

# AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and MicroLogix 1500

**User manual** 



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# AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and MicroLogix 1500

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C	Conformi	ty Statement
according to 89/336	6/EEC and 73/23/	/EEC
Bihl+Wiedemann G responsibility that th zed standards or no has been released.	SmbH, Mannheim he products ment ormative docume	, Germany, hereby declares under its sole ioned below are according to the listed harmoni nts and (where neccessary) a competent body
Item no.	Description	
BWU1416	AS-Interface 3.0 and MicroLogix 1	Scanner for ALLEN-BRADLEY CompactLogix 500
Manufacturer:		
Bihl+Wiedemann G Flosswoerthstrasse 68199 Mannheim Germany	GmbH e 41	
Date: 15.04.02		Bernhard Wiedemann



## 1. Symbol catalog

#### Information!

This symbol indicates important information.



#### Attention!

This symbol warns of a potential failure. Non-compliance may lead to interruptions of the device, the connected peripheral systems, or plant, potentially leading to total malfunctioning.



#### Warning!

This symbol warns of an imminent danger. Non-compliance may lead to personal injuries that could be fatal or result in material damages and destruction.

#### 1.1 Abbreviations



#### Information!

Additional information can be found in section <Glossary>.



#### 2. General

#### 2.1 Product information

This system manual applies to the following Bihl+Wiedemann GmbH equipment:

AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and MicroLogix 1500

Tab. 2-1.

#### 2.2 AS-i specification 3.0

The AS-i 3.0 devices already fulfil the AS-i specification 3.0.

The previous specifications (2.1 and 2.0) are supported as well.

#### **Advanced Diagnostics**

Diagnostics, which go far beyond the standard diagnostics facilitate the simple detection of the occasionally occurring configuration errors and further irritations towards the AS-i communication. So in case of an error the down time of machines can be minimized or you can initiate preventive maintenance.

#### **Commissioning and monitoring**

Commissioning, debugging and setting up of the AS-i parameters can also be accomplished with the use of push-buttons on the frontside of the gateway, the display and the LEDs. It is also possible to do the configuration with the software "AS-i Control Tools".

#### 2.3 Conformity statement

The AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and Micro-Logix 1500 has been developed and manufactured in accordance with the applicable european standards and directives.

#### Information!

The corresponding conformity statement can be found at the very beginning of this system manual.

#### 2.4 Certification according to DIN EN ISO 9001 : 2000

The manufacturer of the product possesses a certified quality assurance system in accordance with ISO 9001.

#### Information!

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#### The current certificate can be viewed in internet: http://www.bihl-wiedemann.de

ssue date: 11.1.2012



#### 3. Safety

#### 3.1 Intended use



#### Warning!

This symbol warns of a possible danger. The protection of operating personnel and the system against possible danger is not guaranteed if the control interface unit is not operated in accordance to its intended use.

#### 3.2 General safety information



#### Warning!

Safety and correct functioning of the device cannot be guaranteed if any operation other than described in this operation manual is performed. Connecting the equipment and conducting any maintenance work under power must exclusively be performed by appropriately qualified personnel. In case a failure cannot be eliminated, the device must be taken out of operation and inadvertently operation must be prevented. Repair work must be performed by the manufacturer only. Additions or modifications to the equipment are not permitted and will void the warranty.



#### Information!

The operator is responsible for the observation of local safety standards.

•	~	
3	.Z.	1



#### Information!

Disposal

Electronic waste is hazardous waste. Please comply with all local ordinances when disposing this product!

The device does not contain batteries that need to be removed before disposing it.



#### 4. Description

#### 4.1 LED Indicators

Indicator	Color	Description
PWR	green	Gateway power
U ASI	green	AS-i Cable sufficiently powered
AS-i act.	green	Normal operation active
Fault	red	Configuration error
ОК	green	PLC in Run mode
prg enable	green	Automatic addressing enable
prj mode	yellow	Configuration mode

#### 4.2 Connection of the AS-i Scanner

#### 4.2.1 Connection samples for the AS-i power supply:





#### Attention!

In the wiring schemes above the current through the AS-i master must not exceed 5 A.

#### 4.3 Display and Operating Elements

#### 4.3.1 LEDs of the Single Masters

- PWR The master's power supply is sufficient.
- FAULT Configuration error

At least one configured slave is missing, at least one detected slave is not projected or for at least one projected and detected slave the actual configuration data does not match the nominal configuration data.

- U ASI The AS-i circuit is sufficiently powered.
- AS-i act. Normal operation active.
- OK PLC in Run mode

AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and MicroLogix 1500
Description



Automatisierungstechnik

 PWR
 The master's power supply is sufficient.

 prg enable
 Automatic address programming enabled.

 Exactly one slave is missing in protected operating mode. The slave can be replaced by another slave of the same type with address zero. The master addresses the new slave to the faulty address and thus eliminates the configuration error.

 pri mode
 The AS-i master is in configuration mode.

#### 4.3.2 Push-Buttons

- mode Switching between configuration mode and protected operating mode and saving the current AS-i configuration as the nominal configuration.
- set Selecting and assigning the address to a slave.
  - The detailled operation is described in chap. < Operating the AS-i Scanner>.



#### 5. Configuration

#### 5.1 I/O Data Interpretation

#### 5.1.1 Input Data Array

The input data array consist of 53 words.

Words 0 to 15 contain the input data of binary AS-Interface slaves; words 16 to 52 contain the response data of the command interface 1 and 2 and the corresponding tittle bars (f.e.: First command interface" and "Second command interface"). See also further description in the separat manual "AS-i 3.0 Command interface".

These bytes of data are as follows:

word	2 <sup>15</sup>	2 <sup>14</sup>	2 <sup>13</sup>	2 <sup>12</sup>	2 <sup>11</sup>	2 <sup>10</sup>	2 <sup>9</sup>	2 <sup>8</sup>	2 <sup>7</sup>	2 <sup>6</sup>	2 <sup>5</sup>	2 <sup>4</sup>	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>	
0		fla	gs		:	slave	1/1A	۱	:	slave	2/2A	۱	slave 3/3A				
	F3	F2	F1	F0	D3	D2	D1	D0	D3	D2	D1	D0	D3	D2	D1	D0	
1		slave	4/4A	۱.		slave	5/5A	۱.	:	slave	6/6A	۱.	:	slave	7/7A	<b>۱</b>	
2		slave	8/8A	۱.		slave	9/9A	۱.	sl	ave '	10/10	A	s	ave '	11/11	A	
3	s	lave ´	12/12	A	sl	ave 1	3/13	A	sl	ave '	14/14	A	s	ave ´	15/15	A	
4	S	lave '	16/16	A	sl	ave 1	17/17	A	sl	ave '	18/18	A	s	ave ´	19/19	A	
5	S	lave 2	20/20	A	sl	ave 2	21/21	A	sl	ave 2	22/22	A	s	ave 2	23/23	A	
6	s	lave 2	24/24	A	sl	ave 2	25/25	A	sl	ave 2	26/26	A	s	ave 2	27/27	A	
7	s	lave 2	28/28	A	sl	ave 2	29/29	A	sl	ave (	30/30	A	s	ave 3	31/31	A	
8		rese	rved			slave	e 1B			slav	e 2B			slav	e 3B		
9		slav	e 4B			slave	e 5B			slav	e 6B			slave	e 7B		
10		slav	e 8B				slave	e 10B		slave 11B							
11		slave	e 12B		slave 13B				slave 14B					slave	: 15B		
12		slave	e 16B		slave 17B				slave 18B				slave 19B				
13		slave	20B			slave	21B		slave 22B				slave 23B				
14		slave	e 24B		slave 25B					slave	26B		slave 27B				
15		slave	28B			slave	29B			slave	90B		slave 31B				
16				comr	nand				T result								
17		res	ponse	e para	amete	er byt	e 1		response parameter byte 2								
18		res	ponse	e para	amete	er byt	e 3		response parameter byte 4								
19		res	ponse	e para	amete	er byt	e 5	response parameter byte 6									
20		res	ponse	e para	amete	er byt	e 7		response parameter byte 8								
21		res	ponse	e para	amete	er byt	e 9			resp	onse	para	amete	er byt	e 10		
22		resp	onse	para	mete	r byte	e 11		response parameter byte 12								
23		resp	onse	para	mete	r byte	e 13		response parameter byte 14								
24		resp	onse	para	mete	r byte	e 15		response parameter byte 16								
25	response parameter byte 1									resp	onse	para	amete	er byt	e 18		
26		resp	onse	para	mete	r byte	e 19		response parameter byte 20								
27		resp	onse	para	mete	r byte	e 21			resp	onse	para	amete	er byt	e 22		
28		resp	onse	para	mete	r byte	e 23		response parameter byte 24								



