

Siemens Simatic 3964R/RK512 I/O Driver

SS5

DRIVER TYPES

	COMM	RES	CFE	ACE
DOS	4.23-6		4.23-6	4.12
WIN	5.31-6		4.23-6	
NT	6.00-9			
Win 2000	6.00-9			
XP	6.00-9			

SUPPORTED HARDWARE

Siemens Simatic S5 U115, U135, U150, U155 via CP524 or CP525
 Siemens Simatic S5 95C via SI2 port, using special software in PLC for RK512 emulation.
 Siemens Simatic S5 U100 via CP521, using special software in PLC for RK512 emulation.

Siemens Simatic S7 315-2 via CP 341-1 (version 5.31-x and 6.00-x)
 Siemens Simatic S7 412-1 via CP441-2. (version 5.31-x and 6.00-x)

PROTOCOL

Direct Link	X
Multi-drop	
Communication Network	

Baud Rate, Parity, Stop Bits, Data Bits: User Definable.

The protocol used is 3964R with RK512.

Support for 256 Devices per serial link, one device represents one Data Block (version 4.23-x).

Support for one PLC per serial link, 299 Poll blocks per PLC, one Poll Record represents a part of one Data Block, 64 Words per Poll Record (version 5.31-x and version 6.00-x).

Up to 8 serial ports are supported through DigiBoard or RIC card (RIC card, only version 4.23-x).

SUPPORTED MESSAGES/DATA AREAS

Read/Write Data Words within Data Blocks and extended Data Blocks

Read input, output and flags

DATA TYPES

SIGNED	16 Bit Signed Integer
UNSIGNED	16 Bit Unsigned Integer
FLOAT	Siemens 32 Bit Floating Point Value converted to 32 Bit Floating Point Value (IEEE)
ULONG	32 Bit Unsigned Integer Stored in Floating Point Format (IEEE)

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SLONG	32 Bit Signed Integer Stored in Floating Point Format (IEEE) (version 5.31-x and 6.00-x)
DIGITAL	16 Bit Digital Information Stored in 16 Bit Unsigned Integer
FLAG	8 Bit Digital Status Flag
ASCII	8 Bit ASCII Characters Stored as Pairs in 16 Bit Unsigned Integers

REQUIRED VENDOR SOFTWARE

The communication protocol 3964R must be loaded into the CP524 or CP525 module, and the CPU must be loaded with the following Siemens function Blocks (FB):

Synchron
Send
Receive

SIGNAL CONDITIONING

NONE	No Signal Conditioning.
LIN	scales the value linear unsigned range: 0 - 65535 signed range: .32768 - 32767.
12BN	12 Bit Binary No Range Check
12AL	12 Bit Binary Range Check
15BN	15 Bit Binary No Range Check
15AL	15 Bit Binary Range Check
3BCD	3 Digit Binary Coded Decimal
10T	Simatic BCD timer, unit 10 seconds. Scaled to EGU range in database block. Range check alarms. Range: 0-999 (version 6.00-5d)
1T	Simatic BCD timer, unit 1 seconds. Scaled to EGU range in database block. Range check alarms. Range: 0-999 (version 6.00-5d)
T1	Simatic BCD timer, unit 0,1 seconds. Scaled to EGU range in database block. Range check alarms. Range: 0-999 (version 6.00-5d)
T01	Simatic BCD timer, unit 0,01 seconds. Scaled to EGU range in database block. Range check alarms. Range: 0-999 (version 6.00-5d)
4BCD	4 Digit Binary Coded Decimal
11S	11 bits + signbit. This option can be used with the analog modules 460, 465, 470, 243 and 244.
11N	11 bits, no signbit. This option can be used with the same modules as for 11S. 11N gets only the positive range of the 11S' range, and only to 2048 because above that is an extension of the SIEMENS hardware.
12S	12 bits, twos complement. This option can be used with the modules 460 and 465.
8N	8 bits, no signbit. In case of module 243 you can use this option.
11CN	11 bit two's complement in normal range. Values in the range [512,2560] is supported. If the value is outside the range, it is clamped to its low resp. high range limits.
11CO	11 bit two's complement with overdrive range. Values in the range [512,4095] is supported. If the value is outside the range, it is clamped to its low resp. high range limits.
11CT	11 bit two's complement with transducer range. Values in the range [0,2560] is supported. If the value is outside the range, it is clamped to its low resp. high range limits.

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11CX	11 bit two's complement with overdrive and transducer range. Values in the range [0,4095] is supported. If the value is outside the range, it is clamped to it's low resp. high range limits.
11B	11 bit binary, taking a value in the range [0,2047] and scale it linear in the EGU range.
12B	12 bit binary including sign bit, scaling a value in the range [-2048,2047] linear into the EGU range.
DR	Maps out right byte of data word. The value is in the range [0,255]
DL	Maps out left byte of data word. The value is in the range [0,255]

For use with UNSIGNED:

15BN, 12BN, 15AL, 12AL, 3BCD, 10T, 1T, T1, T01, 4BCD, NONE, LIN, 11S, 11N, 12S, 8N, 11CN, 11CO, 11CT, 11CX, 11B, 12B, DR and DL

For use with SIGNED:

LIN, NONE

COMMUNICATIONS PERFORMANCE

The protocol is a serial binary protocol. It can read maximally 64 data words from a data block in one message. The 64 words can be any kind of information. The driver expects all data within one message to be of the same data type. At 9600 baud can 3-4 messages containing 64 words be fetched per serial link. This can be, when getting 3 messages/second, $3*64=192$ analog values or $3*64*16=3072$ digital signals.

Performance is lower for 95U and 100U, than the larger systems, since RK512 emulation is done in the PLC. The performance is also depending on the PLC load. With an 100U with no real PLC program, one message with 64 words was read in 1.2 seconds. In an "empty" 95U about 2 messages per second was managed.

GENERAL LIMITATIONS

The driver is master and the PLC is slave. Unsolicited messages are not supported. A total of 256 data blocks and 65536 poll records can be defined.

The RK512 driver for 95C and 100U support read and write of any defined Data Block.

MANUAL

DEMO

COMMENTS

Since the protocol doesn't support bit writes, data words containing information that both is changed from FIX and from the PLC is not recommended. Use dedicated words for output or input. The driver supports backup port.

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