

LAN I2C Adapter VM
Interface Manual
TCP / UDP
I2C

(Rev 1.0)

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COMMANDS

There are three types of commands that can be executed depending on the selected operating mode. The general commands are an exception and can always be executed regardless of the operating mode.

1 GENERALS COMMANDS

1.1 SET MODE

This command selects one of following three operating modes: MASTER_MODE, SLAVE_MODE OR PROG_MODE.

OUT / Length 4 bytes

CMD		Mode	SlvAddr
Low	High		
0x00	0x00	0x00..0x03	0x02..0xFE

IN / Length 6 bytes

Packet Length		CMD		Mode	SlvAddr
Low	High	Low	High		
0x06	0x00	0x00	0x00	0x00..0x03	0x02..0xFE

Field	Size (Byte)	Value	Description
CMD	2	0x0000	SET MODE command
Mode	1	0x00	Reads current mode
		0x01	MASTER_MODE
		0x02	SLAVE_MODE
		0x03	PROG_MODE
SlvAddr	1	0x02..0xFE	Is the slave address of the adapter (valid only in SLAVE_MODE). 8Bit value with LSB set to zero. Only in SLAVE_MODE, else do not care.
Packet Length	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

1.2 GET NET CONFIG

This command is used to read the current network settings from the *LAN I2C Adapter VM*.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x09

IN / Length 33 bytes

Packet Length		CMD		GAR	SUBR	IP	TCP Port		UDP Port	
Low	High	Low	High	Lo..Hi	Lo..Hi	Lo..Hi	Lo	Hi	Lo	Hi
0x1C	0x00	0x00	0x09	4 bytes	4 bytes	4 bytes	2 bytes		2 bytes	

TCP Port (VM)		UDP Port (VM)		SHAR	PHY LINK	KEEP ALIVE	KEEP ALIVE (VM)
Lo	Hi	Lo	Hi	Lo..Hi			
2 bytes		2 bytes		6 bytes	1 byte	1 byte	1 byte

Field	Size (Byte)	Value	Description
CMD	2	0x0900	GET NET CONFIG command
GAR	4		Gateway IP Address Register e.g. 0xC0A80101 = 192.168.1.1
SUBR	4		Subnet Mask Register e.g. 0xFFFFF00 = 255.255.255.0
IP	4		IP Address Register e.g. 0xC0A80164 = 192.168.1.100
TCP Port	2		TCP Port e.g. 0x1388 = 5000
UDP Port	2		UDP Port e.g. 0x0BB8 = 3000
TCP Port (VM)	2		TCP Port for direct communication VM 8051 e.g. 0x1388 = 5000
UDP Port (VM)	2		UDP Port for direct communication VM 8051 e.g. 0x0BB8 = 3000
SHAR	6		Hardware Address Register -MAC- e.g. [0x00, 0x50, 0xC2, 0x00, 0x00, 0x00] = 00-50-C2-00-00-00
PHY LINK	1	0x00..0xFF	Time unit is 5 s. A value of 12 corresponds to 60 seconds
KEEP ALIVE	1	0x00..0xFF	Time unit is 5 s. A value of 12 corresponds to 60 seconds. KEEP ALIVE is disabled if value is set to zero.
KEEP ALIVE (VM)	1	0x00..0xFF	Time unit is 5 s. A value of 12 corresponds to 60 seconds. KEEP ALIVE is disabled if value is set to zero.
Packet Length	2	0x001C	Number of bytes in the packet including <i>Packet Length</i>

1.2 MEM WR 8BIT

This command is used to write one BYTE / 8Bit value into the non-volatile memory.

OUT / Length 5 bytes

CMD		Addr		Value
Low	High	Low	High	
0x00	0x01	0x0100..0x7FFF		0x00..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x01	

Field	Size (Byte)	Value	Description
CMD	2	0x0100	MEM WR 8BIT command
Addr	2	0x0100..0x7FFF	Memory address in the range 0x0100 to 0x7FFF. The first 256 bytes are READ ONLY.
Value	1	0x00..0xFF	8Bit value to write into memory.
Result	1	0x00	RESULT OK
		0x01	ERROR_MEMORY_WRITE
		0x03	ERROR_MEMORY_RESTRICTED
		0x04	ERROR_MEMORY_PROTECTED
		0x05	ERROR_MEMORY_INVALID_ADDR
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.3 MEM WR 16BIT

This command is used to write one WORD / 16Bit value into the non-volatile memory.

OUT / Length 6 bytes

CMD		Addr		Value	
Low	High	Low	High	Low	High
0x00	0x02	0x0100..0x7FFF		0x0000..0xFFFF	

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x02	

Field	Size (Byte)	Value	Description
CMD	2	0x0200	MEM WR 16BIT command
Addr	2	0x0100..0x7FFF	Memory address in the range 0x0100 to 0x7FFF. The first 256 bytes are READ ONLY. ¹
Value	2	0x0000..0xFFFF	16Bit value to write into memory.
Result	1	0x00	RESULT OK
		0x01	ERROR_MEMORY_WRITE
		0x03	ERROR_MEMORY_RESTRICTED
		0x04	ERROR_MEMORY_PROTECTED
		0x05	ERROR_MEMORY_INVALID_ADDR
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.4 MEM WR 32BIT

This command is used to write one DWORD / 32Bit value into the non-volatile memory.

OUT / Length 8 bytes

CMD		Addr		Value			
Low	High	Low	High	Low			High
0x00	0x03	0x0100..0x7FFF		0x00000000..0xFFFFFFFF			

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x03	

Field	Size (Byte)	Value	Description
CMD	2	0x0300	MEM WR 32BIT command
Addr	2	0x0100..0x7FFF	Memory address in the range 0x0100 to 0x7FFF. The first 256 bytes are READ ONLY. ¹
Value	4	0x00000000..0xFFFFFFFF	32Bit value to write into memory.
Result	1	0x00	RESULT OK
		0x01	ERROR MEMORY WRITE
		0x03	ERROR MEMORY RESTRICTED
		0x04	ERROR MEMORY PROTECTED
		0x05	ERROR MEMORY INVALID ADDR
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.4 MEM WR BLOCK

This command is used to write a block of data into the non-volatile memory.