word	2 <sup>15</sup> 2 <sup>14</sup> 2 <sup>13</sup> 2 <sup>12</sup> 2 <sup>11</sup> 2 <sup>10</sup> 2 <sup>9</sup> 2 <sup>8</sup>	2 <sup>7</sup> 2 <sup>6</sup> 2 <sup>5</sup> 2 <sup>4</sup> 2 <sup>3</sup> 2 <sup>2</sup> 2 <sup>1</sup> 2 <sup>0</sup>						
29	response parameter byte 25	response parameter byte 26						
30	response parameter byte 27	response parameter byte 28						
31	response parameter byte 29	response parameter byte 30						
32	response parameter byte 31	response parameter byte 32						
33	response parameter byte 33	response parameter byte 34						
34	command	T result						
35	response parameter byte 1	response parameter byte 2						
36	response parameter byte 3	response parameter byte 4						
37	response parameter byte 5	response parameter byte 6						
38	response parameter byte 7	response parameter byte 8						
39	response parameter byte 9	response parameter byte 10						
40	response parameter byte 11	response parameter byte 12						
41	response parameter byte 13	response parameter byte 14						
42	response parameter byte 15	response parameter byte 16						
43	response parameter byte 17	response parameter byte 18						
44	response parameter byte 19	response parameter byte 20						
45	response parameter byte 21	response parameter byte 22						
46	response parameter byte 23	response parameter byte 24						
47	response parameter byte 25	response parameter byte 26						
48	response parameter byte 27	response parameter byte 28						
49	response parameter byte 29	response parameter byte 30						
50	response parameter byte 31	response parameter byte 32						
51	response parameter byte 33	response parameter byte 34						
52	response parameter byte 35	response parameter byte 36						

	Flags								
F0	ConfigError								
F1	APF								
F2	PeripheryFault								
F3	ConfigurationActive								

ConfigError:0 = ConfigOK, 1 = ConfigErrorAPF:0 = AS-i-Power OK, 1 = AS-i-Power FailPeripheryFault:0 = PeripheryOK, 1 = PeripheryFaultConfigurationActive:0 = ConfigurationActive, 1 = ConfigurationInactive



#### 5.1.2 Output Data Array

The output data array consist of 53 words.

Words 0 to 15 contain the output data of binary AS-Interface slaves; words 16 to 52 contain the request data of the command interface 1 and 2 and the corresponding tittle bars (f.e.: First command interface" and "Second command interface"). See also further description in the separat manual "AS-i 3.0 Command interface".

These bytes of data are as follows:

word	2 <sup>15</sup> 2 <sup>14</sup> 2 <sup>13</sup> 2 <sup>12</sup> 2 <sup>11</sup> 2 <sup>10</sup> 2 <sup>9</sup> 2 <sup>8</sup>								27	2 <sup>6</sup>	2 <sup>5</sup>	24	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
0	flags slave 1/1A								:	slave	2/2A	۱	:	slave	3/3A	
	F3	F2	F1	F0	D3	D2	D1	D0	D3	D2	D1	D0	D3	D2	D1	D0
1		slave	4/4A		5	slave	5/5A		slave 6/6A slave						7/7A	۱
2	slave 8/8A slave 9/9A									ave '	10/10	A	s	ave '	11/11	A
3	slave 12/12A slave 13/13A									ave ´	14/14	A	sl	ave ´	15/15	A
4	S	lave ´	16/16	A	sl	ave 1	7/17	A	sl	ave '	18/18	A	sl	ave ´	19/19	A
5	s	lave 2	20/20	A	sl	ave 2	21/21	A	s	ave 2	22/22	A	sl	ave 2	23/23	A
6	s	lave 2	24/24	A	sl	ave 2	25/25	A	sl	ave 2	26/26	A	sl	ave 2	27/27	A
7	S	lave 2	28/28	A	sl	ave 2	29/29	A	s	ave 3	30/30	A	sl	ave 3	31/31	A
8		rese	rved			slave	e 1B			slav	e 2B			slav	e 3B	
9		slav	e 4B			slave	e 5B			slav	e 6B			slave	e 7B	
10		slav	e 8B			slave	e 9B			slave	e 10B			slave	e 11B	
11		slave	e 12B			slave	13B			slave	e 14B			slave	: 15B	
12		slave	e 16B			slave			slave	e 18B		slave 19B				
13	slave 20B slave 2 <sup>2</sup>									slave	e 22B		slave 23B			
14		slave	e 24B			slave	25B		slave 26B slave 27B							
15		slave	28B			slave	29B			slave	90B		slave 31B			
16				comr	nand				T – circuit							
17		rec	quest	para	mete	r byte	e 1		request parameter byte 2							
18		rec	quest	para	mete	r byte	93		request parameter byte 4							
19		rec	quest	para	mete	r byte	e 5		request parameter byte 6							
20		rec	quest	para	mete	r byte	e 7		request parameter byte 8							
21		rec	quest	para	mete	r byte	9		request parameter byte 10							
22		req	uest	parar	neter	byte	11		request parameter byte 12							
23		req	uest	parar	neter	byte	13		request parameter byte 14							
24	request parameter byte 15									req	uest	parar	metei	r byte	16	
25	request parameter byte 17								request parameter byte 18							
26	request parameter byte 19								request parameter byte 20							
27	request parameter byte 21								request parameter byte 22							
28	request parameter byte 23								request parameter byte 24							
29		req	uest	parar	neter	byte	25		request parameter byte 26							
30		req	uest	parar	neter	byte	27			req	uest	parar	meter	r byte	28	
31	request parameter byte 29								request parameter byte 30							



word	1 2 <sup>15</sup> 2 <sup>14</sup> 2 <sup>13</sup> 2 <sup>12</sup> 2 <sup>11</sup> 2 <sup>10</sup> 2 <sup>9</sup> 2 <sup>8</sup>								27	2 <sup>6</sup>	2 <sup>5</sup>	2 <sup>4</sup>	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
32		req	uest	parar	neter	byte	31		req	uest	parar	nete	byte	: 32		
33		req	uest	parar	neter	byte	33			req	uest	parar	meter	<sup>-</sup> byte	34	
34				comn	nand			Т	-			ciro	cuit			
35		rec	quest	para	mete	r byte	÷1			rec	quest	para	mete	r byt	e 2	
36		rec	quest	para	mete	r byte	<del>)</del> 3		rec	quest	para	mete	r byt	e 4		
37		rec	quest	para	mete	r byte	÷5		rec	quest	para	mete	r byt	e 6		
38		rec	quest	para	mete	r byte	÷7		rec	quest	para	mete	r byt	e 8		
39		rec	quest	para	mete	r byte	9		req	uest	parar	meter	byte	: 10		
40		req	luest	parar	neter	<sup>·</sup> byte	11	request parameter byte 12								
41		req	luest	parar	neter	byte	13			req	uest	parar	meter	<sup>-</sup> byte	: 14	
42		req	luest	parar	neter	byte	15		request parameter byte 16							
43		req	juest	parar	neter	byte	17		request parameter byte 18							
44		req	luest	parar	neter	byte	19		request parameter byte 20							
45		req	luest	parar	neter	byte	byte 21 request parameter byte 22									
46		req	luest	parar	neter	byte	23			req	uest	parar	metei	byte	24	
47		req	uest	parar	neter	byte	25			req	uest	parar	metei	<sup>-</sup> byte	26	
48	request parameter byte 27									req	uest	parar	meter	<sup>-</sup> byte	28	
49	request parameter byte 29									req	uest	parar	metei	byte	30	
50	request parameter byte 31									request parameter byte 32						
51		req	luest	parar	neter	<sup>·</sup> byte	33			req	uest	parar	metei	<sup>-</sup> byte	: 34	
52		req	uest	parar	neter	<sup>·</sup> byte	35			req	uest	parar	metei	<sup>-</sup> byte	: 36	

Flags									
F0	Off-line								
F1	LOS-master-bit								
F2	$\rightarrow$ ConfigurationMode								
F3	$\rightarrow$ ProtectedMode								

 Off-Line:
 0 = OnLine, 1 = Off-Line

 LOS-master-bit
 0 = Off-Line by ConfigError deactivated

 1 = Off-Line by ConfigError activated

A rising edge of the "LOS master bit" effects that all bits in the LOS are set. A falling edge effects that all bits are reset.

A rising edge of F2 and F3 switch the master to the desired mode.



#### 5.2 Swap IO

Swap IO is another way to organise IO data in the backplane of the scanner.

This will change the high and low byte postion and should help users to get the informations in the common way.

To switch the "swapped byte - first configure the data length to 54 words:





Depending on, whether we want to swap data or not, we make the following setting:

In order to swap data: Refer to the output word with Index 53 (word number 54!) in the following screenshot.



#### Information!

If the parameter "Swapping\_Config\_Word" is e.g. set to "1" (odd), the swapping is active!

