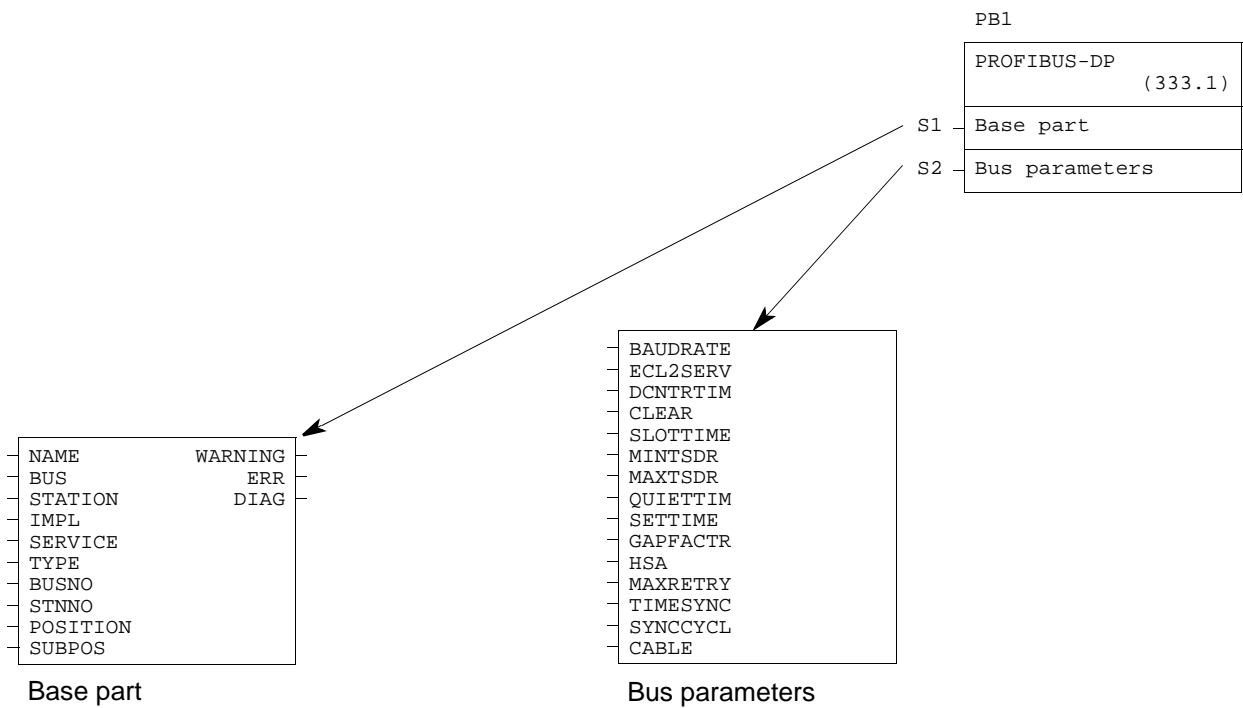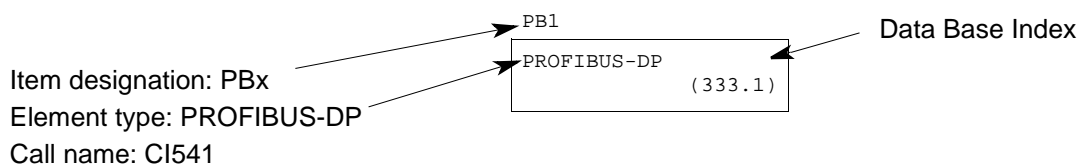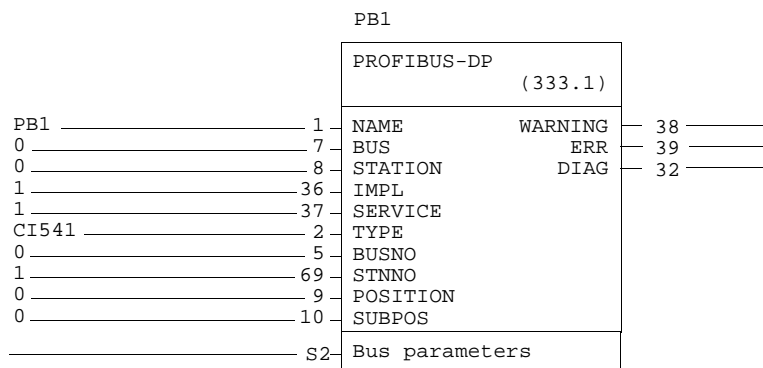# PROFIBUS-DP CI541

Summary

The PROFIBUS-DP data base element specifies the Communication Interface submodule CI541 that supports PROFIBUS-DP. The element contains configuration as well as diagnostic information of the physical CI541V1 submodule.

