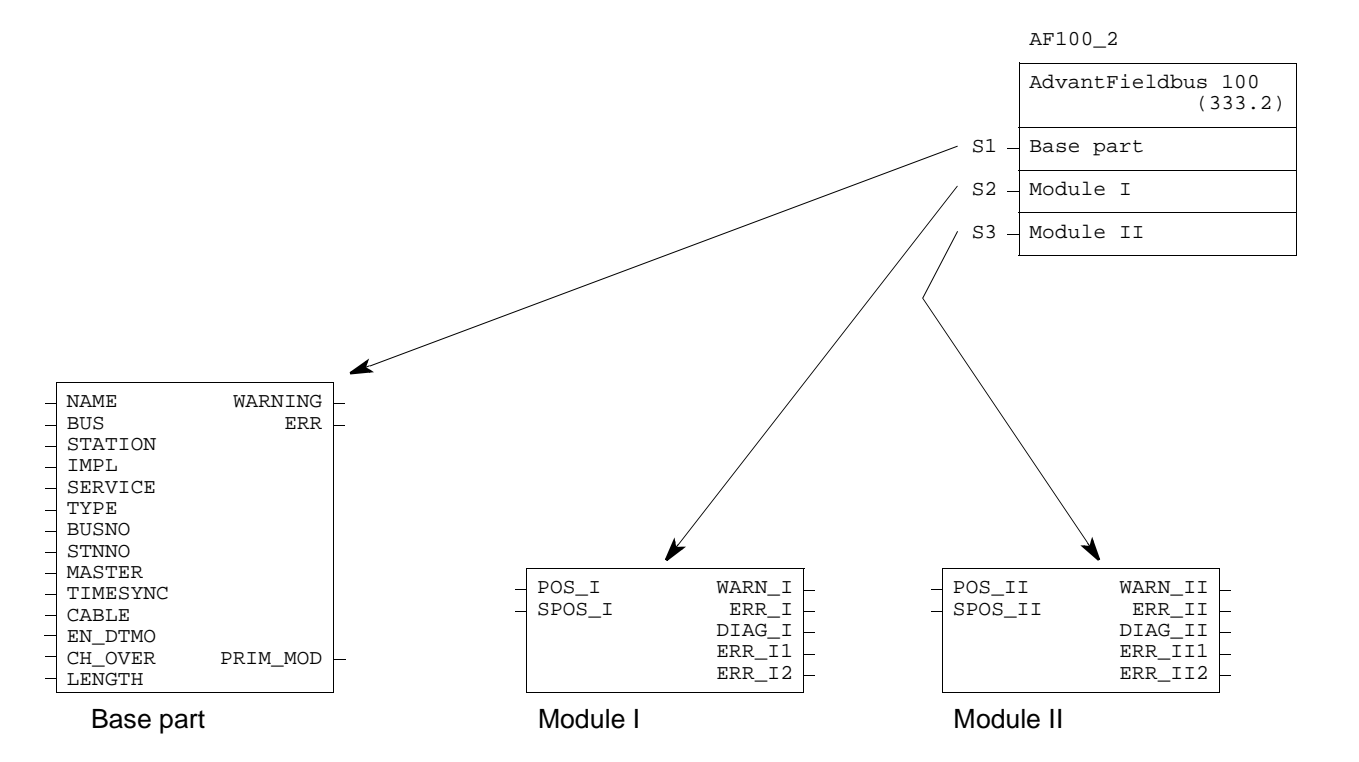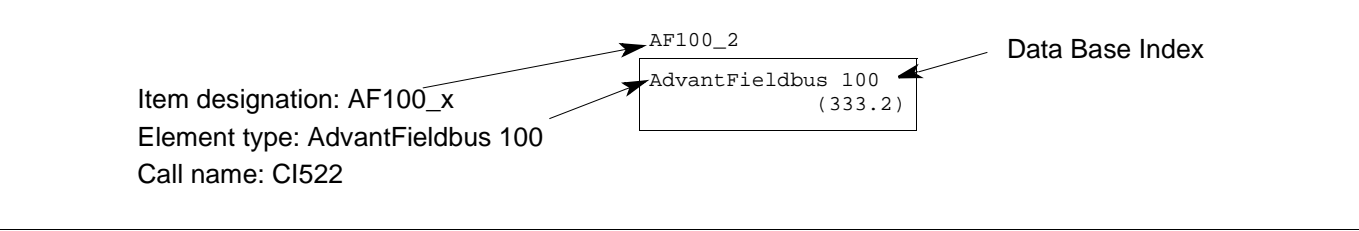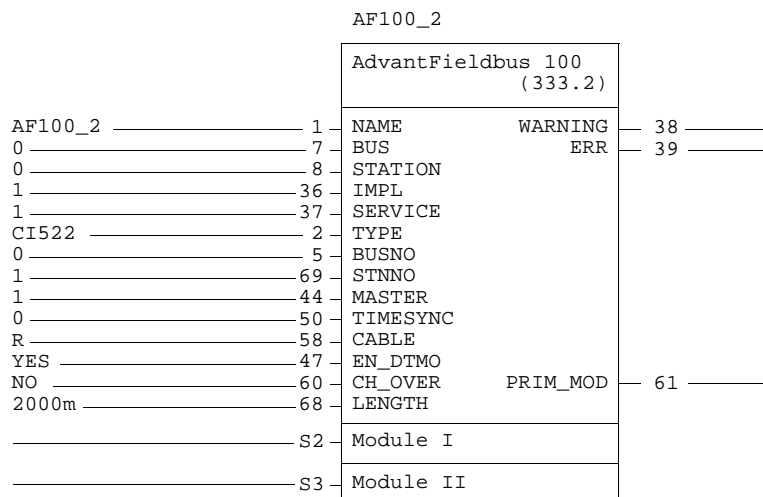# Advant Fieldbus 100 CI522