8 RSLogix 5000 - d [1769-L32E]*						X
File Edit Wew Search Logic Communications Tools Window Help						-
Offline . RUN	192.168.42.62\Backplane\0"					
No Forces	- I and and and and the set					
	F -97F - C. F - 400F - 400F					
1 A Stavorites A Bt A	Timer/Counter & Input/Output & Compare					
- A Controlar d	Controller Taes - d(controller)				6	
Controller Tags						
Controller Fault Handler	Scope: d(controller) • Show Modu	le 💌 Sogt Style	-			
Power-Up Handler	TagNane	Value   Force Mask	<ul> <li>Style</li> </ul>	<ol> <li>Type</li> </ol>	Description	_
R Carlos MainTask	+ Local 2.0.0 ata[18]	16#0000	Hex	INT		
🗄 🕰 MainProgram	+ Local 20.0 ata[19]	16#0000	Hex	INT		
- Call Unscheduled Programs	+ Local:2:0.0 ata(20)	16#0000	Hex	INT		
😑 📹 Motion Groups	+ Local 2:0.Date(21)	16#0000	Hex	INT		
Trandr	+ Local/20.0 ata(22)	16#0000	Hex	INT		
E Cata Types	+ Local/20/Data[23]	16#0000	Hex	INT		
- 🦗 User-Defined	+ Local 20 Date(24)	1690000	Hex	INT		
🕀 🚟 Strings	+ Local 2 0.0 at (20)	1690000	riex	INT.		
Predefined     Mark la Defined	+ Local 20 Data[26]	16#0000	Hex	IN I		
AB1769 MODULE C.0	Cocal 2 0 D and 27	1690000	Hex	DAT.		
A8:1769_MODULE_INT_1088ytes:0:0	+ Local 2 0.0 ate[20]	1690000	Hex	INT	_	
AB:1769_MODULE_INT_112Bytes:1:0	+ Local 2 0 0 ata 201	1640000	Her	INT		
E-10 Configuration	El and 20 Date 211	1640000	Har	INT		
[1] 1769-LS2E Ethernet Port LocaleNB     [3] Compartitive Local	A Local 2 0 Date [37]	1640000	Here	INT		
1 [2] 1769-MODULE ASI Scanner 30 king Data With Swapping	# Local 2 0 Data[22]	1640000	Here	INT		
	a Local 2 D Data 341	1640000	Hey	INT		
	+ Local 2 D Data[35]	1640000	Hes	INT		
	+ 1 ocal 20 Data[36]	1640000	Heu	INT		
	+ Local 20.Datal 371	16#0000	Hex	INT		
	+ Local 2 0.Data[38]	16#0000	Hex	INT		
	+ Local 20.0 ata[39]	16#0000	Hex	INT		
	+ Local:2:0.0 ata(40)	16#0000	Hex	INT		
	+ Local 20.Data[41]	16#0000	Hex	INT		
	+ Local/2/0.0 ata(42)	16#0000	Hex	INT		
	+ Local:20.Date(43)	16#0000	Hex	INT		
	+ Local 2.0.Date(44)	16#0000	Hex	INT		
Description Lange Daten, Swapping Bit an der richtigen Stelle gesetzt.	⊥ Local 2.0.0 ata(45)	16#0000	Hex	INT		
Status	+ Local:2:0.0 ata(46)	16#0000	Hex	INT		
Module Fault	+ Local 2:0.Data[47]	16#0000	Hex	INT		
	+ Local 2:0.0 ata[48]	16#0000	Hex	INT		
	+ Local:20.Data[49]	16#0000	Hex	INT		
	+ Local:2:0.D ata(50)	16#0000	Hex	INT		
	+ Local 2:0 Date[51]	16#0000	Hex	INT		
Constant Automation (	+ Landard Data	16	_			٦l
Swapping_Contig_vvord = 1	Local 20 Date 53	16#0001	Hex	INT		11
			-	_		비



Without swapping – refer to the output word with Index 53 (word number 54!) in the following screenshot.



#### Information!

If the parameter "Swapping\_Config\_Word" is e.g. set to "0" (even), the swapping is not active!

& RSLogix 5000 - c [1769-L32E]						- 7 ×
He Edit Vew Search Logic Communications Tools Window Help						
Offfine 🛄 🕅 RUN 👘 Path (none) 👻 💑						
No Forces P. OK						
No Edito 👌 🔚 🔄 🔄 🔄 🔄	{ ∃F 3/F ( )F (0)F (0)F					
■ I/O Tavorites	Bt & Timer/Counter & Input/Output & Compare					
Controller c	Controller Tags - c(controller)					
Controler Tags	Scoper (footballet)   Show Module	▼ Sα	Stale ·			
Power-Up Handler	Taslans	Makan 6	Ecros Mark 6 Sade	a Tuna	Description	
Tasks	F-Local 20 Data[18]	1640000	Hav	INT	Discoption 1	
🔯 MainTask	El cost 20 Data[19]	1640000	hlav	INT		
💽 🧤 MainProgram	al Local 20 Data[20]	1640000	Hey	INT		
Motion Groups	+ Local 2-0 Data[21]	1640000	Hex	INT		
Ungrouped Axes	+ 1 coat 2/0 Data[22]	1640000	Hex	INT		
Trends	+ Local 2:0.0 atal231	16#0000	Hex	INT		
Data Types	+ Local 2-0 Data[24]	1640000	Hex	INT		
User-Defined	+ Locat 2:0.0 ata[25]	16#0000	Hex	INT		
Predefined	+ Local 2:0.D atal261	16#0000	Hex	INT		
Module-Defined	+ Local 2:0.0 ata[27]	16#0000	Hex	INT		
- A8:1769_MODULE:C:0	+ Local 2:0.D ata[28]	16#0000	Hex	INT		
AB:1769_MODULE_INT_106Bytes:0:0	+ Local 2:0.Data[29]	16#0000	Hex	INT		
- AB:1769_MCOULE_INT_1128ytes:1:0	+ Local 2:0.D ata[30]	16#0000	Hex	INT		
Comparation     Fill 1260J 32E Pharmat Part LocalFNB	+ Local 2:0.D ata[31]	16#0000	Hex	INT		
1 CompactBus Local	+ Local 2:0.D ata[32]	16#0000	Hex	INT		
[2] 1769-MODULE ASI_Scanner_Long_Data_Without_Swapping	+ Local 2:0.Data[33]	16#0000	Hex	INT		
	+ Local 2:0.D ata[34]	16#0000	Hex	INT		
	+ Local 2:0.D ata[35]	16#0000	Hex	INT		
	+ Local 2:0.D ata[36]	16#0000	Hex	INT		
	E Locat 2:0.D ata[37]	16#0000	Hex	INT		
	+ Local 2:0.D ata[38]	16#0000	Hex	INT		
	+ Local 2:0.D ata[39]	16#0000	Hex	INT		
	E Locat 2:0.D ata[40]	16#0000	Hex	INT		
	+ Local 2:0.D ata[41]	16#0000	Hex	INT		
	Eccal 2:0.D ata[42]	16#0000	Hex	INT		
	E Local 2:0.D ata[43]	16#0000	Hex	INT		
<	Eccal 2:0.D ata[44]	16#0000	Hex	INT		
Description Long data	Local 2:0.Data[45]	16#0000	Hex	INT		
Status	Eccal 2:0.D ata[46]	16#0000	Hex	INT		
Module Fault	+ Local:2:0.Data[47]	16#0000	Hex	INT		
	+ Local 2:0.Data[48]	16#0000	Hex	INT		
	+ Local 2:0. Data[49]	16#0000	Hex	INT		
	+ Local 2:0.D ata[50]	16#0000	Hex	INT		
	20 Part 20 Part 20	1640000	Hex	DUT.		
Swapping Config Word -	+ Local 2:0. Data[52]	1690000	Hex	INI		
		16#0000	Hex	INT		
	Line Inc.					:
	(monet lage / coll 18 co					

#### Information!

If you want to switch from 54 word length configuration of the I/O data to a shorter

value (<=53) you have to make a Power Cycle between the two Downloads of the short configuration. After "Power CYCLE" and the second download the new configuration is active!

#### 5.2.1 ADDITIONAL INFORMATION

These information helps the user to specify the moment after which the input data is valid. It is relevant ONLY in case of long data configuration (54 words).

#### Explanation:

The user should choose an arbitrary number BIGGER THAN 1 (> 1), that he writes in the output data with the index 53 - the so called "Swapping\_Config\_Word". When he writes an even number he will deactivate the swapping. Writing an odd number, he will activate the swapping. When the chosen number has been mirrored in the input data word 53, the user will know that the incoming input data is from now on valid.



#### Example:

Let us assume we have chosen the number 6. Writing 6 in the swapping\_config\_word we will not activate the swapping. We will have to wait to read 6 in the input word with Index 53 in order to accept the incoming data as valid. Before that we will ignore the incoming data. In order to activate the swapping we will have to choose an odd number, for example 7, in the swapping\_config\_word. That's why we will have to wait to read 7 in the input word with Index 53 in order to accept the incoming data as valid. Before that we will ignore the incoming data as valid. Before that we will ignore the incoming data as valid. Before that we will ignore the incoming data as valid. Before that we will ignore the incoming data. (please, see the pictures below).

