

6ES5304-3UB11

IM 304 / IM 314 instructions - original Siemens diagrams follow

The seven following pages are unchanged selections from the Siemens IM 304 / IM 314 instructions. Original printed page numbers are retained and therefore are not consecutive.

Included manufacturer pages

PRINTED PAGE	DOCUMENTED SUBJECT
05	System application and central-to-expansion connection diagram
06	Fault-tolerant S5 interface configurations
12	IM 304 backplane connector assignments
13	Exact 6ES5 304-3UB11 and X11 cable-length jumper diagram
16	X12-X22 jumper meanings and interface enablement
17	Partner IM 314 addressing reference
19	X3/X4 front indicators and operational fault context

USE WITH CONTROLLED SYSTEM RECORD

Confirm the installed IM 304 revision, S5 central controller, expansion interface, cable route, jumper settings and termination before work. These selected pages do not replace the complete Siemens manual.

CANONICAL SOURCE

Siemens AG, IM 304 / IM 314 Instructions, C79000-B8576-C716-02.

1 Technical Description

1.1 Application

The IM 304 interface module can be used in the central controllers S5-115U, S5-115F, S5-115H, S5-135U, S5-150U, S5-150H, S5-155U and S5-155H. On the central controller side, it is used for the symmetrical transmission of the central controller bus to the expansion units with a 16-bit address and 16-bit data bus (EG 185, EG 186). On the expansion unit side, the IM 314 interface module is required. Fault tolerant systems require the IM 314H or IM 314R.

The 16-bit address bus and 16-bit data bus are transmitted multiplexed on 16 common lines. The IM 304 interface module is also used in fault tolerant systems to connect the redundant central controllers. (Parallel interface IM 304 - IM 324).

1.2 Interfacing with other Devices

The IM 304 and IM 314 (H/R) interface modules can be used to interface with the following devices:

1.2.1 Symmetrical Interface from SIMATIC S5 Central Controllers (CCs) to SIMATIC S5 Expansion Units (EGs)

This permits (in conjunction with the EG 185, EG 186 and ER 701-3) the use of peripheral (I/O) modules, communications processors (CPs) and intelligent peripheral modules (IPs) in a distributed configuration. On the expansion unit side, the IM 314-3UA11 interface module must be used for this interface.

