

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6DS1222-8BA

CS 275 LOCAL BUS INTERFACE

Used with the applicable TELEPERM M OS 525 N-AT configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens TELEPERM M OS 525 N-AT manufacturer documentation; applicable pages 41, 43, 44, 45, 139, 140, 141, 142, 224

2.1 Preparing Commissioning of the N-AT CP5412-A1 bus interface

The preparatory settings of the OS 525 are restricted to the N-AT bus interface. The bus requires bus address, mode, and address of the N-AT bus interface to be selected. To do this you must open the housing of the OS 525 base unit. The individual steps are explained in the PC Manual. In addition, the EMC instructions given must be observed during this work.



Warning

Hazardous voltages always exist at certain elements inside an electrical device. Improper handling may therefore cause death, serious personal injury or significant damage to equipment.

Please observe all notes in this Manual before you start commissioning this product.

- Only qualified personnel may commission the OS 525.
- The OS 525 must be disconnected from the mains before any work on the base unit is started.
- The Safety Instructions in the first Section of this Manual must be observed.

The individual components of an operator communication and visualization system are connected via suitable interfaces to the local bus of the CS 275 bus system. The local bus is limited to a maximum of 9 devices and a length of 20 meters. The voltage difference on the M signal line may not exceed 0.2 V between the individual devices.

In addition, the Installation Instructions in Chapter 2.3.10 must be observed.

2.1.1 Device Address of the N-AT

The device address of the N-AT local bus interface is selected with the S2 DIL switch (labelled "TA"). This switch can easily be accessed when the module is inserted in the OS 525. The least significant bit (2^0) is set by the switch element on the right-hand side while the switch element on the left-hand side defines the most significant bit (2^7). (Cf. printed label on the board).

Switch position "ON" corresponds to "0", and "OFF" to "1".

Device address 90 ($5A_H$) has been selected when the unit is delivered.

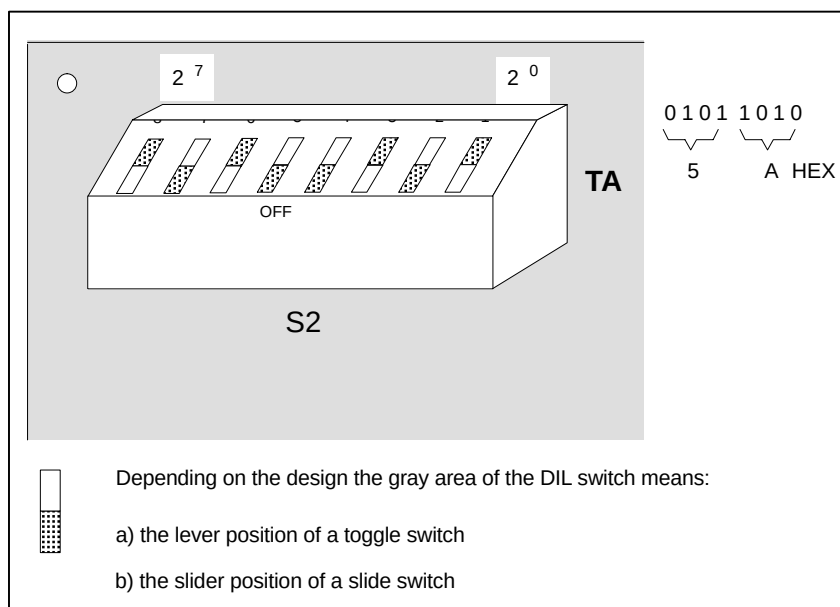


Fig. 2.3 Selecting the device address

2.1.2 Bus Address and Bus Mode of the N-AT

There is a combination element on the front panel of the N-AT that consists of an 8-way DIL switch (S1) and 6 LEDs. Meaning, arrangement and color of the LEDs correspond to the mode indicators of other CS 275 bus interfaces (such as N-8 and N-S5). Not all 8 DIL switch elements have been connected. Switches 1, 2, and 3 are used for setting the bus address (switch 1 selects bit 2⁰, position "OFF" means "1"): Any combination between 0 and 7 represents a valid bus address.

