

Technical description

for the

control

of

“TXT” (MP1406)

with Ethernet

Technical description for the control of "TXT" (MP1406) with Ethernet

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A. Text operation

Introduction

The controlling of the WIBOND-large display with integrated "TXT", which will be controlled according to the following description, happens in "Text operation" with data telegrams. Every data telegram has to be seen as a "command".

At first the hardware address have to be adjusted via DIP-switches at the electronic card "TXT" (factory settings see data sheet). This address is a fix component of each data telegram.

Furthermore before the first data telegram will be sent, the baud rate, the number of data bits, the number of stop bits as well the parity have to be adjusted as you can see at attached data sheet.

If in voltage free conditions the interface parameter and the hardware address has been adjusted, so it will be transmitted the various commands to the "TXT". After supplying the display with power it will be made a self test of the display inclusive lamp test. The end of the test will be confirmed with "OK". Now it will be displayed the information of the actual interface parameter.

e. g.:

Adr.: 1 → SIO: 9600 → P-Bit: none → MP: xxxx

Adr.: → shows the adjusted hardware address
SIO: → shows the adjusted transmission parameter
P-Bit: → shows the adjusted parity
MP: → shows the number of the firmware

At first the WIBOND-display has to be informed about the display size. This happens through transfer of the command "define field".

In the „text operation“ will be displayed the information field-orientated on the display area. The representable signs are included in the firmware of the "TXT" and they are defined via the ASCII-code. Up to eight fields can be defined in up to four masks. In the command "display text" can be chosen the corresponding font with the function "font". Furthermore there are different kinds of representation (indication "representation"), brightness levels (indication "brightness") and according to the display type one or three colours (indication "colour") for selection.

In the "text operation" will be used the integrated text storage of the "TXT" with help of the commands "delete text", "programme text" and "call-up text".

The date-/clock function can be used via the commands "Show date and clock", "Adjust date and clock" and "Select date and clock".

With help of the command "Watchdog" can be deleted old or eventually wrong information on the display area (text field) automatically. For activation there are 4 watchdog times for choice.

The operation of the "TXT" is possible with or without reply. The activation/deactivation of the reply can be made via the command "reply".

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A. Text operation

A.1 Ethernet-Anbindung

A.1.1 Network parameter

A.1.1.1 factory settings

IP-address _____

Subnet-Mask _____

Gateway _____

2.1.2 Change of network parameter

Requirement: The IP-address of the computer has to be in the same address area as the chosen IP-address of the display (Class A, Class B, Class C)

Change of the IP-address from 192.168.10.231 to e.g. 192.168.10.250

- Telnet 192.168.10.231 9999
- The „Enter“ key have to be pressed within 5 seconds now, otherwise the configuration menue closed automatically
- Feed „0“ (Server) and confirm with „Enter“
- Now feed the first part (e.g. 192) of the IP-address and confirm with „Enter“
- Afterwards feed the second part of the IP-address (e. g. 168) and confirm with „Enter“ again
- After it feed the third part of the IP-address (e. g. 010) and confirm with „Enter“
- Now feed the fourth part of the IP-address (e. g. 250) and also confirm
- „Set Gateway IP Address (N)“ confirm with „Enter“
- „Netmask:(8)“ confirm with „Enter“
- „Change telnet config password (N)“ confirm with „Enter“
- Feed „9“ (save and exit) and confirm with „Enter“

The adjustment menue will be reached via call up of e.g. Telnet <IP-address> 9999

Attention: Between Telnet and IP-address as well as IP-address and 9999 have to feed a blank.

A.1.2 Port-/Socketnumbers

Port-/Socketnumbers	Application
8000	Data Sockets
9999	Far configuration with TELNET

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A. Text operation

A.2 Data format

The data format describes the fundamental construction of the data telegram. Parameter without square brackets have to be in every command. Parameter, which are depicted in square brackets, are not binding in every command.

The following tables are telling the meaning of signs in the first column (e.g. start sign), the „ASCII-sign“ (e.g. ESC) in the second column, the hexadecimal value (e.g. 1Bh) in the third column and a short explanation in the fourth column.

Start sign; address; command;
 [Mask_field_number]; [font]; [representation]; [brightness]; [Watchdog]; [reply];
 [week day]; [year_10]; [year_1]; [month_10]; [month_1]; [day_10]; [day_1];
 [hour_10]; [hour_1]; [minute_10]; [minute_1]; [second_10]; [second_1];
 [display size_x_100]; [display size_x_10]; [display size_x_1];
 [display size_y_100]; [display size_y_10]; [display size_y_1];
 [Start_x_100]; [Start_x_10]; [Start_x_1]; [Start_y_100]; [Start_y_10]; [Start_y_1];
 [End_x_100]; [End_x_10]; [End_x_1]; [End_y_100]; [End_y_10]; [End_y_1];
 [Text number_100]; [Text number_10]; [Text number_1];
 [Colour]; [Data]; [time format];
 Stop sign;

Start sign:	„ESC“	= 1Bh	start recognition of telegram
Address:	„1“	= 31h	see chapter „address“
Command:	„A“	= 41h	see chapter „displaying the text“
	„B“	= 42h	see chapter „delete the text“
	„C“	= 43h	see chapter „programme the text“
	„D“	= 44h	see chapter „call-up text“
	„E“	= 45h	see chapter „define field “
	„F“	= 46h	see chapter „show date and clock“
	„G“	= 47h	see chapter „adjust date and clock “
	„H“	= 48h	see chapter „select date and clock “
	„I“	= 49h	see chapter „Watchdog“
	„J“	= 4Ah	see chapter „reply“
Mask_Field_Number:	„1“ to „8“	= 31h to 38h	see chapter „Mask_field_number“
	„A“ to „H“	= 41h to 48h	
	„Q“ to „X“	= 51h to 58h	
	„a“ to „h“	= 61h to 68h	
Font:	„1“ to „B“	= 31h to 42h	see chapter „font“
Representation:	„1“ to „7“	= 31h to 37h	see chapter „representation “
	„A“ to „G“	= 41h to 47h	
Brightness:	„1“ to „3“	= 31h to 33h	see chapter „brightness“
Watchdog:	„0“ to „4“	= 30h to 34h	see chapter „Watchdog“
Reply:	„0“ to „1“	= 30h to 31h	see chapter „reply“

