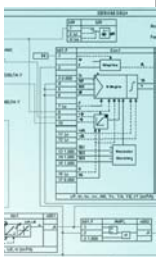


- 9/2 **Serial interface/hardware**
- 9/3 **Communication driver for S7/ PCS 7**
- 9/4 **SIPART device driver WinCC**
- 9/5 **Graphic configuration using SIPROM DR24**

**Notes:**

Parameterization and configuration of the controllers SIPART DR19, DR21 and DR22 with SIMATIC PDM software!  
For detailed information about SIMATIC PDM see catalog FI 01.

The whole programs mentioned in this catalog section are class B software products. The „Agreement concerning the use of software products with a unique payment“ is valid for these programs.



## Serial interface/hardware

### Application

The SIPART DR compact controllers are microprocessor-controlled autonomous devices and can be used for reliable automation of processes. Process operation and monitoring as well as parameterization and configuring are carried out on the front module (control unit) of these controllers.

In addition to their use as individual devices in stand-alone mode, the SIPART DR compact controllers also enable serial communication with automation systems or personal computers for central operation and monitoring or for parameterization and configuring. The controllers are equipped with an RS 232/485 or PROFIBUS DP interface module for these tasks.

The RS 232/485 interface module 6DR2803-8C provides electrical isolation between the individual controllers and the higher-level system. Any combination of up to 32 SIPART DR devices can be connected via the addressable interfaces.

In RS 232 mode, the interface is implemented as a point-to-point. The SIPART DR controllers (see Overview Section 8) can also communicate with higher-level systems using an RS 485 interface.

The PROFIBUS DP interface module 6DR2803-8P permits up to 122 controllers to be connected as slaves to master modules in a programmable controller such as e.g. SIMATIC S5 or S7. The controllers are connected via a common line (2-wire copper or fiber-optic cable). Refer to Catalog IK PI for the PROFIBUS accessories (Order No.: E86060-K6710-A101-A9-7600).

### Design

In RS 485 mode (see Overview Section 8), a bus driver is not required. The controllers are connected directly to the central unit or the interfaces (see Fig. 9/1).

In PROFIBUS DP mode the controllers are connected to a DP master module in series using a 2-wire copper cable (Fig. 9/3). SIMATIC NET repeaters or optical link modules (OLM) are required to cover longer distances (see Catalog IK PI).

### Hardware components

#### Serial interface (SES) 6DR2803-8C

The interface module has a nine-way subminiature connector to connect it to the bus cable. Jumpers on the interface module enable a choice to be made between RS 232 mode (point-to-point) or RS 485 mode.

The terminating resistor required for RS 485 operation is already present on the interface module.

#### PROFIBUS DP interface (6DR2803-DP)

The interface module directly satisfies the PROFIBUS DIN 19245, Parts 1 and 3 (without additional bus driver). The module has a 9-contact Sub-D socket for connection to the PROFIBUS DP. Standardized PROFIBUS plugs can be used (see Catalog IK PI).

#### Connecting cable

1. SIPART DR19/DR21/DR22 "New"/DR24 "New" controller – system from other manufacturer connection using RS 485

The communication to higher-level systems takes place with a 2-wire connection via an RS 485 interface.

The 9-way female connector for round cables is preferred for the connection.

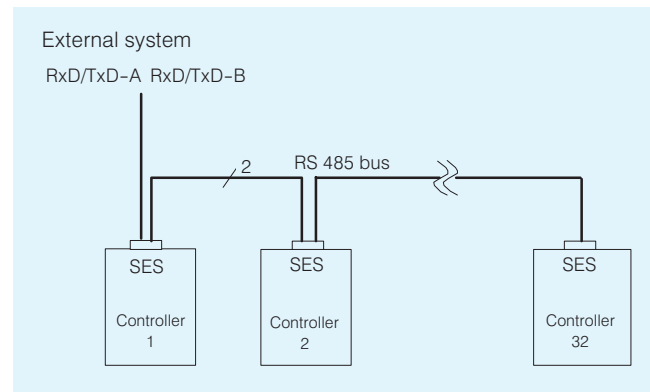


Fig. 9/1 Serial interface using RS 485

#### 2. Controller – Personal Computer as point-to-point connection

Two different cables with different connectors are available:

- 25-way male connector (e.g. COM 1 of SIMATIC programmers) and a 9-way female connector to the controller.
- 9-way female connector (e.g. COM 1/2 with standard personal computers) and a 9-way female connector to the controller.

