# Siemens S5 (AS511) Driver Help

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## Siemens S5 (AS511) Driver Help

Help version 1.015

### **Overview**

What is the Siemens S5 (AS511) Driver?

## **Device Setup**

How do I configure a device for use with this driver?

### **Data Types Description**

What data types does this driver support?

### **Address Descriptions**

How do I address a data location on a Siemens S5 (AS511) Driver?

#### **Error Descriptions**

What error messages does the Siemens S5 (AS511) Driver produce?

### **Overview**

The Siemens S5 (AS511) Driver provides an easy and reliable way to connect Siemens S5 (AS511) devices to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. It is intended for use with Siemens S5 PLCs communicating via the front programming port using AS511 protocol (which is specific for each Siemens device). This driver has been designed to operate with a set range of Siemens equipment: it is not recommended for use on devices that are not supported.

The Siemens S5 PLC family has a unique memory structure. Data within the PLC is not at fixed locations within the PLC's memory space. As the PLC logic is created and modified, this memory space is continuously updated and revised. When these revisions occur, the location of the key data elements (such as flags, timers, counters, I/O, and data blocks) can move around in the PLC's memory. The Siemens S5 (AS511) Driver has been designed to read the location of these memory elements when the driver begins operation or detects a communications error. If the PLC configuration changes, users must restart the Siemens S5 (AS511) Driver or pull and replace the cable connection. Both of these actions will cause the Siemens S5 (AS511) Driver to reacquire the location of all PLC memory elements.

## **Device Setup**

#### **Supported Devices**

Siemens S5-90U Siemens S5-95U Siemens S5-100U-100 Siemens S5-100U-101 Siemens S5-100U-103 Siemens S5-101U Siemens S5-115U-941 Siemens S5-115U-942 Siemens S5-115U-943 Siemens S5-115U-944 Siemens S5-115U-945 Siemens S5-135U-921 Siemens S5-135U-922 Siemens S5-135U-928 Siemens S5-155U-946 Siemens S5-155U-947

## **Communication Protocol**

AS511 Current Loop

#### **Supported Communication Parameters**

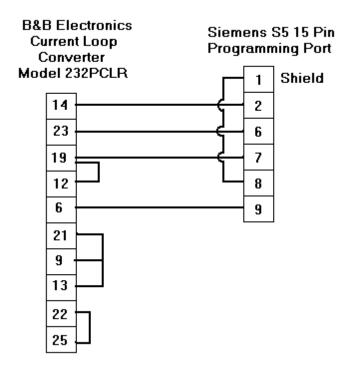
Baud: 9600 (Fixed) Parity: Even (Fixed) Data Bits: 8 (Fixed) Stop Bit: 1 (Fixed)

## **Ethernet Encapsulation**

This driver supports Ethernet Encapsulation, which allows communications with serial devices attached to an Ethernet network using a terminal server or device server. It may be invoked through the COM ID dialog in Channel Properties. When used directly with a serial port, this driver only supports a single connection to a single controller per serial port. When operating in Ethernet Encapsulation Mode, the driver will support up to 30 controllers per channel. In this mode, a single controller can be paired with a terminal server/device server to form a single node. For more information, refer to the server's help documentation.

**Note:** The Siemens S5 AS511 protocol is sensitive to timing and gaps in the communications stream. If the network experiences heavy packet loss or delay while using Ethernet Encapsulation, the Siemens S5 (AS511) Driver may report a large number of timeout errors or be unable to communicate. In some cases, using a switched network can help reduce these delays; however, it is not a guaranteed solution.

#### **Cable Connections**



## **Modem Setup**

This driver supports modem functionality. For more information, please refer to the topic "Modem Support" in the OPC Server Help documentation.

## **Data Types Description**

Data Type	Description
Boolean	Single bit of an 8 bit value*
Byte	Unsigned 8 bit value
Word	Unsigned 16 bit value
Short	Signed 16 bit value
DWord	Unsigned 32 bit value
Long	Signed 32 bit value
Float	32 bit floating point value  The driver interprets two consecutive registers as a floating-point value by making the second register the high word and the first register the low word.
String	Null terminated ASCII string

<sup>\*</sup>For more information, refer to  $\underline{\textbf{Address Descriptions}}.$ 

## **Address Descriptions**

Address specifications vary depending on the model in use. Select a link from the following list to obtain specific address information for the model of interest.

