KMT - Kraus Messtechnik GmbH

Gewerbering 9 • 83624 Otterfing • Germany https://www.kmt-telemetry.com

+49-8024-48737 Fax.-5532 info@kmt-telemetry.com



MTP-NT Software User Manual

Sophisticated multi-channel telemetry system for rotating application, fully software programmable



INSTRUCTIONS FOR QUALIFIED PERSONNEL ONLY!

Further resources and the latest document versions

MTP-NT Technical Resources Page:

https://www.kmt-telemetry.com/support/mtp-nt/

MTP-NT User Manual: MTP-NT Software & Information Manual: MTP-NT Inductive Powering User Manual: https://www.kmt-telemetry.com/support/mtp-nt/Files/MTP-NT-UM.pdf https://www.kmt-telemetry.com/support/mtp-nt/Files/MTP-NT-SW.pdf https://www.kmt-telemetry.com/support/mtp-nt/Files/MTP-IND-PWR.pdf

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https://www.kmt-tele TP-NT Technical R ×	metry.com/support/mtp-nt/ v 🔒 C Suchen		} ₹0
MTF Techr	P-NT nical Resources		
Software			
lement	Description	Downloads	Notes
irmware	This is the latest firmware for all MTP-NT systems. All modules (no matter what function they have) work with the same firmware. Therefore, with a single operation a complete MTP-NT system can be updated to the latest firmware version. Just double-click nt_update.exe and the update will start.	Download	Release Note
Vindows config oftware	This is the latest Windows config software for all MTP-NT systems. [usage: extract the folder and start the ntconfig.exe, that's all (but you'll have to set the right COM port)]	Download	Release Note
nstructions			
lement	Description	Downloads	Notes
Jser Manual	This is the latest user manual for MTP-NT.	Download	Release Note
Pictures			
lement	Description	Downloads	Notes
Product Overview	This is the latest user manual for MTP-NT.	Download	Release Note
Γools			
lement	Description	Downloads	Notes
itrain Gauge Calculation Tool	Excel-Sheet for calculating micristrain to output voltage and output voltage to microstrain.	Download	Release Note
forsional Moment Calculation Tool	Excel-Sheet for calculating the torsional moment	Download	Preview
Auxiliary			
lement	Description	Downloads	Notes
Mini-Terminal	Easy-to-use terminal software	Download	Release Note
Driver for JSB/RS232 adapter	Windows 7/8/8.1/10 (32 & 64-bit) WDF WHQL Driver: v3.8.18.0 (10/17/2017)	Download	Release Note
nformation Locking Clip	Information from AMP/TE about Locking Clip Contacts and Housings	Download	Contact drawing
nformation Locking	Information collection about Locking Clip Contacts and Housings for MTP-mtp-nt	Download	Release Note

NT Module Firmware:

Go to the official NT support site (<u>https://www.kmt-telemetry.com/support/mtp-nt/</u>) and download the firmware setup file **nt_update.exe** as shown in the below figure.

Software		Ū				
Element	Description				Downloads	Notes
Firmware	This is the latest firmware for a with the same firmware. There the latest firmware version. Ju	all MTP-NT systems. All module fore, with a single operation a st double-click nt_update.exe a	es (no matter what function they complete MTP-NT system can b nd the update will start.	/ have) work e updated to	nt_update.exe	Release Note
WinZip Self-Extractor MTP-NT (1) connect M (2) start this s (3) optional: c	or - nt_update.exe Firmware Update: Version 0.09.08 ** MTP-NT Controller to RS232 COMx etup (press "Setup" button) choose the correct COM port	Cancel	This is always the I systems. All MTP-N function they have) Therefore, with a si NT system can be version. Just double update will start.	atest firmv NT module work with ingle opera updated to e-click nt _	ware for all MT es (no matter v the <u>same</u> firm ation a comple the latest firm update.exe a	TP-NT what nware. ete MTP- mware and the
NT Firmware Lo	ader nload.exe v.2.02					x
COM32: 11 NT Firmwar Comment: S Connected C:\users\sz\appo Scanning HEX F PROGRAMMING 06800 07000 07	IS209, E, 8, 1 ? re: NTPIC1 tandard compilation to: NT_CONT_05 S data\local\temp\nload.log = OP data\local\temp\ntpic1.hex = OI file ntpic1.hex HEX File sca G (FLASH block address) 00 800 08000 08800 09000 098	Version: 00.09. S/N 000001345 // EN. PEN. anned successfully: 9810 0000 00800 01000 0180 00	08 2-Jul-19 NTBOOT 00.01.03 lines / 39162 commands 0 02000 02800 03000 03	Prog	gramming Time: 4800 05000 058	63.6 s
firmware u	pdate is running.		include THERMO-Tables	▼ 09	.07.19 00:	33:21



