation: The telegram data type for the specified send telegram index is not admissible. The configuration data for this send telegram index are rejected.
User action: See module description for admissible PRO-CONTROL telegram data types.

5.2.9 Configuration list scanning messages

Message code: **T_CNFTOKUNKN**
Message text: config. list: unknown token in line: %d, token: %s
Severity code: Warning
Explanation: An unknown token has been found in the configuration list.
User action: Check and correct the configuration list.

Message code: **T_CNFTOKNFND**
Message text: config. list: token not found, token: %s
Severity code: Warning
Explanation: An expected token has not been found in the configuration list.
User action: Check and correct the configuration list.

Message code: **T_CNFIDXNFND**
Message text: config. list: sending tlg/ds index or dat reference not found, index: %d, dat ref.: %d, scan mode: %d
Severity code: Warning
Explanation: The specified index number or dat reference number has not been found in the configuration file.
User action: Check and correct the configuration list.

scan modes:

- 0: scan common data
- 1: scan receiving ds data first one
- 2: scan receiving ds data next one
- 3: scan sending tlg data indexed
- 4: scan receiving tlg data first on
- 5: scan receiving tlg data next one
- 6: scan destination tlg data first one
- 7: scan destination tlg data next one
- 8: scan sending ds/dat data indexed
- 9: scan configuration list sizes
- 10: check checksum of config. data file
- 11: check for a valid flash config. list
- 12: check for a valid ram config. list

Message code: **T_CNFUSUPMOD**
Message text: config. list: unsupported scan mode: %d
Severity code: Warning
Explanation: The scan function has been called with an unsupported scan mode. There may be a problem in 87TS50 hardware or software.
User action: Withdraw and reconnect the module. If this message still appears, please contact the ABB service department.

Message code: **T_CNFUNEXEOF**
Message text: config. list: unexpected end of file reached
Severity code: Error
Explanation: The end of the configuration list has been reached, although configuration data are still being expected.
User action: Check and correct the configuration list.

Message code: **T_CNFCHKKNFND**
Message text: config. list: checksum not found
Severity code: Error
Explanation: There is no checksum specified in the configuration list.
User action: Check and correct the configuration list.

Message code: **T_CNFCHKMISM**
Message text: config. list: checksum mismatch, configured: %d, calculated: %d
Severity code: Error
Explanation: The checksum in the configuration list does not match the currently calculated checksum.
User action: Load/save a configuration file with valid checksum entry.
Message code: T_CNFCNVPARA
Message text: config. list: invalid parameter value %d in line:
%d for
variant a:'af-buslength'
variant b:'cycleetime'
variant c:'dataset size'
Severity code: Warning
Explanation: An invalid parameter value has been specified.
User action: Check and correct the configuration list.

Message code: T_CNFBADPARA
Message text: config. list: bad parameter in line: %d, parameter
variant a:'%s' is invalid
variant b:'%d' for %s is out of range [%d..%d]
variant c:'%d' for %s is out of range [%d..%d],
set to default %d
variant d:'%s', too many parameters
variant e:'dat reference'= %s must be unique,
line is ignored
variant f:'rdsi'=%d must be in ascending order
variant g:'rti'=%d must be in ascending order
variant h:'dti'=%d must be in ascending order
variant i:'%s' is missing
Severity code: Warning
Explanation: One of the parameters is errored.
User action: Check and correct the configuration list.

Message code: T_CNMISPARA
Message text: config. list: missing parameter, parameter
variant a:'%s' is invalid
variant b:'%d' for %s is out of range [%d..%d]
variant c:'%d' for %s is out of range [%d..%d],
set to default %d
variant d:'%s', too many parameters
variant e:'dat reference'= %d must be unique,
line is ignored
variant f:'rdsi'=%d must be in ascending order
variant g:'rti'=%d must be in ascending order
variant h:'dti'=%d must be in ascending order
variant i:'%s' is missing
Severity code: Warning
Explanation: One of the parameters is errored.
User action: Check and correct the configuration list.

Message code: T_CNFINVMODE
Message text: config. list: internal mode error, mode: %d
Severity code: Error
Explanation: The internal mode do not fit to one of the specified modes below.
modes:
0 dataset data scan
1 dat data scan
2 dat data scan
3 tlg signal data scan
Severity code: Error
Explanation: The internal mode do not fit to one of the specified modes below.
User action: Please contact the ABB service department.