Siemens S5 (AS511) 90U Siemens S5 (AS511) 95U Siemens S5 (AS511) 100U-100 Siemens S5 (AS511) 100U-101 Siemens S5 (AS511) 100U-103 Siemens S5 (AS511) 101U Siemens S5 (AS511) 115U-941 Siemens S5 (AS511) 115U-942 Siemens S5 (AS511) 115U-943 Siemens S5 (AS511) 115U-944 Siemens S5 (AS511) 115U-945 Siemens S5 (AS511) 135U-921 Siemens S5 (AS511) 135U-922 Siemens S5 (AS511) 135U-928 Siemens S5 (AS511) 155U-946 Siemens S5 (AS511) 155U-947

## Siemens S5 (AS511) 90U Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b .b is Bit Number 0-7	Boolean	Read/Write
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b .b is Bit Number 0-7	Boolean	Read/Write
	EB0-EB127	Byte	Read/Write
<b>Note:</b> I and E access the same memory area.	EW0-EW126	Word, Short	Read/Write
Tana L decess are same memory areas	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b .b is Bit Number 0-7	Boolean	Read/Write
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b .b is Bit Number 0-7	Boolean	Read/Write
	AB0-AB127	Byte	Read/Write
<b>Note:</b> Q and A access the same memory area	AW0-AW126	Word, Short	Read/Write
Trocal Quita // decess the sume memory drea	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b .b is Bit Number 0-7	Boolean	Read/Write
	FB0-FB255	Byte	Read/Write

	FW0-FW254	Word, Short	Read/Write
		l	
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block		Durka	Dood (Mysika
Data DIUCK	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
		,	
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
	1. 1. 1. 1. 1.		
Unsigned Word	1-N is Block Number	Ch+ W	D
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
		<b>3</b> ,	
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Flori	1 Nie Black Noveler		
Float	1-N is Block Number	Chains	Dond ///wite
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Tim	1 Nie Black Nordhau		
Timer	1-N is Block Number	Word Chart	Dood /Write
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\text{F20.3}}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows:  $\ensuremath{\mathsf{DB5}\!:\!\mathsf{KH30}}$
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows:  $\ensuremath{\mathsf{DB2:KM20.7}}$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10

5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20

6. To access Input Memory I10 as a Word, declare an address as follows:  ${\tt IW10}$ 

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

## **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### **Counters**

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

## **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 95U Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	100 10127	D. d.	D // // t -
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB127	Durka	Read/Write
	EBU-EB127	Byte	Read/Write
	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.			
	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB127	Byte	Read/Write
	QD0-QD127	Бусе	Read/ Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
	ADV ADIZ/	Dyte	Nedu/ Wille

	AW0-AW126	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.			
	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b .b is Bit Number 0-7	Boolean	Read/Write
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b .b is Bit Number 0-7	Boolean	Read/Write
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
,	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		1
Data Block	DB1-N:KF0-KF255	<b>Short</b> , Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	<b>Long</b> , DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\text{F20.3}}$ 

- 2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20
- 6. To access Input Memory I10 as a Word, declare an address as follows: IW10

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

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String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 100U-100 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB127	Byte	Read/Write
	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.		•	·
	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB127	Byte	Read/Write

	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
Natar C and A access the came memory area	AW0-AW126	Word, Short	Read/Write
Note: Q and A access the same memory area.	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
boolean	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
Data Block	l is String Length (2-254) DB1-N:KT0-KT255	Long	Dood ////rite
Data Block		Long	Read/Write
Timer	1-N is Block Number	1101 1 5:	10.100
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write

Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows: F20.3
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2: KM20.7  $\,$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:
- 6. To access Input Memory I10 as a Word, declare an address as follows:

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

## Strings

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 100U-101 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		

	EB0-EB127	Byte	Read/Write
	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b .b is Bit Number 0-7	Boolean	Read/Write
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
<b>Note:</b> Q and A access the same memory area.	AW0-AW126	Word, Short	Read/Write
Trocal Q and A decess the same memory area.	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		,
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
Note: Faild Maccess the same memory area.	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
		,	,
Right Byte  Data Block	1-N is Block Number DB1-N:KH0-KH255	Word, Short	Read/Write
		Word, Short	Read/ Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	<b>Long</b> , DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.l-KS255.l	String	Read/Write

	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\text{F20.3}}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:
- 6. To access Input Memory I10 as a Word, declare an address as follows:  $\ensuremath{\mathrm{IW}} 10$

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

## Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

#### Strings

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 100U-103 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	IO.b-I127.b .b is Bit Number 0-7	Boolean	Read/Write

	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		11000, 11110
	EB0-EB127	Byte	Read/Write
<b>Note:</b> I and E access the same memory area.	EW0-EW126	Word, Short	Read/Write
rester Fund E decess the sume memory dred.	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
2.5cl ate darpate	.b is Bit Number 0-7	200.04	Ticady Write
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
<b>Note:</b> Q and A access the same memory area.	AW0-AW126	Word, Short	Read/Write
, , , , , , , , , , , , , , , , , , ,	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b .b is Bit Number 0-7	Boolean	Read/Write
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		1.000, 11.10
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
2	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		

Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

#### **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows: F20.3
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows:  $\mathsf{DB1}$ : $\mathsf{KL}10$
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:
- 6. To access Input Memory I10 as a Word, declare an address as follows: IW10

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### **Counters**

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

#### Strings

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be

used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 101U Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b .b is Bit Number 0-7	Boolean	Read/Write
	EB0-EB127	Byte	Read/Write
Nake, I and E access the same memory area	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
Discrete outputs	.b is Bit Number 0-7	Boolean	Reddy Write
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
·	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
<b>Note:</b> Q and A access the same memory area.	AW0-AW126	Word, Short	Read/Write
Hotel Q and A decess the same memory area.	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		,
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
and it decess the sum interior y direct	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write

Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.l-KS255.l	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\mathsf{F20.3}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows:  $\ensuremath{\mathsf{DB2:KM20.7}}$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows:  ${\tt DB1:KL10}$
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:
- 6. To access Input Memory I10 as a Word, declare an address as follows:  ${\rm IW}10$

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

## **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the

Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

## Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

### **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 115U-941 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write
	180-18127	Бусе	Read/ Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b .b is Bit Number 0-7	Boolean	Read/Write
	.b is bit Number 0-7		
	EB0-EB127	Byte	Read/Write
	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.	ED0 ED134	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
Discrete Outputs	.b is Bit Number 0-7	Boolean	Read/ Write
	.b is bic Number 6 7		
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
·	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
	AW0-AW126	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.	7.00 7.00 120	Jiora, Shore	Tread, Write
,	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	100 10233	Byte	Redu/ Wille
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
	7.20	-,	1.000, 11110

	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.	MD0 MD252		D 1/04/ ::
	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.l-KS255.l	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows:  $\ensuremath{\mathsf{DB5}}\xspace$  KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows:  $\ensuremath{\mathsf{DB2:KM20.7}}$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows:  ${\tt DB1:KL10}$
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:
- 6. To access Input Memory I10 as a Word, declare an address as follows:  $\ensuremath{\mathrm{IW10}}$

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

## **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 115U-942 Address Descriptions

Boolean  Byte  Word, Short  DWord, Long  Boolean  Byte  Word, Short	Read/Write Read/Write Read/Write Read/Write Read/Write Read/Write Read/Write
Word, Short  DWord, Long  Boolean  Byte  Word, Short	Read/Write Read/Write Read/Write Read/Write
Word, Short  DWord, Long  Boolean  Byte  Word, Short	Read/Write Read/Write Read/Write Read/Write
Word, Short  DWord, Long  Boolean  Byte  Word, Short	Read/Write Read/Write Read/Write Read/Write
Boolean  Byte  Word, Short	Read/Write Read/Write Read/Write
Boolean  Byte  Word, Short	Read/Write Read/Write
Boolean  Byte  Word, Short	Read/Write Read/Write
Byte Word, Short	Read/Write
<b>Word</b> , Short	
<b>Word</b> , Short	
	Read/Write
	Reday Wille
<b>DWord</b> , Long	Read/Write
Boolean	Read/Write
Byte	Read/Write
<b>Word</b> , Short	Read/Write
<b>DWord</b> , Long	Read/Write
Boolean	Read/Write
Byte	Read/Write
<b>Word</b> , Short	Read/Write
<b>DWord</b> , Long	Read/Write
Boolean	Read/Write
	Word, Short  DWord, Long  Boolean  Byte  Word, Short  DWord, Long

	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
Note: Ford Massacrath a source massacratic	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	<del></del>
Data Block	DB1-N:KMU.D-KM255.D	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
   Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\text{F20.3}}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows:  $\ensuremath{\mathsf{DB5}}\xspace$  KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7  $\,$

- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20
- 6. To access Input Memory I10 as a Word, declare an address as follows: IW10

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

## **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 115U-943 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB127	Byte	Read/Write
	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.		,	
	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write

	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
<b>Note:</b> Q and A access the same memory area.	AW0-AW126	Word, Short	Read/Write
	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
Note: Fond Macross the same management	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
	1		
Left Byte  Data Block	1-N is Block Number DB1-N:KR0-KR255	Byte	Read/Write
Data Block	DD1-N.RR0-RR233	Byte	Read/ Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Clared Land	1 Nie Black Nordan		
Signed Long Data Block	1-N is Block Number DB1-N:KG0-KG254	Float	Read/Write
Juliu Diock	DDI WINGO NOZUT	liout	Ticad, Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
		,	
Counter	1-N is Block Number	1	Donal (M/: "
Timer Current Values Counter Current Values	T0-T127 C0-C127	Word, Short	Read/Write Read/Write
COUNTEL CUITEIL VAIDES	CU-C12/	Word, Short	Read/ Wille