CS 275 protocol and bus hardware permit operation on a simple and on a redundant bus system. Switch 5 is used for telling the interface module whether it is connected to a simple or to a redundant bus system ("OFF" = non-redundant bus).

The N-AT transitions to an idle mode if the switch positions (1, 2, 3 or 5) are changed during operation. Actuating switch 8 (enter switch) after the change causes the N-AT to accept the newly set parameters.

The N-AT exits idle mode after this switch has been cycled ON-OFF-ON.

All switches are set to OFF when the system is delivered. This means that the parameters must be selected before commissioning is started.

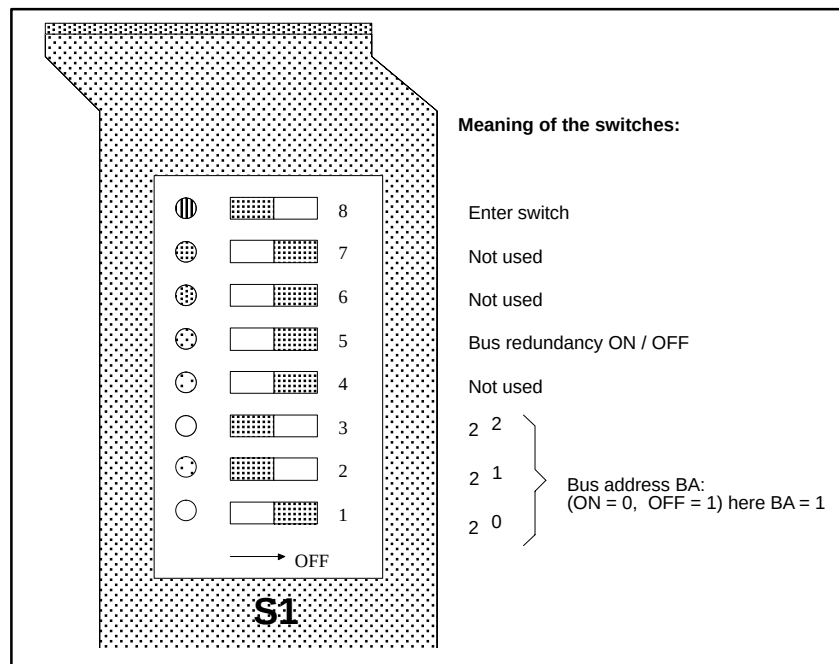


Fig. 2.4 Setting the bus address

2.1.3 Setting the Base Address and Interrupt Allocation

Upon delivery of the OS 525, the base address and the interrupt allocation are set to the following values:

- N-AT base address in the I/O address space: 310_H
- Interrupt allocation to IRQ signal 10