OUT / Length 7 to 38 bytes

CMD		Addr		Size		Data
Low	High	Low	High	Low	High	Up to 64 bytes
0x00	0x04	0x0100	0x7FFF	0x0001	0x0040	0x00..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x04	

Field	Size (Byte)	Value	Description
CMD	2	0x0400	MEM WR BLOCK command
Addr	2	0x0100..0x7FFF	Memory address in the range 0x0100 to 0x7FFF. The first 256 bytes are READ ONLY. ¹
Data	1..64	0x00..0xFF	Page write buffer up to 64 bytes ¹
Size	2	0x0000..0x0040	Number of bytes to write
Result	1	0x00	RESULT OK
		0x01	ERROR_MEMORY_WRITE
		0x03	ERROR_MEMORY_RESTRICTED
		0x04	ERROR_MEMORY_PROTECTED
		0x05	ERROR_MEMORY_INVALID_ADDR
		0x06	ERROR_MEMORY_INVALID_SIZE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1- Note: WORD / DWORD / Page write operations are limited to writing bytes within a single physical page, regardless of the number of bytes actually being written. Physical page boundaries start at addresses that are integer multiples of the page buffer size (or ‘page size’) and end at addresses that are integer multiples of [page size - 1]. If a page write command attempts to write across a physical page boundary, the result is that the data wraps around to the beginning of the current page (overwriting data previously stored there), instead of being written to the next page as might be expected. It is therefore necessary for the application software to prevent page write operations that would attempt to cross a page boundary.

1.5 MEM RD 8BIT

This command is used to read one BYTE / 8Bit value from memory.

OUT / Length 4 bytes

CMD		Addr	
Low	High	Low	High
0x00	0x05	0x0000..0x7FFF	

IN / Length 6 bytes

Packet Length		CMD		Result	Value
Low	High	Low	High		
0x06	0x00	0x00	0x05		0x00..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x0500	MEM RD 8BIT command
Addr	2	0x0000..0x7FFF	Memory address in the range 0x0000 to 0x7FFF.
Value	1	0x00..0xFF	8Bit value read from memory.
Result	1	0x00	RESULT OK
		0x02	ERROR MEMORY READ
		0x03	ERROR MEMORY RESTRICTED
		0x04	ERROR MEMORY PROTECTED
		0x05	ERROR MEMORY INVALID ADDR
Packet Length	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

1.6 MEM RD 16BIT

This command is used to read one WORD / 16Bit value from memory.

OUT / Length 4 bytes

CMD		Addr	
Low	High	Low	High
0x00	0x06	0x0000..0x7FFF	

IN / Length 7 bytes

Packet Length		CMD		Result	Value	
Low	High	Low	High		Low	High
0x07	0x00	0x00	0x06		0x0000..0xFFFF	

Field	Size (Byte)	Value	Description
CMD	2	0x0600	MEM RD 16BIT command
Addr	2	0x0000..0x7FFF	Memory address in the range 0x0000 to 0x7FFF.
Value	2	0x0000..0xFFFF	16Bit value read from memory.
Result	1	0x00	RESULT OK
		0x02	ERROR MEMORY READ
		0x03	ERROR MEMORY RESTRICTED
		0x04	ERROR MEMORY PROTECTED
		0x05	ERROR MEMORY INVALID ADDR
Packet Length	2	0x0007	Number of bytes in the packet including <i>Packet Length</i>

1.7 MEM RD 32BIT

This command is used to read one DWORD / 32Bit value from memory.

OUT / Length 4 bytes

CMD		Addr	
Low	High	Low	High
0x00	0x07	0x0000..0x7FFF	

IN / Length 9 bytes

Packet Length		CMD		Result	Value		
Low	High	Low	High		Low		High
0x09	0x00	0x00	0x07		0x00000000..0xFFFFFFFF		

Field	Size (Byte)	Value	Description
CMD	2	0x0700	MEM RD 32BIT command
Addr	2	0x0000..0x7FFF	Memory address in the range 0x0000 to 0x7FFF.
Value	4	0x00000000.. 0xFFFFFFFF	32Bit value read from memory.
Result	1	0x00	RESULT OK
		0x02	ERROR MEMORY READ
		0x03	ERROR MEMORY RESTRICTED
		0x04	ERROR MEMORY PROTECTED
		0x05	ERROR MEMORY INVALID ADDR
Packet Length	2	0x0009	Number of bytes in the packet including <i>Packet Length</i>

1.8 MEM RD BLOCK

This command is used to read a block of data (up to 1024 bytes) from memory.

OUT / Length 6 bytes

CMD		Addr		Size	
Low	High	Low	High	Low	High
0x00	0x08	0x0000..0x7FFF		0x0001...0x0400	

IN / Length 8 to 1032 bytes

Packet Length		CMD		Result	Reserved	Size		Data
Low	High	Low	High			Low	High	Up to 1024 bytes
8..1032		0x00	0x08		0x00	0x0000..0x0400		0x00..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x0800	MEM RD BLOCK command
Addr	2	0x0000..0x7FFF	Memory address in the range 0x0000 to 0x7FFF.
Reserved	1	0x00	Reserved byte
Size	2	0x0000..0x0400	Number of byte (to read) / (read)
Data	0..1024	0x00..0xFF	Data read from memory
Result	1	0x00	RESULT OK
		0x02	ERROR MEMORY READ
		0x03	ERROR MEMORY RESTRICTED
		0x04	ERROR MEMORY PROTECTED
		0x05	ERROR MEMORY INVALID ADDR
		0x06	ERROR MEMORY INVALID SIZE
Packet Length	2	0x0008..0x0408	Number of bytes in the packet including <i>Packet Length</i>

1.9 SAVE SETTINGS

This command is used to store the settings (operation mode, slave address and SCL frequency) into onboard memory.