## **Examples**

1. To access bit 3 of Internal Memory F20, declare an address as follows: F20  $^{3}$ 

2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30

3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7

4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10

5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20

6. To access Input Memory I10 as a Word, declare an address as follows:  ${\rm IW}10$ 

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

#### Strings

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 115U-944 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write
	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB127	Byte	Read/Write
	EW0-EW126	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.			
	ED0-ED124	<b>DWord</b> , Long	Read/Write

Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
- 1-3-3-3-3-3-4-4-4-4-4-4-4-4-4-4-4-4-4-4-	.b is Bit Number 0-7		
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
<b>Note:</b> Q and A access the same memory area.	AW0-AW126	Word, Short	Read/Write
Note: Q and A access the same memory area.	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
·	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
· · · · · · · · · · · · · · · · · · ·	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Unsigned Word  Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
		3.3, 1.3.2	,
Signed Word	1-N is Block Number	Long DM	Dond ////wit-
Data Block	DB1-N:KD0-KD254	<b>Long</b> , DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		

Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

#### **Examples**

1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\mathsf{F20.3}}$ 

2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5: KH30  $\,$ 

3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7

4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10

5. To access Internal Memory F20 as a DWORD, declare an address as follows:

6. To access Input Memory I10 as a Word, declare an address as follows: IW10

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### Timers

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

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String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 115U-945 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB127	Byte	Read/Write

	IW0-IW126	Word, Short	Read/Write
	ID0-ID124	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB127	Byte	Read/Write
<b>Note:</b> I and E access the same memory area.	EW0-EW126	Word, Short	Read/Write
Total I and E decess the same memory areas	ED0-ED124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q127.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB127	Byte	Read/Write
	QW0-QW126	Word, Short	Read/Write
	QD0-QD124	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A127.b	Boolean	Read/Write
·	.b is Bit Number 0-7		
	AB0-AB127	Byte	Read/Write
Natar Cond A seesas the same market and	AW0-AW126	Word, Short	Read/Write
Note: Q and A access the same memory area.	AD0-AD124	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		Tready Write
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
Notes Found Massacrath a course was assessed	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	<b>Short</b> , Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	<b>Long</b> , DWord	Read/Write
Signed Long	1-N is Block Number		

Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

#### **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\mathsf{F20.3}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20
- 6. To access Input Memory I10 as a Word, declare an address as follows:  ${\rm IW}10$

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

## Strings

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 135U-921 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB511	Byte	Read/Write
	100 10311	Byte	Redd/ Write
	IW0-IW510	Word, Short	Read/Write
	ID0-ID508	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB511	Byte	Read/Write
	EW0-EW510	<b>Word</b> , Short	Read/Write
<b>Note:</b> I and E access the same memory area.	LW0 LW310	Word, Short	Reddy Wille
The state of the s	ED0-ED508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB511	Byte	Read/Write
	OWO OWE10	Mand Chart	Dond ///wike
	QW0-QW510	Word, Short	Read/Write
	QD0-QD508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A511.b	Boolean	Read/Write
	.b is Bit Number 0-7		1.000, 11.100
	AB0-AB511	Byte	Read/Write
	ANYO ANYE 10		B 1044 ''
Note: O and A access the same memory area	AW0-AW510	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.	AD0-AD508	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
The harrier y	.b is Bit Number 0-7		Tread, Write
	FB0-FB255	Byte	Read/Write
	5,40,5,40,5,4		
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MD0 MD255		D 1000
	MB0-MB255	Byte	Read/Write
	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.		310.4, 511010	Today Wille
,	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
2.001	31 111120 11233	,	Today Wille
Left Byte	1-N is Block Number		
		•	•

Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.l-KS255.l	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

#### **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\text{F20.3}}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows:  $\ensuremath{\mathsf{DB5}}\xspace$  KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2: KM20.7  $\,$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:
- 6. To access Input Memory I10 as a Word, declare an address as follows:  ${\rm IW}10$