Message code: T_CNFSREJECT
Message text: config. list: configuration data for rdsi: %d rejected
Severity code: Warning
Explanation: The entire configuration data for the specified receive dataset index are rejected.
User action: Check and correct the configuration list.

Message code: T_CNFTREJECT
Message text: config. list: configuration data for rti: %d rejected
Severity code: Warning
Explanation: The entire configuration data for the specified receive telegram index are rejected.
User action: Check and correct the configuration list.

Message code: T_CNFDREJECT
Message text: config. list: configuration data for dti: %d rejected
Severity code: Warning
Explanation: The entire configuration data for the specified destination tlg index are rejected.
User action: Check and correct the configuration list.
5.2.10 Temperature measuring messages

**Message code:** T_TEMPWARN

**Message text:** temp warning module, temperature: %03d degree celsius out of range (%03d..%03d)

**Severity code:** Warning

**Explanation:** The temperature on the 87TS50 module exceeds the allowed temperature range. The hardware is not at risk yet. But the temperature might continue to rise.

**User action:** Check and/or improve cooling of 87TS50 (cabinet).

**Message code:** T_TEMPERROR

**Message text:** temp error module, temperature: %03d degree celsius out of range (%03d..%03d)

**Severity code:** Fatal Error

**Explanation:** The temperature on the 87TS50 module exceeds the hardware security level. There is a risk that the hardware might be damaged.

**User action:** Check and/or improve cooling of 87TS50 (cabinet).

**Message code:** T_TEMPOK

**Message text:** temp ok module, temperature: %03d degree celsius after warning/error, within range (%03d..%03d)

**Severity code:** Informational

**Explanation:** The temperature of the 87TS50 module has dropped below warning level and is now within the admissible range.

**User action:** No user action required.

5.2.11 Cyclic redundancy check messages

**Message code:** T_CRCTNOTFND

**Message text:** no crc table found, crc check disabled!

**Severity code:** Error

**Explanation:** There is no valid CRC table in the PROMs. The CRC check is disabled. This message should not occur in an official release.

**User action:** Replace the PROM set of the processing section.

**Message code:** T_CRCERROR

**Message text:** crc error in block %d, calculated crc: 0x%04x prommed crc: 0x%04x

**Severity code:** Fatal Error

**Explanation:** There is a CRC sum mismatch between the CRC table and the currently calculated CRC.

**User action:** Exchange the PROM set of the processing section.

**Message code:** T_SUMCRCCHGE

**Message text:** sumcrc changed for (0=ba, 1=ps, 2=module): %d old: 0x%04x new: 0x%04x

**Severity code:** Error, Informational

**Explanation:** The summing CRC of the module has changed. If the severity level is 'Informational CRC has changed due to a new configuration list. Otherwise, there might be problems with further execution of the signalling section.

**User action:** If the severity level is 'Error', replace the PROM set of the processing section.

5.2.12 Virtual Field Interface messages

**Message code:** T_VFI_UNIMPL

**Message text:** vfi unimplemented operation system call

**Severity code:** Error

**Explanation:** There is a system call of the virtual field interface which is not linked to the versatile real-time executive.

**User action:** Please contact the ABB service department.

**Message code:** T_VFI_ERRMSG

**Message text:** vfi errorcode: %d, data: 0x%08x, text: %s

**Severity code:** Informational, Error

**Explanation:** These messages come from the virtual field interface. See also 'VFI error messages'.

**User action:** Please contact the ABB service department if such a message has severity level 'Error'.

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System messages

Message code: T_VFI_TCREATE
Message text: vfi task create (task: 0x%08x, tid: %03d, pri: %03d, param: 0x%08x)
Severity code: Informational
Explanation: This message informs about a new task being created in the virtual field interface.
User action: No user action required.

Message code: T_VFI_DEITOEC
Message text: vfi call: Device_IntToExtTime( error: %d )
Severity code: Error
Explanation: Converting the time into the external time format has failed. Time synchronization with the Advant Power system may not work properly. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check the 87TS50 hardware. Please contact the ABB service department.