#### 3. Controller – PROFIBUS-DP connection

PROFIBUS provides a comprehensive range of bus components for electrical and optical transmission (see Catalog IK PI).

Different connecting cables (for point-to-point connection) for controller configuring via PROFIBUS-DP are available e.g.:

- 6ES7 901-4BD00-0XA0 (IK PI)
- 6ES7 901-0BF00-0AA0 (IK PI)

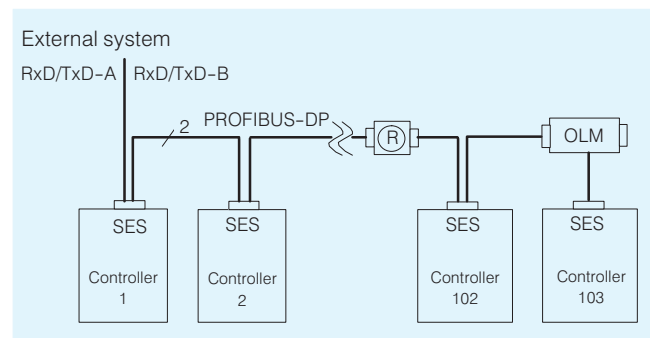






Fig. 9/2 Serial interface using PROFIBUS DP

Serial interface/hardware


| Technical data   |   |
|--|---|
| Connectable devices  | For PROFIBUS DP up to address 125   |
| SIPART DR19 controllers<br>SIPART DR20 controllers   | Software release B01 or newer<br>Software release B07 or newer<br>(max. Adr. 31)<br>Software release A07 or newer   |
| SIPART DR21 controllers<br>SIPART DR22 / DR22N<br>controllers<br>SIPART DR24 / DR24N multi-<br>function unit | Software release B07 / (C03) or newer<br><br>Software release B04 / (C03) or newer  |
| Serial interface<br><u>6DR2803-8C</u>  |   |
| Transmittable signals  | V.24/V.28 signals to CCITT-V.24:<br>TxD (103), RxD (104) and<br>GROUND (102) or SIPART bus<br>or RS 485 2-wire system<br>(with SIPART DR19, DR21, DR 22N<br>or DR24N only)  |
| Transmittable data   | Status flags, process variables,<br>parameter settings and configuring<br>switch settings   |
| No. of addressable devices<br>per connection   | Max. 32   |
| Transmission   | Asynchronous, half-duplex   |
| Transmission rate  | 300, 600, 1200, 2400, 4800 or<br>9600 bit/s   |
| Character frame  | 10 bit (start bit, 7 data bits of an<br>ASCII character starting with the<br>LSB, parity bit and stop bit), even or<br>odd parity   |
| Transmission procedure   | To DIN 66 258, Part 1, configuration<br>A or B, optionally with or without<br>longitudinal redundancy check LRC,<br>before or after the end-of-message<br>ETX, normal or complementary<br>longitudinal redundancy check |
| Galvanic isolation   | Between TxD, RxD and the controller   |
| PROFIBUS-DP interface<br><u>6DR2803-8P</u>   |   |
| Transmittable signals  | RS 485, PROFIBUS-DP/V1 protocol   |
| Transmittable data   | Status flags, process variables,<br>parameters and configuring switches   |
| Transmission procedure<br>PROFIBUS DP/V1 protocol  | To DIN 19 245 Parts 1 and 3<br>European standard: EN 50 170   |
| Transmission rate  | 9.6 kbits/s to 1.5 Mbits/s  |
| Station No.  | 0 to 125 (note software version of<br>controller)<br>(0 to 31 with SIPART DR20)   |
| Electrical isolation between<br>RxD/TxD -P/-N and the device   | Max. UC 50 V common-mode voltage  |
| Test voltage   | AC 500 V  |
| Repeater control signal<br>CNTR-P  | 5 V -0.4 V/+0.2 V, short-circuit-proof  |
| Cable lengths:<br>per segment at 1.5 Mbits/s   | 200 m; for further data see IK PI   |