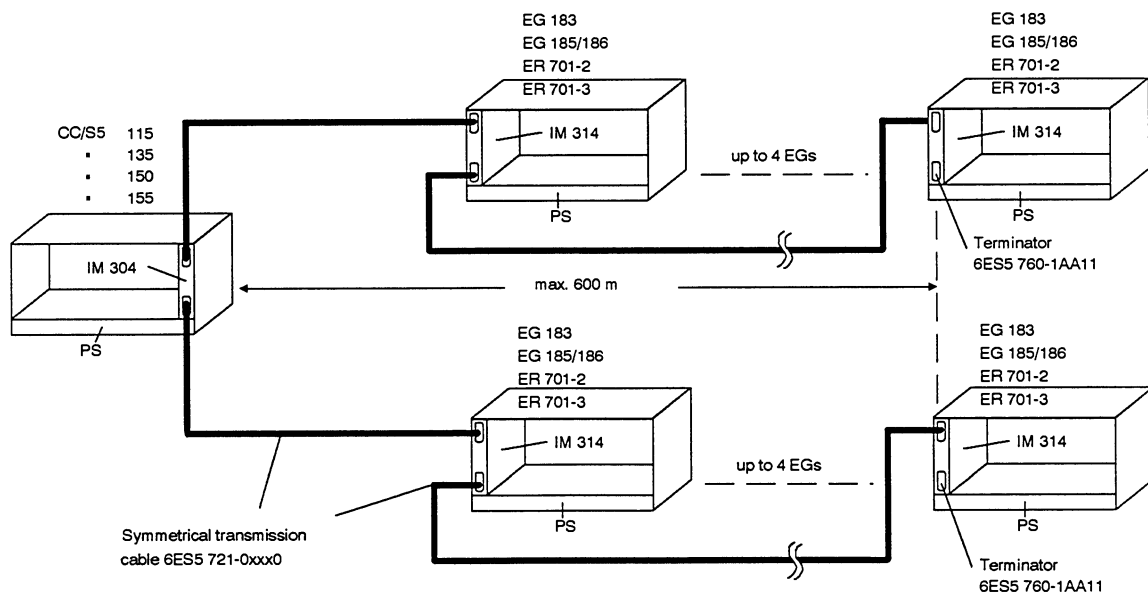


Fig. 1 Distributed configuration with the symmetrical interface IM 304 - IM 314

1.2.2 Parallel Interface between Central Controllers in the Fault Tolerant SIMATIC S5 System

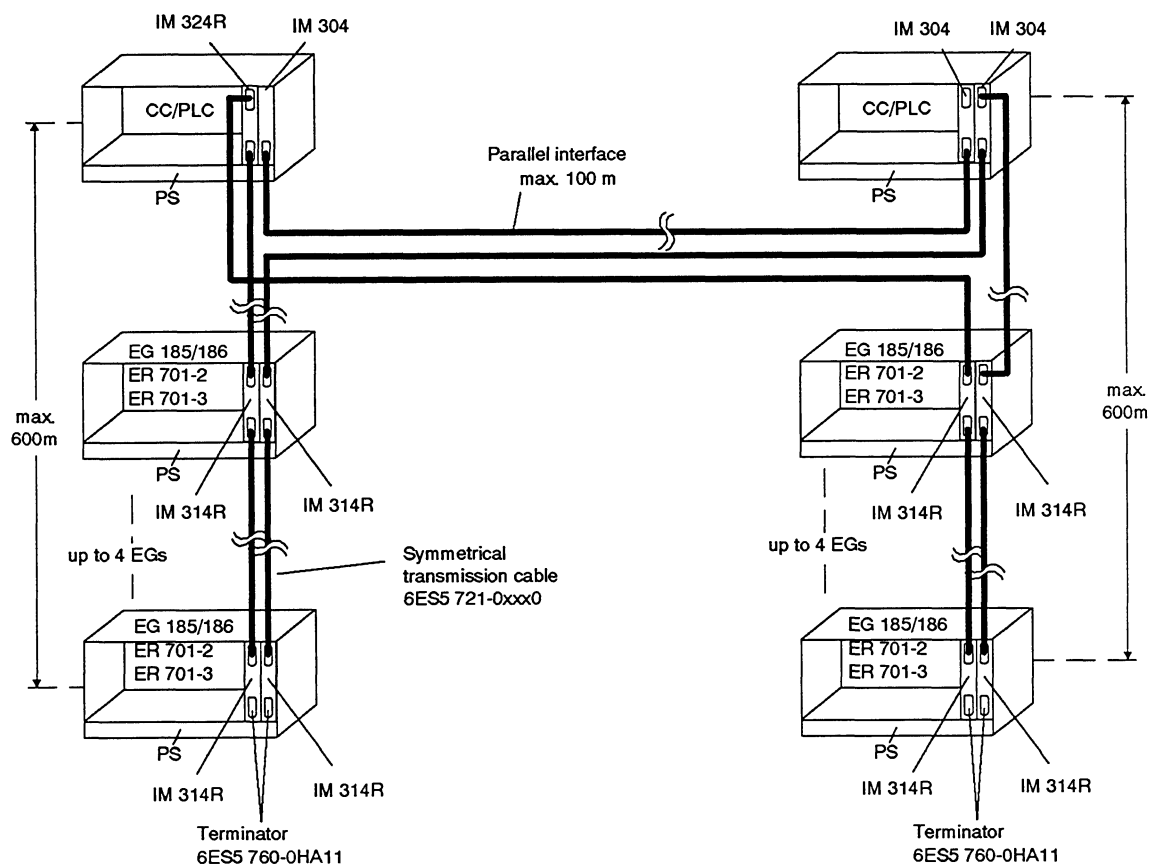
The IM 304 interface module can be used in the CCs S5-115F, S5-115H, S5-150H and S5-155H. At the other end of the link, the IM 324-3UAxx (in the S5-115F, S5-150H) or IM 324-3URxx (in the S5-155H, 115H) must be used. The link is only possible via the X4 interface (lower front connector).

The IM 304 interface module provides the following functions:

- bidirectional transmission of process-related data between the two central controllers,
- recognition of transmission errors by parity checks and monitoring of the data and addresses (only for S5-115F, S5-150H). This function is not possible when the module is used in the S5-115H/155H).