Summary

The CI522 submodule data base element specifies a communication interface that supports redundant Advant Fieldbus 100. The data base element contains diagnostic information of the physical CI522 submodule(s).
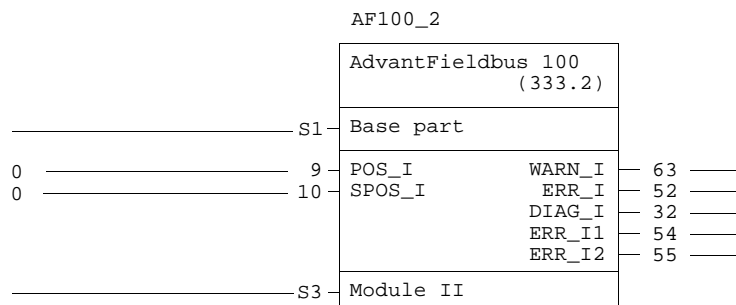
Overview

```
                                          AF100_2
                                        ┌─────────────────────┐
                                        │ AdvantFieldbus 100  │
                                        │              (333.2)│
                                        ├─────────────────────┤
                                    S1 ─┤ Base part           │
                                        ├─────────────────────┤
                                    S2 ─┤ Module I            │
                                        ├─────────────────────┤
                                    S3 ─┤ Module II           │
                                        └─────────────────────┘

┌──────────────────────┐      ┌──────────────────────┐    ┌──────────────────────┐
│ NAME      WARNING    │      │ POS_I      WARN_I     │    │ POS_II      WARN_II   │
│ BUS          ERR     │      │ SPOS_I      ERR_I     │    │ SPOS_II      ERR_II   │
│ STATION              │      │            DIAG_I     │    │             DIAG_II   │
│ IMPL                 │      │            ERR_I1     │    │             ERR_II1   │
│ SERVICE              │      │            ERR_I2     │    │             ERR_II2   │
│ TYPE                 │      └──────────────────────┘    └──────────────────────┘
│ BUSNO                │
│ STNNO                │
│ MASTER               │
│ TIMESYNC             │
│ CABLE                │
│ EN_DTMO              │
│ CH_OVER   PRIM_MOD   │
│ LENGTH               │
└──────────────────────┘
      Base part                    Module I                      Module II
```