Pictures:

□ Write 7 in the output data.

RSLogix 5000 - d [1769-L32E]* File Edit View Search Logic Communications Tools Window Help						
Utitine U. RUN	Offine ] - RUN AB_CTHP-1/152 168 42 628 ackplane/0"					
No Forces P. BAT	E 32E 4 C E 40E 40 E E					
	A					
🕫 🔚 Controller d	Controller Tags - d(controller)					
Controller Tags	Scopy dicontrolet V Show Module	Soft State				
Outroler Fault Handler     Power-Up Handler	TasName	Value Errore Mark & Stale	t Tune Description			
🕀 🔚 Tasks	+ Local 2.0. Date[18]	16#0000 Hes	INT			
E-12 MainTask	+ Local 20.0 atal 19	16#0000 Hex	INT			
Generation	+ Local:2:0.0 ata[20]	16#0000 Hex	INT			
😑 🚔 Motion Groups	+ Local 2:0.Data[21]	16#0000 Hex	INT			
Can Ungrouped Axes	+ Local 2:0.0 ata(22)	16#0000 Hex	INT			
Contraction of the Second	+ Local:2:0.Data[23]	16#0000 Hex	INT			
- User-Defined	Local 2.0.0 ata[24]	16#0000 Hex	INT			
🛞 🚟 Strings	+ Local 2:0.0 ata[25]	16#0000 Hex	INT			
Redefined	+ Local 2:0.0 ata[26]	16#0000 Hex	INT			
Module-Defined     Monute-Con	+ Local 2 D.Data[27]	16#0000 Hex	INT			
A8:1769_MODULE_INT_1088ytes:0:0	+ Local 20 Data[26]	1690000 Hex	INI INT			
AB:1769_MODULE_INT_1128ytes:I:0	+-Local.20.0 ata[23]	160000 Hex	INI III			
E Calueration	Cocal 2 0 Data 30	1680000 Her	DIT DIT			
(1) 1769-L32E Ethernet Port LocalENB     Comparting Local	Fil anal 20 Data 320	1680000 Her	INT			
[2] 1769-MODULE ASI Scanner_30 long Data_With_Swapping	+1 ccal 20 Data[3]	1640000 Here	INT			
	+ Local 2 D.D atal 341	16#0000 Hes	INT			
	+ Local 2:0.0 ata[35]	16#0000 Hex	INT			
	+ Local:2:0.0 ata[36]	16#0000 Hex	INT			
	+ Local 2.0.0 ata[37]	16#0000 Hes	INT			
		16#0000 Hex	INT			
	+ Local:2:0.0 ata[39]	16#0000 Hex	INT			
	<ul> <li>Local:2:0.Data(40)</li> </ul>	16#0000 Hex	INT			
	+ Local 2.0.Date(41)	16#0000 Hex	INT			
	+ Local 2:0.0 ata[42]	16#0000 Hex	INT			
	+ Local:2:0.0 ata[43]	16#0000 Hex	INT			
	+ Local 20 Data(44)	1690000 Hex	INI			
Description Lange Daten, Swapping bit an der nchtigen Stelle gesetzt.	+ Cocar20.Data(40)	1690000 Hex	DIT DIT			
Module Fault	F Local 2.0.0 algeoj	1680000 Her	BIT			
	+ Local 2 D Data[47]	16#0000 Hes	INT			
	+ Local 20.0 ata[49]	16#0000 Hex	INT			
	+ Local 2:0.D ata[50]	16#0000 Hex	INT			
Swapping Config Word = 7	+ Local:2:0.0 ata[52]	16#0000 Hex	INT			
owapping_coning_word = 7	# Local:2:0.Data[53]	▼ 16#0007 Hes	INT			
부 프 프 프 프 팩	11 F.D. Moniter Lans A Foll Lans /					



□ Ignore the incoming input data until 7 is read in the input word 53.

RSLogix 5000 - d [1769-L32E]*     Fle Edit Way Search Logic Computications Tools Window Heb						
Offline . RUN Path AB_ETHP-111	32.168.42.62/Backplane/0*					
No Forces DK	las has has has h					
	- 34- ()- (0- (0)-					
	Imericacher & noticupar & compare					
🖯 🚔 Controller d	Controller Tags - d(controller)					
Controller Tags	Scope dicontroller)   Show Mod	ule 🔻 Sort Style	-			
Controller Haut Handler	Tax Name	Makes & Evre Mar	4 6 5 46	o l Tune	Description	
🕀 🔚 Tasks	E-Locat 21 Data[19]	1640000	Hex	INT	Desciption	
E - 🔯 MainTask	+ Local 21. Data[20]	16#0000	Hex	INT		
How Hand Yogram	+ Local 21.Data[21]	16#0000	Hex	INT		
E 🖶 Motion Groups	+ Local 21.Data[22]	16#0000	Hex	INT		
- Call Ungrouped Axes	+ Local 21.Data[23]	16#0000	Hex	INT		
- Trends	+ Local 21.Data[24]	16#0000	Hex	INT		
E User-Defined	+ Local 21.Data[25]	16#0000	Hex	INT		
🕀 🙀 Strings	+ Local 21.Data[26]	16#0000	Hex	INT		
Predefined	+ Local 21.Data[27]	16#0000	Hex	INT		
Module-Defined	+ Local 21.Data[28]	16#0000	Hex	INT		
- 20 AB:1769_MCOLLEC:0	+ Local 21.Data[29]	16#0000	Hex	INT		
AB:1769_MODULE_INT_112Bytes:I:0	+ Local 21.Data[30]	16#0000	Hex	INI	_	
😑 😁 1/0 Configuration	+ Local 21. Data[31]	16#0000	Hex	INT		
[1] 1769-L32E Ethernet Port LocalENB	+ Locat 21.D at a[32]	16#00000	Hex	INI	-	
In Compactous Loca     If [2] 1769.4000 HE AST Scanner, 30 Into Data With Swanning	+ Locar 21.0 ara(33)	16#0000	Hex	INT		
B (i) to construct the property interest of	F Local 21 Data[34]	1640000	Prex.	INT		
	El Land 21 Data 201	100000	Here	INIT		
	E Loost 21 Data[27]	1640000	Hew	INT	_	
	All Local 21 Data[38]	1640000	Hey	INT	-	
	H-Local 21 Data[39]	1640000	Hex	INT		
	+ Local 21 Data[40]	1640000	Hey	INT		
	+ Local 21 Data[41]	16#0000	Hex	INT		
	+ Local 21. Data[42]	16#0000	Hex	INT		
	+ Local 21. Data[43]	16#0000	Hex	INT		
	+ Local 21.Data[44]	16#0000	Hex	INT		
	+ Local 21.Data[45]	16#0000	Hex	INT		
Description	Eliterate Local 21.Data[46]	16#0000	Hex	INT		
Size 112 Bytes	+ Local 21.Data[47]	16#0000	Hex	INT		
	+ Locat 21. Data[48]	16#0000	Hex	INT		
	+ Local 21. Data[49]	16#0000	Hex	INT		
lanore the incoming input	+ Local 21. Data[50]	16#0000	Hex	INT		
ignore the meetining input	i Loost21 Data151	1640000	-	INT		
data until 7 is read in the in-	+ Local 21.Data[52]	1600000	Hex	INI		
muture and EQ	/ + Local 21.Data[53]	▲ 16#0007	Hex	INT		
put wora 53.	La Local 20		()	AP 1259 MODUL		
	<		14			D.C.



□ Write 6 in the output data.