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A. Text operation

A.2 Data format

Weekday:	„1“ to „7“	= 31h to 37h	see chapter „clock“
Year_10:	„0“ to „9“	= 30h to 39h	
Year_1:	„0“ to „9“	= 30h to 39h	
Month_10:	„0“ to „1“	= 30h to 31h	
Month_1:	„0“ to „9“	= 30h to 39h	
Day_10:	„0“ to „3“	= 30h to 33h	
Day_1:	„0“ to „9“	= 30h to 39h	
Hour_10:	„0“ to „2“	= 30h to 32h	
Hour_1:	„0“ to „9“	= 30h to 39h	
Minute_10:	„0“ to „5“	= 30h to 35h	
Minute_1:	„0“ to „9“	= 30h to 39h	
Second_10:	„0“ to „5“	= 30h to 35h	
Second_1:	„0“ to „9“	= 30h to 39h	
Display size_x_100:	„0“ to „9“	= 30h to 39h	see chapter „display size “
Display size_x_10:	„0“ to „9“	= 30h to 39h	
Display size_x_1:	„0“ to „9“	= 30h to 39h	
Display size_y_100:	„0“ to „9“	= 30h to 39h	
Display size_y_10:	„0“ to „9“	= 30h to 39h	
Display size_y_1:	„0“ to „9“	= 30h to 39h	
Start_x_100:	„0“ to „9“	= 30h to 39h	see chapter „field coordinate“
Start_x_10:	„0“ to „9“	= 30h to 39h	
Start_x_1:	„0“ to „9“	= 30h to 39h	
Start_y_100:	„0“ to „9“	= 30h to 39h	
Start_y_10:	„0“ to „9“	= 30h to 39h	
Start_y_1:	„0“ to „9“	= 30h to 39h	
End_x_100:	„0“ to „9“	= 30h to 39h	see chapter „field coordinate “
End_x_10:	„0“ to „9“	= 30h to 39h	
End_x_1:	„0“ to „9“	= 30h to 39h	
End_y_100:	„0“ to „9“	= 30h to 39h	
End_y_10:	„0“ to „9“	= 30h to 39h	
End_y_1:	„0“ to „9“	= 30h to 39h	
Text number_100:	„0“ to „9“	= 30h to 39h	see chapter „text number“
Text number_10:	„0“ to „9“	= 30h to 39h	
Text number_1:	„0“ to „9“	= 30h to 39h	
Colour:	„DC1“ to „DC4“	= 11h to 14h	see chapter „colour “
Data:	„ “ to „ÿ“	= 20h to FFh	see chapter „data“
Time format:	„0“ to „9“ „A“ to „F“	= 30h to 39h = 41h to 46h	see chapter „time format “
Stop sign:	„CR“	= 0Dh	end recognition of telegram

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A. Text operation

A.3 Address

In every data telegram the „address“ has to be transmitted. The value has to agree to the hardware address.

With this value will be defined the hardware address of the corresponding TXT.

Address:	„1“	=	31h	address 1
	„2“	=	32h	address 2
	„3“	=	33h	address 3
	„4“	=	34h	address 4
	„5“	=	35h	address 5
	.		.	
	.		.	
	.		.	
	„0“	=	6Fh	address 63
	„p“	=	70h	address 64



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A. Text operation

A.4 Command

A.4.1 Display text

With the command „display text“ the information will be transmitted field oriented. The represented signs complies to the bottom edge of the field.

With the byte “mask_field_number” will be defined the corresponding field. This field has to be defined in the “TXT”. It will be visualised only the data of the active mask at the display area. With the byte “font” will be defined the digit height and the font. The “font” is independent of the field height. So the use of “small” fonts in “big” fields is possible.

With the byte “representation” will be defined the representation of the information.

With the byte “brightness” will be defined the brightness of the whole “TXT”.

With the byte “colour” will be defined the digit colour. With beginning of a byte “colour” it can be adjusted for every single sign the corresponding colour. Every following sign will be represented in the same colour. So the transfer of a colour byte is only necessary if the colour has to be changed (see examples). If no byte “colour” will be transmitted, the text will be represented in the corresponding standard colour (one colour red or green, multicolour yellow). The number of the byte “data” (minimum 160, maximum 320), which can be represented in running type are dependent from the font height (indication “font”). If no data byte will be transmitted, the content of the chosen field will be deleted.

At an mask change the actual information at the text display will be stored in the “TXT” with exception of the running-, clock and date representation. During this process (length approx. 1 second) the display will be dark.

Start sign; address; command;
mask_field_number; font; representation; brightness;
colour; data; [colour]; [data];
stop sign

start sign:	„ESC“	=	1Bh	start recognition of the telegram
address “A”:	„1“ to „p“	=	31h to 70h	see chapter „address“
command (B):	„A“	=	41h	show text
mask_field_number (F):	„1“ to „8“	=	31h to 38h	see chapter „mask_field_number“
	„A“ to „H“	=	41h to 48h	
	„Q“ to „X“	=	51h to 58h	
	„a“ to „h“	=	61h to 68h	
font (S):	„1“ to „B“	=	31h to 42h	see chapter „font“
representation (D):	„1“ to „7“	=	31h to 37h	see chapter „representation“
	„A“ to „G“	=	41h to 47h	
brightness (H):	„1“ to „3“	=	31h to 33h	see chapter „brightness“
colour:	„DC1“ to „DC4“	=	11h to 14h	see chapter „colour“
data:	„ “ to „ÿ“	=	20h to FFh	see chapter „data“
stop sign:	„CR“	=	0Dh	end recognition of the telegram