| Ordering data  |  |
|--|--|
|  | Order No.  |
| <b>RS 232/RS 485 interface module (SES),<br/>switchable</b><br>for SIPART DR compact controllers   | <b>6DR2803-8C</b>  |
| <b>PROFIBUS-DP module</b><br>for SIPART DR compact controllers for<br>direct communication via the<br>PROFIBUS DP  | <b>6DR2803-8P</b>  |
| <b>RS 232 connecting cable for<br/>point-to-point connection,</b><br>for controller to PC on COM interface<br>- 9-way female to 9-way female<br>- 25-way male from PC to 9-way<br>female on controller<br>Length: 5 m  | <b>6DR2902-8AB</b><br><b>6DR2902-8AC</b>                 |
| <u>Connection for ribbon cable/round cable</u><br><b>Female connector</b><br>9-way for round cable<br>(screw-type, for interface module)   | <b>C73451-A347-D39</b><br><br>(see Catalog IK PI)        |
| <b>PROFIBUS-DP connecting cable<br/>point-to-point connection</b><br>for controller to PC/PG with CP 5611, 5511<br>or MPI interface<br>PROFIBUS con. cable: 3 m (IK PI)<br>MPI cable 5 m (IK PI)   | <b>6ES7 901-4BD00-0XA0</b><br><b>6ES7 901-0BF00-0AA0</b> |
| <b>Operating Instructions<br/>"V.28 Serial Interface"</b><br>These instructions are only required<br>if you wish to write your own<br>communications software. The interfaces<br>are described in the controller manuals<br>and operating instructions.<br>For SIPART DR20 controller (Internet)<br> <br>  | <b>C73000-B7400-C128</b><br><b>C73000-B7476-C128</b>     |

The following Instructions can be downloaded from Internet  
(see Section 10, Page 10/7):

**SIPART DR  
PROFIBUS interface / Instructions**  
(Description of the communication via PROFIBUS DP  
with the controller SIPART DR19/20/21/22/24)  
- German  
- English

**SIPART DR19, 21, 22 and 24  
Serial SIPART 6DRxx Bus interface / Instructions**  
(Description of the communication via RS 232, RS 485 or PROFIBUS DP)  
- German  
- English

**Available ex-stores:**  
Items marked  are available ex-stores.

Communication driver for S7 / PCS 7

All replacement products of 6DR1126-xxxx will be delivered via  
SIEMENS  &                                          

**Contact:** Roland Heid  
E-Mail: Roland.Heid@siemens.com

## SIPART device driver WinCC

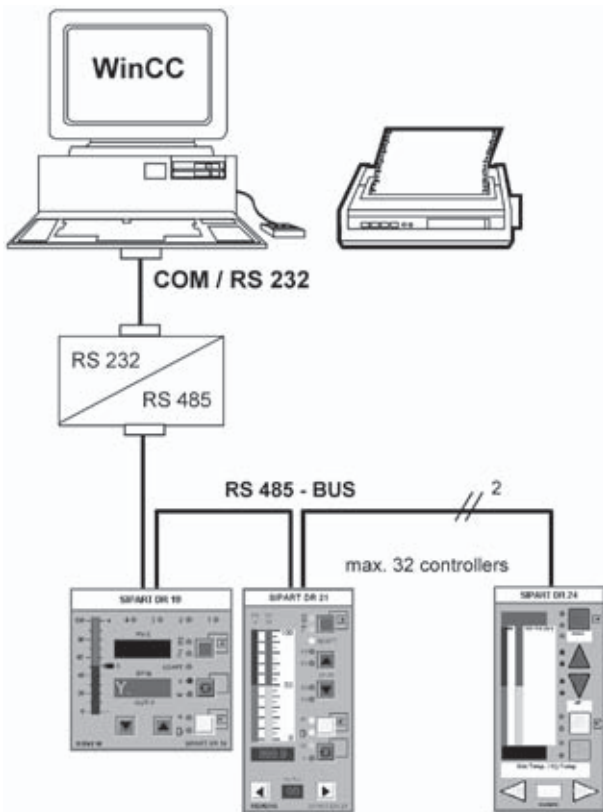


Fig. 9/3 System configuration

### WinCC functions

WinCC provides powerful function packages for visualization, message processing, archiving of measured values and user data, and for logging.