Base address

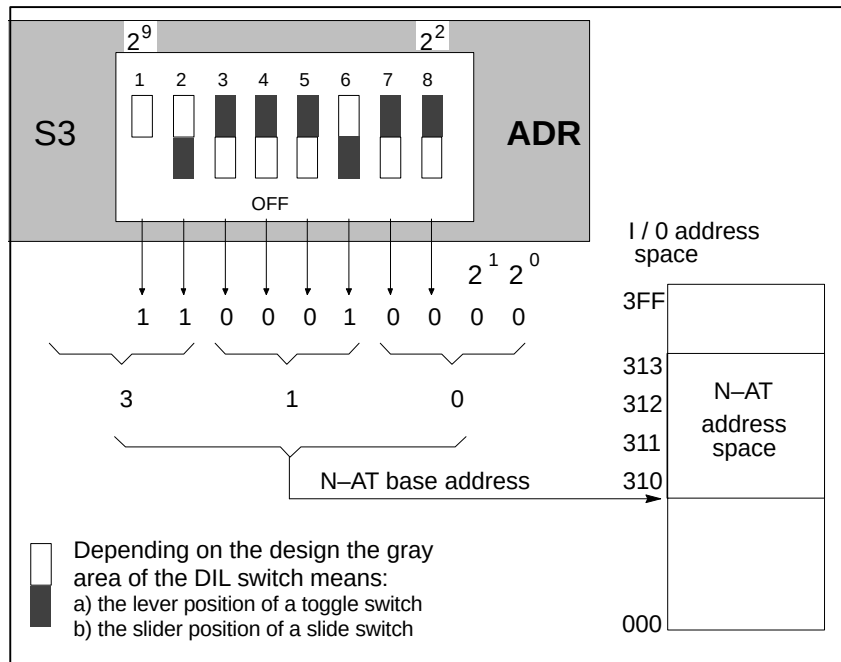


Fig. 2.5 Setting the base address on the N-AT module

Interrupt allocation

Plug-in jumper X100 (labelled "IRQ") selects IRQ 10 for the interrupt signal.

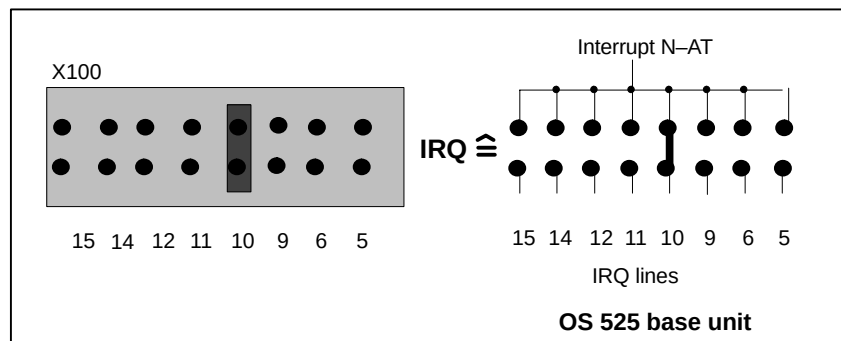


Fig. 2.6 Typical interrupt allocation on the N-AT: IRQ10



Caution

Duplicated allocation of an IRQ signal by several interface modules may cause defects.

4.3 N-AT Local Bus Interface

The N-AT local bus interface permits the OS 525 to be connected to the 20-meter local bus of the CS 275 bus system. This enables computer performance and visualization capabilities of the OS 525 system to be utilized in the TELEPERM M system.

4.3.1 Structure of the N-AT Local Bus Interface

The N-AT local bus interface can roughly be subdivided into four blocks.

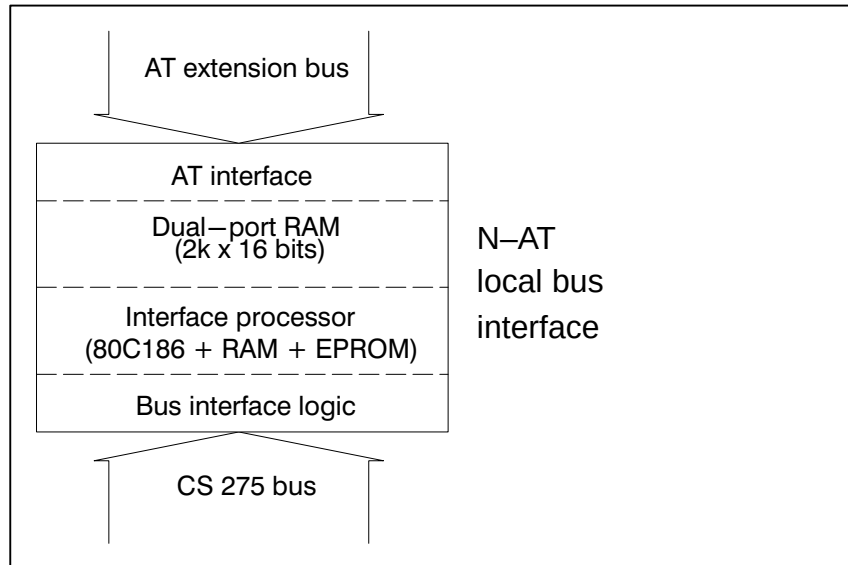


Fig. 4.1 Function block structure of the N-AT

The functions of the lower layers of the CS 275 bus protocol have been implemented in the **bus interface logic**.

The operational sequence is controlled by separate receive and transmit controllers. Two FIFO memories perform series-parallel conversion and provide timing decoupling between the CS 275 bus and the rest of the interface.