To change the COM port click on the *COM port settings* box that is located on the top left corner (marked in red).

In the COM port settings window you can change the COM port number. The default communication setting for all MTP-NT systems is 115200,E,8,1 (this setting never has to be changed, but you must be sure that this setting is correct).

Note: In the case of connection problems, you should check the Device Manager to see if the COM port used is available.

NT Configuration Software (Windows):

Go to the official NT support site (<u>https://www.kmt-telemetry.com/support/mtp-nt/</u>) and download the **ntconfig.zip** file as shown in the below figure. You need to extract the zip file. Any extractor tool can be used to get the contents.

MTP-NT Technical Resour	ces		
Software			
Element	Description	Downloads	Notes
Firmware	This is the latest firmware for all MTP-NT systems. All modules (no matter what function they have) work with the same firmware. Therefore, with a single operation a complete MTP-NT system can be updated to the latest firmware version. Just double-click nt_update.exe and the update will start.	nt_update.exe	Release Note
Windows Config Software	This is the latest Config Software <i>ntconfig.exe</i> for all MTP-NT systems. From now on, the NT Config Software comes with a Windows installer: (1) If there is an older version, installed directly in a folder, then remove this first. (2) Then simply start the ntconfiginstaller.exe (3) Start the NT Config Software via the shortcut on the Windows Desktop.	ntconfiginstaller.exe	Release Note
Instructions & Informations			
Flomont	Decention	Downloads	Notos

This will be described in more detail soon ...