Head

```
                          AF100_2
                        ┌─────────────────────┐
                        │ AdvantFieldbus 100  │  ──── Data Base Index
                        │              (333.2)│
                        └─────────────────────┘
Item designation: AF100_x
Element type: AdvantFieldbus 100
Call name: CI522
```

Base part

```
                                    AF100_2

                                   ┌─────────────────────────┐
                                   │ AdvantFieldbus 100      │
                                   │                (333.2)  │
   AF100_2 ──────────────── 1 ─┤ NAME         WARNING ├─ 38 ──────
   0 ───────────────────── 7 ─┤ BUS              ERR ├─ 39 ──────
   0 ───────────────────── 8 ─┤ STATION                 │
   1 ───────────────────── 36 ─┤ IMPL                    │
   1 ───────────────────── 37 ─┤ SERVICE                 │
   CI522 ───────────────── 2 ─┤ TYPE                    │
   0 ───────────────────── 5 ─┤ BUSNO                   │
   1 ───────────────────── 69 ─┤ STNNO                   │
   1 ───────────────────── 44 ─┤ MASTER                  │
   0 ───────────────────── 50 ─┤ TIMESYNC                │
   R ───────────────────── 58 ─┤ CABLE                   │
   YES ─────────────────── 47 ─┤ EN_DTMO                 │
   NO ──────────────────── 60 ─┤ CH_OVER    PRIM_MOD ├─ 61 ──────
   2000m ───────────────── 68 ─┤ LENGTH                  │
                                   │                         │
                            ─── S2 ─┤ Module I                │
                                   │                         │
                            ─── S3 ─┤ Module II               │
                                   └─────────────────────────┘
```

Terminal Description, Base part

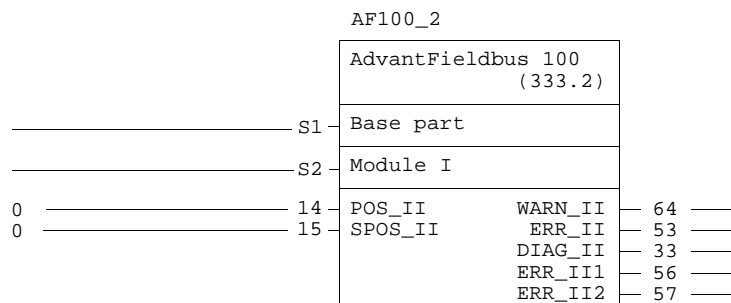| Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	AF100_x	–	Unique **NAME** of the bus.	Max. 20 characters.
7	BUS	predef	0	–	**BUS**. Part of Address.	See section "Address Terminals BUS, STATION, POSITION and SUBPOS" in the Introduction.
8	STATION	predef	0	–	**STATION**. Part of Address.	–
36	IMPL	user	1	B(r)	0=the module is spare 1=the module is **IMPL**emented	–
37	SERVICE	user	1	B(r/w)	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
2	TYPE	predef	CI522	–	**TYPE** designation of hardware module.	–
5	BUSNO	user	0	–	Unique **BUS N**umber for this fieldbus: 1..255.	Cannot be changed when IMPL=1 in op. mode. 0 not allowed for an active bus.
69	STNNO	user	1	–	**ST**atio**N N**umber representing the Controller on the fieldbus: 1..80.	Cannot be changed when IMPL=1 in op. mode. 0 not allowed for an active station.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
44	MASTER	user/ system	1	–	Communication interface in 0=SLAVE mode 1=**MASTER** mode	Cannot be changed when IMPL=1 in op. mode. Set by system when redundant submodules are used.
50	TIMESYNC	user	0	–	Send **TIME SYNC**hronization messages.	–
58	CABLE	user	R	–	**CABLE** connection: S=single R=redundant	–
47	EN_DTMO	user/ system	YES	–	**EN**able **D**ouble **TiM**e-**O**ut. Enables longer time-out time for cyclic data on AF 100.	Cannot be changed when IMPL=1 in op. mode. Set by system when redundant submodules are used. Shall be set when any station on the bus has communication redundancy.
60	CH_OVER	user	NO	–	**CH**ange **OVER**. YES=order a change of primary CI522 module.	Will be set to NO after the change-over. For updating the screen use GVD command.
68	LENGTH	user	2000m	–	Bus **LENGTH**. Allowed values: 2000m, 8500m, 15000m.	Cannot be changed when IMPL=1 in op. mode.
38	WARNING	system	–	B(r)	**WARNING** flag indicating non-fatal errors.	–
39	ERR	system	–	B(r)	**ERR**or flag indicating hardware or configuration error.	–
61	PRIM_MOD	system	–	–	**PRIM**ary **MOD**ule, shown as I or II.	–