Overview

```
                                              PB1
                                              ┌─────────────────────┐
                                              │ PROFIBUS-DP          │
                                              │            (333.1)   │
                                    S1 ───────┤ Base part            │
                                    S2 ───────┤ Bus parameters       │
                                              └─────────────────────┘


                                       ┌─────────────────┐
                                       │ BAUDRATE        │
                                       │ ECL2SERV        │
                                       │ DCNTRTIM        │
                                       │ CLEAR           │
                                       │ SLOTTIME        │
                                       │ MINTSDR         │
      ┌─────────────────────┐          │ MAXTSDR         │
      │ NAME       WARNING  │          │ QUIETTIM        │
      │ BUS            ERR  │          │ SETTIME         │
      │ STATION       DIAG  │          │ GAPFACTR        │
      │ IMPL                │          │ HSA             │
      │ SERVICE             │          │ MAXRETRY        │
      │ TYPE                │          │ TIMESYNC        │
      │ BUSNO               │          │ SYNCCYCL        │
      │ STNNO               │          │ CABLE           │
      │ POSITION            │          └─────────────────┘
      │ SUBPOS              │
      └─────────────────────┘
         Base part                        Bus parameters
```

Head

```
                                    PB1
                                    ┌──────────────────────┐
                                    │ PROFIBUS-DP          │        Data Base Index
                                    │            (333.1)   │
                                    └──────────────────────┘
   Item designation: PBx
   Element type: PROFIBUS-DP
   Call name: CI541
```

Base part

```
                              PB1

                              PROFIBUS-DP
                                          (333.1)

PB1 ───────────────── 1 ─ NAME      WARNING ─ 38 ──────
0 ──────────────────── 7 ─ BUS          ERR ─ 39 ──────
0 ──────────────────── 8 ─ STATION     DIAG ─ 32 ──────
1 ─────────────────── 36 ─ IMPL
1 ─────────────────── 37 ─ SERVICE
CI541 ──────────────── 2 ─ TYPE
0 ──────────────────── 5 ─ BUSNO
1 ─────────────────── 69 ─ STNNO
0 ──────────────────── 9 ─ POSITION
0 ─────────────────── 10 ─ SUBPOS

                     S2 ─ Bus parameters
```

Terminal Description, Base part

Termi- nal No	Terminal Name	Value entered by	Default value	PC con- nection data type	Description	Remarks
1	NAME	user	PBx	–	Unique **NAME** of the bus.	Maximum 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 **SERVICE** terminal shows whether the module is in service or has been taken out of service. 0=The module has been taken out of service 1=The module is in service (normal operation).	–
2	TYPE	predef	CI541	–	Module **TYPE** designation: CI541V1	–
5	BUSNO	user	0	–	Unique **BUS N**umber for this fieldbus.	0 - 255. Cannot be changed when IMPL=1 in operational mode. 0 not allowed for an active bus.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
69	STNNO	user	1	–	**ST**atio**N N**umber representing the Controller on the fieldbus.	0 - 125. Cannot be changed when IMPL=1 in operational mode. 0 not allowed for an active bus.
9	POSITION	user	0	–	**POSITION**. Part of Address.	See section "Address Terminals BUS, STATION, POSITION and SUBPOS" in the Introduction
10	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	
38	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
39	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
32	DIAG	system	0	–	**DIAG**nostic information.	–

Bus parameters

```
                                        PB1

                                   ┌──────────────────────┐
                                   │ PROFIBUS-DP          │
                                   │            (333.1)   │
                                   ├──────────────────────┤
          ────────────────── S1 ──┤ Base part            │
                                   ├──────────────────────┤
          500 ────────────── 85 ──┤ BAUDRATE             │
          0   ────────────── 86 ──┤ ECL2SERV             │
          2000 ───────────── 87 ──┤ DCNTRTIM             │
          1   ────────────── 88 ──┤ CLEAR                │
          200 ────────────── 89 ──┤ SLOTTIME             │
          11  ────────────── 90 ──┤ MINTSDR              │
          100 ────────────── 91 ──┤ MAXTSDR              │
          0   ────────────── 92 ──┤ QUIETTIM             │
          1   ────────────── 93 ──┤ SETTIME              │
          10  ────────────── 94 ──┤ GAPFACTR             │
          125 ────────────── 95 ──┤ HSA                  │
          1   ────────────── 96 ──┤ MAXRETRY             │
          0   ────────────── 50 ──┤ TIMESYNC             │
          100 ────────────── 98 ──┤ SYNCCYCL             │
          S   ────────────── 58 ──┤ CABLE                │
                                   └──────────────────────┘
```