NT MTP-NT Configura	tor (V1.1.25)						– 🗆 X
COM8: 115200,E,8,3	Tx Rx	? Save	Configuration Report:	Sy	stem One	Module	READY
MTP-NT System Setting	Modules: 7 Channels: 14	Powering Mode: Data Transmissio	n.a. n: n.a.	Bit Rate (kBit/s) 2500 (256ch)	Sampling Rate 488.281	Samples/s	Config MTP-Gateway Bitrate Config
Module S/N 045 Contro C1 Hardwar Softwar	7585 ler 1 e e 00.10.03 05.06.03	Module Status Voltage 6.54 V Temp. 37.0 °C 1 Selftest O.K.	Module S/N 30129 Power Hardware Software	2 1.23 4.56 12.34[98]	Vodule Status Voltage 6.14 V Temp. 32.0 °C I I Selftest O.K.	8.92	Inductive Power 39.7 V I
Module S/N099 Analog Hardwar Softwar	901 e e 00.10.03 03.06.0	Module Status Voltage 6.54 V Temp. 39.0 °C 1 Selftest O.K.	Channel 1 Strain Gauge Channel 2 Strain Gauge	BridgeType [Ohm] Quarter(-) 120 ~ BridgeType [Ohm] Quarter(-) 120 ~	Range [±mV/V] 0.625 ~ Range [±mV/V]	Shunt Offset Auto Zero auto Shunt Offset Auto Zero auto	Filter [Hz] Rev. Pol 2228 Filter [Hz] Rev. Pol 2228
Module S/N0999 Therm 2 Hardwar Softwar	901 D e e 00.10.03 02.02.0	Module Status Voltage 6.54 V Temp. 37.0 °C 1 Selftest O.K.	Channel 3 Thermo Channel 4 Thermo	Sensor Type K(NiCr-Ni) ~ Sensor Type PT500 ~	Temp.Range [°C] -273.15/+1635.2 \vee Temp.Range [°C] -273.15/+1635.2 \vee	3	Filter [Hz] 32 🔄 Filter [Hz] 32 🔄
Module S/N0002 Voltage Hardwar Softwar	837 : e e 00.10.03 03.06.0	Module Status Voltage 6.54 V Temp. 36.5 °C 1 Selftest O.K.	Channel 5 Voltage Channel 6 Voltage	Input DC Voltage v Input OFF v	Range [±V] 2.5 ✓ Range [±V] ✓ 5 ✓	Auto Zero Auto Zero	Filter [Hz] Rev. Pol 2600 🗧 🗖 Filter [Hz] Rev. Pol 2600 🗣 🗖
Module S/N0999 IEPE/I 4 Hardwar Softwar	901 CP® e e 00.10.03 03.06.0	Module Status Voltage 6.54 V Temp. 32.0 °C 1 Selftest O.K.	Channel 7 IEPE/ICP® Channel 8 IEPE/ICP®	Input OFF ~ Input OFF ~	Range [±V] 2.5 ∨ Range [±V] 2.5 ∨	Auto Zero Auto Zero	Filter [Hz] Rev. Pol 3501 🔄 🗖 Filter [Hz] Rev. Pol 440 🔄 🗖
Module S/N0999 XVDT 5 Hardwar	901 e	Module Status Voltage 6.54 V Temp. 39.0 °C	Channel 9 XVDT Channel	Input XVDT ~ Input	Range Gain2 ~ Range	Auto Zero Auto	Filter [Hz] Rev. Pol 4901 Filter [Hz] Rev. Pol 4901
Module S/N0999 Strain (6 Hardwar	903 Gauge e	Module Status Voltage 6.54 V Temp. 31.5 °C	Channel 11 Strain Gauge Channel 11	BridgeType [Ohm] Quarter(-) 120 ~ BridgeType [Ohm]	Range [±mV/V] 0.625 ~ Range [±mV/V]	Zero Shunt Offset Auto Zero auto Shunt Offset	Filter [Hz] Rev. Pol Filter [Hz] Rev. Pol
COM Port opened: CC	00 00 00 00 00 00 00 00 00 00 00	10		0 1 12400	0.005	Auto 📼	2000 V

- 1. **Controller Module:** The red marked box indicates the controller module present in the system. All information regarding this module is described here.
- 2. Power Module*: The blue marked box indicates the Power module present in the system. Information regarding different parameters are mentioned in this box. (* omitted when no power module is present)
- 3. Measurement Modules: This area contains the information and settings of all the modules connected to the controller module. All the different types of modules like Strain Gauge, Analog, Thermo, IEPE/ICP, Voltage, Potentiometer etc. are listed here. Module specific setup operations can be performed, like Range Setting, Bridge Type, send AutoZero, set/reset shunt, reverse polarity, change filter frequency, etc. On performing these operations, the "Connection Status Indicator" could change its status to busy (Yellow/Orange blinking) since it may need some time to dispatch commands and waiting for response. It is advisable to wait till this Connection Status Indicator turns green again before taking any new action.