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.1 Display text

Example 1:

The text "interference 23" will be transmitted by the command "show text" with the following parameters: address 1; field 1 in mask 1, font "1", blinking type left adjusted, middle brightness, digit colour red

	Start	A	B	F	S	D	H	Colour	Data	Stop
ASCII	ESC	1	A	1	1	4	2	DC1	Interference 23	CR
HEX	1B	31	41	31	31	34	32	11		0D

Example 2:

The text „plan: 1000" in red, "actual: 650" in yellow and "difference: +10" in green will be transmitted with the following parameters: address 1, field 1 of mask 2, font "?", standing type left sided, maximum brightness

	Start	A	B	F	S	D	H	Colour	Data 1	Colour	Data 2	Colour	Data3	Stop
ASCII	ESC	1	A	A	?	1	3	DC1	Plan: 1000	DC3	actual: 650	DC2	difference: +10	CR
HEX	1B	31	41	41	3F	31	33	11		13		12		0D

Example 3:

The text „finish at machine 23 interfered" will be transmitted with the following parameters: address 2, field 2 of mask 1, font "2", running type, minimum brightness, digit colour yellow

	Start	A	B	F	S	D	H	Colour	Data	Stop
ASCII	ESC	1	A	2	2	7	3	DC3	Finish at machine 23 interfered	CR
HEX	1B	31	41	32	32	37	31	13		0D

Example 4:

The text „chain transporter runs" will be transmitted with the following parameters: address 1, field 1 in mask 3, font "4", standing type centred, maximum brightness, digit colour green

	Start	A	B	F	S	D	H	Farbe	Data	Stop
ASCII	ESC	1	A	Q	4	2	3	DC2	Chain transporter runs	CR
HEX	1B	31	41	51	34	32	33	12		0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.2 Delete text storage

With this command the text storage of the complete "TXT" gets deleted.

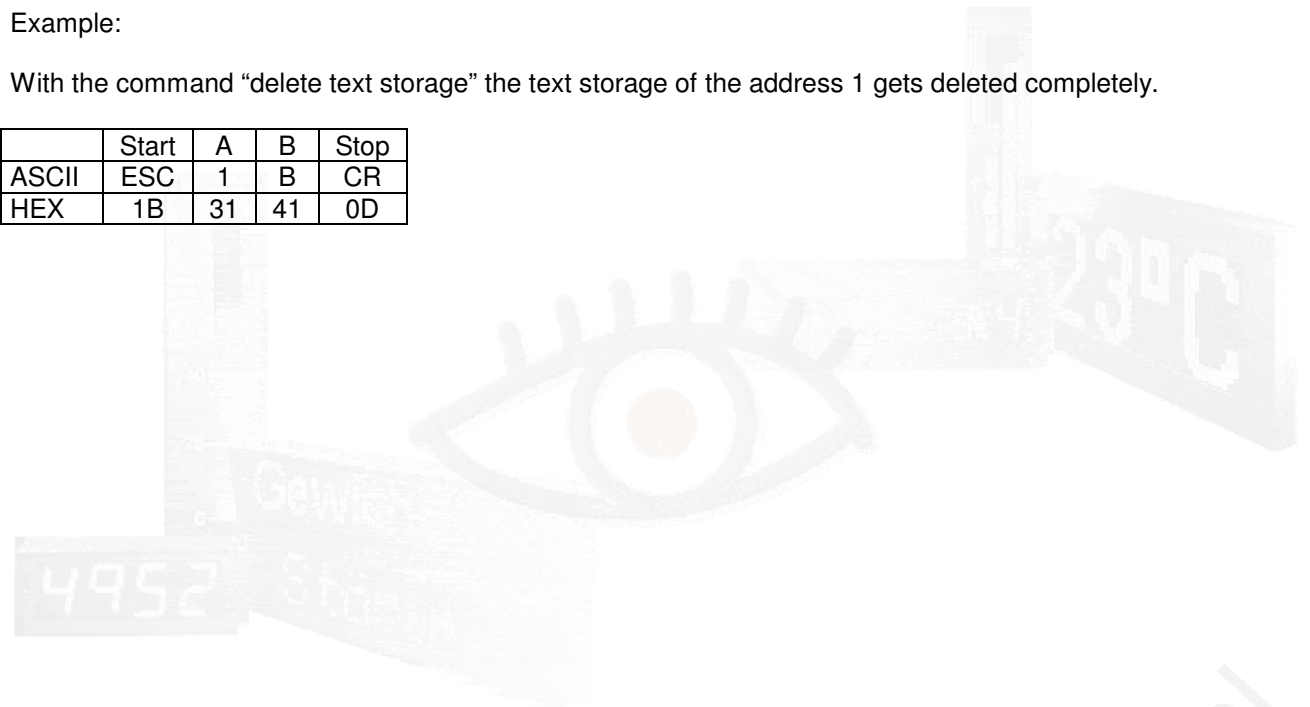
Start sign; address; command;
Stop sign

Start sign:	„Esc“	=	1Bh	
Address:	„1“ to „p“	=	31h to 70h	see chapter „address“
command:	„B“	=	42h	delete text storage
Stop sign:	„CR“	=	0Dh	

Example:

With the command "delete text storage" the text storage of the address 1 gets deleted completely.

	Start	A	B	Stop
ASCII	ESC	1	B	CR
HEX	1B	31	41	0D



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Technical description for the control of “TXT” (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.3 Programme text storage

With this command up to 999 texts á 189 signs can be stored with indication of the text number. At the same time the “font” and one or different digit colours will be appointed.