Terminal Description, Bus parameters

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
85	BAUDRATE	user	500	–	**BAUDRATE** of PROFIBUS network in kilobytes per second (kbps). Values: 9.6, 19.2, 93.75, 187.5, 500, 1.5M, 3M, 6M, 12M.	May change other terminal values, see table below.
86	ECL2SERV	user	0	–	1=**E**nable **CL**ass **2 SERV**er access. 0=disable class 2 server access.	Allow PROFIBUS-DP master class 2 to read process data.
87	DCNTRTIM	user	2000	–	**D**ata **C**o**NTR**ol **TIM**e in milliseconds. Time-out supervision of master – slave dialog. Must be at least $6 \times T_{WD}$.	0 - 65535.
88	CLEAR	user	1	–	If data exchange fails: 1=Set output of all PROFIBUS-DP slaves to 0 (**CLEAR**) 0=Do not change outputs.	–
89	SLOTTIME	user	200	–	**SLOT TIME** T_{SL}. The maximum time a PROFIBUS-DP master must wait for a transaction response.	0 - 65535 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.
90	MINTSDR	user	11	–	**MIN T$_{SDR}$**. Minimum PROFIBUS-DP slave delay.	0 - 65535 t_{BIT}.
91	MAXTSDR	user	100	–	**MAX T$_{SDR}$**. Maximum PROFIBUS-DP slave delay.	0 - 65535 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.
92	QUIETTIM	user	0	–	**QUIETTIM**e T_{QUI}. Transmitter fall time.	0 - 255 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.
93	SETTIME	user	1	–	**SET**up **TIME** T_{SET}. Time between event and reaction.	0 - 255 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.

Terminal Description, Bus parameters (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
94	GAPFACTR	user	10	–	**GAP FACT**o**R**. Number of token rounds between GAP maintenance cycles.	0 - 100.
95	HSA	user	125	–	**H**ighest **S**tation (slave) **A**ddress configured on this bus.	2 - 126.
96	MAXRETRY	user	1	–	**MAX**imum number of times to **RETRY** transmission.	1 - 8. Value may change if terminal BAUDRATE is changed. See table below.
50	TIMESYNC	predef	0	–	**TIME SYNC**hronization. 0=No time synchronization 1=Time synchronization enabled	For future use.
98	SYNCCYCL	predef	100	–	**SYNC**hronization **CYCL**e.	For future use.
58	CABLE	predef	S	–	**CABLE** redundancy. S=single cable R=redundant cables	For future use.

The value of the following terminals changes to the specified default if terminal BAUDRATE is changed:

Defaults depending on BAUDRATE

BAUDRATE	SLOTTIME	MAXTSDR	QUIETTIM	SETTIME	MAXRETRY
9.6	100	60	0	1	1
19.2	100	60	0	1	1
93.75	100	60	0	1	1
187.5	100	60	0	1	1
500	200	100	0	1	1
1.5M	300	150	0	1	1
3M	400	250	3	4	2
6M	600	450	6	8	3
12M	1000	800	9	16	4

Function

The PROFIBUS-DP data base element specifies a PROFIBUS-DP network connected to an Advant Controller 400 Series. The data base element contains configuration and diagnostic information of the CI541V1 communication module itself as well as the PROFIBUS-DP bus.

The PROFIBUS-DP data base element can be created in the system but can not be removed. It is however possible to disable the function of the element by setting the IMPL terminal to 0. The data base element can also be reconfigured to specify a different PROFIBUS-DP bus if one fieldbus is removed and another is inserted in the system.

Communication 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. Service

3. Parameters

4. Diagnostics.

1.   Implementation

The PROFIBUS-DP 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 CI541V1 communication module is configured with its parameters and started. Connection to the PROFIBUS slaves on the corresponding network is established. Setting IMPL to 0 in a system in operational mode means that the CI541V1 communication module is disabled and the connection to the slaves is lost.

Reconfiguration of terminals such as POS and SPOS in a system with IMPL set to 1 is not allowed.

Reconfiguration of Bus parameters has no effect when IMPL is set to 1.

2.   Service

The SERVICE terminal has similar functionality as the IMPL terminal, except that it is meant to be used for temporary disabling and repairs. Setting SERVICE to 0 will turn off all System Messages from this device.

3.   Parameters

The BUSNO terminal specifies a unique bus number for this specific PROFIBUS-DP fieldbus. It can be used in other data base elements to specify when communicating via or if they are connected to this specific PROFIBUS-DP fieldbus. All fieldbuses in the systems (PROFIBUS and AF 100) need unique bus numbers. 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 PROFIBUS-DP bus.

4. Diagnostics

The PROFIBUS-DP data base element indicates diagnostics for both the CI541V1 communication module and the PROFIBUS-DP bus. The ERR terminal indicates fatal errors. The WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. The diagnostics handling is described in the table below (error with highest priority first in table):

Diagnostic Information

Condition	WARNING	ERR	DIAG	Action
Missing CI541. Device not accessible.	–	1	MNA	Insert CI541.
Cable bad.	–	1	FBE	Replace cable.
Internal software **E**rror.	–	1	IE	Toggle the IMPL flag.
Device Error.	–	1	ME	Replace CI541.
Configuration failed.	–	1	CE	Change configuration parameters.
System **E**rror.	1	0	SE	The reason for this error condition can be a number of things. Refer to the system message for more detailed information.
Process **E**rror.	1	0	PE	The reason for this error condition can be disturbance on PROFIBUS-DP or faulty CI541.
CI541 **pas**sive.	–	–	PSV	Set the IMPL flag.