ŀ	NT MTP-NT Configurator (V1.1.25)				×
	COM8: 115200,E,8,1 Tx Rx ? Save Configuration R	eport: System	One Module		3/8
	MTP-NT Modules: 7 Powering Mode: n.a. System Setting Channel: 14 Data Transmission: n.a.	Bit Rate (kBit/s) Sampling Rate 2500 (256ch) 488.281	ate Samples/s	Config MTP-Gateway Bitrate	• Config
	Module S/N 0457585 Module Status Controller Voltage 0.00 V Hardware Temp. 0.0 °C Software 00.10.03 05.06.01 Selftest O.K.				
	Module V/N0999901 Module Status Channel Voltage 0.00 V 1 Strain G Software 00.10.03 03. System Help 2 Strain G	BridgeType [Ohm] Range [±m BridgeType [Ohn 3 nge [±m BridgeType [Ohn 3 nge [±m BridgeType [Ohn 3 nge [±m BridgeType [Ohn 3 nge [±m] 0.625	IV/V] Shunt IV/V] 4 Shunt IV/V] Auto Zero	Offset Filter [Hz] Rev. Pol auto 2228 Offset Filter [Hz] Rev. Pol auto 2228	5

- 1. **COM port Settings:** This box is responsible for the COM port settings. Click on this box that opens another dialog to configure the settings. See the next pages for changing the settings.
- 2. Serial port LED: There are three colors that explains state of serial communication in the application.

Gray: This color means that there is no serial port with given settings.

Yellow: This color means that serial port is available but unable to contact or communicate with MTP_NT system.

Green: This color means that the application is able to communicate with MTP_NT with given serial port settings.

- 3. System Report: Click this button to store the whole system report in to two available formats in PDF or in excel sheet. See next page for detailed information.
- 4. Single Module Report: Click this button to save the single module report among available options. This section is described in the next page.
- 5. Connection Status Indicator: There are two phases as mentioned below. It is advisable to wait till Ready (Green) and then give the next command.

(a) Busy (Yellow): In the initial stage of application start it shows the number of modules to be fetched like in the above picture. Upon issuing a group command it displays the number of seconds till the operation completes.

(b) Ready (Green): This indicates that all pending messages are sent and the user can send additional operations.

MTP-N System Se NT COM Port Setting Available COM ports in PC Module Available COM ports in PC Nodule Available COM ports in PC 1 1 2650:	115200,E,8,1	? Save Configuration: System One Module	
C1 Available COMPPORTS. 8.25 W Inductive Power 0125: 1 3 4 5 - 1 2650: - - - - - 1 5175: -	-N NT COM Port Settin	g Available COM ports in PC	X Sampling Rate kBit/s 1666.667 Samples/s Bitrate C
1 5175:	0125: 1 _ 3	4 5	8.25 W Inductive Power 3
2 101125: 126150: 3 Comfig 115200:E,8,1 Select Settings Do not change the settings. Cancel 6002 ♥ □ Filter [Hz] Rev. Pol. Level [%] 5003 ♥ □ 6002 ♥ □ Filter [Hz] Rev. Pol. Level [%]	5175: 76100:		Filter [Hz] Rev. Pol. Level [%]
Modul 3 COM 5 Config 115200:E,8,1 Select Source 5003 Config 15200:E,8,1 Select Source 5003 Select Source 5000 Select Source 5003 Select Source 5003 Select Source 50	² 101125:		
Do not change the settings.	одик сом	5 Config 115200:E,8,1 Select	Filter [Hz] Rev. Pol. Level [%]
These are default settings for MTP-NT		Do not change the settings. Cancel These are default settings for MTP-NT	6003 🔄 🔲

To change the COM port, click on the COM port settings box that is located on the top left corner (marked in red).

1. **COM Port Setting Screen**: This screen allows you to enter the used COM Port number. (Hint: in the above blue marked area there's a list of the currently available COM ports). Click on "*select*" to open the used COM port with given settings