OUT / Length: 2 bytes

CMD	
Low	High
0x00	0x0A

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x0A	

Field	Size (Byte)	Value	Description
CMD	2	0x0A00	SAVE SETTINGS command
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.10 RESET SETTINGS

This command is used to load and write factory (default) settings into onboard memory:

MASTER_MODE

SLAVE_ADDRESS = 0xFE

SCL_FREQUENCY = 100 kHz

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x0B

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x0B	

Field	Size (Byte)	Value	Description
CMD	2	0x0B00	RESET SETTINGS command
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.11 GET MEM PROTECT

This command is used to read the current settings of memory protection.

OUT / Length 3 bytes

CMD	
Low	High
0x00	0x0C

IN / Length 6 bytes

Packet Length		CMD		Result	Protect
Low	High	Low	High		
0x06	0x00	0x00	0x0C		0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0C00	SET MEM PROTECT command
Protect	1	0x00	Protection disabled / Write operations enabled
		0x01	Protection enabled / Write operations disabled
Result	1	0x00	RESULT OK
		0x02	ERROR MEMORY READ
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.12 GET IRQ MODE

This command is used to read the configuration of the interrupt input while operating in Master mode.

OUT / Length 3 bytes

CMD	
Low	High
0x00	0x0D

IN / Length 5 bytes

Packet Length		CMD		IRQMode
Low	High	Low	High	
0x05	0x00	0x00	0x0D	0x00..0x02

Field	Size (Byte)	Value	Description
CMD	2	0x0D20	GET IRQ MODE command
IRQMode	1	0x00	Interrupt disabled
		0x01	Interrupt enabled / falling edge sensitive
		0x02	Interrupt enabled / rising edge sensitive
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.13 VM START REQUEST

This command is used to send a request to start the 8051 virtual machine. If the bytecode is already loaded, the VM starts executing the bytecode and the VM status is set to VM_RUNNING.

Note: The response to this command means the command has been submitted, but the VM may not have started yet. Read the current VM status with the VM GET STATE command.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x51

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x00	0x51

Field	Size (Byte)	Value	Description
CMD	2	0x5100	VM START REQUEST command
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

1.14 VM STOP REQUEST

This command is used to send a request to stop the 8051 virtual machine. The VM stops executing the bytecode and the VM status is set to VM_ABORTED.

Note: The response to this command means the command has been submitted, but the VM may not have been stopped yet. Read the current VM status with the VM GET STATE command.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x52

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x00	0x52

Field	Size (Byte)	Value	Description
CMD	2	0x5200	VM STOP REQUEST command
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

1.15 VM GET STATE

This command is used to read the current state of the 8051 virtual machine.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x53

IN / Length 5 bytes

Packet Length		CMD		VM State
Low	High	Low	High	
0x05	0x00	0x00	0x53	0x00..0x03

Field	Size (Byte)	Value	Description
CMD	2	0x5300	VM GET STATE command
VM State	1	0x00	VM ABORTED
		0x01	VM RUNNING
		0x02	VM ABORT REQUEST
		0x03	VM START REQUEST
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.16 VM IRQ REQUEST

This command is used to send up to 255 bytes to the 8051 virtual machine. If the VM is already running and the interrupt is enabled, the VM jumps into the corresponding service routine. Check the command VM IRQ RESULT to check if the VM has received and accepted the data.

OUT / Length 4 to 258 bytes

CMD		Size	Data
Low	High		up to 255 bytes
0x00	0x54	0x01..0xFF	0x00..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x54	

Field	Size (Byte)	Value	Description
CMD	2	0x5400	VM IRQ REQUEST command
Data	1..255	0x00..0xFF	Up to 255 bytes of data to write to VM
Size	1	0x01..0xFF	Number of bytes to write
Result	1	0x00	RESULT OK
		0x08	ERROR VM ABORTED
		0x0D	ERROR VM IRQ DATA SIZE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.17 VM IRQ RESULT

This command is used to read the result of the last VM IRQ REQUEST command. The result is equal to 1 if the data has been received by the VM and the data is available for further processing.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x55

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x55	

Field	Size (Byte)	Value	Description
CMD	2	0x5500	VM IRQ RESULT command
Result	1	0x00	RESULT_OK
		0x08	ERROR_VM_ABORTED
		0x0E	ERROR_VM_IRQ_REQUEST or request sill pending
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.18 VM RESET

This command is used to delete the VM's code memory and to reset the VM.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x5B

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x5B	

Field	Size (Byte)	Value	Description
CMD	2	0x5B00	VM RESET command
Result	1	0x00	RESULT_OK
		0x08	ERROR_VM_RUNNING
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.19 VM CODE LOADED

This command is used to check if a binary file has already been loaded into the VM's code memory and verified.

OUT / Length 2 bytes

CMD	
Low	High
0x00	0x5C

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x5C	

Field	Size (Byte)	Value	Description
CMD	2	0x5C00	VM CODE LOADED command
Result	1	0x00	RESULT_OK
		0x08	ERROR_VM_RUNNING
		0x0C	ERROR_VM_CODE_NOT_LOADED
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.20 VM LOAD CODE

This command is used to write a block of data into the VM code memory (RAM).