The **interface processor**, which has been set up on a 80C188 processor, transports the data between bus interface logic and dual-port RAM. It performs sequence control, sets the necessary administrative pointers and event cells, and monitors all functions of the module. It also co-ordinates the activities with the PC.

The **dual-port RAM** forms the link between the interface processor and the PC. The transmit and receive buffers are located here, together with their pointers and event cells, and may be accessed from either side. The 4 kB of the dual-port RAM are organized as 2 k•16 bits.

The **AT interface** forms the link to the AT extension bus. From the PC's perspective, the N-AT interface is an interface with two 16-bit registers in the I/O address space. The address selector register is used for selecting a 16-bit cell in the dual-port RAM.

Addressing the data register enables the selected 16-bit word in the dual-port RAM to be read or written.

Please refer to the N-AT Operating Instructions /12/ for details.

4.3.2 Status Indicators and Selected Parameters

The executing user software controls the interface and the reception and transmission of message frames during system operation. The six other control LEDs on the N-AT front panel have the same meaning, layout, and color as the status indicators on other CS 275 bus interface modules (such as N-8 or N-S5).

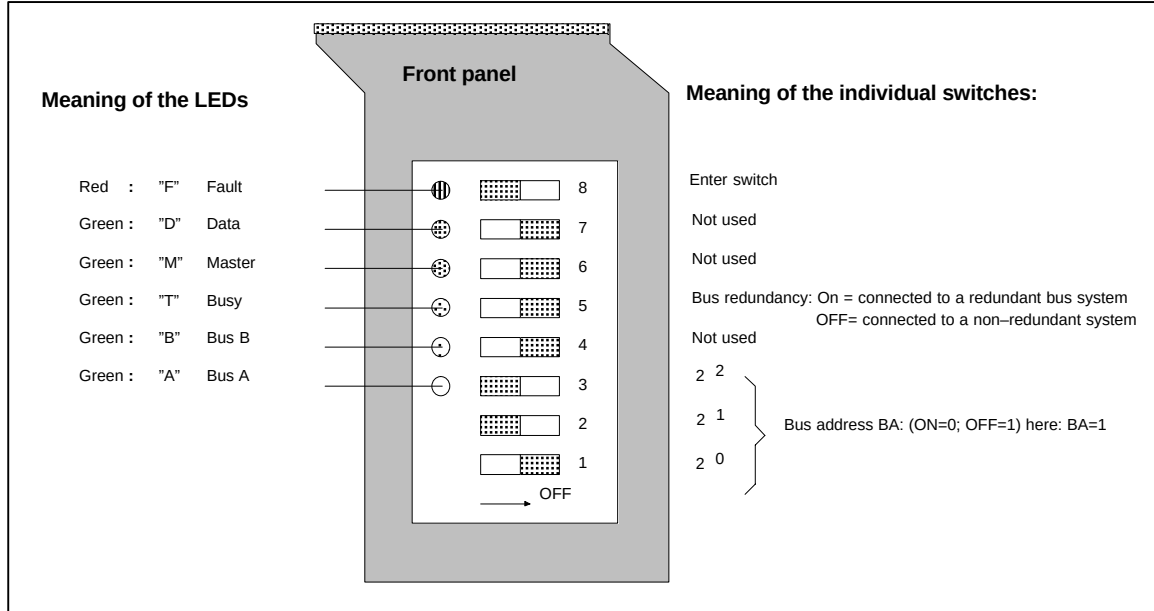


Fig. 4.2 LEDs and switch assignments on the N-AT

Switch functions

Enter switch

The interface bus addresses and the mode ("redundant" or "not redundant") can be selected while the system is running.

The N-AT module transitions to idle mode when one of these switches is actuated.

Cycling the enter switch from ON to OFF to ON enters the previously selected parameters and the N-AT exits idle mode.

Bus redundancy

Selection:

ON = connected to a redundant bus system
OFF = connected to a non-redundant bus system

BA bus address

Allocation:

The TA device address (see Section 2.1.1) is employed for distinguishing between interfaces that have been connected to a self-contained bus system. The BA bus address is required additionally if several buses are to be distinguished that are interlinked via bus coupling units (see Section 2.1.2).