ITP-N ystem Set	F ting	Modules: 6 Channels: 1	i0 120		Powering Data Tran	Node:	inductive	•	Bit Rate 2500	kBit/s	Sampling Rate	amples/s	Bitrate Conf
Module	S/N 30000 Controller	Modul Voltag	e Status	Module s	/N 30129 Power	1 23		NT O	ne Module Repor	t		×	39.8
	Select All				ftware	4.56	12.34[98]		Module Type	Serial No.		^	ок ні
	Module Type	Serial No.		^	1ge [±V] 3125	~	AUTO		Controller Strain Gauge	30000		я.	Level [%]
	Strain Gauge	30001			5	~	2		IEPE_ICP	30002			
	IEPE_ICP	30002			Las Lug				Voltage	30003			Laural [0/]
	Voltage	30003			ige [±v]	~	AUTO		Thermo	40004		л.	Level [%]
	Thermo	40004			23	Ť	ZERO		Strain Gauge	30005			
	Strain Gauge	30005			525	\sim	AUTO ZERO		Strain Gauge	30006			
	Strain Gauge	30006			isor Type		Temp.Ra		Strain Gauge	30007			
	Strain Gauge	30007			500	\sim	-50/+30		Strain Gauge	30008			
	Strain Gauge	30008							Strain Gauge	30009		~	
	Strain Gauge	30009		~	NiCr-Ni)	\sim	-270/+1	То	Clipboard Ope	n in File Pri	nt Save PD	 ₹	
	Cave as Ev		0		geType [O	nm]	Range [yl.	Level [%]

- 1. System Report Screen: When clicking on the *System* button on the top, a new screen appears with a list of all modules in the connected NT System. The checkboxes of all modules that should be included in the system report must be selected. The system report could be either saved as an Excel file or a PDF file by clicking on the desired *Save* button below.
- 2. One Module Report Screen: This function is used to collect the status report of a single module, for printing, writing it to a Text or PDF file, or simply copying it to the clipboard.

MTP-NT Configurator (V1.1.	17)					– 🗆 🗙
COM4: 115200,E,8,1	Save Configuration Rep	oort: System One Module				READY
MTP-NT	Modules: 6	Powering Mode:	inductive	Bit Rate	Sampling Rate	
System Setting	Channels: 12	Data Transmission	n: inductive	0.000 kBit/s	0.000 Samples/s	Bitrate Config
Module S/N 0999901 C1 Module I Softwale 00.05	Module Status Voltage 6.18 ∨ Temp. 25.5 ℃ 9.04 05.06.01 Selftest O.K.	Module S/N Power 1 Hardware Software	Contractions and the status status and the status status and the status status and the status status status and the status stat	Load I I I I I mA 1000	0.00 W Inductive Power	0.0 V
Module <u>S/N 0999901</u>	Module Status	Channel BridgeType [Ohm]	Range [±mV/V]	Shunt Offset	Filter [Hz] Rev. Pol.	Level [%]
Strain Gauge	Voltage 6.18 V	1 Half(+) ~	40 ~	AUTO ZERO auto	5000 🗘 🗌	
1 Hardware Software 00.09	1.04 Temp. 25.5 ℃ 9.04 03.06.01 Selftest O.K.	2 Full Half(+) Half(-) Quarter(+) 350	40 20 10 5	AUTO ZERO auto	5000 🖨 🔲	
Module S/N 0999901	Module Status	Quarter(-) 120 Channel Sensor ype	2.5 1.25		Filter [Hz]	
Thermo 2 _{Hardware}	Voltage 6.18 V	3 PT100 ~	0.025	3 4 5		
Software 00.0	9.04 02.02.01 Selftest O.K.	4 K(NiCr-Ni) ~	-273.15/+1635. ~			

Strain Gauge

The configuration parameters of the strain gauge could be altered. In the above picture for MTP-NT Configurator the markings along with numbers indicate each different parameter that could be altered from application, below is information about them. A group command can be issued for some features denoted by "SC (Shift Click)" and "SE" (Shift Enter).

