

# SIEMENS

## Product Information on Analog Input Module 16 x I/V or 8 x I/V, Floating (6ES5 466-4UA11)

### 1. New analog input module

The 16 x I/V or 8 x I/V floating analog input module is a reworked analog input module for use with the S5-115U/H/F and S5-135/155 PLCs.

It replaces the previous analog input module 6ES5 466-3LA11.

Please refer to the pertinent manuals for a description of the module. This product information describes only the changes with respect to the 466-3LA11 and startup.

### 2. Terminal Assignment of the Front Connector

**Note:** Please note that the pin assignments differ from those of the 466-3LA11.

a      b		a      b	
1		1	
2		2	
3		3	
4	M0+	4	M0+
5	M0-	5	Mext
6	M8-	6	Mext
7	M8+	7	M0-
8	M1+	8	M1+
9	M1-	9	Mext
10	M9-	10	Mext
11	M9+	11	M1-
12		12	
13	M2+	13	M2+
14	M2-	14	Mext
15	M10-	15	Mext
16	M10+	16	M2-
17	M3+	17	M3+
18	M3-	18	Mext
19	M11-	19	Mext
20	M11+	20	M3-
21		21	
22		22	
23		23	
24		24	
25	M4+	25	M4+
26	M4-	26	Mext
27	M12-	27	Mext
28	M12+	28	M4-
29	M5+	29	M5+
30	M5-	30	Mext
31	M13-	31	Mext
32	M13+	32	M5-
33		33	
34	M6+	34	M6+
35	M6-	35	Mext
36	M14-	36	Mext
37	M14+	37	M6-
38	M7+	38	M7+
39	M7-	39	Mext
40	M15-	40	Mext
41	M15+	41	M7-
42		42	

Common-reference measurement	Differential measurement	a =Contact Pin No. b=Assignment
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**3. Technical Specifications****(6ES5 466-4UA11)**

Number of inputs	16 individual or 8 differential inputs in groups of 4 or 2 channels (switchable) voltage measurement or current measurement	Basic error limits	
		- Voltage ranges outside 0 to 1.25 V, +1.25 V	0.1 %
		- Current ranges and 0 to 1.25 V, +1.25 V	<b>0.2 %</b>
Floating	yes	Operational error limits (0 °C to 60 °C)	
Input ranges	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 1.25 V, 0 to 2.5 V, 0 to 5 V, 1 to 5 V, 0 to 10 V, ±1.25 V, ±2.5 V, ±5 V, ±10 V	- Voltage ranges outside 0 to 1.25 V, +1.25 V	0.2 %
Input resistance		- Current ranges and 0 to 1.25 V, +1.25 V	<b>0.24 %</b>
- Voltage measuring range	10 M	Individual errors	
- Current measuring range	125	- Linearity	0.02 %
Type of connection for sensors	Two-wire connection	- Tolerance	0.05 %
Digital representation of the input signal	Any of the following representations	- Polarity error	0.05 %
	- 12 bits two's complement	Temperature error	0.005 %/K
	- 11 bits + sign	Cable length	
	- 12 bits binary	- shielded	maximum 200 m (656 ft.)
Measuring principle	Momentary value decoding	Front connector	<b>42 pins</b>
Conversion principle	Successive approximation	Isolation rating	to VDE 0160
Conversion time typically	25 µsec. (per channel)	Rated isolation voltage (channels to grounding point) tested with	500 V
Coding time (per measured value)	250 µsec.	Supply voltage	
Duration of cyclic sampling (scan time)		- internal	+5 V +/- 5 %
- for 8 measured values	maximum 2 msec.	- external	none
- for 8 measured values	maximum 4 msec.	Internal current consumption	<b>typically 0.6 A</b>
Max. permissible input voltage (without destruction)	maximum ±30V (static) or ± 75V (Pulse for max. 1 msec. and a duty cycle 1:20)	Power losses of the module	<b>typically 3 W</b>
Permissible isolation voltage between the reference potential and the central grounding point	maximum 60 V AC/75 V DC	Weight	approx. 0.4 kg
Error indication for		Design	ES 902
- Overflow	yes (overflow bit set)		
- Internal errors	yes (error bit (= E bit) set)		
Noise suppression common mode noise (V <sub>PP</sub> =1 V)	minimum 70 dB		

#### 4. Start -Up of the 466-4UA11 Analog Input Module

The operating mode of the 466 analog input module is set exclusively via switches on the the printed circuit board. Figure 1 shows the labelling and locations of the switches on the PCB. Switches **S9** and **S3** are new or have been modified.

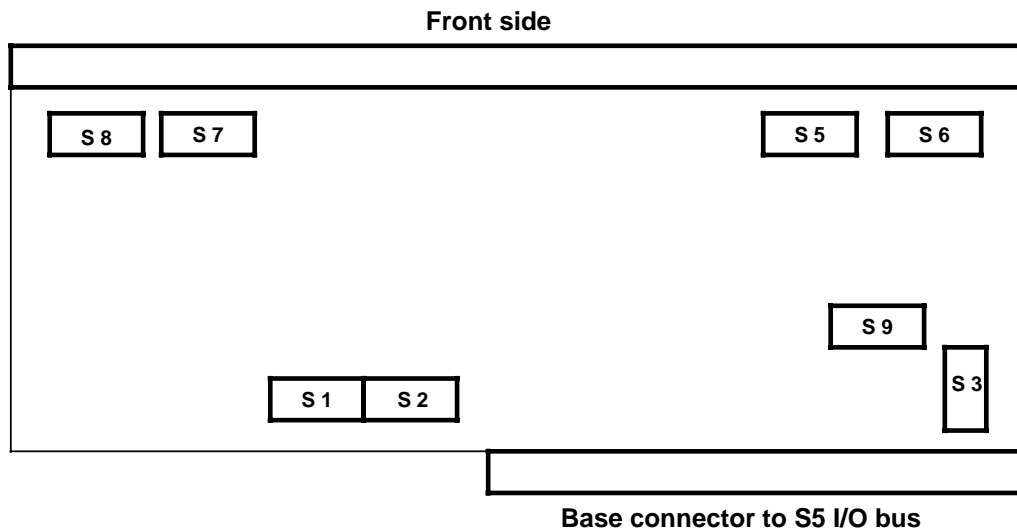


Figure 1 Locations of the Mode Selectors

##### Note

An adapter casing (e.g. 6ES5 491-0LB12) is required for using the 466 analog input module in the PLC.

You also require a 42-pin front connector K;

- 6ES5 497-4UA12 for crimp connections  
or
- 6ES5 497-4UB31 for screw connections.

#### Setting the Type of Measurement

##### Common-reference Measurement/Differential Measurement

Set switch **S 9** to the type of measurement (common-reference or differential). The switch positions refer to the module as represented in Figure 1:





Table 1 Setting the Type of Measurement (Common-Reference or Differential)

Type of Measurement	Switch Position S 9
Common-reference measurement	<div><div>1<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>8</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>ON OFF</div></div>
Differential measurement	<div><div>1<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>8</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>ON OFF</div></div>





## Current/Voltage Measurement for Individual Channel Groups

If you have set **differential measurement** at Switch **S 9**, there are two channel groups available to you, each with four channels. You can configure each channel group separately for current or voltage measurement. For this purpose, you must set the switches **S 5**, **S 6**, **S 7** and **S 8** (see Table 2 and 3). Switches S 5 and S 7 permit three settings (Left, Middle, Right); switches S 6 and S 8 permit two settings (Left, Right). The switch positions refer to the module as represented in Figure 1:

**Table 2. Setting Current/Voltage Measurement for Channel Group I**



Channel Group I (Channel 0 to 3)	Switch S 5	Switch S 6
Current		
Voltage		

**Table 3. Setting Current/Voltage Measurement for Channel Group II**



Channel Group II (Channel 4 to 7)	Switch S 7	Switch S 8
Current		
Voltage		

If you have set **common-reference measurement** at Switch **S 9**, there are four channel groups available to you, each with four channels. You can configure each channel group separately for current or voltage measurement. For this purpose, you must set the switches **S 5**, **S 6**, **S 7** and **S 8** (see Table 4 to 7). Switches S 5 and S 7 permit three settings (Left, Middle, Right); switches S 6 and S 8 permit two settings (Left, Right). The switch positions refer to the module as represented in Figure 1:

**Table 4. Setting Current/Voltage Measurement for Channel Group I**

Channel Group I (Channel 0 to 3)	Switch S 5
Current	
Voltage	

**Table 5. Setting Current/Voltage Measurement for Channel Group II**

Channel Group II (Channel 4 to 7)	Switch S 7
Current	
Voltage	

**Table 6. Setting Current/Voltage Measurement for Channel Group III**

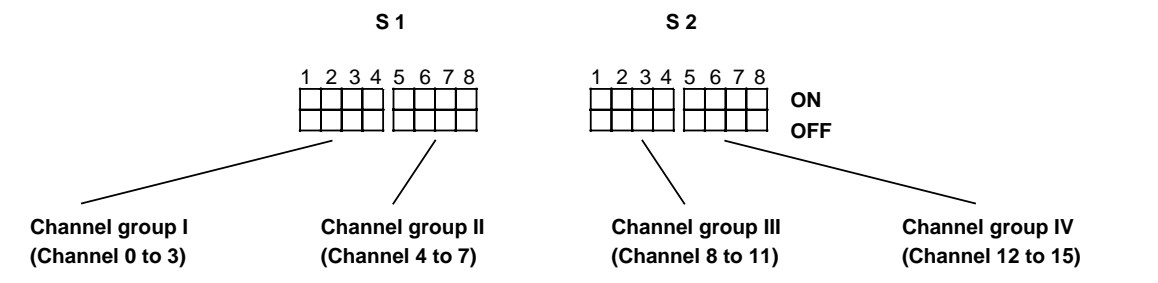
Channel Group III (Channel 8 to 11)	Switch S 6
Current	
Voltage	

**Table 7. Setting Current/Voltage Measurement for Channel Group IV**

Channel Group IV (Channel 12 to 15)	Switch S 8
Current	
Voltage	

### Setting the Measuring Range

The 466 analog input module has 12 measuring ranges. One measuring range can be selected for each channel group (i.e. for four inputs each), independently of the other channel groups. Set the measuring ranges with switches S 1 and S 2. See Figure 2 for the assignment of switches to channel group.

**Figure 2. Assignment of Switches S 1/S 2 to Channel Group**

The same measuring range coding applies to all channel groups. For this reason, the following table (see Table 8) contains only the measuring range setting for one channel group. The switch positions refer to the module as represented in Figure 1.

Please note that the type of measurement (current/voltage) must be set additionally with switches S 5 to S 8!

**Table 8. Setting the Measuring Range for One Channel Group (4 Channels per Group)**

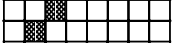
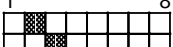

Measuring Range	Switch Positions
0 - 20 mA	

## Setting the Data Format

The data format must be set with switch S 9:

- Two's complement - 12-bit two's complement representation (range: 0 to 4095 units unipolar, or - 2048 to +2047 units bipolar)
- Number with sign - 11-bit number and 1-bit sign (range: 0 to 4095 units unipolar, or - 2048 to +2047 units bipolar)
- Binary - 12-bit binary number (range 0 to 4095 both for unipolar and bipolar variables)

### Table 9. Setting the Data Format

































































































































































































Data Format	Switch Position S 9
Two's complement	
Number with sign	
Binary	

## Setting the Connection Type and the Module Starting Address

Table 10. Setting the Connection Type

466-4UA11 Module	Switch Position S 9
When operating in CC or EU over distributed connections with IM 304/314, 307/317, 308/318-3, 300/312	<div>P area</div> <div><div><div>1</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>8</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div>ON OFF</div>
	<div>Q area</div> <div><div><div>1</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>8</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div>ON OFF</div>
	<div>IM 3 area</div> <div><div><div>1</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>8</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div>ON OFF</div>
	<div>IM 4 area</div> <div><div><div>1</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>8</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div>ON OFF</div>
When operating in distributed EU 701-2/3 with AS 301/310, EU 185 with AS 301/310	<div><div><div>1</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>8</div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div>ON OFF</div>

Table 11. Setting the Module Starting Addresses for S5-135/155

Module Starting Address	Switch Position S 3												
000 (F000 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
016* (F010 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
032 (F020 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
048* (F030 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
064 (F040 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
080* (F050 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
096 (F060 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													
112* (F070 <sub>H</sub> )	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> ON OFF	1	2	3	4								
1	2	3	4										
													
													

\* Can only be set in the case of differential measurement

**Table 12. Setting the Module Starting Addresses for S5-115 and S5-135/155**

Module Starting Address	Switch Position S 3
128 (F080 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>
144* (F090 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div> </div> <div> <div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>
160 (F0A0 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>
176* (F0B0 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div> </div> <div> <div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> </div> <div>ON OFF</div>
192 (F0C0 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>
208* (F0D0 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> <div> <div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>
224 (F0E0 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>
240* (F0F0 <sub>H</sub> )	<div> <div> <div>1</div><div>2</div><div>3</div><div>4</div> </div> <div> <div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div> </div> <div> <div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div> </div> </div> <div>ON OFF</div>

\* Can only be set in the case of differential measurement