1.2.3 Symmetrical Interface from Central Controllers to Expansion Units in the Fault Tolerant SIMATIC S5 System

In this configuration, the IM 304 interface module is served by the IM 314H or IM 314R interface module on the expansion unit side of the connection.



Backplane connector pin assignment of the IM 304

	d	b	z
2	-----	M	+ 5 V
4	-----		-----
6	ADB 12	ADB 0	$\overline{\text{CPKL}}$
8	ADB 13	ADB 1	$\overline{\text{MEMR}}$
10	ADB 14	ADB 2	$\overline{\text{MEMW}}$
12	ADB 15	ADB 3	$\overline{\text{RDY}}$
14	-----	ADB 4	DB 0
16	-----	ADB 5	DB 1
18	-----	ADB 6	DB 2
20	-----	ADB 7	DB 3
22	-----	ADB 8	DB 4
24	-----	ADB 9	DB 5
26	-----	ADB 10	DB 6
28	-----	ADB 11	DB 7
30	-----	BASP	-----
32	-----	M	-----

Interface X1

(----- = not used)

	d	b	z
2	-----	M	+ 5 V
4	-----	DB 8	DB 12
6	-----	DB 9	DB 13
8	-----	DB 10	DB 14
10	-----	DB 11	DB 15
12	-----	-----	-----
14	-----	-----	($\overline{\text{PEU}}$) *
16	-----	-----	-----
18	-----	$\overline{\text{PEU}}$ *	-----
20	-----	-----	-----
22	-----	-----	-----
24	-----	-----	-----
26	-----	-----	-----
28	-----	-----	-----
30	-----	-----	-----
32	-----	M	-----

Interface X2

*dependent on jumper plug X15

Backplane connector pin assignment of the IM 314

	d	b	z
2	-----	M	+ 5 V
4	+5 V	PESP	-----
6	ADB 12	ADB 0	$\overline{\text{CPKLq}}$
8	ADB 13	ADB 1	$\overline{\text{MEMR}}$
10	ADB 14	ADB 2	$\overline{\text{MEMW}}$
12	ADB 15	ADB 3	$\overline{\text{RDY}}$
14	-----	ADB 4	DB 0
16	-----	ADB 5	DB 1
18	-----	ADB 6	DB 2
20	-----	ADB 7	DB 3
22	M	ADB 8	DB 4
24	M	ADB 9	DB 5
26	M	ADB 10	DB 6
28	-----	ADB 11	DB 7
30	M	BASP	$\overline{\text{DSI}}$
32	$\overline{\text{BASPq}}$	M	-----

Interface X1

(----- = not used)

	d	b	z
2	-----	M	+ 5 V
4	-----	DB 8	DB 12
6	$\overline{\text{CPKL}}_i$	DB 9	DB 13
8	-----	DB 10	DB 14
10	-----	DB 11	DB 15
12	-----	+5 V	-----
14	-----	+5 V	-----
16	-----	+5 V	-----
18	-----	$\overline{\text{NAU}}$	$\overline{\text{CPKL}}$
20	-----	-----	-----
22	-----	M	M
24	-----	M	M
26	-----	M	M
28	-----	M	M
30	-----	M	M
32	-----	M	M