Module I

```
                                      AF100_2

                              ┌─────────────────────────┐
                              │ AdvantFieldbus 100      │
                              │                 (333.2) │
                              ├─────────────────────────┤
                        S1 ───┤ Base part               │
                              ├─────────────────────────┤
         0 ──────────── 9 ───┤ POS_I          WARN_I   ├─ 63 ──────
         0 ──────────── 10 ──┤ SPOS_I           ERR_I   ├─ 52 ──────
                              │                 DIAG_I   ├─ 32 ──────
                              │                 ERR_I1   ├─ 54 ──────
                              │                 ERR_I2   ├─ 55 ──────
                              ├─────────────────────────┤
                        S3 ───┤ Module II               │
                              └─────────────────────────┘
```

Terminal Description, Module I

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
9	POS_I	user	0	–	**POS_I**. Part of address for submodule **I**.	Start up as Primary if redundant submodules. Cannot be changed when IMPL=1 in op. mode.
10	SPOS_I	user	0	–	**SPOS_I**. Part of address for submodule **I**.	Cannot be changed when IMPL=1 in op. mode.
63	WARN_I	system	–	B(r)	**WARN**ing flag indicating non-fatal errors on submodule **I**.	–
52	ERR_I	system	–	B(r)	**ERR** flag indicating hardware or configuration error on submodule **I**.	–
32	DIAG_I	system	–	B(r)	Module **DIAG**nostics for submodule **I**.	–
54	ERR_I1	system	–	B(r)	**ERR**or indication for bus cables on submodule **I**.	–
55	ERR_I2	system	–	B(r)		–

Module II

```
                                    AF100_2

                                AdvantFieldbus 100
                                             (333.2)
                          S1 ─  Base part

                          S2 ─  Module I

          0  ──────────── 14 ─  POS_II      WARN_II ─ 64 ──────
          0  ──────────── 15 ─  SPOS_II      ERR_II ─ 53 ──────
                                            DIAG_II ─ 33 ──────
                                            ERR_II1 ─ 56 ──────
                                            ERR_II2 ─ 57 ──────
```

Terminal Description, Module II

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
14	POS_II	user	0	–	**POS_II**. Part of address for submodule **II**.	If = 0, submodule II is not used and submodule I is not redundant.
15	SPOS_II	user	0	–	**SPOS_II**. Part of address for submodule **II**.	–
64	WARN_II	system	–	B(r)	**WARN**ing flag indicating non-fatal errors on submodule **II**.	–
53	ERR_II	system	–	B(r)	**ERR** flag indicating hardware or configuration error on submodule **II**.	–
33	DIAG_II	system	–	B(r)	Module **DIAG**nostics for submodule **II**.	–
56	ERR_II1	system	–	B(r)	**ERR**or indication for bus cables on submodule **II**.	–
57	ERR_II2	system	–	B(r)		–

Function

The Advant Fieldbus 100 data base element specifies an Advant Fieldbus 100 connected to an Advant Controller 400 Series. The data base element contains diagnostic information of both Advant Fieldbus 100 and the CI522 communication module(s) itself.