OUT / Length 7 to 1030 bytes

CMD		Addr		Size		Data
Low	High	Low	High	Low	High	Up to 1024 bytes
0x00	0x56	0x0000..0x3FFF		0x0001..0x0400		0x00..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x56	

Field	Size (Byte)	Value	Description
CMD	2	0x5600	VM CODE LOAD command
Addr	2	0x0000..0x3FFF	The size of the VM's code memory area is 16K bytes. The memory address is in the range from 0x0000 to 0x3FFF
Size	2	0x0001..0x0400	Number of bytes to write
Data	1..1024	0x00..0xFF	Up to 1024 bytes
Result	1	0x00	RESULT_OK
		0x07	ERROR_VM_RUNNING
		0x09	ERROR_VM_CODE_ADDR
		0x0A	ERROR_VM_CODE_SIZE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.21 VM VERIFY CODE

The next step after loading the bytecode into the VM's memory is to verify the bytecode. This is done by writing the checksum of the bytecode to the VM. The VM calculates the checksum and compares it with the received checksum. The checksum is a 32Bit 2's complement of the sum of the bytecode. The sum of the bytecode and the checksum should add up to 0x00000000.

OUT / Length 8 bytes

CMD		Size		Checksum			
Low	High	Low	High	Low			High
0x00	0x57	0x0001	0x3FFF	0x00000000..0xFFFFFFFF			

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x57	

Field	Size (Byte)	Value	Description
CMD	2	0x5700	VM VERIFY CODE command
Size	2	0x0001..0x3FFF	Size of bytecode already loaded into VM's memory
Checksum	4	0x00000000.. 0xFFFFFFFF	The checksum to compare with. 32Bit 2's complement of the sum of the bytecode
Result	1	0x00	RESULT OK
		0x07	ERROR VM RUNNING
		0x0A	ERROR VM CODE SIZE
		0x0B	ERROR VM CODE CHECKSUM
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.22 VM LOAD FROM EEPROM

This command is used to load the VM bytecode from the EEPROM at the given address (*Addr*) to VM code memory.

OUT / Length 4 bytes

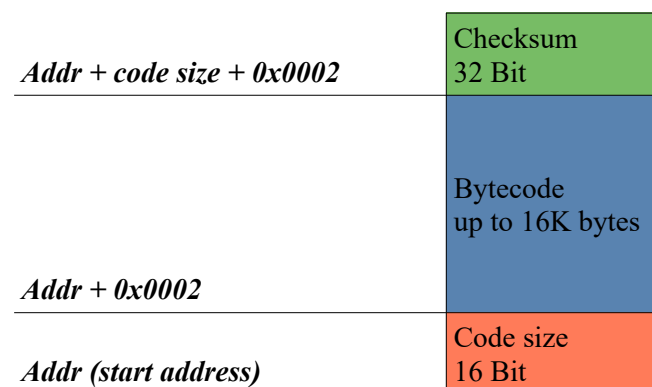
CMD		Addr	
Low	High	Low	High
0x00	0x58	0x0100..0x7FFF	

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x58	

Field	Size (Byte)	Value	Description
CMD	2	0x5800	VM LOAD FROM EEPROM command
Addr	2	0x0100..0x7FFF	The size of the EEPROM is 32K bytes. Memory address in the range from 0x0100 to 0x7FFF.
Result	1	0x00	RESULT OK
		0x02	ERROR MEMORY_READ
		0x05	ERROR MEMORY_INVALID_ADDR
		0x07	ERROR VM_RUNNING
		0x0A	ERROR VM_CODE_SIZE
		0x0B	ERROR VM_CODE_CHECKSUM
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

Use the command MEM WR BLOCK to download the bytecode into the EEPROM. The size of the EEPROM is 32K bytes. The bytecode size (2 bytes) is written to address *Addr*, followed by the bytecode up to 16K bytes to address (*Addr + 2*), and finally the checksum (4 bytes) to address (*Addr + code size + 2*).



1.23 VM SET PARAM

The bytecode can be automatically loaded from the EEPROM into the VM after the adapter powered on and booted. *Addr* is the address where the bytecode is located.

OUT / Length 5 bytes

CMD		Addr		Load Options
Low	High	Low	High	
0x00	0x59	0x0100..0x7FFF		0x00..0x03

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x00	0x59	

Field	Size (Byte)	Value	Description
<i>CMD</i>	2	0x5900	VM SET PARAM command
<i>Addr</i>	2	0x0100..0x7FFF	The size of the EEPROM is 32K bytes. Memory address in the range 0x0100 to 0x7FFF.
<i>Load Options</i>	1	Bit[0]	0: do not load; 1 : load bytecode into VM after boot
		Bit[1]	0: do not start; 1 : start bytecode in VM after boot
		Bit[7:2]	Reserved. Write zeros
<i>Result</i>	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
		0x03	ERROR_MEMORY_RESTRICTED
<i>Packet Length</i>	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.24 VM GET PARAM

This command is used to read the settings of VM 8051.

OUT / Length 5 bytes

CMD	
Low	High
0x00	0x5A

IN / Length 5 or 8 bytes

Packet Length		CMD		Result	Load Options	Addr	
Low	High	Low	High			Low	High
5 or 8 bytes		0x00	0x5A		0x00..0x03	0x0100..7FFF	

Field	Size (Byte)	Value	Description
<i>CMD</i>	2	0x5A00	VM GET PARAM command
<i>Addr</i>	2	0x0100..0x7FFF	The address where the bytecode is located
<i>Load Options</i>	1	Bit[0]	0: do not load; 1 : load bytecode into VM after boot
		Bit[1]	0: do not start; 1 : start bytecode in VM after boot
		Bit[7:2]	Reserved
<i>Result</i>	1	0x00	RESULT_OK
		0x02	ERROR_MEMORY_READ
<i>Packet Length</i>	2	0x0005 / 0x0008	Number of bytes in the packet including <i>Packet Length</i>

1.25 VM DATA

This IN Packet is sent to the client from the virtual machine VM 8051.