Interface X2

i = input, q = output

2.4 Operating Modes / Jumper Settings on the IM 304 (6ES5 304-3UB11)

2.4.1 Jumper Settings

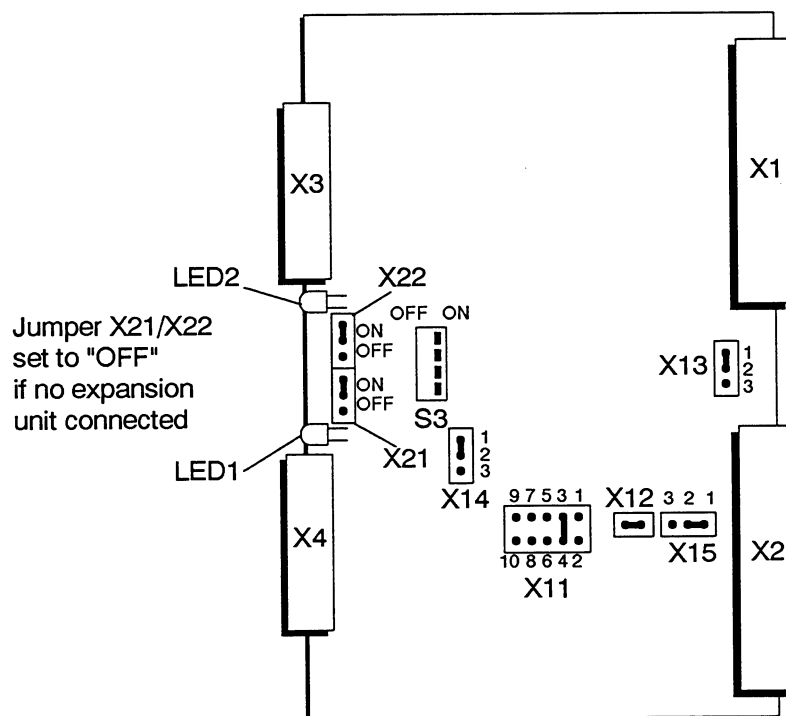
X11: Adapting to various cable lengths

	Jumper plug X11				
Jumper setting					
	*)				
Cable length	max. 10 m	10 - 100 m	100 - 250 m	250 - 450 m	450 - 600 m

*) This setting is only permitted for the IM 304 - IM 324R link in the S5-155H.

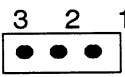
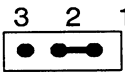
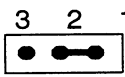
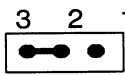
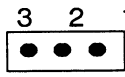
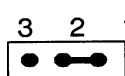
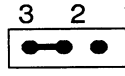
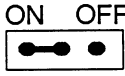
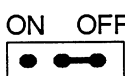
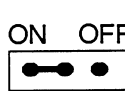
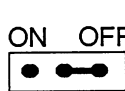
The longest connection at interface X3 or X4 is determined by the jumper setting at X11.

Symmetrical connection CC - EG with IM 304/IM 314 (S5-115U, S5-135U, S5-150U, S5-155U)



Jumpers as set at the factory

2.4.2 Significance of the Jumpers

X12		Test jumper - must always be plugged in.
X13		Data driver for D (8...15) on the S5 bus switched off.
		
X14		PEU (peripheral not ready) is generated, if one interface is reported as being "not ready".
		PEU (peripheral not ready) is generated, if both interfaces are reported as being "not ready".
X15		The PEU signal generated by the IM 304 is not connected to the CC bus.
		The output signal PEU from the IM 304 is connected to the S5 bus backplane connector 2, pin b18 (PEU).
		The output signal PEU from the IM 304 is connected to the S5 bus backplane connector 2, pin z14 (NAU).
X21		Interface X4 (lower front connector) is switched to on; the cable is connected.
		Interface X4 is switched to off. No cable is connected.
X22		Interface X3 (upper front connector) is switched to on; the cable is connected.
		Interface X3 is switched to off. No cable is connected.
S3		Switchover to redundant mode.

2.5 Setting the Module Address on the IM 314

The module address (e.g. P area or Q area) is set at the IM 314. This setting is only valid for the digital and analog I/O modules.

Fifteen address areas are available for the software interface. The digital and analog I/O modules in all areas are addressed by setting the DIP switches appropriately.

In the STEP 5 operation set, it is only possible to address the P and Q area.

Addressing the P and Q area

Module addresses used in the CC can no longer be used in the EG or in the P or Q area.