- 1. Bridge Type (SC): The drop box below "Bridge Type" label could be clicked to display a list of valid options. Depending on the required type the user can make his selection and the specific channel is set the value.
- 2. Range (SC): Click on the drop box below the label "Range ". This will display a list of items that user could select to set the range.
- Autozero (SC): Click on the Autozero button to send the command to the corresponding channel. The button text changes to red (Time in red color is the approx. time for autozero to take effect in the module). Holding Shift key while clicking will apply the AZ command to all similar channels at once. Alternatively, on Long press of this button Autozero Reset command is sent to the particular channel of the module.
- 4. Shunt : Clicking this option enables the shunt for the specific channel in the module.
- 5. Offset: Clicking this box displays a new screen where user can set it to auto or manual for the offset value in the corresponding channel.
- 6. Filter (SE): The filter value could be set in this box, upon setting the text changes to blue and command is sent for the specific channel in the module.
- 7. Rev. Pol.: This box could be clicked to reverse the polarity of the specific channel for the module.

(SE) and **(SC)** denotes that this feature is eligible to be used in combination with Shift + Enter (SE) and Shift + Click (SC) that sets the current selected setting to all modules of similar type. Simply click on the dropdown of eligible types then by holding shift and click on the setting to apply on all similar modules.

NT MTP-NT C	Configurator (V1.1.17)								-	- 🗆 X
COM4: 1152	200,E,8,1	Save Configuration Repo	ort: System	One Module						READY
MTP-N	T Mo	dules: 6		Powering Mode:	inductive	Bit Rate		Sampling Rate		
System Set	tting Cha	annels: 12		Data Transmissio	n: inductive	0.000	kBit/s	0.000	Samples/s	Bitrate Config
Module C1	S/N 0999901 Module Name Software 00.09.04 05.06.01	Module Status Voltage 6.18 V Temp. 25.5 °C Selftest O.K.	Module S/N Pov P1 Hard Soft	wer 1 dware 0.00 tware	Vodule Status voltage 6.18 V temp55.0 °C Selftest O.K.	Load I I I mA	I I 1000	0.00 W Inc	ductive Power	0.0 V
Module	5/N 0919901 Thermo	Module Status C Voltage 6.18 V	Channel Sens	sor Type	Temp.Range [°C]			Filter [Hz]	4 🜩	^
2	Hardware 1.04 Software 00.09.04 02.02.01	Temp. 25.0 °C Selftest O.K.	4 PT5 PT1 K(N	100 500 1000 liCr-Ni)	-273.15/+1635.00 -273.15/+1635. ~				4 🜩	
Module 3	S/N 0002837 Voltage Hardware 1.04	Module Status C Voltage 6.18 V Temp. 25.0 °C	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	e-cuni) liCr-CuNi) 2u-CuNi) Pt13Rh-Pt) It10Rh-Pt) It30Rh-Pt6Rh)	AUTO ZERO			Filter [Hz]	Rev. Pol. Lev	el [%]

Thermo Module

The thermo module has only three parameters that could be modified by the user

- 1. Sensor Type: There are a list of sensors that could be configured with the Thermo modules. The user can click on the drop box below the Sensor Type and choose desired sensor
- 2. Temperature range: The temperature range could be modified by selecting the drop box by the user.
- 3. Filter: The filter value could be set in this box, upon setting the text changes to blue and command is sent for the specific channel in the module.

NT	MTP-NT Co	onfigurator (V1.1.17)								-	- 🗆 ×	(
	COM4: 1152	D0,E,8,1	ave Configuration Re	port: System	n One Module						READY	
	MTP-NT	Mod	dules: 6		Powering Mode:	inductive	Bit Rate		Sampling Rate			
	System Sett	ing Cha	annels: 12		Data Transmission:	inductive	0.000	kBit/s	0.000	Samples/s	Bitrate Config	
	C1	S/N 0999901 Module Name Software 00.09.04 05.06.01	Module Status Voltage 6.18 V Temp. 25.5 °C Selftest O.K.	Module S/ P0 P1 Ha So	N ower ardware 1.00 oftware	Module Status Voltage 6.18 V Temp55.0 °C Selftest O.K.	Load I I I mA	I I I 1000	0.00 W Inc	luctive Power	0.0 V	
	Module 3	S/N 000 2837 Voltage Hardware 1.04 Software 00.09.04 03.06.01	Module Status Voltage 6.18 V Temp. 25.0 °C Selftest O.K.	Channel Ra 5 0 1 5 2	ange [±V]	AUTO ZERO AUTO ZERO			Filter [Hz] 5000	Rev. Pol. Lev	el [%]	
	Module 2	S/N 0999901 Thermo Hardware 1.04 Software 00.09.04 02.02.01	Module Status Voltage 6.18 V Temp. 25.0 °C Selftest O.K.	Channel 0 3 P ² 4 K	.3125 T100 ~ (NiCr-Ni) ~	-273.15/+1635. ~			Filter [Hz]	Rev. Pol. Lev	el [%]	