S DSL only 5000 - c [1769.] 32F1*						
File Fife View Search Look Communications Tools Window Held	2					
The car way beaut toge contrainations food withow here						
	- <b>188 18 28</b> 20	2				
Offline 🛛 🗧 BUN The Path Knone	o 🗸					
No Forces P OK						
No Edita A BAT	al 3F 37 () (0) (0)	>				
I I/O A Favorites	ABt & Timer/Counter & Incut/Output & Company	0				
Controller c	Controller Tags - c(controller)					
Controller Tags	a structure of them Model	a _ a . [cut	-			
Controller Pault Handler	Scope:   c(consolie)	<ul> <li>Soft   Soft</li> </ul>				
Power-Up Handler	Tag Name	Value   Force Mas	k 🔹 Style	6 Type	Description	<b>^</b>
MainTask	+ Local 2:0. Data[18]	16#0000	Hex	INT		
🕀 🕞 MainProgram	+ Local 2:0.Data[19]	16#0000	Hex	INT		
Call Unscheduled Programs	+ Local 2:0.0 ata[20]	16#0000	Hex	INT		
Motion Groups	E Local 2:0.Data[21]	16#0000	Hex	INT		
Ungrouped Axes	E Local 2:0.Data[22]	16#0000	Hex	INT		
Data Turan	E Local 2:0.D ata[23]     E	16#0000	Hex	INT		
Get User-Defined	+ Local 2:0.Data[24]	16#0000	Hex	INT		
Strings	E Local 2:0.D ata[25]	16#0000	Hex	INT		
Redefined	E Local 2:0. Data[26]	16#0000	Hex	INT		
Module-Defined	+ Local 2:0.Data[27]	16#0000	Hex	INT		
AB:1769_MODULE:C:0	E. Local 2:0. Data[28]	16#0000	Hex	INT		
M AB1769_9000LE_INI_1008ytest0.0		16#0000	Hex	INT		
10 Configuration		16#0000	Hex	INT		
[1] 1769-L32E Ethernet Port LocalENB	Local 2:0.Data[31]	16#0000	Hex	INT		
III Compactitus Local	E Local 2:0.0 ata[32]	16#0000	Hex	INT		
- 🖞 [2] 1769-MODULE ASI_Scanner_Long_Data_Without_Swapping	+ Local 2:0.0 ata[33]	16#0000	Hex	INT		
	+ Local 2:0.Data[34]	16#0000	Hex	INT		
	⊥ocal 2:0.0 ata[35]	16#0000	Hex	INT		
	E Local 2:0.D ata[36]	16#0000	Hex	INT		
	+ Local 2:0.0 ata[37]	16#0000	Hex	INT		
	+ Local 2:0.Data[38]	16#0000	Hex	INT		
	E Local 2:0.Data[39]	16#0000	Hex	INT		
	E Local 2:0.D ata[40]	16#0000	Hex	INT		
	+ Local 2:0.Data[41]	16#0000	Hex	INT		
		16#0000	Hex	INT		
	+ Local 2:0.D ata[43]	16#0000	Hex	INT		
< >	+ Local 2:0.Data[44]	16#0000	Hex	INT		
Description	⊥Local 2:0.D ata[45]	16#0000	Hex	INT		
Size 112 Bytes	E Local 2:0.D ata[46]	16#0000	Hex	INT		
	+ Local 2:0.Data[47]	16#0000	Hex	INT		
	+ Local 2:0.Data[48]	16#0000	Hex	INT		
	+ Local 2:0.D ata[49]	16#0000	Hex	INT		
	+ Local 2:0.Data[50]	16#0000	Hex	INT		
	20 Januar 20 Deta151	1640000	Hex			
	+ Local 2:0 Data[52]	16#0000	Hex	INT		
Swapping Config Word =6	+ Local 2:0. Data [53]	16#0006 -	Hex	INT		
	P DATE AND A DATE OF A DAT					



□ Ignore the incoming input data until 6 is read in the input word 53.

RSLogix 5000 - c [1769-L32E]*      See See Your Search Logic Communications Table Mindow Halo						
Her Edit weiw search Logic Communications Tools window Help						
	🖸 💰 🍇 💺 📑 🛃 🔍 🔍					
Offine . RUN Rate Knone	च <b>क</b>	1				
No Forces	No Forces by 0K					
B ⊀ > \Favorites	Ell & Timer/Counter & Input/Cutput & Compare					
	6	-				
Controller c	Controller Tags - c(controller)					
Controler Lags	Scope: c(controller) - Show Module	• So	rt: Style 💌			
Power-Up Handler	Tag Name	Value •	Force Mask	State A	Tupe De	
Tasks	H-Local 21 Data[17]	16#0000		dex .	INT	
MainTask	+ Local 21.Data[18]	16#0000		lex	INT	
How Panerogram	+ Local 21 Data [19]	16#0000		Hex	INT	
Motion Groups	+ Local 21 Data[20]	16#0000		-lex	INT	
C Ungrouped Axes	E Local 21 Data[21]	16#0000		-lex	INT	
Trends	+ Local 21.Data[22]	16#0000		lex	INT	
Data Types	+ Local 21 Data[23]	16#0000		Hex	INT	
Strings	Local 21.D ata[24]	16#0000		-lex	INT	
Redefined	± Local 21.Data[25]	16#0000		lex	INT	
Ca Module-Defined	Local 21 Data[26]	16#0000		Hex	INT	
AB:1769_MODULE:C:0	Local 21.D ata[27]	16#0000		Hex	INT	
AB:1769 MODULE INT 1128vtes:10	E Local 21.D ata[28]	16#0000		lex	INT	
1/0 Configuration	+ Local21.Data[29]	16#0000		lex	INT	
[1] 1769-L32E Ethernet Part LocalENB	+ Local 21 Data[30]	16#0000		Hex	INT	
(III) Compactitus Local	+ Local 21.Data[31]	16#0000		lex	INT	
<ul> <li> <u> </u></li></ul>	+ Local 21 Data[32]	16#0000		Hex	INT	
	+ Local 21 Date[33]	16#0000		162	INI	
	+ Local 21 Data[34]	1690000		nex lau	INT	
	F Cook 21 Data[30]	1600000		nex Jac	INT	
	El contra de la co	1640000		tex tex	INT	
	El Jocal 21 Data[29]	1640000		dav	INT	
	in Local 21 Data[39]	1640000		Hev	INT	
	H-Local 21 Data[40]	16#0000		-lex	INT	
	+ Local 21.Data[41]	16#0000		lex	INT	
	+ Local 21 Data 42	16#0000		Hex	INT	
< >	+ Local 21 Data[43]	16#0000		-lex	INT	
Description	E Local 21.Data[44]	16#0000		lex	INT	
Size 112 Bytes	+ Local 21 Data[45]	16#0000		-lex	INT	
	+ Local 21.Data[46]	16#0000		Hex	INT	
		16#0000		lex	INT	
<u>+ </u>	+ Local 21.D ata[48]	16#0000		lex	INT	
lanoro the incoming input	+ Local 21 Data[49]	16#0000		lex	INT	
ignore the incoming input	+ Local 21.D ata[50]	16#0000		lex	INT	
data until 7 is read in the in-	+ Local 21.Data[51]	16#0000		lex	INT	
				lev		
put word 53.	+ Locat 21.0 atal531	16#0006		1ex	INI	
	100 Togo Tugo			_		لالأنه ويسوهمه



#### 6. Operating the AS-i Scanner

#### 6.1 Master Start-Up

After starting up, all segments of the figure display and all LEDs light up for approximately one second (self-test). Afterwards, the LC display the condition of their respective flags. The LC display shows the state of the master:

#### 40: Offline Phase

The AS-i master initializes - there is no data communication happening on the AS-i.



#### Attention!

If the AS-i circuit is insufficiently powered ("U AS-i" does not light up) or there is no communication relationship between the master and the AS-i/gateway.

#### 41: Detection Phase

Start-up phase, in which the system looks for slaves located on the AS-i. The master remains in the detection phase until it finds at least one slave.

#### 42<sup>1</sup>: Activation Phase

End of the start-up operation when the parameters are transmitted to all connected and recognized slaves. This enables access to the AS-i slaves' data connections.

#### 43<sup>2</sup>: Start of Normal Operation

The AS-i master can exchange data with all active slaves. It transmits management messages and looks for and activates newly connected slaves. During normal operation, the system keeps the maximum cycle time of 5 milliseconds.

#### 6.2 Configuration Mode

The configuration mode serves to configure the AS-i circuit.



#### Attention!

In the configuration mode, all recognized slaves are activated even when the desired and actual configurations do not match.

Pressing the "" button for at least five seconds switches the gateway to configuration mode. While in configuration mode, the yellow "" LED lights up.

If the display is empty, no slaves have been connected to the AS-i circuit.In configuration mode, all recognized slaves are activated except for slave zero. The AS-i master is in normal operation. Data exchange between the AS-i master and all AS-i slaves has been detected by the master, regardless of whether the detected AS-i slaves have been projected before.



#### Attention!

When delivered the device is in configuration mode.

- 1. Activation phase and the start of normal operation maybe so short that the numbers can not be seen in the display.
- 2. Activation phase and the start of normal operation maybe so short that the numbers can not be seen in the display.



#### 6.3 Protected Operating Mode



#### Information!

Unlike the configuration mode, the protected mode allows data exchange between the AS-i master and the projected AS-i slaves only.



#### Attention!

If there is no communication between the host and the AS-I master, the AS-i master clears the output data of all slaves.

#### 6.3.1 Switching to Protected Operating Mode

The configuration mode can be left by pressing the "" button.

Pressing the button shortly:

Exits the configuration mode without saving the current AS-i configuration.

Pressing the button for more than five seconds:

Exits the configuration mode and projects the actual AS-i configuration. Simultaneously the actual AS-i configuration is stored as nominal configuration in the EEPROM.

#### Information!

If the system detects an AS-i slave with address zero on the AS-i, it can not leave the configuration mode.

In the protected operating mode, only AS-i slaves which are projected and whose actual configurations match the nominal configurations will be activated.