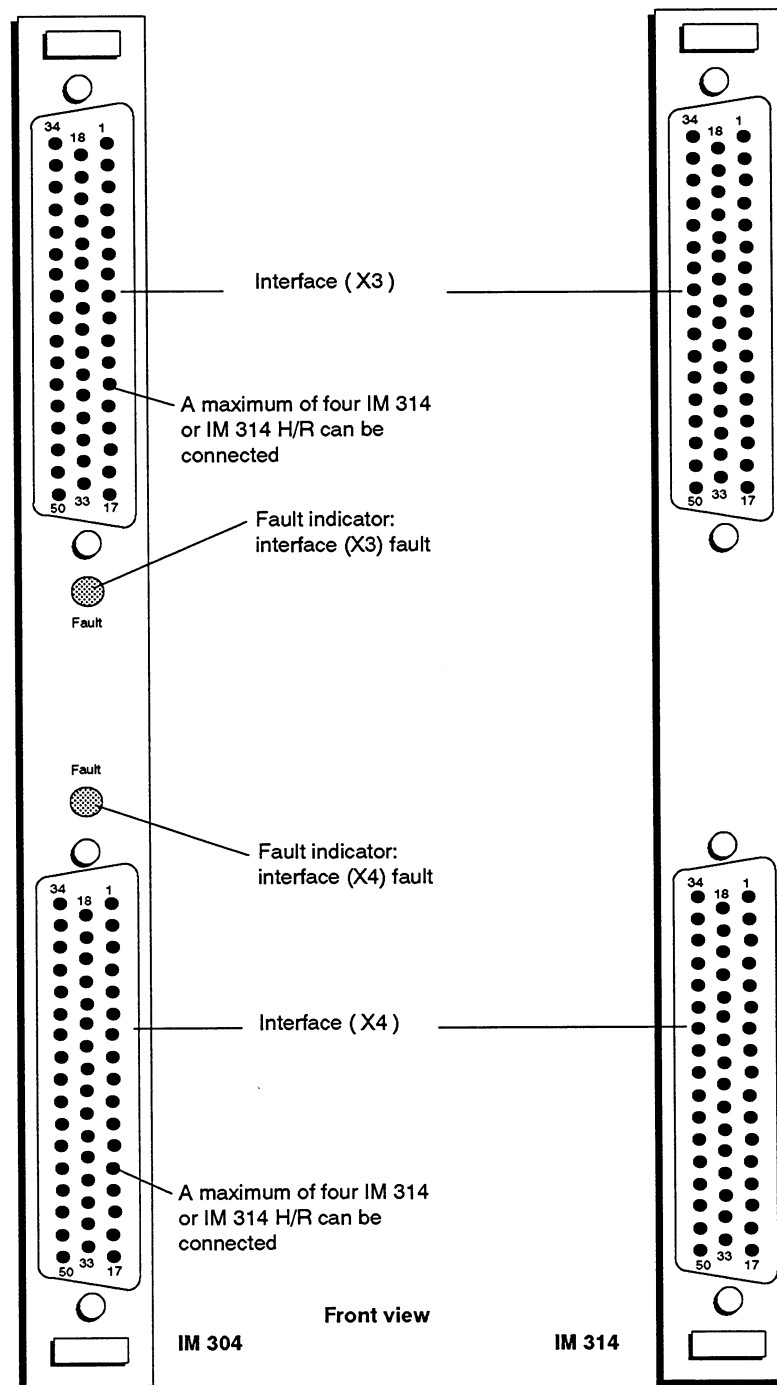
If peripheral modules are installed only in the expansion unit, all addresses both in the P and in the Q area can be addressed if the appropriate setting is made on the IM 314.

		ADB 11 10 9 8							
		S1							
						0 = switch OFF X = switch ON			
						Address (H)		Areas	
P area		0	0	0	0	0	* F000 - F0FF	6 1 4 4 0 - 6 1 6 9 5	
Q area		0	0	0	X	1	F100 - F1FF	6 1 6 9 6 - 6 1 9 5 1	
		0	0	X	0	2	F200 - F2FF	61952 - 62207	
		0	0	X	X	3	F300 - F3FF	62208 - 62464	
		0	X	0	0	4	F400 - F4FF	62465 - 62720	
		0	X	0	X	5	F500 - F5FF	62721 - 62976	
		0	X	X	0	6	F600 - F6FF	62977 - 63232	
		0	X	X	X	7	F700 - F7FF	63233 - 63488	
		X	0	0	0	8	F800 - F8FF	63489 - 63744	
		X	0	0	X	9	F900 - F9FF	63745 - 64000	
		X	0	X	0	A	FA00 - FAFF	64001 - 64256	
		X	0	X	X	B	FB00 - FBFF	64257 - 64512	
		X	X	0	0	C	FC00 - FCFF	64513 - 64768	
		X	X	0	X	D	FD00 - FDFF	64769 - 65024	
		X	X	X	0	E	FE00 - FEFF	65025 - 65280	
		X	X	X	X	F		not permitted	

* Factory setting

3 Operation

Control and display elements



The "FAULT" LED is lit if there is a power failure in an expansion unit, if there is no terminator on the last IM 314, if there is a wire break or if the DIP switch S3 is set incorrectly.