The Advant Fieldbus 100 data base element can be created in the system but cannot be removed. It is however possible to disable the function of the element by setting terminal IMPL = 0. The data base element can also be configured to specify a different Advant Fieldbus 100 bus if one fieldbus is removed and another is inserted in the system. The CI522 communication module supports redundant Advant Fieldbus 100. The POS_I and SPOS_I terminals specify the position of the first CI522 submodule, and this position is used for single AF 100. The POS_II and SPOS_II terminals specify the position of the second

(redundant) CI522 submodule. If the second position is specified (POS_II and SPOS_II not 0) before entering operation mode or at creation time in operation mode, the redundant AF 100 is used, otherwise single AF 100 is used.

Example of Position Terminals Usage in CI522 Data Base Elements
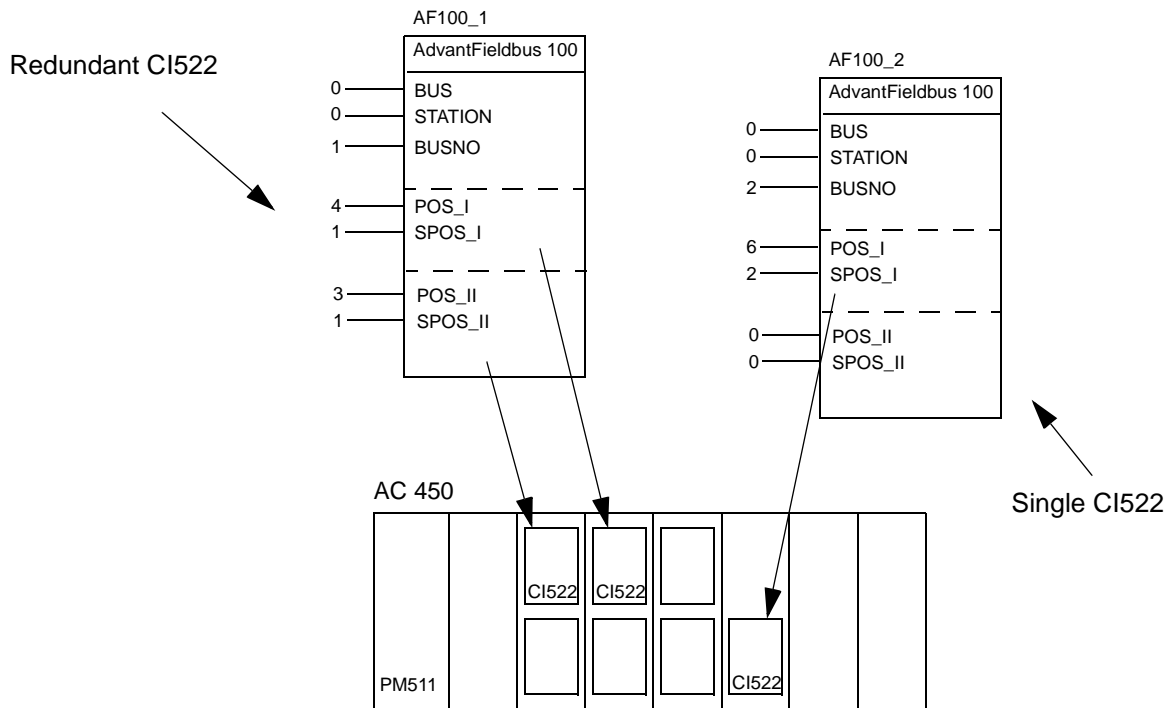
Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation

2. Disabling

3. Parameters

4. Diagnostics.

1.   Implementation

The Advant Fieldbus 100 data base communication module is configured with its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI522 communication module(s) is configured with its parameters and started. Connection to the stations on Advant Fieldbus 100 is established. Setting IMPL to 0 in a system in operational mode means that the CI522 communication module(s) is shut down and the connection to the stations is lost.

2.   Disabling

The SERVICE terminal is meant to be used for temporary disabling and repairs. The bus is not supervised if SERVICE=0 and thereby no system message will be generated for the bus.

3.   Parameters

The BUSNO terminal specifies a unique bus number for this specific Advant Fieldbus 100, to be used in other data base elements to specify when communicating via or if they are connected to this specific Advant Fieldbus 100. Please note that BUSNO **can not be changed** when the system is in operational mode.