Start sign; address; command;
Font;
Text number_100; text number_10; text number_1;
Colour; data; [colour]; [data];
Stop sign

Start sign:	„Esc“	=	1Bh	
Address:	„1“ to „p“	=	31h to 70h	see chapter „address“
Command:	„B“	=	43h	programme text storage
Font:	„1“ to „R“	=	31h to 52h	see chapter “font”
Text number_100:	„0“ to „9“	=	30h to 39h	see chapter „text number“
Text number_10:	„0“ to „9“	=	30h to 39h	
Text number_1:	„0“ to „9“	=	30h to 39h	
Font:	„DC1“ to „DC4“	=	11h to 14h	see chapter “colour”
Data:	„ “ to „ÿ“	=	20h to FFh	see chapter “data”
Stop sign:	„CR“	=	0Dh	

Example 1:

With the command “programme text storage” the text “input buffer MA2 is empty” will be stored in the text storage of address 1 with the following parameters:
Font “@”, text number 15, digit colour yellow

	Start	A	B	S	T_100	T_10	T_1	Colour	Data	Stop
ASCII	ESC	1	C	@	0	1	5	DC3	Input buffer MA2 is empty	CR
HEX	1B	31	43	40	30	31	35	13		0D

Example 2:

In the text storage of the address 2 will be stored the text “machine preparing” with the following parameters:
Font “9”, text number 102, digit colour red

	Start	A	B	S	T_100	T_10	T_1	Colour	Data	Stop
ASCII	ESC	2	C	9	1	0	2	DC1	Machine preparing	CR
HEX	1B	32	43	39	31	30	32	11		0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.4 Call-up text

With this command and with information of the text number a text which is stored in the text storage of the "TXT" gets called up. He we be visualized in the choosed field, with the coosed representation and brightness at the display area. The "font" as well as the digit colour was stored with the text.

Start sign; address; command;
Mask_field_number; font; representation; brightness;
Text number_100; text number_10; text number_1;
Stop sign

Start sign:	„Esc“	=	1Bh	
Address:	„1“ to „p“	=	31h to 70h	see chapter „address“
Command:	„D“	=	44h	call-up texts
Mask_field_number:	„1“ to „8“	=	31h to 38h	see chapter "mask_field_number"
	„A“ to „H“	=	41h to 48h	
	„Q“ to „X“	=	51h to 58h	
	„a“ to „h“	=	61h to 68h	
Representation:	„1“ to „7“	=	31h to 37h	see chapter "representation"
	„A“ to „G“	=	41h to 47h	
Brightness:	„1“ to „3“	=	31h to 33h	see chapter "brightness"
Text number_100:	„0“ to „9“	=	30h to 39h	see chapter „text number“
Text number_10:	„0“ to „9“	=	30h to 39h	
Text number_1:	„0“ to „9“	=	30h to 39h	
Stop sign:	„CR“	=	0Dh	

Example 1:

At text number 15 of the address 1 the text "input buffer MA2 is empty" is stored and will be called up. The representation happens in field 1 of mask 3, in blinking type right sided, with maximum brightness.

	Start	A	B	F	D	H	T_100	T_10	T_1	Stop
ASCII	ESC	1	D	R	6	3	0	1	5	CR
HEX	1B	31	44	52	36	33	30	31	35	0D

Example 2:

At text number 102 of the address 2 the text "machine preparing" is stored and will be called up. The representation happens in field 7 of mask 4, in standing type left sided invers, with middle brightness

	Start	A	B	F	D	H	T_100	T_10	T_1	Stop
ASCII	ESC	2	D	G	A	2	1	0	2	CR
HEX	1B	32	43	67	41	32	31	30	32	0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.5 Define fields

With the command „define fields“ the “TXT” will be informed about the mask- and field number, the display size of the “TXT” and the field coordinates.

With the byte “mask-field-number” will be defined the corresponding field.

The display size results of the number of horizontal (x-direction) and vertical (y-direction) pixel. With help of the byte “display size” will be informed the “TXT” about this data. The display size is defined in the data sheet at point “resolution”. With the byte “start_?” and “end_?” will be transmitted the corresponding field coordinates to the “TXT”. In the chapter “mask_field_number” all permissible possibilities are described.

4 masks with maximum 8 fields can be defined, which also can overlap. The following is to observe cause of the field size:

field height ≤ 16 pixel
field width ≥ display width

start sign address; command;
maske_field_number;
display_size_x_100; display_size_x_10; display_size_x_1;
display_size_y_100; display_size_y_10; display_size_y_1;
start_x_100; start_x_10; start_x_1; start_y_100; start_y_10; start_y_1;
end_x_100; end_x_10; end_x_1; end_y_100; end_y_10; end_y_1;
stop sign

start sign:	„ESC“	=	1Bh	start recognition of the telegram
address:	„1“ to „p“	=	31h to 70h	see chapter „address“
commands:	„E“	=	45h	mask/field definition
mask_field_number:	„1“ to „8“	=	31h to 38h	see chapter „mask_field_number“
	„A“ to „H“	=	41h to 48h	
	„Q“ to „X“	=	51h to 58h	
	„a“ to „h“	=	61h to 68h	
display_size_x_100:	„0“ to „9“	=	30h to 39h	see chapter „display size“
display_size_x_10:	„0“ to „9“	=	30h to 39h	
display_size_x_1:	„0“ to „9“	=	30h to 39h	
display_size_y_100:	„0“ to „9“	=	30h to 39h	
display_size_y_10:	„0“ to „9“	=	30h to 39h	
display_size_y_1:	„0“ to „9“	=	30h to 39h	

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A. Text operation

A.4 Command

A.4.5 Define fields

start_x_100:	„0“ to „9“	=	30h to 39h	see chapter "field coordinate"
start_x_10:	„0“ to „9“	=	30h to 39h	
start_x_1:	„0“ to „9“	=	30h to 39h	
start_y_100:	„0“ to „9“	=	30h to 39h	
start_y_10:	„0“ to „9“	=	30h to 39h	
start_y_1:	„0“ to „9“	=	30h to 39h	
end_x_100:	„0“ to „9“	=	30h to 39h	see chapter „field coordinate“
end_x_10:	„0“ to „9“	=	30h to 39h	
end_x_1:	„0“ to „9“	=	30h to 39h	
end_y_100:	„0“ to „9“	=	30h to 39h	
end_y_10:	„0“ to „9“	=	30h to 39h	
end_y_1:	„0“ to „9“	=	30h to 39h	
stop sign:	„CR“	=	0Dh	end recognition of the telegram

Example: see appendix A



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A. Text operation

A.4 Command

A.4.6 Show date and clock

Start sign; address; command;
Mask_field_number; font; representation; brightness;
Colour; time format;
Stop sign

Start sign:	„Esc“	=	1Bh	
Address:	„1“ to „p“	=	31h to 70h	see chapter „address“
Command:	„F“	=	46h	show date and clock
Mask_field_number:	„1“ to „8“	=	31h to 38h	see chapter „mask_field_number“
	„A“ to „H“	=	41h to 48h	
	„Q“ to „X“	=	51h to 58h	
	„a“ to „h“	=	61h to 68h	
Font:	„1“ to „B“	=	31h to 42h	see chapter „font“
Representation:	„1“ to „6“	=	31h to 37h	see chapter „representation“
	„A“ to „F“	=	41h to 47h	
Brightness:	„1“ to „3“	=	31h to 33h	see chapter „brightness“
Colour:	„DC1“ to „DC4“	=	11h to 14h	see chapter „colour“
Time format:	„0“ to „9“	=	30h to 39h	see chapter „time format“
	„A“ to „F“	=	41h to 46h	
Stop sign:	„CR“	=	0Dh	

Example 1:

At the display elements of address 1 in field 1 of mask 1 will be the actual date (DD.MM.YY) and the time (hh:mm) visualized.

The representation happens with font "6", in standing type centred (2), with maximum brightness and digit colour red.

	Start	A	B	F	S	D	H	Colour	DD	.	MM	.	YY		H_24	:	M	Stop
ASCII	ESC	1	F	7	6	6	3	DC1	5	.	6	.	8		2	:	3	CR
HEX	1B	31	46	37	36	36	33	11		2E		2E		20	32	3A	33	0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.7 Adjust date and clock

With this command will be adjusted the clock and date in the integrated clock through transmission of all 13 values, for correct representation after call-up.

start sign; address; command;
weekday; year_10; year_1; month_10; month_1; day_10; day_1;
hour_10; hour_1; minute_10; minute_1; second_10; second_1;
stop sign

start sign: "ESC" = 1B start recognition of the telegram

address: "1" to "p" = 31h to 70h see chapter "address"

command: "G" = 47h

weekday: "1" to "7" = 31h to 37h see chapter "clock"

year_10: "0" to "9" = 30h to 39h

year_1: "0" to "9" = 30h to 39h

month_10: "0" to "1" = 30h to 31h

month_1: "0" to "9" = 30h to 39h

day_10: "0" to "3" = 30h to 33h

day_1: "0" to "9" = 30h to 39h

hour_10: "0" to "2" = 30h to 32h

hour_1: "0" to "9" = 30h to 39h

minute_10: "0" to "5" = 30h to 35h

minute_1: "0" to "9" = 30h to 39h

second_10: "0" to "5" = 30h to 35h

second_1: "0" to "9" = 30h to 39h

stop sign: "CR" = 0DH end recognition of the telegram

Example:

Transmission of: Monday, 13.07.2005, 13:10:00 h

	Start	Address	Command	J_10	J_1	M_10	M_1	T_10	T_1	h_10	h_1	m_10	m_1	s_10	s_1	Stop
ASCII	ESC	1	G	0	5	0	7	1	3	1	3	1	0	0	0	CR
HEX	1B	31	47	30	35	30	37	31	33	31	33	31	30	30	30	0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.8 Select date and clock

start sign; address; command;
stop sign

start sign:	"ESC"	=	1Bh
address:	"1" to "p"	=	31h to 70h see chapter "address"
command:	"H"	=	48h
stop sign:	"CR"	=	0DH

Example:

The date and clock of address 2 gets selected

	Start	A	B	Stop
ASCII	ESC	2	H	CR
HEX	1B	32	48	0D

Example for the reply:

Transmission of: Monday, 13.07.2005, 13:10:00 h

	Start	A	W	J_10	J_1	M_10	M_1	T_10	T_1	h_10	h_1	m_10	m_1	s_10	s_1	Stop
ASCII	ESC	1	1	0	5	0	7	1	3	1	3	1	0	0	0	CR
HEX	1B	31	31	30	35	30	37	31	33	31	33	31	30	30	30	0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.9 Watch dog

With help of this command, can prevent a representation of old and eventually wrong data, that can result through a missing communication with the master. For supervision of a cyclic communication it can be choose between 4 watchdog times. If there is no cyclic communication or the cyclic time is > 60 seconds, the watchdog can be deactivated.

If a watch dog time is replaced, a valid data telegram have to arrive at the display during the set watch dog time. If this not happens, the display shows "offline".

The watch dog timer turns up to the set value after every valid and received data telegram. After a power reset the watch dog is turned off.

start sign; address; command; watchdog, stop sign;

start sign:	"ESC"	=	1Bh	start recognition of the telegram
address:	"1" to "p"	=	31h to 70h	see chapter "address"
command:	"I"	=	49h	activate/deactivate watch dog
watchdog:	"0"	=	30h	watch dog off
	"1"	=	31h	watch dog 5s
	"2"	=	32h	watch dog 10s
	"3"	=	33h	watch dog 30s
	"4"	=	34h	watch dog 60s
stop sign:	"CR"	=	0Dh	end recognition of the telegram

Example:

The watchdog shall be activated with a watchdog time of 30 seconds.

	start	address	command	watchdog	stop
ASCII	ESC	1	I	3	CR
HEX	1B	31	49	33	0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.4 Command

A.4.10 Reply

With this command the reply can be switched on or off. If the reply is turned on, the display answers after the receipt of every valid command with the same telegram (see below). If no reply happens, the command was invalid or the telegram was received not correctly or not at all. After a power reset the reply is turned on, cause we recommend the operation with reply, cause the data transfer gets optimized and controlled. To avoid collision of data telegrams, the specific evaluation of the reply is necessary.

start sign; address; command;
reply;
stop sign

start sign:	„ESC“	=	1Bh	start recognition of the telegram
address:	„1“ to „p“	=	31h to 70h	see chapter „address“
command:	„J“	=	4Ah	activate/deactivate reply
reply:	„0“	=	30h	reply off
	„1“	=	31h	reply on
stop sign:	„CR“	=	0Dh	end recognition of the telegram

Structure of a reply, which will be send after every valid command as long as the reply is activated:

	Start	Address	Stop
ASCII	ESC	1	CR
HEX	1B	31	0D

Example:

The answer command of the "TXT" with address 1 will be deactivated.

	Start	Address	Command	Answer command	Stop
ASCII	ESC	1	J	0	CR
HEX	1B	31	4A	30	0D

Technical description for the control of "TXT" (MP1406) with Ethernet

A Text operation

A.5 Mask_field_number

With this feature will be defined the field and the mask. Following variants are possible in the "Text operation".

mask_field_number:	„1“	=	31h	mask 1, field 1
	„2“	=	32h	mask 1, field 2
	„3“	=	33h	mask 1, field 3
	„4“	=	34h	mask 1, field 4
	„5“	=	35h	mask 1, field 5
	„6“	=	36h	mask 1, field 6
	„7“	=	37h	mask 1, field 7
	„8“	=	38h	mask 1, field 8
	„A“	=	41h	mask 2, field 1
	„B“	=	42h	mask 2, field 2
	„C“	=	43h	mask 2, field 3
	„D“	=	44h	mask 2, field 4
	„E“	=	45h	mask 2, field 5
	„F“	=	46h	mask 2, field 6
	„G“	=	47h	mask 2, field 7
	„H“	=	48h	mask 2, field 8
	„Q“	=	51h	mask 3, field 1
	„R“	=	52h	mask 3, field 2
	„S“	=	53h	mask 3, field 3
	„T“	=	54h	mask 3, field 4
	„U“	=	55h	mask 3, field 5
	„V“	=	56h	mask 3, field 6
	„W“	=	57h	mask 3, field 7
	„X“	=	58h	mask 3, field 8
	„a“	=	61h	mask 4, field 1
	„b“	=	62h	mask 4, field 2
	„c“	=	63h	mask 4, field 3
	„d“	=	64h	mask 4, field 4
	„e“	=	65h	mask 4, field 5
	„f“	=	66h	mask 4, field 6
	„g“	=	67h	mask 4, field 7
	„h“	=	68h	mask 4, field 8

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.6 Font

With this feature the font of the text will be defined. The following table describes the deposited variants of the WIBOND-display.

- H → height of the sign in pixel
- B → width of the sign in pixel
- U → descender of the sign in pixel
- A → distance between two signs in pixel
- S → line strength of the sign in pixel
- P → proportional character width
- F → fixed character width

Font:				H	B	U	A	S
„1“	=	31h	P	07	05	0	1	1
„2“	=	32h	F	07	05	0	1	1
„3“	=	33h	P	08	05	1	1	1
„4“	=	34h	F	08	05	1	1	1
„5“	=	35h	P	08	05	0	1	1
„6“	=	36h	F	08	05	0	1	1
„7“	=	37h	P	10	05	2	1	1
„8“	=	38h	F	10	05	2	1	1
„9“	=	39h	P	10	06	0	1	1
„.“	=	3Ah	F	10	06	0	1	1
„“	=	3Bh	P	12	07	2	1	1
„<“	=	3Ch	F	12	07	2	1	1
„=“	=	3Dh	P	12	08	0	1	2
„>“	=	3Eh	F	12	08	0	1	2
„?“	=	3Fh	P	16	08	2	1	2
„@“	=	40h	F	16	08	2	1	2
„A“	=	41h	P	16	10	0	2	2
„B“	=	42h	F	16	10	0	2	2

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.7 Representation

With this feature the text representation in each field will be defined. In each mask are different kind of representations, but only one running type possible. If the representation "running type" will be sent, an eventually active running type will be get deactive and the content of the field will be deleted. If a text is longer than the field the text will be visualised in standing- or blinking type always left-sided.

Representation:	„1“	=	31h	standing type	left sided	
	„2“	=	32h	standing type	centred	
	„3“	=	33h	standing type	right sided	
	„4“	=	34h	blinking type	left sided	
	„5“	=	35h	blinking type	centred	
	„6“	=	36h	blinking type	right sided	
	„7“	=	37h	running type		
	“A”	=	41h	standing type	left sided	invers
	“B”	=	42h	standing type	centered	invers
	“C”	=	43h	standing type	right sided	invers
	“D”	=	44h	blinking type	left sided	invers
	“E”	=	45h	blinking type	centred	invers
	“F”	=	46h	blinking type	right sided	invers
	“G”	=	47h	running type		invers

A.8 Brightness

With this feature will be defined the generally brightness of the display size. A change of the value of the brightness results in the whole WIBOND-display.

brightness:	„1“	=	31h	minimum
	„2“	=	32h	middle
	„3“	=	33h	maximum

A.9 clock

With help of this values the date and the time will be defined in the "TXT".
The time is in format 24 hours.