IN / Length 7 to 261 bytes

Packet Length		CMD		Size		Data
Low	High	Low	High	Low	High	Up to 255 bytes
0x0007	..0x0105	0x00	0x50	0x0001	..0x00FF	0x00..0xFF

Field	Size (Byte)	Value	Description
<i>CMD</i>	2	0x5000	VM 8051 DATA
<i>Size</i>	2	0x0001..0x00FF	Number of bytes received from VM 8051
<i>Data</i>	1..255	0x00..0xFF	Data received from VM 8051
<i>Packet Length</i>	2	0x0007..0x0105	Number of bytes in the packet including <i>Packet Length</i>

2 PROG MODE COMMANDS

2.1 SET GAR

This command is used to set a new value for GAR (Gateway IP Address Register). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 6 bytes

CMD		GAR			
Low	High	Low			High
0x10	0x01	0x00000000..0xFFFFFFFF			

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x01	

Field	Size (Byte)	Value	Description
CMD	2	0x0110	SET GAR command
GAR	4	0x00000000.. 0xFFFFFFFF	Gateway IP Address Register e.g. 0xC0A80101 = 192.168.1.1
Result	1	0x00	RESULT OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.2 SET SUBR

This command is used to set a new value for SUBR (Subnet Mask Register). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 6 bytes

CMD		SUBR			
Low	High	Low			High
0x10	0x02	0x00000000..0xFFFFFFFF			

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x02	

Field	Size (Byte)	Value	Description
CMD	2	0x0210	SET GAR command
SUBR	4	0x00000000.. 0xFFFFFFFF	Subnet Mask Register e.g. 0xFFFFFFFF00 = 255.255.255.0
Result	1	0x00	RESULT OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.3 SET SHAR

This command is used to set a new value for SHAR (Hardware Address Register -MAC-). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 8 bytes

CMD		SHAR					
Low	High						
0x10	0x03	6Bytes					

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x03	

Field	Size (Byte)	Value	Description
CMD	2	0x0310	SET GAR command
SHAR	6		Hardware Address Register (MAC) e.g. 0x00, 0x00, 0x00, 0x00, 0x00, 0x00
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.4 SET IP

This command is used to set a new value for IP (IP Address Register). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 6 bytes

CMD		IP			
Low	High	Low			High
0x10	0x04	0x00000000..0xFFFFFFFF			

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x04	

Field	Size (Byte)	Value	Description
CMD	2	0x0410	SET IP command
IP	4	0x00000000.. 0xFFFFFFFF	IP Address Register e.g. 0xC0A80164 = 192.168.1.100
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.5 SET TCP PORT

This command is used to set a new value for TCP PORT (TCP listening port number). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		TCP PORT	
Low	High	Low	High
0x10	0x05	0x0000..0xFFFF	

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x05	

Field	Size (Byte)	Value	Description
CMD	2	0x0510	SET TCP PORT command
TCP PORT	2	0x0000..0xFFFF	TCP Port number e.g. 0x1388 = 5000
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.6 SET UDP PORT

This command is used to set a new value for UDP PORT (UDP port number). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		UDP PORT	
Low	High	Low	High
0x10	0x06	0x0000..0xFFFF	

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x06	

Field	Size (Byte)	Value	Description
CMD	2	0x0610	SET UDP PORT command
UDP PORT	2	0x0000..0xFFFF	UDP Port number e.g. 0x0BB8 = 3000
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.7 SET TCP PORT (VM)

This command is used to set a new value for TCP PORT (TCP listening port number). This port is intended for direct communication between a client and the VM 8051. The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		TCP PORT	
Low	High	Low	High
0x10	0x07	0x0000..0xFFFF	

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x07	

Field	Size (Byte)	Value	Description
CMD	2	0x0710	SET TCP PORT command
TCP PORT	2	0x0000..0xFFFF	TCP Port number e.g. 0x1388 = 5000
Result	1	0x00	RESULT OK
		0x01	ERROR MEMORY WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.8 SET UDP PORT (VM)

This command is used to set a new value for UDP PORT (UDP listening port number). This port is intended for direct communication between a client and the VM 8051. The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		UDP PORT	
Low	High	Low	High
0x10	0x08	0x0000..0xFFFF	

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x08	

Field	Size (Byte)	Value	Description
CMD	2	0x0810	SET UDP PORT command
UDP PORT	2	0x0000..0xFFFF	UDP Port number e.g. 0x0BB8 = 3000
Result	1	0x00	RESULT OK
		0x01	ERROR MEMORY WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.9 SET KEEP ALIVE TIME

This command is used to set the time interval for sending automatic KEEP ALIVE packets. It only applies to TCP sockets. If the value is set to zero, then the automatic KEEP ALIVE is deactivated. The time unit is 5 seconds. A value of 12 corresponds to 60 seconds, in this case KEEP ALIVE packets are sent every 60 seconds (1 minute). Note: KEEP ALIVE packets are only transmitted after data has been received from and sent to a client. If a client fails to answer a KEEP ALIVE packet, the socket is disconnected. The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		KP ALIVE TIME
Low	High	
0x10	0x0C	0x00..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x0C	

Field	Size (Byte)	Value	Description
CMD	2	0x0C10	SET KEEP ALIVE TIME command
KEEP ALIVE TIME	1	0x00..0xFF	Time interval, 5 seconds units e.g. 0x0C = 12 corresponds to 60 seconds
Result	1	0x00	RESULT OK
		0x01	ERROR MEMORY WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.10 SET KEEP ALIVE TIME (VM)

This command is used to set the time interval for sending automatic KEEP ALIVE packets. It only applies to TCP sockets. If the value is set to zero, then the automatic KEEP ALIVE is deactivated. The time unit is 5 seconds. A value of 12 corresponds to 60 seconds, in this case KEEP ALIVE packets are sent every 60 seconds (1 minute). Note: KEEP ALIVE packets are only transmitted after data has been received from and sent to a client. If a client fails to answer a KEEP ALIVE packet, the socket is disconnected. The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		KP ALIVE TIME
Low	High	
0x10	0x0D	0x00..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x0D	

Field	Size (Byte)	Value	Description
CMD	2	0x0C10	SET KEEP ALIVE TIME command
KEEP ALIVE TIME	1	0x00..0xFF	Time interval, 5 seconds units e.g. 0x0C = 12 corresponds to 60 seconds
Result	1	0x00	RESULT OK
		0x01	ERROR MEMORY WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.11 SET PHYLINK CHECK TIME

This command is used to set the time interval for checking the network cable connection. The time unit is 5 seconds. A value of 12 corresponds to 60 seconds, in this case the PHYLINK and cable connection are checked every 60 seconds (1 minute). The new value is written directly into the memory (EEPROM). The new value is valid after power-up or after a REINIT command.