The STNNO terminal specifies a unique station number for the Advant Controller 400 Series to be used on this Advant Fieldbus 100. Station number 1 is the default value and is valid as long as only one Advant Controller 400 Series exist on this bus. Only one Advant Controller 400 Series can have station number 1, the others have to change the station number. It is recommended to have as low station numbers as possible if the CI522 is specified as MASTER.

NOTE

When redundant communication interfaces (CI522 and CI820) are used on the bus, at least one of the following two rules must be followed:

•   The redundant CI522 pair is assigned a station number lower than five (5).

or

•   Two master defined communication interfaces are assigned station numbers lower than five (5).

Terminal MASTER specifies if the CI522 communication module shall be Master or Slave on the Advant Fieldbus 100. A CI522 communication module is normally a Master on the bus, and it is also the default value.

Terminal TIMESYNC specifies if the CI522 communication module shall send time synchronization messages on Advant Fieldbus 100. The default value is 0. Please note that only one station can be responsible for sending time synchronization messages on Advant Fieldbus 100.

Terminal CH_OVER indicates that controlled change-over of the submodules should be performed if possible. The system sets this flag to NO directly after the change-over. For updating the screen use the GVD command. The actual primary CI522 is shown on the PRIM_MOD terminal. "I" is shown if the submodule configured as "Module I" is primary, and "II" is shown if the submodule configured as "Module II" is primary.

If the CI522 communication module is single, it can be connected to single or redundant media (one or two cables). Terminal CABLE specifies if single or redundant media is installed for the Advant Fieldbus 100. Default is redundant media.

The first bus administrator that takes the bus mastership will actually decide which length the bus is configured for. Every other length will be considered as wrong.

4.   Diagnostics

The Advant Fieldbus 100 data base element indicates diagnostics for both the CI522 communication module(s) and Advant Fieldbus 100. The ERR terminal indicates fatal errors and the WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. In single AF 100 terminal DIAG_II is blank. One or more diagnostics indicators may be set. A list of error conditions for single AF 100 is shown in the following table.

Advant Fieldbus 100 data base element diagnostic information (single AF 100)

Condition	WARNING	ERR	DIAG_I	Action
Missing CI522	–	1	MNA	Insert CI522
Faulty CI522	–	1	ME	Replace CI522
Cable bad	–	1	FBE	Replace cable
Internal software error	–	1	IE	Toggle the IMPL flag
System error	1	0	SE	The reason for this error condition can be manifold: Disturbance, more than one Time Sync Master, stations with same station number on AF 100, to high load on CI522 etc. Refer to the system message for detailed information.
Process error	1	0	PE	The reason for this error condition can be disturbance on AF 100 or faulty CI522.
Redundant cable bad	1 [1]	0	PE	Replace cable
CI522 passive	–	–	PSV	Set IMPL flag

(1) Terminal ERR_I1 or ERR_I2 indicates which cable is bad.

A list of additional error conditions concerning redundant AF 100 can be found in the following table.

Advant Fieldbus 100 data base element diagnostic information (redundant AF 100)

Condition	WARNING	ERR	DIAG_I	DIAG_II	Action
First CI522 missing	1	–	MNA	–	Insert CI522
Second CI522 missing	1	–	–	MNA	Insert CI522
Both CI522 missing	1	–	MNA	MNA	Insert both CI522
Redundant cable bad	1	0	PE	PE	Replace cable
First modem cable bad	1	0	PE	–	Replace modem cable

Error Handling

WARN_I,
WARN_II   Shows if there is a warning (non-fatal error) on respective CI522 module. If any of the CI522 submodules has a warning (WARN_I or WARN_II is set) the summary WARNING terminal is set.

ERR_I,
ERR_II   Shows if there is an error on respective CI522 module. If any of the CI522 modules has an error (ERR_I or ERR_II is set) the summary WARNING terminal is set. If both CI522 submodules have an error the summary ERR terminal is set.

Terminals POS_II, SPOS_II, ERR_II1, and ERR_II2 have the corresponding meaning as their counterparts with "_I".