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### Timers

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

## Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

## **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

## Siemens S5 (AS511) 135U-922 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	The thest		5 1/14/ 11
	IB0-IB511	Byte	Read/Write
	IW0-IW510	Word, Short	Read/Write
	1110 111310	Shore	ricad, Write
	ID0-ID508	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB511	Durko	Dond ////rito
	ED0-ED311	Byte	Read/Write
	EW0-EW510	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.			,
	ED0-ED508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB511	Byte	Read/Write
	QB0-QB311	Бусе	Read/ Write
	QW0-QW510	Word, Short	Read/Write
		,	,
	QD0-QD508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB511	Pyto	Read/Write
	ABO-ABS11	Byte	Read/ Write
	AW0-AW510	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.		·	,
	AD0-AD508	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	1 50 1 52 55	Dyte	iteau/ write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
	1100 110233	Dyte	icau/ write
	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.			
	MD0-MD252	<b>DWord</b> , Long	Read/Write

Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	<b>Long</b> , DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T127	Long	Read/Write
Counter Current Values	C0-C127	Word, Short	Read/Write
Counter Current Values	Z0-Z127	Word, Short	Read/Write

## **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows: F20  $^{3}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows:  $\ensuremath{\mathsf{DB5}}\xspace$  KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows:  $\ensuremath{\mathsf{DB2:KM20.7}}$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows: DB1:KL10
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20
- 6. To access Input Memory I10 as a Word, declare an address as follows:  ${\rm IW}10$

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

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Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

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## Siemens S5 (AS511) 135U-928 Address Descriptions

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB511	Byte	Read/Write
	150 15311	5,00	reday Write
	IW0-IW510	Word, Short	Read/Write
	ID0-ID508	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E511.b	Boolean	Read/Write
Discrete inputs	.b is Bit Number 0-7	Boolean	Read/ Write
	is servanise o		
	EB0-EB511	Byte	Read/Write
	5W0 5W510		D 101/ 11
<b>Note:</b> I and E access the same memory area.	EW0-EW510	Word, Short	Read/Write
roce. Fand E decess the same memory area.	ED0-ED508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	000 00511	D t .	D = = 4 (M/::i+=
	QB0-QB511	Byte	Read/Write
	QW0-QW510	Word, Short	Read/Write
	QD0-QD508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	AB0-AB511	Byte	Read/Write
		'**	,
	AW0-AW510	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.	AD0-AD508	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
The Hair Herhory	.b is Bit Number 0-7	Doolean	icau/ write
	FB0-FB255	Byte	Read/Write
	FW0-FW254	<b>Word</b> , Short	Read/Write
	1 VV U-1 VV 2 34	Word, Short	Read/ Wille
	FD0-FD252	<b>DWord</b> , Long	Read/Write

Internal Memory	M0.b-M255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Data Block	DB1 W. W. 10.5 W 1233.5	Boolean	Reddy Wille
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.l-KS255.l	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)	_	
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T255	Long	Read/Write
Counter Current Values	C0-C255	Word, Short	Read/Write
Counter Current Values	Z0-Z255	Word, Short	Read/Write

All offsets for memory types I, Q, and F represent a byte starting location within the specified memory type.

# **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\ensuremath{\text{F20.3}}$
- 2. To access Data Block 5 as word memory at element 30, declare an address as follows:  $\ensuremath{\mathsf{DB5}}\xspace$  KH30
- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows:  $\ensuremath{\mathsf{DB2:KM20.7}}$
- 4. To access Data Block 1 as left byte memory at element 10, declare an address as follows:  ${\tt DB1:KL10}$
- 5. To access Internal Memory F20 as a DWORD, declare an address as follows:  $\ensuremath{\mathsf{FD20}}$

6. To access Input Memory I10 as a Word, declare an address as follows: IW10

**Note:** Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

## Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

#### **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

# Siemens S5 (AS511) 155U-946 Address Descriptions

Default data types for dynamically defined tags are shown in bold.

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	IB0-IB511	Byte	Read/Write
	IW0-IW510	Word, Short	Read/Write
	ID0-ID508	<b>DWord</b> , Long	Read/Write
Discrete Inputs	E0.b-E511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB511	Byte	Read/Write
	EW0-EW510	<b>Word</b> , Short	Read/Write
<b>Note:</b> I and E access the same memory area.		Julia, Shore	Treday Wille
	ED0-ED508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB511	Byte	Read/Write
	QW0-QW510	Word, Short	Read/Write
	QD0-QD508	<b>DWord</b> , Long	Read/Write

Discrete Outputs	A0.b-A511.b	Boolean	Read/Write
	.b is Bit Number 0-7		1333, 77.133
	AB0-AB511	Byte	Read/Write
Note: O and A access the same memory and	AW0-AW510	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.	AD0-AD508	<b>DWord</b> , Long	Read/Write
Internal Memory	F0.b-F255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
<b>Note:</b> F and M access the same memory area.	MW0-MW254	Word, Short	Read/Write
Tioter Falla in access the same memory area.	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
Right Byte	1-N is Block Number		
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	Long, DWord	Read/Write
Signed Long	1-N is Block Number		
Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T255	Long	Read/Write
Counter Current Values	C0-C255	Word, Short	Read/Write
Counter Current Values	Z0-Z255	Word, Short	Read/Write

All offsets for memory types I, Q, and F represent a byte starting location within the specified memory type.