OUT / Length 4 bytes

CMD		PHYLINK TIME
Low	High	
0x10	0x0E	0x01..0xFF

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x0E	

Field	Size (Byte)	Value	Description
CMD	2	0x0E10	SET PHYLINK CHECK TIME command
PHYLINK TIME	1	0x01..0xFF	Time interval, 5 seconds units e.g. 0x18 = 24 corresponds to 120 seconds
Result	1	0x00	RESULT OK
		0x01	ERROR MEMORY WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2.12 LOAD FACTORY SETTINGS

This command restores network settings to default settings. The new values is valid after power-up or after a REINIT command.

OUT / Length 2 bytes

CMD	
Low	High
0x10	0x09

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x10	0x09

Field	Size (Byte)	Value	Description
CMD	2	0x0910	LOAD FACTORY SETTINGS command
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

Default Network settings:

GAR (<i>Gateway IP Address Register</i>):	192.168.1.1
SUBR (<i>Subnet Mask Register</i>):	255.255.255.0
IP (<i>IP Address Register</i>):	192.168.1.100
SHAR (<i>Hardware Address register -MAC-</i>):	00-00-00-00-00-00
TCP/IP Port:	5000
UDP Port:	3000
TCP/IP Port (VM):	5001
UDP Port (VM):	3001
KEEP ALIVE Time Interval:	0 (disabled)
KEEP ALIVE Time Interval (VM):	0 (disabled)
PHY LINK Check Time Interval:	12 (60 seconds)

2.13 REINIT

This command reinitializes the adapter. The adapter will disconnect.

OUT / Length 2 bytes

CMD	
Low	High
0x10	0x0A

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x10	0x0A

Field	Size (Byte)	Value	Description
CMD	2	0x0A10	REINIT command
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

2.14 SET MEM PROTECT

This command is used to enable/disable write operation to the onboard memory (only user memory > 0x00FF) from accidental write operations. Writes to memory are disabled when **Protect** is set to 0x01. If **Protect** is set to 0x00, protection is disabled and writes are allowed.

OUT / Length 3 bytes

CMD		Protect
Low	High	
0x10	0x0B	0x00..0x01

IN / Length 5 bytes

Packet Length		CMD		Result
Low	High	Low	High	
0x05	0x00	0x10	0x0B	

Field	Size (Byte)	Value	Description
CMD	2	0x0B10	SET MEM PROTECT command
Protect	1	0x00	Protection disabled / Write operations enabled
		0x01	Protection enabled / Write operations disabled
Result	1	0x00	RESULT_OK
		0x01	ERROR_MEMORY_WRITE
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

3 MASTER MODE COMMANDS

3.1 WRITE I2C

This command is used to start an I2C WRITE transaction.

OUT / Length 7 to 1030 bytes

CMD		SlvAddr	Reserved	Size		data
Low	High			Low	High	Up to 1024 bytes
0x20	0x01	0x02..0xFE	0x00	0x0001..0x400		0x00..0xFF

IN / Length 8 bytes

Packet Length		CMD		SlvAddr	Result	Size	
Low	High	Low	High			Low	High
0x08	0x00	0x20	0x01	0x02..0xFE		0x0000..0x0400	

Field	Size (Byte)	Value	Description
CMD	2	0x0120	WRITE I2C command
SlvAddr	1	0x02..0xFE	Slave address
Size	2	0/1..1024	Number of bytes to write / written to slave address
Data	1..1024	0x00..0xFF	Data to write to slave address
Result	1	0x00	RESULT_OK
		0x20	ERROR_I2C_ERROR; Unknown error condition
		0x21	ERROR_I2C_ARBLOST; Arbitration lost
		0x22	ERROR_I2C_BUS_ERROR; I2C bus error
		0x23	ERROR_I2C_INVALID_WLEN; Invalid write length
		0x25	ERROR_I2C_NAK_WADDR; No acknowledgement received from slave during WRITE address phase
		0x27	ERROR_I2C_NAK_DAT; No acknowledgement received from slave during WRITE data phase
		0x28	ERROR_I2C_TIMEOUT
	0x29	ERROR_I2C_BUSY; I2C engine is busy	
Reserved	1	0x00	Reserved byte
Packet Length	2	0x0008	Number of bytes in the packet including <i>Packet Length</i>

3.2 READ I2C

This command is used to start and I2C READ transactions.

OUT / Length 6 bytes

CMD		SlvAddr	Reserved	Size	
Low	High			Low	High
0x20	0x02	0x02..0xFE	0x00	0x0001..0x400	

IN / Length 8 to 1032bytes

Packet Length		CMD		SlvAddr	Result	Size		Data
Low	High	Low	High			Low	High	Up to 1024 bytes
0x0008..0x0408		0x20	0x02	0x02..0xFE		0x0000..0x0400	0x00..0xFF	

Field	Size (Byte)	Value	Description
CMD	2	0x0220	READ I2C command
SlvAddr	1	0x02..0xFE	Slave address
Size	2	0/1..1024	Number of bytes to read / read from slave address
Data	1..1024	0x00..0xFF	Data read from slave address
Result	1	0x00	RESULT OK
		0x20	ERROR_I2C_ERROR; Unknown error condition
		0x21	ERROR_I2C_ARBLOST; Arbitration lost
		0x22	ERROR_I2C_BUS_ERROR; I2C bus error
		0x24	ERROR_I2C_INVALID_RLEN; Invalid read data length
		0x26	ERROR_I2C_NAK_RADDR; No acknowledgement received from slave during READ address phase
		0x28	ERROR_I2C_TIMEOUT
	0x29	ERROR_I2C_BUSY; I2C engine is busy	
Reserved	1	0x00	Reserved byte
Packet Length	2	0x0008..0x0408	Number of bytes in the packet including <i>Packet Length</i>

3.3 WRITE READ I2C

This command is used to perform an I2C WRITE transaction, then a REPEATED START and finally a READ transaction.