With its versatile connection possibilities (bus systems and serial), WinCC also supports the simultaneous operation of SIMATIC and SIPART DR.

WinCC is available as a software package or as a system (OP or PC with completely installed software, complete or runtime versions) and is offered in various performance and price classes with different options. You can obtain technical information and ordering data on WinCC from your SIMATIC contact (see also Catalog ST 80).

### Application

The SIPART device driver WinCC permits incorporation of the SIPART DR controllers into WinCC. WinCC then has access to all device data of the various SIPART DR controllers for operation and monitoring.

The data to be visualized, operated and logged are defined by configuring. The configuring of WinCC for SIPART DR is particularly simple by using "Standards" (pre-configured and documented display blocks for each type of controller).

Modifications during the test and commissioning phase present no problem as a result of online configuring.

WinCC is connected to the DR19, DR20, DR21, DR22 and DR24 compact controllers via the device driver for SIPART DR (channel DLL). WinCC supports up to 4 SIPART buses with max. 32 process controllers each.

### Hardware and software requirements

- Personal computers with Windows XP, NT or Windows 9x, with Pentium processor  $\geq 166$  MHz, main memory configuration at least 32 Mbyte, vacant hard disk capacity  $\geq 1$  Gbyte, CD-ROM drive
- WinCC software (complete or runtime version as desired)
- The SIPART DR19, DR21, DR22 "New" and DR24 "New" controllers are connected in RS 485 mode (see Fig. 9/1)

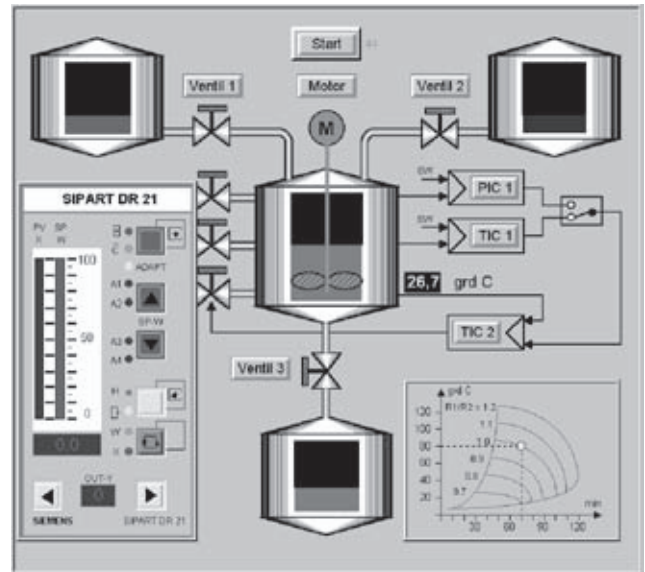


Fig. 9/4 WinCC full graphics and windows

### Ordering data

|  | Order No.                 |
|--|---------------------------|
| <b>SIPART device driver for WinCC</b><br>for the SIPART DR19, DR20, DR21, DR22 and DR24 controllers for connection to a standard COM interface on the PC | <b>6DR1127-1AA00</b>      |
| <b>Update</b>  | <b>6DR1127-1AA00-0UD3</b> |

### Scope of supply

SIPART device driver for WinCC

- DISK 1/3: Pre-configured and documented blocks for every type of controller; Demo project V5 SP1
- DISK 2/3: Documentation of examples in German, English and French in WINWORD format
- DISK 3/3: Demo project V6
- Installation Manual in German, English and French

### Update note

The update ordering requires the proof of an old complete individual license!

**Graphic configuration using SIPROM DR24**

**Application**

The SIPROM DR24 program is used for the graphic programming of the SIPART DR24 multi-function unit. It includes all the configuration and parameterization of the multi-function unit using a graphic operator interface (MS Windows).

