

Interface Manual

TCP / UDP

I2C

(Rev 1.04)

COPTONIX



Luxemburger Str. 31
D - 13353 Berlin
Phone: +49 - (0)30 - 61 74 12 48
Fax: +49 - (0)30 - 61 74 12 47
www.coptonix.com

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COMMANDS

1 GENERALS COMMANDS

1.1 SET MODE

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

OUT / Length: 4 Bytes

CMD		ucMode	ucSlvAddr
Low	High		
0x00	0x00	0x00..0x03	0x01..0xFF

IN / Length 6 Bytes

Packet Length		CMD		ucMode	ucSlvAddr
Low	High	Low	High		
0x06	0x00	0x00	0x00	0x00..0x03	0x01..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x0000	SET MODE command
ucMode	1	0x00	Reads current mode
		0x01	MASTER_MODE
		0x02	SLAVE_MODE
		0x03	PROG_MODE
ucSlvAddr	1	0x01..0xFF	Is the slave address of the converter (valid only in SLAVE_MODE). If the LSB is 1, then the General Call is active. 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

reads current network settings from the *LAN I2C Converter MS*.

OUT / Length: 2 Bytes

CMD	
Low	High
0x00	0x09

IN / Length 28 Bytes

Packet Length		CMD		SHAR	DHCP	RES	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	6Bytes	1Byte	0x00	4Bytes	4Bytes	4Bytes	2Bytes		2Bytes	

Field	Size (Byte)	Value	Description
CMD	2	0x0900	GET NET CONFIG command
Packet Length	2	0x001C	Number of bytes in the packet including <i>Packet Length</i>
SHAR	6		Hardware Address Register -MAC- e.g. [0x00, 0x50, 0xC2, 0x00, 0x00, 0x00] = 00-50-C2-00-00-00
DHCP	1	0x00..0x03	Bit 0: 0 = automatic IP is active 1 = automatic IP is not active Bit 1: 0 = TimeOut is not used 1 = TimeOut is used
RES	1	0x00	Reserved Byte
GAR	4		Gateway IP Address Register e.g. 0xC0A80101 = 192.168.1.1
SUBR	4		Subnet Mask Register e.g. 0xFFFFFFFF00 = 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

1.2 MEM WR 8BIT

writes 1 BYTE / 8Bit value into the non-volatile memory.

OUT / Length: 5 Bytes

CMD		wAddr		ucValue
Low	High	Low	High	
0x00	0x01	0x0100..0x1FFF		0x00..0xFF

IN / Length 5 Bytes

Packet Length		CMD		ucRet
Low	High	Low	High	
0x05	0x00	0x00	0x01	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0100	MEM WR 8BIT command
wAddr	2	0x0100..0x1FFF	Memory address in the range 0x0100 to 0x1FFF. The first 256 Bytes are READ ONLY.
ucValue	1	0x00..0xFF	8Bit value to write into memory.
ucRet	1	0x00	Writing to memory: FAILED
		0x01	Writing to memory: SUCCESS
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.3 MEM WR 16BIT

writes 1 WORD / 16Bit value into the non-volatile memory.

OUT / Length: 6 Bytes

CMD		wAddr		wValue	
Low	High	Low	High	Low	High
0x00	0x02	0x0100..0x1FFF		0x0000..0xFFFF	

IN / Length 5 Bytes

Packet Length		CMD		ucRet
Low	High	Low	High	
0x05	0x00	0x00	0x02	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0200	MEM WR 16BIT command
wAddr	2	0x0100..0x1FFF	Memory address in the range 0x0100 to 0x1FFF. The first 256 Bytes are READ ONLY. ¹
wValue	2	0x0000..0xFFFF	16Bit value to write into memory. ¹
ucRet	1	0x00	Writing to memory: FAILED
		0x01	Writing to memory: SUCCESS
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.4 MEM WR 32BIT

writes 1 DWORD / 32Bit value into the non-volatile memory.

OUT / Length: 8 Bytes

CMD		wAddr		dwValue			
Low	High	Low	High	Low			High
0x00	0x03	0x0100..0x1FFF		0x00000000..0xFFFFFFFF			

IN / Length 5 Bytes

Packet Length		CMD		ucRet
Low	High	Low	High	
0x05	0x00	0x00	0x03	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0300	MEM WR 32BIT command
wAddr	2	0x0100..0x1FFF	Memory address in the range 0x0100 to 0x1FFF. The first 256 Bytes are READ ONLY. ¹
dwValue	4	0x00000000..0xFFFFFFFF	32Bit value to write into memory. ¹
ucRet	1	0x00	Writing to memory: FAILED
		0x01	Writing to memory: SUCCESS
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.4 MEM WR BLOCK

writes a block of data into the non-volatile memory.

OUT / Length: 5 – 36 Bytes

CMD		wAddr		Data
Low	High	Low	High	Up to 32 Bytes
0x00	0x04	0x0100..0x1FFF		0x00..0xFF

IN / Length 5 Bytes

Packet Length		CMD		ucRet
Low	High	Low	High	
0x05	0x00	0x00	0x04	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0400	MEM WR BLOCK command
wAddr	2	0x0100..0x1FFF	Memory address in the range 0x0100 to 0x1FFF. The first 256 Bytes are READ ONLY. ¹
data	1..32	0x00..0xFF	Page write buffer up to 32 Bytes. 32Bit value to write into memory. ¹
ucRet	1	0x00	Writing to memory: FAILED
		0x01	Writing to memory: SUCCESS
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

reads 1 BYTE / 8Bit value from memory.

OUT / Length: 4 Bytes

CMD		wAddr	
Low	High	Low	High
0x00	0x05	0x0000..0x1FFF	

IN / Length 6 Bytes

Packet Length		CMD		ucRet	ucValue
Low	High	Low	High		
0x06	0x00	0x00	0x05	0x00..0x01	0x00..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x0500	MEM RD 8BIT command
wAddr	2	0x0000..0x1FFF	Memory address in the range 0x0000 to 0x1FFF.
ucValue	1	0x00..0xFF	8Bit value read from memory.
ucRet	1	0x00	Reading from memory: FAILED
		0x01	Reading from memory: SUCCESS
Packet Length	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

1.6 MEM RD 16BIT

reads 1 WORD / 16Bit value from memory.

OUT / Length: 4 Bytes

CMD		wAddr	
Low	High	Low	High
0x00	0x06	0x0000..0x1FFF	

IN / Length 7 Bytes

Packet Length		CMD		ucRet	wValue	
Low	High	Low	High		Low	High
0x07	0x00	0x00	0x06	0x00..0x01	0x0000..0xFFFF	

Field	Size (Byte)	Value	Description
CMD	2	0x0600	MEM RD 16BIT command
wAddr	2	0x0000..0x1FFF	Memory address in the range 0x0000 to 0x1FFF.
wValue	2	0x0000..0xFFFF	16Bit value read from memory.
ucRet	1	0x00	Reading from memory: FAILED
		0x01	Reading from memory: SUCCESS
Packet Length	2	0x0007	Number of bytes in the packet including <i>Packet Length</i>

1.7 MEM RD 32BIT

reads 1 DWORD / 32Bit value from memory.

OUT / Length: 4 Bytes

CMD		wAddr	
Low	High	Low	High
0x00	0x07	0x0000..0x1FFF	

IN / Length 9 Bytes

Packet Length		CMD		ucRet	dwValue			
Low	High	Low	High		Low			High
0x09	0x00	0x00	0x07	0x00..0x01	0x00000000..0xFFFFFFFF			

Field	Size (Byte)	Value	Description
CMD	2	0x0700	MEM RD 16BIT command
wAddr	2	0x0000..0x1FFF	Memory address in the range 0x0000 to 0x1FFF.
dwValue	4	0x00000000..0xFFFFFFFF	32Bit value read from memory.
ucRet	1	0x00	Reading from memory: FAILED
		0x01	Reading from memory: SUCCESS
Packet Length	2	0x0009	Number of bytes in the packet including <i>Packet Length</i>

1.8 MEM RD BLOCK

reads a block of data (up to 1024 Bytes) from memory.

OUT / Length: 6 Bytes

CMD		wAddr		wSize	
Low	High	Low	High	Low	High
0x00	0x08	0x0000..0x1FFF		0x0001...0x0400	

IN / Length up to 8+1032 Bytes

Packet Length		CMD		ucRet	ucRes	wSize		rdata
Low	High	Low	High			Low	High	Up to 1024 bytes
Up to 8+1024		0x00	0x08	0x00..0x01	0x00	0x0000..0x0400		0x00..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x0800	MEM RD 16BIT command
wAddr	2	0x0000..0x1FFF	Memory address in the range 0x0000 to 0x1FFF.
ucRet	1	0x00	Reading from memory: FAILED
		0x01	Reading from memory: SUCCESS
ucRes	1	0x00	Reserved Byte
rdata	0..1024	0x00..0xFF	data read from memory
Packet Length	2	0x0000..0x0408	Number of bytes in the packet including <i>Packet Length</i>

1.9 SAVE SETTINGS

the settings (operation mode, slave address and SCL frequency) are stored into onboard memory.

OUT / Length: 2 Bytes

CMD	
Low	High
0x00	0x0A

IN / Length 4 Bytes

Packet Length		CMD		ucRet
Low	High	Low	High	
0x05	0x00	0x00	0x0A	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0A00	REINIT command
ucRet	1	0x00	Save Settings: FAILED
		0x01	Save Settings: SUCCESS
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

1.10 RESET SETTINGS

loads factory (default) settings:

MASTER_MODE

SLAVE ADDRESS = 0x00

SCL FREQUENCY = 100 kHz. (wSCLL = 0x012C and wSCLH = 0x012C)

OUT / Length: 2 Bytes

CMD	
Low	High
0x00	0x0B

IN / Length 4 Bytes

Packet Length		CMD		ucRet
Low	High	Low	High	
0x05	0x00	0x00	0x0B	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0B00	REINIT command
ucRet	1	0x00	Reset Settings: FAILED
		0x01	Reset Settings: SUCCESS
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

2 PROG MODE COMMANDS

2.1 SET GAR

sets a new value for GAR (Gateway IP Address Register).

OUT / Length: 6 Bytes

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

IN / Length 9 Bytes

Packet Length		CMD		ucRet	GAR			
Low	High	Low	High		Low			High
0x09	0x00	0x10	0x01	0x00..0x01	0x00000000..0xFFFFFFFF			

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
ucRet	1	0x00	Set GAR: FAILED
		0x01	Set GAR: SUCCESS
Packet Length	2	0x0009	Number of bytes in the packet including <i>Packet Length</i>

2.2 SET SUBR

sets a new value for SUBR (Subnet Mask Register).

OUT / Length: 6 Bytes

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

IN / Length 9 Bytes

Packet Length		CMD		ucRet	SUBR			
Low	High	Low	High		Low			High
0x09	0x00	0x10	0x02	0x00..0x01	0x00000000..0xFFFFFFFF			

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
ucRet	1	0x00	Set SUBR: FAILED
		0x01	Set SUBR: SUCCESS
Packet Length	2	0x0009	Number of bytes in the packet including <i>Packet Length</i>

2.3 SET SHAR

sets a new value for SHAR (Hardware Address Register -MAC-).

OUT / Length: 6 Bytes

CMD		SHAR					
Low	High						
0x10	0x03	6Bytes					

IN / Length 11 Bytes

Packet Length		CMD		ucRet	SHAR					
Low	High	Low	High							
0x0B	0x00	0x10	0x03	0x00..0x01	6Bytes					

Field	Size (Byte)	Value	Description
CMD	2	0x0310	SET SHAR command
SUBR	6		Hardware Address Register e.g. 0x00, 0x00, 0x00, 0x00, 0x00, 0x00
ucRet	1	0x00	Set SHAR: FAILED
		0x01	Set SHAR: SUCCESS
Packet Length	2	0x000B	Number of bytes in the packet including <i>Packet Length</i>

2.4 SET IP

sets a new value for IP (IP Address Register).

OUT / Length: 6 Bytes

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

IN / Length 9 Bytes

Packet Length		CMD		ucRet	IP			
Low	High	Low	High		Low			High
0x09	0x00	0x10	0x04	0x00..0x01	0x00000000..0xFFFFFFFF			

Field	Size (Byte)	Value	Description
CMD	2	0x0410	SET GAR command
IP	4	0x00000000..0xFFFFFFFF	IP Address Register e.g. 0xC0A80164 = 192.168.1.100
ucRet	1	0x00	Set IP: FAILED
		0x01	Set IP: SUCCESS
Packet Length	2	0x0009	Number of bytes in the packet including <i>Packet Length</i>

2.5 SET TCP PORT

sets a new value for TCP PORT (TCP listening port number).

OUT / Length: 4 Bytes

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

IN / Length 7 Bytes

Packet Length		CMD		ucRet	TCP PORT	
Low	High	Low	High		Low	High
0x07	0x00	0x10	0x05	0x00..0x01	0x0000..0xFFFF	

Field	Size (Byte)	Value	Description
CMD	2	0x0510	SET TCP PORT command
TCP PORT	2	0x0000..0xFFFF	TCP Port number e.g. 0x1388 = 5000
ucRet	1	0x00	Set TCP Port: FAILED
		0x01	Set TCP Port: SUCCESS
Packet Length	2	0x0007	Number of bytes in the packet including <i>Packet Length</i>

2.6 SET UDP PORT

sets a new value for UDP PORT (UDP port number).

OUT / Length: 4 Bytes

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

IN / Length 7 Bytes

Packet Length		CMD		ucRet	UDP PORT	
Low	High	Low	High		Low	High
0x07	0x00	0x10	0x06	0x00..0x01	0x0000..0xFFFF	

Field	Size (Byte)	Value	Description
CMD	2	0x0510	SET TCP PORT command
UDP PORT	2	0x0000..0xFFFF	UDP Port number e.g. 0x0BB8 = 3000
ucRet	1	0x00	Set UDP Port: FAILED
		0x01	Set UDP Port: SUCCESS
Packet Length	2	0x0007	Number of bytes in the packet including <i>Packet Length</i>

2.7 LOAD FACTORY SETTINGS

This command loads network settings to default settings. Use REINIT Command to reinitialize the adapter.

OUT / Length: 2 Bytes

CMD	
Low	High
0x10	0x07

IN / Length 4 Bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x10	0x07

Field	Size (Byte)	Value	Description
CMD	2	0x0710	LOAD FACTORY SETTINGS command
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

Default Network settings:

GAR (*Gateway IP Address Register*): 192.168.1.1
SUBR (*Subnet Mask Register*): 255.255.255.0
IP (*IP Address Register*): 192.168.1.100
SHAR (*Hardware Address register -MAC-*): 00-00-00-00-00-00
TCP/IP Port: 5000
UDP Port: 3000

2.8 REINIT

This command reinitializes the adapter. Adapter will disconnect.

OUT / Length: 2 Bytes

CMD	
Low	High
0x10	0x08

IN / Length 4 Bytes

Packet Length		CMD	
Low	High	Low	High
0x04	0x00	0x10	0x08

Field	Size (Byte)	Value	Description
CMD	2	0x0810	REINIT command
Packet Length	2	0x0004	Number of bytes in the packet including <i>Packet Length</i>

2.9 MEM PROTECT

The *MEM PROTECT* command is useful for protecting the contents of the on board memory (only user memory > 0xFF) from inadvertent write operations. Write operations are disabled to the memory when *ucProtect* is set to 0x01. When *ucProtect* is set to 0x02 write operations are allowed.

OUT / Length: 3 Bytes

CMD		ucProtect
Low	High	
0x10	0x09	0x00..0x02

IN / Length 6 Bytes

Packet Length		CMD		ucProtect	ucRet
Low	High	Low	High		
0x06	0x00	0x10	0x09	0x01..0x02	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0910	MEM PROTECT command
ucProtect	1	0x00	Reads current settings
		0x01	Write Operations Disabled
		0x02	Write Operations Enabled
ucRet	1	0x00	Enable / Disable FAILED
		0x01	Enable / Disable SUCCESS
Packet Length	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

2.10 SET DHCP

SET DHCP command activates / deactivates automatic IP address and network settings.

OUT / Length: 3 Bytes

CMD		ucDHCP
Low	High	
0x10	0x0A	0x00..0x03

IN / Length 6 Bytes

Packet Length		CMD		ucDHCP	ucRet
Low	High	Low	High		
0x06	0x00	0x10	0x0A	0x00..0x03	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0A10	SET DHCP command
ucDHCP	1	0x00..0x03	Bit 0: 0 = automatic IP not active 1 = automatic IP active
			Bit 1: 0 = TimeOut not used 1 = TimeOut is used
ucRet	1	0x00	Enable / Disable FAILED
		0x01	Enable / Disable SUCCESS
Packet Length	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

3 MASTER MODE COMMANDS

3.1 WRITE I2C

This command initiates I2C WRITE transaction.

OUT / Length: 6 + 1024 Bytes

CMD		ucSlvAddr	RES	wSize		wdata
Low	High			Low	High	Up to 1024 Bytes
0x20	0x01	0x01..0xFF	0x00	0x0001..0x400		0x00..0xFF

IN / Length: 10 Bytes

Packet Length		CMD		ucSlvAddr	RES	wStatus		wSize	
Low	High	Low	High			Low	High	Low	High
0x0A	0x00	0x20	0x01	0x01..0xFF	0x00			0x0001..0x0400	

Field	Size (Byte)	Value	Description
ucCMD	2	0x0120	WRITE I2C command
ucSlvAddr	1	0x02..0xFE	Slave address
wSize	2	1..1024	Number of bytes to write to slave address " ucSlvAddr ".
wdata	1..1024	0x00..0xFF	Data to write to slave address " ucSlvAddr ".
wStatus	2	Lo: 0x00..0x11 Hi: 0x00..0x11	
Packet Length	2	0x000A	Number of bytes in the packet including Packet Length

3.2 READ I2C

This command initiates I2C READ transactions.

OUT / Length: 6 Bytes

CMD		ucSlvAddr	RES	wSize	
Low	High			Low	High
0x20	0x02	0x01..0xFF	0x00	0x0001..0x400	

IN / Length: up to 10+1024 Bytes

Packet Length		CMD		ucSlvAddr	RES	wStatus		wSize		rdata
Low	High	Low	High			Low	High	Low	High	Up to 1024 Bytes
0x000A.. 0x040A		0x20	0x02	0x01..0xFF	0x00			0x0001..0x0400		0x00..0xFF

Field	Size (Byte)	Value	Description
ucCMD	2	0x0220	READ I2C command
ucSlvAddr	1	0x02..0xFE	Slave address
wSize	2	1..1024	Number of bytes to read from slave address " ucSlvAddr ".
rdata	0..1024	0x00..0xFF	Data read from slave address " ucSlvAddr ".
wStatus	2	Lo: 0x00..0x11 Hi: 0x00..0x11	
Packet Length	2	0x000A.. 0x040A	Number of bytes in the packet including Packet Length

3.3 WRITE READ I2C

This command initiates I2C WRITE transaction, then a REPEATED START and at last a READ transaction.

OUT / Length: 8 + 1024 Bytes

CMD		ucSlvAddr	RES	wvrSize		wrdsSize		wdata
Low	High			Low	High	Low	High	Up to 1024 Bytes
0x20	0x08	0x01..0xFF	0x00	0x0001..0x0400		0x0001..0x0400		0x00..0xFF

IN / Length: up to 10+1024 Bytes

Packet Length		CMD		ucSlvAddr	RES	wStatus		wrdsSize		rdata
Low	High	Low	High			Low	High	Low	High	Up to 1024 Bytes
0x000A..0x040A		0x20	0x08	0x01..0xFF	0x00			0x0001..0x0400		0x00..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x0820	WRITE READ I2C command
ucSlvAddr	1	0x02..0xFE	Slave address
RES	1	0x00	Reserved Byte
wvrSize	2	0x0001..0x0400	Number of bytes to write to slave address " ucSlvAddr ".
wrdsSize	2	0x0001..0x0400	Number of bytes to read from slave address " ucSlvAddr ".
wdata	1..1024	0x00..0xFF	Data to write to Slave address " ucSlvAddr ".
rdata	0..1024	0x00..0xFF	Data read from slave address " ucSlvAddr ".
wStatus	2	Lo: 0x00..0x11 Hi: 0x00..0x11	
Packet Length	2	0x000A..0x040A	Number of bytes in the packet including <i>Packet Length</i>

3.4 CHECK SLAVE ADDRESS

This command checks if the slave address **ucSlvAddr** is connected to the I2C bus.

OUT / Length: 3 Bytes

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

IN / Length 6 Bytes

Packet Length		CMD		ucSlvAddr	ucConnected
Low	High	Low	High		
0x06	0x00	0x20	0x07	0x02..0xFE	0x00..0x01

Field	Size (Byte)	Value	Description
CMD	2	0x0720	Check slave address command
ucSlvAddr	1	0x02..0xFE	The slave address to be checked.
ucConnected	1	0x00	Device is not connected to the I2C bus.
		0x01	Device is connected to the I2C bus.
Packet Length	2	0x0006	Number of bytes in the packet including <i>Packet Length</i>

3.5 SCAN I2C BUS

This command scans I2C devices currently connected to the I2C bus.

OUT / Length: 2 Bytes

CMD	
Low	High
0x20	0x05

IN / Length: up to 5 + 127 Bytes

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

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

3.6 SET I2C FREQUENCY

Use this command to set the I2C clock frequency and the duty cycle.

OUT / Length: 6 Bytes

CMD		wSCLH		wSCLL	
Low	High	Low	High	Low	High
0x20	0x03	0x001E..0xEA60		0x001E..0xEA60	

IN / Length up to 8 Bytes

Packet Length		CMD		wSCLH		wSCLL	
Low	High	Low	High	Low	High	Low	High
0x08	0x00	0x20	0x03	0x001E..0xEA60		0x001E..0xEA60	

Field	Size (Byte)	Value	Description
CMD	2	0x0320	SET I2C FREQUENCY command
wSCLH	2	0x001E.. 0xEA60	High time of the I2C clock
wSCLL	2	0x001E.. 0xEA60	Low time of the I2C clock wSCLH and wSCLL determine the I2C clock frequency generated by the master. The cloch frequency is determined by the following formula: $I2C_{frequency} = 60000000 / (wSCLH + wSCLL)$ The values for wSCLH and wSCLL should not necessarily be the same. Software can set different duty cycles on SCL by setting different values wSCLH and wSCLL . The values must ensure the data rate is in the data rate range of 500 Hz through 1MHz.
Packet Length	2	0x0008	Number of bytes in the packet including <i>Packet Length</i>

3.7 GET I2C FREQUENCY

Use this command to read the current value for I2C SCL clock frequency.

OUT / Length: 2 Bytes

CMD	
Low	High
0x20	0x04

IN / Length up to 8 Bytes

Packet Length		CMD		wSCLH		wSCLL	
Low	High	Low	High	Low	High	Low	High
0x08	0x00	0x20	0x04	0x001E..0xEA60		0x001E..0xEA60	

Field	Size (Byte)	Value	Description
CMD	2	0x0420	GET I2C FREQUENCY command
wSCLH	2	0x001E.. 0xEA60	High time of the I2C clock
wSCLL	2	0x001E.. 0xEA60	Low time of the I2C clock wSCLH and wSCLL determine the I2C clock frequency generated by the master. The cloch frequency is determined by the following formula: $I2C_{frequency} = 60000000 / (wSCLH + wSCLL)$
Packet Length	2	0x0008	Number of bytes in the packet including <i>Packet Length</i>

3.8 SET IRQ MODE

The converter has an interrupt input. e.g. if you use an IO-Expander, you could connect it's interrupt output with the interrupt input of the converter. Then your software would recognize all events of the IO-Expander, if the state of the IOs changes.

OUT / Length: 3 Bytes

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

IN / Length 5 Bytes

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

Field	Size (Byte)	Value	Description
CMD	2	0x0620	SET IRQ MODE command
ucIRQMode	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 host, if 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 converter operates in SLAVE_MODE, so it is possible to change the slave address any time using this function. *ucSlvAddr* is the new slave address of the converter.

OUT / Length: 3 Bytes

CMD		ucSlvAddr
Low	High	
0x30	0x83	0x01..0xFF

IN / Length 5 Bytes

Packet Length		CMD		ucSlvAddr
Low	High	Low	High	
0x05	0x00	0x30	0x83	0x01..0xFF

Field	Size (Byte)	Value	Description
CMD	2	0x8330	SET SLAVE ADDRESS command
ucSlvAddr	1	0x00..0xFF	New slave address of the converter (valid only in SLAVE_MODE). If the LSB is 1, then the general Call is active.
Packet Length	2	0x0005	Number of bytes in the packet including <i>Packet Length</i>

4.2 WRITE SLAVE BUFFER

This command writes data to the I2C slave output buffer.

OUT / Length: 6 + 1024 Bytes

CMD		ucEvent	RES	wSize		wdata
Low	High			Low	High	Up to 1024 Bytes
0x30	0x81	0x00..0x01	0x00	0x0001..0x0400		0x00..0xFF

IN / Length: 8 Bytes

Packet Length		CMD		ucEvent	RES	wSize	
Low	High	Low	High			Low	High
0x08	0x00	0x30	0x81	0x00..0x01	0x00	0x0001..0x0400	

Field	Size (Byte)	Value	Description
CMD	2	0x8130	WRITE SLAVE BUFFER command
ucEvent	1	0x00	No interrupt is signalled
		0x01	The converter sends an interrupt signal to the master. Thus the converter informs the master that there is data ready to read.
wSize	2	0x0001.. 0x0400	Number of bytes to write to the output buffer.
wdata	1..1024	0x00..0xFF	Data to be written to the output buffer.
Packet Length	2	0x0008	Number of bytes in the packet including <i>Packet Length</i>

4.3 SLAVE DATA

This IN Packet is sent to the host, if the converter is operating in SLAVE_MODE and it receives data from a I2C master.

IN / Length: up to 6+1024 Bytes

Packet Length		CMD		wSize		rdata
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
wSize	2	0x0001..0x0400	Number of bytes received from master.
rdata	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, if an unknown command was sent to the converter.

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	4	0x0004	Number of bytes in the packet including <i>Packet Length</i>

5.2 EXECUTE COMMAND DENIED

This IN Packet is sent to the host, e.g. if the converter is operating in MASTER_MODE and the software is trying 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	0xFFFFE	EXECUTE COMMAND DENIED
Packet Length	4	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, if an unknown mode command was sent to the converter.

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	4	0x0004	Number of bytes in the packet including <i>Packet Length</i>