## **Examples**

1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\mathsf{F20.3}$ 

2. To access Data Block 5 as word memory at element 30, declare an address as follows: DB5:KH30

3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7

4. To access Data Block 1 as left byte memory at element 10, declare an address as follows:  $DR1 \cdot KI \cdot IO$ 

5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20

6. To access Input Memory I10 as a Word, declare an address as follows:

**Note:**Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

#### **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

#### Counters

Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

#### **Strings**

String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

# Siemens S5 (AS511) 155U-947 Address Descriptions

The default data types for dynamically defined tags are shown in **bold**.

Address Type	Range	Туре	Access
Discrete Inputs	I0.b-I511.b .b is Bit Number 0-7	Boolean	Read/Write
	IB0-IB511	Byte	Read/Write
	IW0-IW510	Word, Short	Read/Write
	ID0-ID508	<b>DWord</b> , Long	Read/Write

Discrete Inputs	E0.b-E511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	EB0-EB511	Byte	Read/Write
	EW0-EW510	Word, Short	Read/Write
<b>Note:</b> I and E access the same memory area.		11014, 55.	11000, 11110
	ED0-ED508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	Q0.b-Q511.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	QB0-QB511	Byte	Read/Write
		'	
	QW0-QW510	Word, Short	Read/Write
	QD0-QD508	<b>DWord</b> , Long	Read/Write
Discrete Outputs	A0.b-A511.b	Boolean	Read/Write
biser etc outputs	.b is Bit Number 0-7	Boolean	ricady write
			Read/Write
	AB0-AB511	Byte	D = = d /\A/:t-=
	AW0-AW510	Word, Short	Read/Write
<b>Note:</b> Q and A access the same memory area.	7.W 0 7.W 3 1 0	Troita, Shore	Read/Write
·	AD0-AD508	<b>DWord</b> , Long	
Internal Memory	F0.b-F255.b	Boolean	Read/Write
	.b is Bit Number 0-7		
	FB0-FB255	Byte	Read/Write
	FW0-FW254	Word, Short	Read/Write
	FD0-FD252	<b>DWord</b> , Long	Read/Write
Internal Memory	M0.b-M255.b	Boolean	Read/Write
,	.b is Bit Number 0-7		
	MB0-MB255	Byte	Read/Write
	MW0-MW254	Word, Short	Read/Write
<b>Note:</b> F and M access the same memory area.			
	MD0-MD252	<b>DWord</b> , Long	Read/Write
Data Block	DB1-N:KM0.b-KM255.b	Boolean	Read/Write
Boolean	1-N is Block Number		
	.b is Bit Number 0-15		
Data Block	DB1-N:KL0-KL255	Byte	Read/Write
Left Byte	1-N is Block Number		
Data Block	DB1-N:KR0-KR255	Byte	Read/Write
			,
Right Byte	1-N is Block Number		1- 1000
Data Block	DB1-N:KH0-KH255	Word, Short	Read/Write
Unsigned Word	1-N is Block Number		
Data Block	DB1-N:KF0-KF255	Short, Word	Read/Write
		,	
Signed Word	1-N is Block Number		
Data Block	DB1-N:KD0-KD254	<b>Long</b> , DWord	Read/Write
Signed Long	1-N is Block Number		
- J ==::J	= =		

Data Block	DB1-N:KG0-KG254	Float	Read/Write
Float	1-N is Block Number		
Data Block	DB1-N:KS0.I-KS255.I	String	Read/Write
String	1-N is Block Number		
	l is String Length (2-254)		
Data Block	DB1-N:KT0-KT255	Long	Read/Write
Timer	1-N is Block Number		
Data Block	DB1-N:KC0-KC255	Word, Short	Read/Write
Counter	1-N is Block Number		
Timer Current Values	T0-T255	Long	Read/Write
Counter Current Values	C0-C255	Word, Short	Read/Write
Counter Current Values	Z0-Z255	Word, Short	Read/Write

All offsets for memory types I, Q, and F represent a byte starting location within the specified memory type.