OUT / Length 9 to 1032 bytes

CMD		SlvAddr	Reserved	wSize		rSize		wData
Low	High			Low	High	Low	High	Up to 1024 bytes
0x20	0x08	0x02..0xFE	0x00	0x0001..0x0400	0x0001..0x0400		0x00..0xFF	

IN / Length: 8 to 1032 bytes

Packet Length		CMD		SlvAddr	Result	rSize		rData
Low	High	Low	High			Low	High	Up to 1024 bytes
0x0008..0x0408		0x20	0x08	0x02..0xFE		0x0000..0x0400	0x00..0xFF	

Field	Size (Byte)	Value	Description
CMD	2	0x0220	WRITE READ I2C command
SlvAddr	1	0x02..0xFE	Slave address
wSize	2	1..1024	Number of bytes to write to slave address
rSize	2	0/1..1024	Number of bytes to read / read from slave address
wData	1..1024	0x00..0xFF	Data to write to slave address
rData	0..1024	0x00..0xFF	Data read from slave address
Result	1	0x00	RESULT OK
		0x20	ERROR_I2C_ERROR; Unknown error condition
		0x21	ERROR_I2C_ARBLOST; Arbitration lost
		0x22	ERROR_I2C_BUS_ERROR; I2C bus error
		0x23	ERROR_I2C_INVALID_WLEN; Invalid write length
		0x24	ERROR_I2C_INVALID_RLEN; Invalid read data length
		0x25	ERROR_I2C_NAK_WADDR; No acknowledgement received from slave during WRITE address phase
		0x26	ERROR_I2C_NAK_RADDR; No acknowledgement received from slave during READ address phase
		0x27	ERROR_I2C_NAK_DAT; No acknowledgement received from slave during WRITE data phase
		0x28	ERROR_I2C_TIMEOUT
0x29	ERROR_I2C_BUSY; I2C engine is busy		
Reserved	1	0x00	Reserved byte
Packet Length	2	0x0008..0x0408	Number of bytes in the packet including <i>Packet Length</i>

3.4 CHECK SLAVE ADDRESS

This command is used to check if the slave address *SlvAddr* is connected to the I2C bus.

OUT / Length 3 bytes

CMD		SlvAddr
Low	High	
0x20	0x07	0x02..0xFE

IN / Length 6 bytes

Packet Length		CMD		SlvAddr	Result
Low	High	Low	High		
0x06	0x00	0x20	0x07	0x02..0xFE	

Field	Size (Byte)	Value	Description
<i>CMD</i>	2	0x0720	CHECK SLAVE ADDRESS command
<i>SlvAddr</i>	2	0x02..0xFE	The slave address to be checked
<i>Result</i>	1	0x00	RESULT OK
		0x2A	ERROR DEVICE NOT CONNECTED
<i>Packet Length</i>	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

3.5 SCAN I2C BUS

This command is used to scan I2C devices currently connected to the I2C bus.

OUT / Length 2 bytes

CMD	
Low	High
0x20	0x05

IN / Length 5 to 132 bytes

Packet Length		CMD		Size	Devices
Low	High	Low	High		Up to 127 bytes
0x0005..0x0084	0x20	0x05		0x00..0x7F	0x02..0xFE

Field	Size (Byte)	Value	Description
<i>CMD</i>	2	0x0520	SCAN I2C BUS command
<i>Size</i>	1	0x00..0x7F	Number of devices detected
<i>Devices</i>	0..127	0x02..0xFE	List of I2C devices were detected
<i>Packet Length</i>	2	0x0005..0x0084	Number of bytes in the packet including <i>Packet Length</i>

3.6 SET I2C FREQUENCY

This command is used to set the I2C clock frequency.

OUT / Length 8 bytes

CMD		Reserved	FREQ			
Low	High		Low			High
0x20	0x03	0x0000	0x000001F4..0x00061A80			

IN / Length 8 bytes

Packet Length		CMD		FREQ			
Low	High	Low	High	Low			High
0x08	0x00	0x20	0x03	0x00001F4..0x00061A80			

Field	Size (Byte)	Value	Description
CMD	2	0x0320	SET I2C FREQUENCY command
FREQ	4	0x000001F4.. 0x00061A80 500 Hz-400 kHz	32Bit value. The frequency in 1 Hertz units. 100.000 corresponds to 100kHz. The next possible frequency is then determined and set.
Reserved	2	0x0000	Reserved 2 bytes
Packet Length	2	0x0008	Number of bytes in the packet including <i>Packet Length</i>

3.7 GET I2C FREQUENCY

This command is used to read the current I2C SCL clock frequency.

OUT / Length 2 bytes

CMD	
Low	High
0x20	0x04

IN / Length 8 bytes

Packet Length		CMD		FREQ			
Low	High	Low	High	Low			High
0x08	0x00	0x20	0x04	0x00001F4..0x00061A80			

Field	Size (Byte)	Value	Description
CMD	2	0x0420	GET I2C FREQUENCY command
FREQ	4	0x000001F4.. 0x00061A80 500 Hz-400 kHz	32Bit value. The frequency in 1 Hertz units. 100.000 corresponds to 100kHz. The next possible frequency is then determined and set.
Packet Length	2	0x0008	Number of bytes in the packet including <i>Packet Length</i>

3.8 SET IRQ MODE

The adapter has an interrupt input. e.g. if you use an IO-Expander, you may connect its interrupt output with the interrupt input of the adapter. Then your software recognizes all events of the IO-Expander when the state of the IOs changes.