Valid values of the bus address: 0....7

- The significance of the switches is as follows:
 Switch 1 = 2^0
 Switch 2 = 2^1
 Switch 3 = 2^2
- ON = "0"
 OFF = "1".

The switches in Fig. 4.2 have been set for bus address "1".

Meaning of the LEDs

The LEDs are used for diagnostics and status indication.

- "F" (red) = Fault: Fault indication from the bus interface logic
- "D" (green) = Data: General data traffic on the local bus
- "M" (green) = Master: The module is currently bus master
- "T" (green) = Busy: The 80C188 processor performs read cycles
- "B" (green) = Bus B: Bus B is the active bus
- "A" (green) = Bus A: Bus A is the active bus

The **"F" indicator** is ON if there is a malfunction on the local bus or on the bus interface. A blinking LED indicates a sporadic malfunction.

Possible causes of a malfunction:

- Incorrect frames due to wrong qualifiers or parity errors
- Receive buffer overflow (e.g. defective bus processor)
- Mismatch between transmit data and bus information (e.g. defective line driver)

The **"D" indicator** blinks and is more or less dimmed, depending on the density of the data traffic.

The **"M" indicator** is ON as long as the module possesses mastership. This is indicated by a faster or slower blinking frequency, that depends on the number of connected devices.

The **"T" indicator** signals at almost full brightness that the CPU performs a command or an I/O cycle.

The **"A" and "B" indicators** blink in the rhythm of the bus alternations. The brighter LED indicates the currently active bus.

4.3.3 Pin Assignments of the CS 275 Bus System Connector

Bus connector 25-way (sub-miniature 'D', male)

Pin	Signal	Bus	Level	Pin	Signal	Bus	Level
1	Clock	A	1	2	Qualifier	A	1
3	Data	A	1	4	Control	A	1
5	–		0V	6	–		0V
7	–		0V	8	–		0V
9	–		0V	10	Clock	B	1
11	Qualifier	B	1	12	Data	B	1
13	Control	B	1	14	Clock	A	0
15	Qualifier	A	0	16	Data	A	0
17	Controlö	A	0	18	–		0V
19	–		0V	20	–		0V
21	–		0V	22	Clock	B	0
23	Qualifier	B	0	24	Data	B	0
25	Control	B	0				

Please refer to the Operating Instructions of the N-AT local bus interface /10/ for details.

9 Spare Parts List OS 525

Item	Designation	Order No.	Spare part cat. *)	Qty.	Remarks
1	Operator input devices				
2	Membrane keyboard German	6GF6710-2AB	N	1	
3	Membrane keyboard international	6GF6710-2BB	N	1	
4	Mouse	6GF6810-1AA	N	1	
5	TK200 standard keyboard German / international	6GF6710-1AA	N	1	
6	Pres.-sens. keyboard German	6GF6710-2AA	N	1	
7	Pres.-sens. keyboard internat.	6GF6710-2BA	N	1	
8	I/O modules				
9	CP1413 (SINEC-H1)	C79458-L2343-A2	R1	1	
10	CP5412 (SINEC L2)	6GK1541-0AB01	R1	1	
11	FU-AT radio-contr. clock	6AD1017-0AA01	N	1	
12	HIGRAF II	C79458-L2350-A1	R1	1	
13	Local bus interface N-AT	6DS1222-8BA	R1	1	
14	SCSI controller	C75451-Z1349-U1	R1	1	
15	Signal module	6DS1916-8AA	R1	1	
16	Drives				
17	3.5" floppy disk drive	C79451-Z1-U125	N	1	
18	5 1/4" floppy disk drive	6AB1013-4GA10	N	1	For ES500 only
19	3.5" hard disk drive IDE 850 MB	C79451-Z1423-K3	R1	1	
20					
21	MO drive 2.3 GB	C75451-Z1468-U2	R0	1	
22	Monitor				
23	SCM 2185 color monitor	6GF6100-1AA	N	1	
24	PM54/C2 process moni- tor, desktop unit	6AV8011-1LE62-0KA0	R7	1	