#### 6.3.2 Configuration Errors in Protected Operating Mode

As long as there is no configuration error, the numeric display is turned off while in protected operating mode. Otherwise, the address with the faulty assignment is displayed. A faulty assignment occurs when a slave has been recognized or projected but cannot be activated.

If there are more than one faulty assignments the one that was first detected is displayed. Pressing the "" button shortly displays the next higher faulty address.

Shortly appearing configuration errors are stored in the device (advanced AS-i diagnosis). The last error that occurred can be displayed by pressing the "" button. If a short AS-i power failure is responsible for the configuration error the display will show a "39".

#### 6.4 Assigning an AS-i Address in Configuration Mode

AS-i can be put into operation in a very comfortable manner by using the Windows software AS-i Control Tools (adressing directly or with the the AS-i address assistant, see chap. <Windows Software AS-i Control Tools>) (addressing directly or with the AS-i address assistant).

Furthermore, a handheld addressing device can be used.

If you have neither a PC nor a hand held addressing device, address assigning of the AS-i slaves is also possible with the AS-i/DeviceNetgateway using the pushbuttons.



To assign a slave with an address unequal zero to a different address unequal zero, please follow the following instructions in reverse order:

#### 6.4.1 Assigning a Slave Address

(assigning an available address to a slave with address zero)

In configuration mode, the addresses of all detected slaves are displayed in succession. To display the next higher available operating address, press the "" button shortly. Each time you press the "" button, the next available address is displayed.

Choose the displayed address as your target address by pressing the "" button for more than five seconds. The address display flashes. The master is ready for programming; pressing the "" button again addresses the connected slave with address zero to the target (flashing address).

Any errors will be displayed by their error codes according to chap. <Appendix: Codes indicated by the Display>. Otherwise, the detected slaves are displayed again as described in chap. <Configuration Mode>.



#### Information!

Only slaves with address 0 can get a new address by the master.



#### Attention!

There must not be two AS-i slaves with the same address on the AS-i circuit, since this would cause malfunctions.

#### 6.4.2 Erasing the Slave Address

(assigning address zero to a detected slave)

In configuration mode, the addresses of all recognized slaves are displayed in succession. By pressing the "" button repeatedly, the master will display the next available address. Pressing the button more than five seconds while the address of a detected slave is displayed, this slave will get the address zero and the display will show "0".

When you release the button, the display continues to display the detected slaves.

#### 6.5 Programming the Address in Case of Configuration Errors

#### 6.5.1 Automatic Address Assignment



#### Information!

One of AS-i's major advantages is the automatic address assignment. If a slave fails, it can be replaced by another one of the same type with the address zero. The master will detect the replacement and automatically address the new slave with the address of the faulty one.

For automatic programming, the following requirements must be met:

- 1. The AS-i master must be in the protected operating mode.
- 2. The "Auto\_Address\_Assign"<sup>1</sup> release flag must be set.
- 3. Only one of the projected slaves may not be detected.

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If these requirements are met, the AS-i master's "" LED lights up and a slave with address zero will be automatically be assigned to the operating address of the missing slave. The "Automatic Address Assignment" can be activated and deactivated with the software "AS-i Control Tools".



#### Information!

Only slaves with address 0 can get a new address by the master, since this would cause malfunctions.



 $\bigcirc$ 

#### Attention!

If the two slaves have different configuration data, i.e. are not of the same type as far as AS-i is concerned, the automatic address assignment will not be carried out.

#### 6.5.2 Manual Address Assignment

#### Information!

If several slaves fail, they cannot be replaced automatically by the AS-i master. These addresses have to be set manually. If this should not be done with the host interface (using the AS-i Control Tools) or with a handheld addressing device, the slave addresses can also be changed by using the push-buttons and the LC display of the device.

In protected operating mode, wrong assignments are displayed as errors (see chap. <Protected Operating Mode>). By pressing the "" button all faulty assignments will be displayed in succession. By pressing the "" button for more than five seconds the currently displayed address will be selected as a potential target address, and the display starts to flash.

If the faulty slave was previously replaced by a slave with address zero, the new slave can now be programmed for the blinking address by pressing the "" key again. As a requirement, the new slave's configuration data must match the configuration data for the flashing address.

After the address has been successfully set, the next faulty assignment is displayed and the address assignment can be carried out again. Otherwise, the system displays an error code (see also chap. <Appendix: Codes indicated by the Display>). When all faulty assignments are eliminated, the display will be empty.

#### 6.6 Error Messages



#### Attention!

The system displays error codes for error messages that do not point to faulty assignments on the AS-*i* circuit. The code numbers are larger than 50 and therefore outside the slave address range. These codes are described in the appendix (see chap. <Appendix: Codes indicated by the Display>).

<sup>1.</sup> By deleting the flag "Auto\_Address\_Assign", the user can deactivate "automatic addressing".



#### 7. Reference List

#### 7.1 Manual: "AS-i 3.0 Command Interface"

This Manual contains a detailed description of the AS-i 3.0 Command Interface.





#### 8. Commissioning Tools and Accessories

The AS-i circuit on the AS-i master can be put into operation with the comfortable Windows software "AS-i Control Tools" (art. no. BW1203).

#### 8.1 Serial Cable

The software package communicates with the AS-i master via a serial cable (art. no. BW1417).



#### 8.2 Windows Software AS-i Control Tools

- 4. Start the AS-i Control Tools.
- 5. Call the command Master | New.
- 6. Choose DeviceNet as protocol.
- 7. Do the appropriate settings.
- Call the command Master | AS-i configuration. The AS-i configuration editor will be started. All detected and projected AS-i slaves are displayed in this window.

AS-i Configuration - COM 2, Addr 3			
<u>_ Slaves</u>			1
Address Type	Address	: Туре	
0 1 AS-i slave: 3 in / 1 out 2 AS-i slave: 4 in / 1 out 3 d Remote I/0: 4 in / 4 out 4 AS-i slave: 4 in / 2 out 5 d Remote I/0: 2 in / 2 out 6 d User defined: 4 in / 4 out 7 8 p ( clave missing )	16 17 18 19 20 21 22 23 24	AS-i slave: 1 in / 3 out	<u>H</u> elp
9 9 10 11 12 p < slave missing > 13 14 15	25 26 27 28 29 30 31	AS-i slave: 1 in / 4 out	Master Bus address: 3 Configuration error Store <u>C</u> onfiguration

 Click on a slave entry to open the dialog box slave configuration. Changing a slave address, setting AS-i parameters or AS-i configuration data is possible here. Additionally, inputs and outputs can be tested. AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and MicroLogix 1500 Commissioning Tools and Accessories



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	_
Slave configuration	х
S <u>e</u> lected Slave: 2	]
Change address to: 2	
Less	
<u>S</u> tore	
Inputs: 🔽 0 🗹 1 🔽 2	
<u>O</u> utputs: 🗖 3	
<u>C</u> urrent parameters: 🔽 0 🗌 1 🔽 2 🔽 3	
Power up parameters: 🔽 0 🔽 1 🗖 2 🗹 3	
Detected: 11 AS-i sensor	
Projected: 10 2x2 input module	-
U <u>s</u> ername:	
Device Type:	1

A very easy approach to configure the AS-i circuit is connecting each AS-i slave to the line and setting the AS-i slave address one after the other. After that press the button "Store configuration" to adopt the detected AS-i circuit to the AS-i master as projected data.

Furthermore you can use the **AS-i Address Assistant**. This tool automatically changes the address of an AS-i slave to the desired address after connecting the slave to the AS-i line. The desired AS-i configuration can be created ooffline before and then be stored to a file. When building up the plant you only have to connect the AS-i slaves to the AS-i line one after the other.

Further descriptions to all features of the software can be obtained from the integrated help.



#### 9. Appendix: Codes indicated by the Display

In the basic state of the configuration mode, the display shows the addresses of all detected slaves at a rate of two per second one after the other. A blank display indicates that the *LDS* is empty, no slaves were detected.

In the basic state of the protected operating mode, the display is either blank or displays the address of a faulty assignment (see chap. <Configuration Errors in Protected Operating Mode>).

During manual address programming, the slave address display has a different meaning (see chap. <Assigning an AS-i Address in Configuration Mode> and chap. <Programming the Address in Case of Configuration Errors>).

All displayed numbers bigger than 31 which can not be interpreted as a slave address are status or error messages of the master. They have the following meanings:

39	Advanced AS-i diagnostics: After pressing the 'set'-button a short-time AS-i power failure occured.
40	The AS-i master is in offline phase.
41	The AS-i master is in detection phase.
42	The AS-i master is in activation phase.
43	The AS-i master starts the normal operating mode.
70	Hardware error: The AS-i master's EEPROM cannot be written.
72	Hardware error: The PIC processor does not respond.
73	Hardware error: The PIC processor does not respond.
74	Checksum error in the EEPROM.
75	Error in the internal RAM.
76	Error in the external RAM.
80	Error while attempting to exit the configuration mode: A slave with address zero exists.
81	General error while changing a slave address.
82	The front panel operation is blocked. Until repowering-up the device can only be accessed from the host via the interface.
83	Program reset of the AS-i Control programm: The AS-i Control programm is being read out of EEPROM and copied into the RAM.
88	Display test while starting up the AS-i master
90	Error while changing a slave address in protected operating mode: No slave with address 0 existing.
91	Error while changing slave address: Target address is already used.
92	Error while changing slave address: New address could not be set.