#### **Examples**

- 1. To access bit 3 of Internal Memory F20, declare an address as follows:  $\mathsf{F20.3}$
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- 3. To access Data Block 2 element 20 and bit 7, declare an address as follows: DB2:KM20.7
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- 5. To access Internal Memory F20 as a DWORD, declare an address as follows: FD20
- 6. To access Input Memory I10 as a Word, declare an address as follows: IW10

**Note:**Use caution when modifying Word, Short, DWord, and Long types. For I, Q, and F each address starts at a byte offset within the device. Therefore, Words FW0 and FW1 overlap at byte 1. Writing to FW0 will also modify the value held in FW1. Similarly, DWord, and Long types can also overlap. It is recommended that these memory types be used so that overlapping does not occur. For example, when using DWords, use FD0, FD4, FD8 ... and so on to prevent overlapping bytes.

## **Timers**

The Siemens S5 (AS511) Driver automatically scales T and KT values based on the Siemens S5 time format. The value returned for either a T or KT memory type will already be scaled using the appropriate Siemens time base. As a result, the values are always returned as a count of milliseconds. When writing to T or KT memory types, the Siemens time base will also be applied. To write a value to a timer in the controller, simply write the desired value as a count of milliseconds to the appropriate timer.

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Counters are stored as three BCD digits on the device. The largest value that can be read or written to a counter is 999.

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String data is stored in data block registers, thus the actual number of bytes used to store the data is an even number. For example, if a string of length 5 is specified, say by DB11:KS1.5, then 3 registers (6 bytes) will be used to store the string data. When writing strings shorter than the maximum specified length (5 in this example), a null terminator (0x00) will be added to the end of the string. When strings are read, the full range of registers are read (3 in this example). Use of string tags with overlapping address ranges should be avoided due to the effects of the null terminators.

# **Error Descriptions**

The following error/warning messages may be generated. Click on the link for a description of the message.

#### **Address Validation**

Address '<address>' is out of range for the specified device or register

Array support is not available for the specified address: '<address>'

Data Type '<type>' is not valid for device address '<address>'

Device address '<address>' contains a syntax error

Device address '<address>' is not supported by model '<model name>'

Missing address

#### **Serial Communications**

Communications error on '<channel name>' [<error mask>]

COMn does not exist

COMn is in use by another application

**Error opening COMn** 

Unable to set comm parameters on COMn

#### **Device Status Messages**

Device '<device name>' is not responding

Unable to write to '<address>' on device '<device name>'

## **Driver Warning Messages**

Data Block DB '<block number>' not defined in '<device name>' write operation has failed

Failure reading device '<device name>' configuration

Protocol Error-Number of bytes received = '<num bytes>' Expected = '<num bytes>'

Requested Data Block DB'<block number>' not defined in '<device name>' block has been disabled

#### **Address Validation**

The following error/warning messages may be generated. Click on the link for a description of the message.

# **Address Validation**

Address '<address>' is out of range for the specified device or register

Array support is not available for the specified address: '<address>'

Data Type '<type>' is not valid for device address '<address>'

Device address '<address>' contains a syntax error

Device address '<address>' is not supported by model '<model name>'

Missing address

# Array support is not available for the specified address: '<address>'

#### **Error Type:**

Warning

## **Possible Cause:**

A tag address that has been specified dynamically contains an array reference for an address type that doesn't support arrays.

## Solution:

Re-enter the address in the client application to remove the array reference or correct the address type.

# Address '<address>' is out of range for the specified device or register

# **Error Type:**

Warning

## **Possible Cause:**

A tag address that has been specified dynamically references a location that is beyond the range of supported locations for the device.

#### Solution:

Verify the address is correct; if it is not, re-enter it in the client application.

# Data Type '<type>' is not valid for device address '<address>'

## **Error Type:**

Warning

## **Possible Cause:**

A tag address that has been specified dynamically has been assigned an invalid data type.

#### Solution:

Modify the requested data type in the client application.

# Device address '<address>' is not supported by model '<model name>'

## **Error Type:**

Warning

#### **Possible Cause:**

A tag address that has been specified dynamically references a location that is valid for the communications protocol but not supported by the target device.

## Solution:

Verify that the address is correct; if it is not, re-enter it in the client application. Also verify that the selected model name for the device is correct.

# Device address '<address>' contains a syntax error

#### **Error Type:**

Warning

#### **Possible Cause:**

A tag address that has been specified dynamically via DDE contains one or more invalid characters.

#### **Solution:**

Re-enter the address in the client application.

# Missing address

# **Error Type:**

Warning

# **Possible Cause:**

A tag address that has been specified dynamically has no length.

#### Solution:

Re-enter the address in the client application.

## **Serial Communications**

The following error/warning messages may be generated. Click on the link for a description of the message.