SIPROM DR24 runs on the following computers:

1. Personal computer with operating system MS-Windows 95/98/NT/2000/XP
2. SIMATIC PGs programmable controllers with operating system MS-Windows 95/98/NT/2000/XP

The core functions of the SIPROM DR24 are:

- Documentation updating of complete user programs in the SIPART DR24 in tabular form. Controller data can be modified in the PC, saved, and downloaded again to the multi-function unit
- Function library containing all of the SIPART DR24 function elements.
- Positioning of the elements with a mouse click on maximum 100 sheets. Positioning can be carried out within one sheet or more (FDEF)
- Connection of function blocks from data source to data sink (FCON) where the analog and digital signals can be differentiated by their color
- Positioning (FPOS) of the function blocks i. e. the order of the software processing is automatically fixed. It can be changed at any time by a mouse click
- Parameter input in tabular form (ONPA, OFPA, CLPA)
- Transmission of complete graphic configuration to SIPART DR24, to the printer and on floppy or hard disk
- Duplication of user programs. The programs stored in a user program memory are fetched and then copied from the PC to other empty program memories.
- Documentation of complete multi-function unit: front assignment and rear including all inputs and outputs
- Moving of blocks without destroying interconnections.
- Insertion of text strings where required
- Symbol alignment using grid points (can be toggled on and off)
- Choice of graphical or tabular configuration
- Layout check over 2 pages
- Page by page storage and loading of partial circuits
- Multiple use of constants
- UNDO facility (can be toggled on and off)
- When processing a graphics circuit scaling up or reducing is possible (zooming)
- Controller data generated by previous SIPROM DR24 software versions can be edited.

**Hardware and software requirements**

- Hardware
  - Personal Computer, permissible for MS-Windows XP
    - Hard disk  $\geq$  500 Mbyte
    - Memory capacity  $\geq$  64 Mbyte
    - CD-ROM drive
    - Color graphics card, supported by Microsoft Windows but at least with SuperVGA functionality (from 800\*600 pixels upward)
    - Printers, plotters, supported by Microsoft Windows

- DP master module for PC:
  - CP 5611: 6GK1 561-1AA00
  - DP master module for laptops:
    - CP 5511: 6GK1 551-1AA00
- SIMATIC PG with built-in MPI Interface

- Serial interface on the SIPART DR24:
  - RS 232: 6DR2803-8C
  - PROFIBUS-DP: 6DR2803-8P
- Connecting cable:
  - for RS 232/"point-to-point" 6DR2902-8AB/-8AC
  - for PROFIBUS-DP/5 m: 6ES7 901-4BD00-0XA0 see IK PI
  - for PROFIBUS-DP/5 m: 6ES7 901-0BF00-0AA0 see IK PI

- Software
  - Operating system Microsoft Windows XP or operating system Microsoft Windows 95/98 (32-bit version only), 2000, NT 4
  - PROFIBUS-DP driver "Softnet DP" Version  $\geq$  2.2 for PCs/PGs, Order No. 6GK1 704-5DW61-3AA0 1)

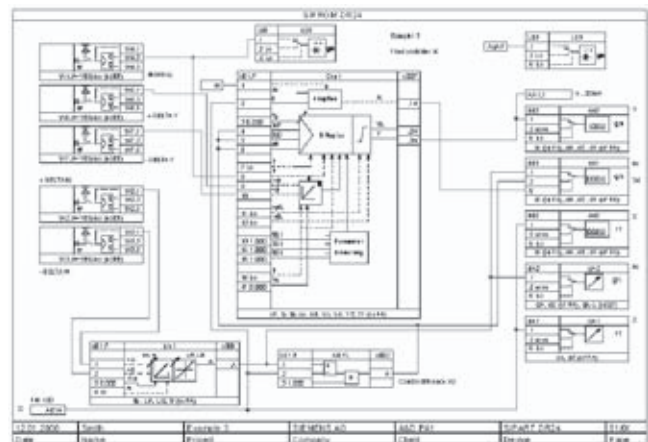


Fig. 9/5 SIPROM DR24

**Ordering data**

|   | Order No.                 |
|---|---------------------------|
| <b>SIPROM DR24 program</b><br>for SIPART DR24 controllers<br>- German/English | <b>6DR1127-1BA00</b>      |
| Update<br>- German/English  | <b>6DR1127-1BA00-0UD3</b> |

**Scope of supply SIPROM DR24**

Program and manual (English and German) on CD-ROM

**Training**

Refer to the ITC catalog (German) for details of training courses for these programs.

**Update note**

The update ordering requires the proof of an old complete individual license!

1) The required drivers are not included in the SIMATIC programmable controller delivery.