weekday:	“1” to “7”	=	31h to 37h	Monday to sunday
year_10:	“0” to “9”	=	30h to 39h	place ten year
year_1:	“0” to “9”	=	30h to 39h	place one year
month_10:	“0” to “1”	=	30h to 31h	place ten month
month_1:	“0” to “9”	=	30h to 39h	place one month
day_10:	“0” to “3”	=	30h to 33h	place ten day
day_1:	“0” to “9”	=	30h to 39h	place one day
hour_10:	“0” to “2”	=	30h to 32h	place ten hour (24 hour format)
hour_1:	“0” to “9”	=	30h to 39h	place one hour
minute_10:	“0” to “5”	=	30h to 35h	place ten minute
minute_1:	“0” to “9”	=	30h to 39h	place one minute
second_10:	“0” to “5”	=	30h to 35h	place ten minute
second_1:	“0” to “9”	=	30h to 39h	place one minute

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.10 Display size

With this value the TXT will be informed about the size of the display in pixel. The display size results of the number of horizontal (x-direction) and vertical (y-direction) pixel. The display size is defined in the data sheet at point "resolution". The count direction is from the left side to the right side on the x-axle and from upside to downside at the y-axle.

display_size_x_100:	„0“ to „9“	=	30h to 39h	hundred digit
display_size_x_10:	„0“ to „9“	=	30h to 39h	tens digit
display_size_x_1:	„0“ to „9“	=	30h to 39h	ones digit
display_size_y_100:	„0“ to „9“	=	30h to 39h	hundred digit
display_size_y_10:	„0“ to „9“	=	30h to 39h	tens digit
display_size_y_1:	„0“ to „9“	=	30h to 39h	ones digit

A.11 Field coordinates

With this value it will be defined the start position and the end position of a field. The field size corresponds to the display size. The count direction is from the left side to the right side on the x-axle and from upside to downside on the y-axle. It can be defined no fields, which are bigger than the display size. A data telegram with such a content is not allowed and will be ignored.

start_x_100:	„0“ to „9“	=	30h to 39h	hundred digit	start position x-axle
start_x_10:	„0“ to „9“	=	30h to 39h	tens digit	start position x-axle
start_x_1:	„0“ to „9“	=	30h to 39h	ones digit	start position x-axle
start_y_100:	„0“ to „9“	=	30h to 39h	hundred digit	start position y-axle
start_y_10:	„0“ to „9“	=	30h to 39h	tens digit	start position y-axle
start_y_1:	„0“ to „9“	=	30h to 39h	ones digit	start position y-axle
end_x_100:	„0“ to „9“	=	30h to 39h	hundred digit	end position x-axle
end_x_10:	„0“ to „9“	=	30h to 39h	tens digit	end position x-axle
end_x_1:	„0“ to „9“	=	30h to 39h	ones digit	end position x-axle
end_y_100:	„0“ to „9“	=	30h to 39h	hundred digit	end position y-axle
end_y_10:	„0“ to „9“	=	30h to 39h	tens digit	end position y-axle
end_y_1:	„0“ to „9“	=	30h to 39h	ones digit	end position y-axle

A.12 Colour

With this feature will be defined the digit colour.

Colour:	„DC1“	=	11h	red
	„DC2“	=	12h	green
	„DC3“	=	13h	yellow
	„DC4“	=	14h	off

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.13 Data

In the following table are shown all representable signs after ISO/IEC 8859 and extension ISO/IEC 8859-1.

Data: „ “ to „ÿ“ = 20h to FFh

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0																
1																
2		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	P	q	r	s	t	u	v	w	x	y	z	{		}	~	
8	€															
9																
A		ì	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
B	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E	À	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F	Ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Technical description for the control of "TXT" (MP1406) with Ethernet

A. Text operation

A.14 Time format

The value time format states the format of clock.

The arrangement of weekday, hour, minute, second, day, month and year can be chose.

Between the format information separators can be insert to create an optical separation.

Time format	"0"	=	30h	weekday in german (W_D)
	"1"	=	31h	hour 2 digits, 12h format (h_12)
	"2"	=	32h	hour 2 digits, 24h format (h_24)
	"3"	=	33h	minute 2 digits (mm)
	"4"	=	34h	second 2 digits (ss)
	"5"	=	35h	day 2 digits (TT)
	"6"	=	36h	month 2 digits (MM)
	"7"	=	37h	month name in german (M_D)
	"8"	=	38h	year 2 digits (JJ)
	"9"	=	39h	year 4 digits (JJJJ)
	"A"	=	41h	weekday in english (W_GB)
	"B"	=	42h	month name in english (M_GB)
	"C"	=	43h	weekdy in spanish (W_E)
	"D"	=	44h	month name in spanish (M_E)
	"E"	=	45h	weekday in French (W_F)
	"F"	=	46h	month name in French (M_F)

Separators:

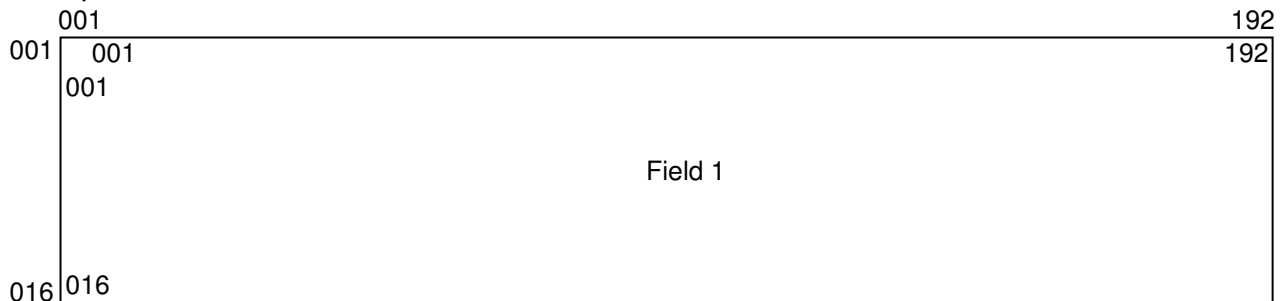
" "	=	20h
" "	=	2Ch
" "	=	2Dh
" "	=	2Eh
" "	=	2Fh
" "	=	3Ah