## **Serial Communications**

Communications error on '<channel name>' [<error mask>]

COMn does not exist

COMn is in use by another application

**Error opening COMn** 

Unable to set comm parameters on COMn

# Communications error on '<channel name>' [<error mask>]

## **Error Type:**

Serious

# **Error Mask Definitions:**

**B** = Hardware break detected.

- **F** = Framing error.
- $\mathbf{E} = I/O \text{ error.}$
- **O** = Character buffer overrun.
- $\mathbf{R} = \mathsf{RX}$  buffer overrun.
- **P** = Received byte parity error.
- T = TX buffer full.

#### **Possible Cause:**

- 1. The serial connection between the device and the Host PC is bad.
- 2. The communications parameters for the serial connection are incorrect.

#### Solution:

- 1. Verify the cabling between the PC and the device.
- 2. Verify that the specified communications parameters match those of the device.

# COMn does not exist

## **Error Type:**

Fatal

# **Possible Cause:**

The specified COM port is not present on the target computer.

#### Solution:

Verify that the proper COM port has been selected.

# COMn is in use by another application

## **Error Type:**

Fatal

## **Possible Cause:**

The serial port assigned to a device is being used by another application.

# **Solution:**

Verify that the correct port has been assigned to the channel.

## **Error opening COMn**

# **Error Type:**

Fatal

## **Possible Cause:**

The specified COM port could not be opened due an internal hardware or software problem on the target computer.

#### Solution:

Verify that the COM port is functional and may be accessed by other Windows applications.

## Unable to set comm parameters on COMn

#### **Error Type:**

Fatal

## **Possible Cause:**

The serial parameters for the specified COM port are not valid.

## Solution:

Verify the serial parameters and make any necessary changes.

## **Device Status Messages**

The following error/warning messages may be generated. Click on the link for a description of the message.

#### **Device Status Messages**

Device '<device name>' is not responding

Unable to write to '<address>' on device '<device name>'

# Device '<device name>' is not responding

## **Error Type:**

Serious

#### **Possible Cause:**

- 1. The serial connection between the device and the Host PC is broken.
- 2. The communications parameters for the serial connection are incorrect.
- 3. The named device may have been assigned an incorrect Network ID.
- 4. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.

#### Solution:

- 1. Verify the cabling between the PC and the device.
- 2. Verify the specified communications parameters match those of the device.
- 3. Verify that the Network ID given to the named device matches that of the actual device.
- 4. Increase the Request Timeout setting so that the entire response can be handled.

# Unable to write to '<address>' on device '<device name>'

#### **Error Type:**

Serious

#### **Possible Cause:**

- 1. The serial connection between the device and the Host PC is broken.
- 2. The communications parameters for the serial connection are incorrect.
- 3. The named device may have been assigned an incorrect Network ID.

## Solution:

- 1. Verify the cabling between the PC and the device.
- 2. Verify that the specified communications parameters match those of the device.
- 3. Verify that the Network ID given to the named device matches that of the actual device.

## **Driver Warning Messages**

The following error/warning messages may be generated. Click on the link for a description of the message.

#### **Driver Warning Messages**

Data Block DB' <block number>' not defined in '<device name>' write operation has failed Failure reading device '<device name>' configuration

Protocol Error-Number of bytes received = '<num bytes>' Expected = '<num bytes>'

Requested Data Block DB'<block number>' not defined in '<device name>' block has been disabled

# Data Block DB '<blook number>' not defined in '<device name>' write operation has failed

#### **Error Type:**

Warning

## **Possible Cause:**

An attempt has been made to write to a nonexistent location in the specified device.

#### Solution:

Verify the tags assigned to addresses in the specified range on the device and eliminate ones that reference invalid locations.

## Failure reading device '<device name>' configuration

## **Error Type:**

Warning

# Possible Cause:

A device configuration transaction timed-out. Below are possible causes for this time-out:

- 1. The serial connection between the device and the Host PC is broken.
- 2. The communications parameters for the serial port connection are incorrect.

#### **Solution:**

- 1. Verify the cabling between the PC and the device.
- 2. Verify that the correct baud rate and parity is specified for the named device.

# Protocol Error-Number of bytes received = '<num bytes>' Expected = '<num bytes>'

## **Error Type:**

Warning

## **Possible Cause:**

- 1. Misalignment of packets due to connection/disconnection between PC and device.
- 2. There is bad cabling connecting the devices causing noise.

#### **Solution:**

The driver will recover from this error without intervention. If this error occurs frequently, there may be an issue with the cabling or the device itself.

# Requested Data Block DB'<block number>' not defined in '<device name>' block has been disabled

# **Error Type:**

Warning

## **Possible Cause:**

An attempt has been made to reference a nonexistent location in the specified device.

#### **Solution:**

Verify that the tags assigned to addresses in the specified range on the device and eliminate ones that reference invalid locations.

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