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93	Error while changing slave address: New address could only be stored volatilely in the slave.
94	Error while changing the slave address in protected operating mode: Slave has wrong configuration data.
95	Error while changing slave address in protected operating mode: The configura- tion error was caused by a superfluous slave (instead of a missing slave).



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#### 10. Appendix: Installation/Commissioning Instructions







Dokumentation AS-i-Master/Scanner (deutsch): Art.-Nr. BW1496

Zubehör Art.-Nr. BW1563/Accessories art. no. BW1563/ Accessoires no. d'art. BW1563/Accessori no. di art. BW1563/ Accesorios no. del art. BW1563



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#### 10.1 Front view and connections



- ① LED-Statusanzeige
- ② Tasten f
  ür Handbedienung
- ③ LED-Anzeige
- ④ AS-Interface<sup>®</sup>-Anschluss
- ⑤ Erde
- 6 RS232-Anschluss
- ① LED status display
- ② Buttons for hand operation
- ③ LED display
- ④ AS-interface<sup>®</sup> connection
- ⑤ Earth
- 6 RS232 connection
- ① Afficheur d'état DEL
- 2 Boutons pour commande manuelle
- 3 Afficheur LED
- ④ Connexion AS-Interface<sup>®</sup>
- 5 Terre
- 6 Raccordement RS232

- ① Visualizzazione a LED
- ② Pulsanti per le impostazioni manuali
- ③ Indicazione LED
- ④ Collegamento interfaccia AS-Interface<sup>®</sup>
- ⑤ Terra
- 6 Collegamento RS232
- ① LED visualización
- ② Teclas para accionamiento manual
- ③ Indicación LED
- ④ Conexión AS-Interface<sup>®</sup>
- ⑤ Tierra
- 6 Conexión RS232



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#### 10.2 Startup



#### 10.3 Connect AS-i Slaves



#### 10.4 Store AS-i Configuration



	LCD
--	-----

Konfiguration O.K. Configuration O.K. Configuration O.K. Configurazione O.K. Configuración O.K.

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#### 10.5 Error tracing

#### 10.5.1 Incorrect slaves (one error)



#### 10.5.2 Incorrect Slaves (multiple errors)





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#### 10.6.1 Program Slave 0 to Address 4



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#### 10.7 Accessories

10.7.1 Software "AS-i Control Tools" with serial transmission cord for Allen-Bradley AS-i Master, art. no. BW1563





#### 10.7.2 Example programs

Download:	http://www.bihl-wiedemann.de/deutsch/download.htm
Download:	http://www.bihl-wiedemann.de/englisch/down- load.htm
Téléchargement:	http://www.bihl-wiedemann.de/englisch/down- load.htm
Trasferimento diretta:	http://www.bihl-wiedemann.de/englisch/down- load.htm
Transferencia directa:	http://www.bihl-wiedemann.de/englisch/down- load.htm





# 11. Appendix: Putting the AS-Interface Scanner into Operation with CompactLogix

This chapter shows exemplary the putting into operation of the AS-Interface Master/Scanner BWU1416 for Allen Bradley CompactLogix with the software RSLogix 5000 version 13.15 and the 1769-L32E CompactLogix5332E Controller.

Download the example "AS-Interface-Scanner for Allen-Bradley CompactLogix" from the download area of the Bihl+Wiedemann website and unzip the files.

Ο	
Д	

#### Information!

This example can be found in the download area of http://www.bihl-wiedemann.com under Software - Examples: AS-Interface Master/Gateway/Link/Scanner - AS-Interface-Scanner for Allen-Bradley CompactLogix.

- □ Start the software RSLogix 5000.
- □ Open the file Module.acd.
- $\Rightarrow$  This sample file contains a program that shows how to use the mailbox.
- □ Look at the description of the controller tags, where you find the tags mailbox1. Here you can edit Mailbox commands. How is written in the Mbx0Main routine of the program mailbox.

	Favorites Bt & Timer/Counter & Input/Output	Compare
E- Controller Maibox	Controller Tags - Mailbox(controller)	
Controller Tags	Scope: Mailbox Show All	💌 Sort Tag Name 💌
- Power-Up Handler	Tag Name 🛆	Value + Force Mask
🖻 🚖 Tasks		{} {.
🖻 🤯 MainTask	⊞-ASi_Output	{} {.
🗄 📑 MainProgram	E-Locat1:C	() (.
H MaiDox	⊞-Locat1:I	() (.
E-S Motion Groups		() (.
- Cal Ungrouped Axes	-Mailbox1	{} {.
- 🧰 Trends	Mailbox1.Request	() (.
B-Cata Types	-Mailbox1.Start	0
Billing User-Derined	Mailbox1.Response	{} {.
Predefined		
🗉 🙀 Module-Defined		
🖻 😋 I/O Configuration		
[1] 1769-L32E Ethernet Port Local		
E-III Compactbus Local		
If [1] 1769 MODULE Asi_Scame		

 $\Rightarrow$  You find some other examples:

C02\_RD\_WR.ACD, C03\_Get\_LAS.ACD, C04\_READ\_IDI.ACD, C05\_GET\_DELTA.ACD, C06\_GET\_TECA.ACD, C07\_SET\_LOS.ACD, C08\_GET\_LOS.ACD, C09\_GET\_LCS.ACD, C10\_GET\_LPF.ACD. The task **MainProgram** of these examples, shows you, how to use some commands of the mailbox with help of the task **Mbx0Main**.

#### DataExchange.ACD.

This sample file contains a very simple program, that shows how to read and write digital AS-Interface inputs and outputs.

□ If your AS-Interface Scanner is not mounted in slot 1, you can change this setting.



□ Click with the right mouse-button in the Controller Organizer window on [1] 1769-MODULE Asi\_Scanner and choose **Properties**.



Туре:	1769-MODULE Generic 1769 Module				
Parent	Local	Connection Pa	rameters Assembly Instance:	Size:	
Na <u>m</u> e:	Asi_Scanner	<u>I</u> nput:	101	54 🔅 (	16-bit)
Description:	A	Output:	100	54 🔹 (	16-bit)
	¥	<u>Configuration</u>	102	0 + (	16-bit)
Comm <u>F</u> orma	at: Data - INT 💌				
Sl <u>o</u> t:	1				

□ if you use another controller type than the 1769-L32E CompactLogix5332E, you can change the controller type.



×

□ Execute the command Edit | Controller Properties then press Change Type.



Revision: 13 💌

0K

Cancel

Help

0K

Abbrechen



□ Adjust the communication settings by using the program **RSLinx**:





#### 12. Appendix:

### Putting the AS-i Scanner into Operation with MicroLogix

This chapter shows exemplary the putting into operation of the AS-i Master/Scanner BWU1416 for Allen Bradley MicroLogix with the software RSLogix 500 version 5.50.00 and the MicroLogix 1500 LSP Series C Controller.

- Download the example "AS-Interface-Scanner for Allen-Bradley MicroLogix" from the download area of the Bihl+Wiedemann GmbH website and unzip the files.
- 0 11

#### Information!

This example can be found in the download area of http://www.bihl-wiedemann.com under Software - Examples: AS-Interface Master/Gateway/Link/Scanner - AS-Interface-Scanner for Allen-Bradley MicroLogix.

- 2. Start the software RSLogix 500.
- Open the file D02\_RD\_WR\_1.RSS. This sample file contains a program that shows how to use the mailbox with the mailbox-commands RD\_7X\_IN and WR\_7X\_OUT. (The scanner reads the values of an analog-input slave and writes the values to an analog-output slave.)
- 4. You find some other examples:
  - D03\_Get\_LAS.RSS, D04\_READ\_IDI.RSS, D05\_GET\_DELTA.RSS, D06\_GET\_TECA.RSS, D07\_SET\_LOS.RSS, D08\_GET\_LOS.RSS, D09\_GET\_LCS.RSS, D10\_GET\_LPF.RSS.
  - D01\_Module.RSS. (This program is the base-module of the further programs and you can use it for your own mailbox commands, if you like.)



E.g.: Write a mailbox command (READ\_IDI; 41#h) in the data file N9-MBX\_REQ.