Technical description for the control of "TXT" (MP1406) with Ethernet

Appendix A: Example for display size and field coordinates

1.) display 1: address 1, display size 192 x 16 pixel

1.1) mask 1



F1 → field 1

	F1
display size_x_100:	1
display size_x_10:	9
display size_x_1:	2
display size_y_100:	0
display size_y_10:	1
display size_y_1:	6
start_x_100:	0
start_x_10:	0
start_x_1:	1
start_y_100:	0
start_y_10:	0
start_y_1:	1
end_x_100:	1
end_x_10:	9
end_x_1:	2
end_y_100:	0
end_y_10:	1
end_y_1:	6

ASCII-command field 1: <ESC> 1 E 1 192 016 001 001 192 016 <CR>

Technical description for the control of "TXT" (MP1406) with Ethernet

Appendix A: Example for display size and field coordinates

1.) display 1: address 1, display size 192 x 16 pixel

1.2) mask 2

001		192
001	001	192
001	Field 1	
008		
001		192
009	Field 2	
016		

F1 → field 1
F2 → field 2

	F1	F2
display size_x_100:	1	1
display size_x_10:	9	9
display size_x_1:	2	2
display size_y_100:	0	0
display size_y_10:	1	1
display size_y_1:	6	6
start_x_100:	0	0
start_x_10:	0	0
start_x_1:	1	1
start_y_100:	0	0
start_y_10:	0	0
start_y_1:	1	9
end_x_100:	1	1
end_x_10:	9	9
end_x_1:	2	2
end_y_100:	0	0
end_y_10:	0	1
end_y_1:	8	6

ASCII-command field 1: <ESC> 1 E A 192 016 001 001 192 008 <CR>
ASCII-command field 2: <ESC> 1 E B 192 016 001 009 192 016 <CR>

Technical description for the control of "TXT" (MP1406) with Ethernet

Appendix A: Example for display size and field coordinates

1.) display 1: address 1, display size 192 x 16 pixel

1.3) mask 3

001	001	016	017	136	137	192
001	001	016	001	Field 2	001	Field 3
	Field 1		008		008	
			017			192
			009	Field 4		
016	016		016			

F1 → field 1
F2 → field 2
F3 → field 3
F4 → field 4

	F1	F2	F3	F4
display_size_x_100:	1	1	1	1
display_size_x_10:	9	9	9	9
display_size_x_1:	2	2	2	2
display_size_y_100:	0	0	0	0
display_size_y_10:	1	1	1	1
display_size_y_1:	6	6	6	6
start_x_100:	0	0	1	0
start_x_10:	0	1	3	1
start_x_1:	1	7	7	7
start_y_100:	0	0	0	0
start_y_10:	0	0	0	1
start_y_1:	1	1	1	0
end_x_100:	0	1	1	1
end_x_10:	1	3	9	9
end_x_1:	6	6	2	2
end_y_100:	0	0	0	0
end_y_10:	1	0	0	1
end_y_1:	6	7	7	6

ASCII-command field 1: <ESC> 1 E Q 192 016 001 001 016 016 <CR>
 ASCII-command field 2: <ESC> 1 E R 192 016 017 001 136 008 <CR>
 ASCII-command field 3: <ESC> 1 E S 192 016 137 001 192 008 <CR>
 ASCII-command field 4: <ESC> 1 E T 192 016 017 009 192 016 <CR>

Technical description for the control of "TXT" (MP1406) with Ethernet



Appendix A: Example for display size and field coordinates

1.) display 1: address 1, display size 192 x 16 pixel

1.4) mask 4

001	001	048	049	096	097	144	145	192
001	Field 1		001	Field 2		001	Field 3	
008			008			008		
001	048	049	096	097	144	145	192	
009	Field 5		009	Field 6		009	Field 7	
016			016			016		

- | | |
|--------------|--------------|
| F1 → field 1 | F5 → field 5 |
| F2 → field 2 | F6 → field 6 |
| F3 → field 3 | F7 → field 7 |
| F4 → field 4 | F8 → field 8 |

	F1	F2	F3	F4	F5	F6	F7	F8
display size_x_100:	1	1	1	1	1	1	1	1
display size_x_10:	9	9	9	9	9	9	9	9
display size_x_1:	2	2	2	2	2	2	2	2
display size_y_100:	0	0	0	0	0	0	0	0
display size_y_10:	1	1	1	1	1	1	1	1
display size_y_1:	6	6	6	6	6	6	6	6
start_x_100:	0	0	0	1	0	0	0	1
start_x_10:	0	4	9	4	0	4	9	4
start_x_1:	1	9	7	5	1	9	7	5
start_y_100:	0	0	0	0	0	0	0	0
start_y_10:	0	0	0	0	0	0	0	0
start_y_1:	1	1	1	1	9	9	9	9
end_x_100:	0	0	1	1	0	0	1	1
end_x_10:	4	9	4	9	4	9	4	9
end_x_1:	8	6	4	2	8	6	4	2
end_y_100:	0	0	0	0	0	0	0	0
end_y_10:	0	0	0	0	1	1	1	1
end_y_1:	8	8	8	8	6	6	6	6

ASCII- command field 1: <ESC> 1 E a 192 016 001 001 048 008 <CR>
 ASCII- command field 2: <ESC> 1 E b 192 016 049 001 096 008 <CR>
 ASCII- command field 3: <ESC> 1 E c 192 016 097 001 144 008 <CR>
 ASCII- command field 4: <ESC> 1 E d 192 016 145 001 192 008 <CR>
 ASCII- command field 5: <ESC> 1 E e 192 016 001 009 048 016 <CR>
 ASCII- command field 6: <ESC> 1 E f 192 016 049 009 096 016 <CR>
 ASCII- command field 7: <ESC> 1 E g 192 016 097 009 144 016 <CR>
 ASCII- command field 8: <ESC> 1 E h 192 016 145 009 192 016 <CR>