Message code: T_VFI_DERDMA
Message text: vfi call: Device_ReadObjectMap( error: %d )
Severity code: Error
Explanation: Reading the 'device object map' has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DERDER
Message text: vfi call: Device_ReadObjErrors( error: %d )
Severity code: Error
Explanation: Reading the device object errors has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DERDID
Message text: vfi call: Device_ReadDeviceId( error: %d )
Severity code: Error
Explanation: Reading the device id has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DERDST
Message text: vfi call: Device_ReadDeviceStatus( error: %d )
Severity code: Error
Explanation: Reading the device status has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DAWRPA
Message text: vfi call: DataSet_WriteStdParamList( error: %d )
Severity code: Error
Explanation: Writing the standard parameter list has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DAWRCO
Message text: vfi call: DataSet_WriteCommand( sta: %d, ident: %d, cmd: %d, error: %d)
Severity code: Error
Explanation: Writing a dataset command has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DESEST
Message text: vfi call: Device_SetDeviceState( state: %d, error: %d )
Severity code: Error
Explanation: Setting the device state has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DERDDI
Message text: vfi call: Device_ReadDiagnostics( error: %d )
Severity code: Error
Explanation: Reading the device diagnostics has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

State definitions:
0 Force device passive
1 Force device operational
2 Force device restart
3 Force device error
4 Force device init
5 Force master
6 Force standby
7 Force OSP
8 Reset OSP
9 Reset submodule 1
10 Reset submodule 2

Message code: T_VFI_DAWRRC
Message text: vfi call: DataSet_WriteCommand( sta: %d, ident: %d, cmd: %d, error: %d)
Severity code: Error
Explanation: Writing a dataset command has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Dataset command definitions:
0 Activate dataset
1 Deactivate dataset
2 Delete dataset
3 Set dataset to error value and deactivate
4 Set dataset to error value and delete

User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.
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Message code: T_VFI_DAWRCL
Message text: vfi call: DataSet_WriteCommandList( error: %d )
Severity code: Error
Explanation: Writing a dataset command list has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DARDAD
Message text: vfi call: DataSet_ReadAddress( sta: %d, ident: %d, error: %d )
Severity code: Error
Explanation: Reading a dataset address has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DARDAI
Message text: vfi call: DataSet_ReadAddressList( error: %d )
Severity code: Error
Explanation: Reading a dataset address list has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DARDDI
Message text: vfi call: DataSet_ReadDiagnosticList( error: %d )
Severity code: Error
Explanation: Reading the dataset diagnostic list has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_DANXDI
Message text: vfi call: DataSet_NextDiagnostics( currpos: %d, error: %d )
Severity code: Error
Explanation: Unpacking the dataset diagnostic list has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_SDP5IN
Message text: vfi call: SDP520a_Install( error: %d )
Severity code: Error
Explanation: Installing the service data protocol has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection. Check the 87TS50 hardware.

Message code: T_VFI_SDP6IN
Message text: vfi call: SDP626_Install( error: %d )
Severity code: Error
Explanation: Installing the slave dispatcher and master receiver task has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.
Check the 87TS50 hardware.

Message code: T_VFI_CIINHW
Message text: vfi call: CI520Drv_InitHW failed( error: %d )
Severity code: Error
Explanation: Initializing the CI520 device driver has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.
Check the 87TS50 hardware.

Message code: T_VFI_CIWRPA
Message text: vfi call: CI520_WriteSpecDeviceParam( blen: %d, flg: 0x%02x, osta: %d, error: %d )
Severity code: Error
Explanation: Writing the CI520 device specific parameters has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 station address in the configuration list is correct.
Withdraw and reconnect the 87TS50 module.

Message code: T_VFI_CIRDPA
Message text: vfi call: CI520_ReadSpecDeviceParam( error: %d )
Severity code: Error
Explanation: Reading the CI520-device-specific parameters has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection. Check 87TS50 hardware.

Message code: T_VFI_CISETI
Message text: vfi call: CI520_SetTime( error: %d )
Severity code: Error
Explanation: Setting the time at the CI520 has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_CISEDA
Message text: vfi call: CI520_SetDate( error: %d )
Severity code: Error
Explanation: Setting the date at the CI520 has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.

Message code: T_VFI_CISETD
Message text: vfi call: CI520_SetDate( error: %d )
Severity code: Error
Explanation: Setting the date at the CI520 has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection.
Message code: **T_VFI_OJRDDI**
Message text: `vfi call: Obj_ReadDiagnostics( chantype: %d, chanattr: %d, chaninst: %d, error: %d )`
Severity code: Error
Explanation: Reading the object diagnostics has not been successful. For the meaning of the error code, refer to 'VFI error codes'.
User action: Check whether the parameters entered during the user monitor session for Advant Power diagnosis were correct.

Message code: **T_VFI_FILDER**
Message text: advant fieldbus fault
Severity code: Error
Explanation: A bus fault has been detected for Advant Fieldbus 100.
User action: Check connection to the Advant Fieldbus 100, modems and TK515 cables.

Message code: **T_VFI_FILDOK**
Message text: advant fieldbus ok
Severity code: Error
Explanation: The bus fault indicated by a previous T_VFI_FILDER message has been eliminated.
User action: No user action required.

Message code: **T_VFI_CINOOP**
Message text: ci520 not operational
Severity code: Error
Explanation: The Advant Fieldbus 100 interface is not operational.
User action: Check whether the FAULT LED is on. If so, check the Advant Fieldbus 100 connection. Check 87TS50 hardware.

Message code: **T_VFI_CIOPAG**
Message text: ci520 operational again
Severity code: Error
Explanation: The Advant Fieldbus 100 interface is operational again.
User action: No user action required.

---

5.2.13 Special test message

Message code: **T_TEST**
Message text: `, txt = %s`
Severity code: Informational
Explanation: These are messages that occur when a test mode has been activated.
User action: No user action required.
5.3 VFI error codes

All of the following VFI error codes are reported with the 87TS50 message code T_VFI_ERRMSG:

- XComm_success
- XDBS_success
- XIOBa_success
- XIOBb_success

- XIOBb_context2

- XIOBb_noBuf
- XIOBb_noServer
- XIOBb_errMsgTyp
- XIOBb_errPackCount
- XIOBb_errMVIinst
- XIOBb_errMalloc
- XIOBb_errNoInit
- XIOBb_errMsgTyp2
- XIOBb_errPackCount2
- XIOBb_unexpInit
- XIOBb_errStateOut
- XIOBb_errStateDisc
- XIOBb_errStateWait
- XIOBb_errState
- XIOBb_errNoServT
- XIOBb_recPackFail
- XIOBb_mviExpt
- XIOBb_noPendMsg
- XIOBb_illSrcNode
- XIOBb_mviNotInst
- XIOBb_unsolResp
- XIOBb_errState2
- XIOBb_recPackFail2
- XIOBb_noMem
- XIOBb_wrongSeq
- XIOBb_routeTooBig
- XIOBb_slavePcktTmo
- XIOBb_masterPcktTmo

- XIOBb_writeProtectError
- XIOBb_CRCError
- XIOBb_timeOut
- XIOBb_nonExistingMemory
- XIOBb_cableBreak
- XIOBb_otherTypeError
- XIOBb_busNotConfigured
- XIOBb_invalidateBus
- XIOBb_invalidator
### 5.3 VFI error codes (continued)

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</table>

### 5.4 VFI error messages

All of the following VFI error message texts are reported with the 87TS50 message code T_VFI_ERRMSG:

- CI520Drv_InitHW failed, no device found
- CI520Drv_InitHW failed, wrong device found
- CI520Drv_InitHW failed, could not assign to interrupt
- vbuIntAssign: interrupt already assigned
- resetting CI520 by MIB ...
- No buffer available
- No server installed
- Wrong message type
- Wrong packet count
- MVI addressed but not installed
- SPEICHER allocation failed
- Init bit expected
- Wrong message type 2
- Wrong packet count 2
- Unexpected init-bit received
- Wrong protocol state: answerOutstanding
- Wrong protocol state: discardAnswer
- Wrong protocol state: waitForReceiveTask
- Wrong protocol state
- No server task installed
- Receive packet failed
- Call from MVI bus expected
- Receive called but no pending message
- Received from illegal source node
- MVI bus addressed but not installed
- Unsolicited Confirm or Response
- Illegal protocol state: dormant
- Response buffer too small
- Wrong message type 3
- Wrong init bit state
- Wrong message type 4
- Wrong message count 2
- Wrong init bit state received
- Wrong protocol state 2
- Receive packet failed
- Could not allocate memory
- Wrong sequence bit in received message
- Route size exceeds packet size
- Packet receive timeout
- Packet receive timeout
5.5 Index of message codes

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