DO1_MODULE.R55			
Project			
🕀 🧰 Help	per Data Fil	e N9 (he	x) MBX_REQ
E Controller	Offset	0	(Symbol) Description
Controller Properties	N9:0	4100	(COHMAND)
	N9:1	0	(REQUEST_1_2)
	N9:2	0	(REQUEST_3_4)
IO Configuration	M9:3	0	(REQUEST_5_6)
Channel Contiguration	N9:4	0	(REQUEST_7_8)
Program Files	N9:5	0	(REQUEST 9 10)
SYS1.	N9:6	0	(REQUEST 11 12)
LAD 2 - MAIN	N9:7	0	(REQUEST 13 14)
LAD 5 - MAILBOX	N9:8	0	(REQUEST 15 16)
🖻 🧰 Data Files	N9:9	0	(REQUEST 17 18)
Cross Reference	10	0	(BEOHEST 19 20)
00 - OUTPUT	W0.11	ő	(DE0UEST 21 22)
1 H - INPUT			(REQUEST_21_22)
S2 - STATUS	N9:12	U	(REQUEST_23_24)
B3 - BINARY	N9:13	0	(REQUEST_25_26)
T4 - TIMER	N9:14	0	(REQUEST_27_28)
CS - COUNTER	N9:15	0	(REQUEST_29_30)
	N9:16	0	(REQUEST_31_32)
B F8 - FL OAT	N9:17	0	(REQUEST_33_34)
DING MEX REQ			
N10 - MBX RES			<b>F</b> -
B11 - AUX_VAR_1	IN IN	<del>2</del> 0	Badiv Hex/BCD V
RCP Configuration Files	Symbol: Co	MMAND	Columns: 1 V
E- Corce Files	Desci C	an mar	
00 - OUTPUT		Dece	autian   Ifanga   Hele
	- <sup>EN</sup>	Prop	erties Usage <u>H</u> elp



□ Toggle the "Start" bit in the program file "LAD 2 - MAIN".



□ Look after the issue in the data file "N-10MBX\_REQ".

	🔁 Data I	File N10 (he	בא) MBX_	_RES	- D ×	
Channel Configuration	Offset	0	(Symbol)	Description		
🗐 🦳 Program Files	N10:0	4100				
	N10:1	125				
	N10:2	FFF				
	10.2	¥000				
	10:3	1000				
🗄 🧰 Data Files	N10:4	0				
🔀 Cross Reference	N10:5	0				
🚺 OO - OUTPUT	N10:6	0				
🚺 11 - INPUT	N10:7	0				
S2 - STATUS	110.8	0				
🚺 B3 - BINARY						
14 - TIMER	N10:9	FUU				
C5 - COUNTER	N10:10	0			<b>*</b> 1	
🚹 R6 - CONTROL	l'ar				- E	
N7 - INTEGER	<u> </u>					
		N10:0		Radix:   Hex/BCL		
N9 - MBX_REQ	Symbol			Columns	1 🗖	
📔 N10 - MBX_RES	Desc:					
B11 - AUX_VAR_1	N10 -	Prope	nties	Jsage H	elp	

DataExchange.RSS
 This sample file contains a very simple program that shows how to
 read and write digital AS-Interface inputs and outputs.



- 5. If your AS-Interface Scanner is not mounted in slot 1, you can change this setting.
- a. CompactLogix setup In the project tree, double click "IO Configuration". Then drag and drop the module with ID-Code 4660 to another slot number.



#### b. MicroLogix setup

In the project tree, double click "IO Configuration". Then drag and drop the module with ID-Code 1416 to another slot number.

III I/O Configuration	
	Current Cards Available
	Filter All IO
	Part # Description
Read IO Co <u>n</u> fig.	1769-HSC High Speed Counter
	1769-IA8I 8-Input Isolated 120 VAC
RowerSupply	1769-IA16 16-Input 79/132 VAC
	1769-IF4 Analog 4 Channel Input Module
	1769-IF4I Analog 4 Channel Input Module
# Part # Description 🔺	1769-IF4X0F2 Analog 4 Chan Inp/2 Chan Out
0 Bul.1764 MicroLogix 1500 LRP Series C	1769-IF4FX0F2F4Ch Input / 2Ch Output Fast Analog
1 OTHER I/O Module · ID Code = 1416	1769-IF8 Analog 8 Chan Input
2 OTHER I/O Module - ID Code = 1416	1769-IG16 16-point TTL input/A
3	1769-IM12 12-Input 159/265 VAC
4	1769-IQ16 16-Input 10/30 VDC
5	1769-IQ6XDW4_6-Input 24 VDC, 4-Output (RLY)
6	1769-IQ16F 16-Input High Speed 24 VDC
7	1769-IQ32 32-Input High Density 24 VDC
8	1769-IQ32T 32-point 24VDC Sink/Source Input
9	1769-IR6 6 Channel RTD Module
10	1769-116 6 Channel Thermocouple Module
111	1769-UA8 8-Uutput 120/240 VAC
12	1769-0A16 16-Output 120/240 VAC
	1769-0B8 8-Output High Current 24 VDC
Adv Config Help Hide All Cards	1769-0B16 16-0utput 24 VDC Source 🗨



Properties window for	scanner revision	prior to 1.3
-----------------------	------------------	--------------

Module #1: OTHER - I/O Module - ID Code = 1416	×
Expansion General Configuration	
Variate ID.	
Vendor ID:	
Product Type : 12	
Product Code : 1416	
Series: B	
Input Words : 52	
Output Words : 52	
Extra Data Length : 0	
Japane Configuration Error :	
OK Cancel Apply H	lelp

### Properties window for scanner revision higher as 1.3

Module #2: OTHER - I/O Module - ID Code = 1416	×
Expansion General Configuration	
·	
Vendor ID: 645	
Product Type : 12	
Product Code : 1416	
Series: B	
Input Words : 54	
Output Words : 54	
Extra Data Length : 0	
Ignore Configuration Error :	
OK Cancel Apply He	elp

 If you use another controller type than the Micrologix 1500 LSP, you can change the controller type. In the project view double click on "Controller Properties". Click on the flag "Controller Communications" and then on the button "Who Active ...". AS-Interface 3.0 Scanner for ALLEN-BRADLEY CompactLogix and MicroLogix 1500 Appendix: Putting the AS-i Scanner into Operation with MicroLogix



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		-
D01_MODULE.R55	Controller Properties	×
E- Project	General Compiler Passwords Controller Communications	F
🕀 🦳 Help		
E Controller	Driver Route Processor Node:	
Controller Properties	Micro_com2 v local 1 Decimal (=1	
	Uctalj	
	Last Configured (System)	
IO Configuration	la antitati i	
	Micro_com2 Node 1d local	
Program Files		
SYS0-	Heply I meout	
SYS1-	10 (Sec.) Who Active.	
LAD 2 - MAIN		
LAD S - MAILBOX		
Data Files	Comms Path FABRICIU/Micro_com21	
	OK Abbrechen Übernehmen Hilfe	
S2. STATUS	1	
02- STATOS		



4. Choose your controller.

D01_MODULE.R55	Controller Properties	×
Project	General Compiler Passwords Controller Communications	
🕀 🦲 Help		-1
😑 🧰 Controller	Driver Route Processor Node:	
Controller Properties	Micro_com2 V local 1 Decimal (=1	
Processor Status	cong	
	Last Configured (System)	
IO Configuration		- 11
	Micro_com2 Node 1d local	
Program Files		
	Reply Timeout:	
SYS1-	10 (Sec.) Who Active	
A LAD 2 - MAIN		- 11
AD 5 - MAILBOX		
😑 🧰 Data Files	Comms Path FABRICIDIMicro_com2\1	
🔯 Cross Reference		
	DK Abbreshen Übersekreen Hille	
11 - INPUT	Addrechen Obernenhen hire	
S2 - STATUS	1	_

5. Adjust the communication settings by using the program RSLinx:





#### 13. Your opinion is important to us!

Please give us an opportunity to hear your suggestions, wishes and criticisms regarding this Manual.

We read every note or comment, no matter how small, and incorporate them into the documentation whenever possible.

Fill out the form on the following page and fax it to us or send your remarks, suggestions for improvement etc. to the following address:

Bihl+Wiedemann GmbH Technical Support Floßwörthstr. 41 D - 68199 Mannheim Germany Phone: +49 (0) 621-33 99 6-0 Fax: +49 (0) 621-33 9 22 39 eMail: mail@bihl-wiedemann.de

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Firm	Name:			
	Dept.			
Street	Position:			
City	Tel.:			
	Fax:			
	eMail:			
Which manual are you using?	-			
Title		Publication date:		
My opinion of the manual				
Design		Yes	Partly	No
Is the table of contents clearly laid out?				
Are the illustrations/graphics comprehensible/meaningful?				
Are the text explanations for the illustrations sufficient?				
Does the quality of the images meet your expectations?				
Does the pagination encourage rapid finding of information?				

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Content	Yes	Partly	No
Are the formulations/technical terms understandable?			
Are the examples relevant?			
Is the Manual easy to handle?			
Is there important information missing? If yes, explain.			

#### Comments: