

Preface

Overview of the variants of the CP 1604

CP 1604 modules are available in 4 variants:

- Communications processor CP 1604 / CP 1604 EEC
- CP 1604 Microbox Package
- RJ-45 connection board for CP 1604
- Power supply for CP 1604

Please check that the consignment you have received is complete. Otherwise contact your supplier or your local Siemens office immediately.

Communications processor 6GK1160-4AA01

The following components ship with the product:

- CP 1604 communications processor
- Driver CD for CP 1604

Communications processor CP 1604 EEC - 6GK1160-4AT01

The device is suitable for use in environments according to EN50121.

The following components ship with the product:

- Communications processor CP 1604 EEC
- Driver CD for CP 1604 EEC

Note

Descriptions for CP 1604 EEC

All descriptions of the CP 1604 also apply to the CP 1604 EEC.

Exception: The temperature range of the operating temperature in the technical specifications

CP 1604 Microbox Package - 6GK1160-4AU00 / 6GK1160-4AU01

The following components ship with the product:

- CP 1604 communications processor
- Power supply for CP 1604 + 20-pin ribbon cable and connector
- RJ-45 connection board for CP 1604 + 40-pin ribbon cable

BF LED	SF LED	Description
alternating fast flashing		A disruption has occurred. In this case, diagnostics via the Web or using SNMP is no longer possible.
		Note If this error occurs, contact Technical Support. The problem can be eliminated if you contact our specialists directly. You will find the contact data in the section "Trademarks for PC CPs (Page 6)". Resetting the firmware or restarting the PC will not eliminate the problem.

LEDs on the "RJ-45 connection board for CP 1604"

Within the frame of each RJ-45 jack, there are 2 LEDs.

The green LED is lit when a connection is established (Link LED).

The yellow LED is lit when sending and receiving (Activity LED).

Virtual LEDs

Note that apart from the visible LEDs there are also two "virtual" LEDs in the firmware. These are the operating mode LEDs RUN and STOP. They do not exist physically but can nevertheless be queried using SNMP. They are on in the RUN or STOP mode and never flash normally or quickly.

1.1.1 40-pin male connector for connection of the RJ-45 connection board for CP 1604

Description

The 40-pin connector is used to connect the ribbon cable from the RJ-45 connection board for CP 1604. This has the Ethernet connectors that allow network operation.

The signals are processed in the integrated 4-port real-time switch of the CP 1604.

Ethernet connectors

The CP 1604 communications processor is intended for operation in Ethernet networks.

It also has the following features:

- The connectors are designed for 10BaseT and 100BaseTX (via RJ-45 connection board for CP 1604).
- Data transmission speeds of 10 and 100 Mbps in full/half duplex are supported.
- The adaptation is automatic (autonegotiation).
- The module includes a 4-port real-time switch.

- Autocrossing
- The CP 1604 can be a PCI master.

LED signaling

If the CP 1604 is used without the RJ-45 connection board for CP 1604, the 40-pin connector has 2 pins per channel for the Link and Activity signal. These can be used to control a total of 8 LEDs. The signals of the operating statuses group fault (SF) and bus fault (BF) are available at pin 3 (SF) and pin 37 (BF).

The wiring is the same as described for the 20-pin connector.

Pin assignment of the 40-pin connector

The pin assignment of the 40-pin connector is as follows:

Pin no.	Assignment	Pin no.	Assignment
1	P3V3	21	RDN_P2
2	M	22	RDP_P2
3	GPIO(6) – SF	23	M
4	LINK_P0_N	24	TDN_P2
5	ACT_P0_N	25	TDP_P2
6	LINK_P1_N	26	M
7	ACT_P1_N	27	RDN_P3
8	M	28	RDP_P3
9	RDN_P0	29	M
10	RDP_P0	30	TDN_P3
11	M	31	TDP_P3
12	TDN_P0	32	M
13	TDP_P0	33	LINK_P2_N
14	M	34	ACT_P2_N
15	RDN_P1	35	LINK_P3_N
16	RDP_P1	36	ACT_P3_N
17	M	37	GPIO(7) – BF
18	TDN_P1	38	P3V3
19	TDP_P1	39	M
20	M	40	P3V3

You will find the pin assignment of the connector on the labeling on the ribbon cable socket bar.

1.1.2 20-pin male connector for connection of the power supply for CP 1604

Description

The 20-pin connector is used to connect the power supply for CP 1604. On the one hand, this supplies 5 V for the CP 1604, on the other hand, 2 LEDs for signaling the operating statuses bus fault (BF) and group fault (SF) are controlled on the power supply for CP 1604.

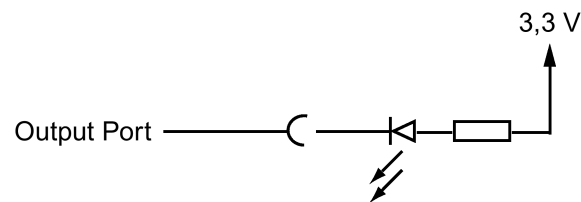
With the 5 V power supply, the integrated real-time switch can also operate when the PC is turned off. The 5 V power supply is optional. Without the external 5 V power supply, the switch operates with the 5 V power supply of the PC/104 PC.

If the CP 1604 is to be operated without the power supply for the CP 1604, a separate 5 V power supply or the 2 LEDs can be connected to this connector.

LED connection (optional)

The following figure shows the circuit diagram for connecting an LED to a pin of the 20- or 40-pin connector.

The CP 1604 activates ground via a port. This means that via the resistor connected to the 3.3 V power supply, the current flows via the LED.



NOTICE

LED current

The LED current must not exceed 9 mA.

Pin assignment of the 20-pin connector

The pin assignment of the 20-pin connector is as follows:

Pin no.	Assignment
1	GND
2	GND
3	5 V power supply, +/-5%
4	5 V power supply, +/-5%
5	5 V power supply, +/-5%
6	5 V power supply, +/-5%
7	Connector for SF LED
8	GND

Pin no.	Assignment
9	Powerfail_N (L1) = 0 V if no L1 power supply is applied and 3.3 V when L1 is applied
10	GND
11	Powerfail_N (L2) = 0 V if no L2 power supply is applied and 3.3 V when L2 is applied
12	GND
13	Connector for BF LED
14	GND
15	5 V power supply, +/-5%
16	5 V power supply, +/-5%
17	5 V power supply, +/-5%
18	5 V power supply, +/-5%
19	GND
20	GND

Note**Switch mode**

The switch mode of the module is only possible when 3.3 V is applied to at least one of the two pins 9 and 11.

You will find the pin assignment of the connector on the labeling on the ribbon cable socket bar.

1.1.3 10-pin connector

Description

The 10-pin connector (PE) is used to signal the PROFlenergy commands to the host PC. As of firmware V2.6, the CP 1604 allows operation as a PROFlenergy device. With suitable commands from the PROFINET controller, the PC in which the CP 1604 is plugged in can be turned off and on again with the aim of reducing energy consumption. The device is turned off by certain commands (data records) on the IO-Base user programming interface. You will find these commands in the "IO-Base User Programming Interface" document.

Note**Hardware version for 10-pin connector**

The 10-pin connector is available as of hardware version 7 (MLFB 6GK1160-4AA01).

Technical specifications

5.1 Communications processor CP 1604 / CP 1604 EEC

5.1.1 Communications processor CP 1604 / CP 1604 EEC

Listing

The following technical specifications apply to the CP 1604 / CP 1604 EEC communications processor:

Data transfer	
Transmission rate	10/100 Mbps

Interfaces	
10BaseT/100BaseTx	4 RJ-45 connectors with 40-pin ribbon cable
Interface of the RJ-45 connection board for CP 1604	40-pin connector
Interface of the power supply for CP 1604	20-pin connector
Connection to PC	PC/104 Plus

Voltage	
PCI power supply	+5 VDC, +/-5%
5 VDC supply, external (optional)	+5 VDC, +/-5%

Current consumption	
PCI voltage at +5 V	max. 800 mA
5 VDC supply, external (optional)	max. 800 mA

Permitted ambient conditions	
Operating temperature	+5 °C to +60 °C (CP 1604) -40 °C to +70 °C (CP 1604 EEC)
Transportation/storage temperature	-20 °C to +60 °C (CP 1604) -40 °C to +85 °C (CP 1604 EEC)

Construction	
Module format	PC/104 Plus format
Dimensions (W x D x H) in mm	90 x 95 x 24
Weight	110 g

LED connectors	
Input current	max. 9 mA

Note

Multiple CP 1604 / CP 1604 EEC CPs in one PC are not permitted

Multiple CP 1604 / CP 1604 EEC communications processors in one PC are not currently permitted.

Note

Parallel operation is not permitted

Parallel operation of the communications processors CP 1604 / CP 1604 EEC and CP 1616 in one PC is not permitted.

5.1.2 RJ-45 connection board for CP 1604

Listing

The following technical specifications apply to the RJ-45 connection board for CP 1604:

Interfaces	
Connection to 10BaseT/100BaseTx	RJ-45 connector (four)

Permitted ambient conditions	
Operating temperature	+5 °C to +60 °C
Transportation/storage temperature	-20 °C to +60 °C

Construction	
Dimensions (W x D x H) in mm	83 x 37 x 15
Weight	33 g

5.1.3 Power supply for CP 1604

Listing and notes

The following technical specifications apply to the power supply for CP 1604:

Requirements	
Electrical isolation of the 24 V supplies	Not necessary, the isolation is on the power supply for CP 1604.
Nominal voltage range of the 24 V supplies	18 to 32 VDC Safe Extra Low Voltage (SELV)
Overvoltage protection at input	PTC thermistor as overload protection (PTC Resettable Fuse); 0.6 A; 60 V

Feed-in	
Phoenix contacts	4-fold, can be screwed

Current consumption from the external 24 V voltage	
With 18 VDC supply	max. 300 mA
With 32 VDC supply	max. 200 mA

Construction	
Dimensions (W x D x H) in mm	68 x 55 x 12
Weight	40 g

 WARNING	
External supply	
The external supply must meet the requirements in compliance with NEC class 2 (voltage range 18 to 32 V, current requirement 300 mA).	

NOTICE
Permitted power supply The CP 1604 communications processor is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC 950/EN 60950/VDE 0805 can be connected to the power supply terminals. If the device is connected to a redundant power supply (two separate power supplies), both power supplies must meet these requirements.

NOTICE
Permitted voltage Never operate the power supply for CP 1604 with an AC voltage. Never operate the power supply for CP 1604 with a DC voltage higher than 32 VDC.

5.1.4 Microbox expansion frame for the CP 1604

Listing

The following technical specifications apply to the Microbox expansion frame for CP 1604:

Interfaces	
Connection to the SIMATIC Microbox PC 420	The form of the Microbox expansion rack for CP 1604 matches the housing of the SIMATIC Microbox PC 420.

Construction	
Dimensions (W x D x H) in mm	262 x 117 x 23
Weight	200 g