OUT / Length 3 bytes

CMD		IRQMode
Low	High	
0x20	0x06	0x00..0x02

IN / Length 5 bytes

Packet Length		CMD		IRQMode
Low	High	Low	High	
0x05	0x00	0x20	0x06	0x00..0x02

Field	Size (Byte)	Value	Description
CMD	2	0x0620	SET IRQ MODE command
IRQMode	1	0x00	Disable interrupt
		0x01	Enable interrupt / falling edge sensitive
		0x02	Enable interrupt / rising edge sensitive
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

3.9 IRQ EVENT

This IN report is sent to the client when the interrupt input is enabled and an interrupt is detected.

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x20	0x09

Field	Size (Byte)	Value	Description
CMD	2	0x0920	IRQ EVENT
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

4 SLAVE MODE COMMANDS

4.1 SET SLAVE ADDRESS

If the adapter operates in SLAVE_MODE, it is possible to change the slave address any time with this function. *SlvAddr* is the adapter's new slave address.

OUT / Length: 3 bytes

CMD		ucSlvAddr
Low	High	
0x30	0x83	0x02..0xFE

IN / Length 5 bytes

Packet Length		CMD		SlvAddr
Low	High	Low	High	
0x05	0x00	0x30	0x83	0x02..0xFE

Field	Size (Byte)	Value	Description
CMD	2	0x8330	SET SLAVE ADDRESS command
SlvAddr	1	0x02..0xFE	New slave address of the adapter (valid only in SLAVE_MODE). 8Bit value with LSB set to zero.
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

4.2 WRITE SLAVE BUFFER

This command is used to write data to the I2C slave output buffer.

OUT / Length 7 to 1030 bytes

CMD		Trigger	Reserved	Size		Data
Low	High			Low	High	
0x30	0x81	0x00..0x01	0x00	0x0001..0x0400	0x00..0xFF	Up to 1024 bytes

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x30	0x81

Field	Size (Byte)	Value	Description
CMD	2	0x8130	WRITE SLAVE BUFFER command
Trigger	1	0x00	Interrupt output disabled
		0x01	The adapter sends an interrupt signal to the master. Thus the adapter informs the master that there is data ready to read.
Size	2	0x0001..0x0400	Number of bytes to write to the output buffer.
Data	1..1024	0x00..0xFF	Data to write to the output buffer.
Reserved	1	0x00	Reserved byte
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

4.3 SLAVE DATA

This IN Packet is sent to the client when the adapter is operating in SLAVE_MODE and receiving data from an I2C master.

IN / Length 7 to 1030 bytes

Packet Length		CMD		Size		Data
Low	High	Low	High	Low	High	Up to 1024 bytes
0x0007	..0x0406	0x30	0x82	0x0001	..0x0400	0x00..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x8230	SLAVE DATA
Size	2	0x0001..0x0400	Number od bytes received from master
Data	1..1024	0x00..0xFF	Data received from master
Packet Length	2	0x0007..0x0406	Number of bytes in the packet including <i>Packet Length</i>

5 UNKNOWN COMMANDS

5.1 UNKNOWN COMMAND

This IN Packet is sent to the host when an unknown command was sent to the adapter.

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0xFF	0xFD

Field	Size (Byte)	Value	Description
CMD	2	0xFFFFD	UNKNOWN COMMAND
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

5.2 EXECUTE COMMAND DENIED

This IN Packet is sent to the client, e.g. when the adapter is operating in MASTER_MODE and the software tries to send SLAVE commands or PROG commands and vice versa.

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0xFF	0xFE

Field	Size (Byte)	Value	Description
CMD	2	0xFFFE	EXECUTE COMMAND DENIED
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

5.3 UNKNOWN MODE COMMAND

This IN Packet is sent to the host when an unknown mode command has been sent to the adapter.

IN / Length 4 bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0xFF	0xFF

Field	Size (Byte)	Value	Description
CMD	2	0xFFFF	UNKNOWN MODE COMMAND
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

6 Result Codes

RESULT_OK	0x00
ERROR_MEMORY_WRITE	0x01
ERROR_MEMORY_READ	0x02
ERROR_MEMORY_RESTRICTED	0x03
ERROR_MEMORY_PROTECTED	0x04
ERROR_MEMORY_INVALID_ADDR	0x05
ERROR_MEMORY_INVALID_SIZE	0x06
ERROR_VM_RUNNING	0x07
ERROR_VM_ABORTED	0x08
ERROR_VM_CODE_ADDR	0x09
ERROR_VM_CODE_SIZE	0x0A
ERROR_VM_CODE_CHECKSUM	0x0B
ERROR_VM_CODE_NOT_LOADED	0x0C
ERROR_VM_IRQ_DATA_SIZE	0x0D
ERROR_VM_IRQ_REQUEST	0x0E
ERROR_I2C_ERROR	0x20
ERROR_I2C_ARBLOST	0x21
ERROR_I2C_BUS_ERROR	0x22
ERROR_I2C_INVALID_WLEN	0x23
ERROR_I2C_INVALID_RLEN	0x24
ERROR_I2C_NAK_WADR	0x25
ERROR_I2C_NAK_RADR	0x26
ERROR_I2C_NAK_DAT	0x27
ERROR_I2C_TIMEOUT	0x28
ERROR_I2C_BUSY	0x29
ERROR_DEVCIE_NOT_CONNECTED	0x2A

Revision history

Rev.	Date	Description
1.0	05 JULY 2022	Initial release of the Interface Manual TCP/UDP I2C