IEPE / Voltage / Potentiometer Module

Modules such as IEPE, Voltage, Potentiometer etc. have the same set of user interface elements such as the "Range", "Autozero", "Filter" and "Reverse Polarity etc. look in to Strain Gauge section as setting these features are already discussed there.

NT MTP-NT Configurator (V1.1.25)			- 🗆 X
COM8: 115200,E,8,1	? Save Configuration Repo	rt: System One Module	READY
MTP-NT Modules: 7	Powering Mode: n.a.	NT Modify Channel Function X	
System Setting Channels, 14	Data mansmission, n.a.	ANALOG Module, Channel 1	Config MTP-Gateway Bitrate Config
Module S/N 0457585	Module Status	○ Strain Gauge	
Module Name	Voltage 6.54 V	○ IEPE/ICP® ○ Potentiometer	
C1 Hardware	Temp. 36.0 °C 1		
Software 00.10.03 05.06.0	1 Selftest O.K.	OK Cancel	
Module_S/N0999901	Module Status Channel	Input Range [±V]	Filter [Hz]
Analog	Voltage 6.54 V 1 Voltage	DC Voltage V 10 V Auto Zero	2228 🔹 🔲
1 Hardware	Temp. 39.5 °C Channel	BridgeType [Ohm] Range [±mV/V] Shunt Offset	Filter [Hz] Rev. Pol
Software 00.10.03 03.06.0	1 Selftest O.K. 2 Strain Gaug	e Full 2 v 0.625 v Auto Zero auto	2228 🔹 🗖

Analog Module

The Analog module channels can be configured to a different channel function type such as Strain Gauge, Voltage, IEPE/ICP and Potentiometer.

- 1. Modify Channel Function: Click on the channel number button below "Channel", this brings a new dialog where a different channel function can be selected. The available channel functions are Strain Gauge, Voltage, IEPE/ICP and Potentiometer.
- 2. Channel Function name: Upon successful change in the channel function, the name and features available for the channel are displayed

The selected channel function behaves exactly like the same way as its chosen type, for example if the channel function is chosen as Strain Gauge all the features for the channel are identical as Strain gauge. This behavior is same when Voltage, Potentiometer and IEPE are selected.

This will be described in more detail soon ...

em Sett	ting	Mod Char	nels: 6		Powering I Data Trans	Mode: n.a. mission: n.a.	Bit 50	: Rate (kBit/ 000 (32ch)	/s) Sam 781	pling Rate	Samples	s/s	Bitrate Co
Module	S/N 0999902		Module Sta	tus									
	Controller		Voltage 6.9	99 V									
C1	Hardware 1.04	1	Temp. N	Dialog					?	×			
	Software 00.09.16	05.06.01	Selftest	Help Manua	I								
Module	S/N0999901		Module	This applicat	on uses COM port fo	or serial communica	tion.			^]	R	ev. Pol	Level [%]
	Strain Gauge		Voltage	To get the o	complete manual <u>did</u>	<u>there.</u>					÷		
1	Hardware 1.04	4	Temp.	In order to o	hange the COM por	t settings:-					_		
	Software 00.09.16	03.06.01	Selftest	1) Inorder to	choose COM port	Settings, Click on	the white box(S	ettings box) on top Left. Th	nis will	-		
Module	S/N0999901		Module	2) In the ne	w window fill the nu	mbor used by your	COM part basida	the hey riv	abt of COM (Co.)	1			
	Thermo		Voltage	device mana	ger and see under s	erial ports to know	your COM port).	r the box h <u>c</u>	Int of COM.(Go	.0			
2	Hardware 1.04	4	Temp.	Tip: In the s	ame screen a list of	available COM port	numbers in the s	ystem are li	sted out ranging	from			
	Software 00.09.16	02.02.01	Selftest	1 to 150.							-		
Module	S/N0002837		Module	 Choose the dialog box to 	ne configuration of s specify baudrate,pa	erial port by clicking arity,stopbit and da) on the text box ta bits. Select yo	beside Co i ur desired s	n fig. This opens ettings.	up a	R	ev. Pol	Level [%]
	Voltage		Voltage	4) There is a	n LED present just l	peside the settings	box.			Í	•		
3	Hardware 1.04	4	Temp.	5) Upon suc	cessful opening, The	status of the cont	troller is automatio	cally retrieve	ed and displayed	on	•		
	Software 00.09.16	03.06.01	Selftest	the screen.	Upon successful re	trieval of status t	he LED box turns	to GREEN	•		-		
	- /			6) When the	ere is no response f	from the controller	or the controller	status is no	t readable , the	mini-			
Module	S/N0999901		Module	7) Wheneve	r there is an error in	communication wi	th COM Bort a VE		r is displayed in th		Re	ev. Pol	Level [%]
	IEPE/ICP®		Voltage	LED.	r chere is an error in	communication wi			пь израуец пт и	le	-		
7	Hardware 1.04	4	Temp.	8) In the ma	in screen on the top	right the status o	f the application i	is indicated	by a box with eit	ther 🗸			
	Software 00.09.16	03.06.01	Selftest		•						•		
Module	S/N0999901		Module Sta	tus Channe	l Range					Filter [Hz]	Re	ev. Pol	Level [%]
	XVDT		Voltage 6.9	99 V 9	Gain1	 Auto Zero 				4900	*		
5	Hardware 1.04	4	Temp. 24.	5 °C	-	Auto							
	Software 00.09.16	03.06.01	Selftest O.	K. 10	Gain1	Zero				4901	÷		
Module	S/N0999903		Module Sta	tus Channe	BridgeType [O	hm] Range [±m	v/v]	Shunt	Offset	Filter [Hz]	R	ev. Pol	Level [%]
	Strain Gauge		Voltage 6.9	99 V 11	Half(+)	× 40	 Auto Zoro 		auto	4900	\$		
6	Hardware 1.04	4	Temp. 24.	5 °C			Zero						
	Software 00.09.16	03.06.01	Selftest O.	к. 12	Half(+)	× 40	Zero		auto	5000	÷		

Help Manual

If for future references on quickly going through the basic operations of NTConfig, a help manual is present that opens by clicking on the "?" button as given in the above picture. A brief overview is provided in this dialog and for a detailed information there is also a link provided that redirects to this document again.

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05.06.16 Version 002

KMT IP LAN Interface

TCP Settings



1. TCP Block Format

Index	Name	Size / Format	Example	Comment
0	frame_size	2 Byte unsigned int	00000000 00001000 Frame Size = 8 Bytes	Frame Size in Bytes
2	number_of_frames	2 Byte unsigned int	00000000 00001010 10 Frames	Number of Frames
4		frame_size (Bytes)		first Frame
n		frame_size (Bytes)		last Frame

blue = Data Section

n = ((4 + (frame_size * number_of_frames)) - frame_size)

- The data sample format is 16 Bit unsigned integer, as it comes from the A/D converter.
- The frame size is the data sample size (2 bytes) times number of channels.
- The order of bytes is Little-Endian (Intel).

2. IP-LAN Device Setting (server mode for PC client software)



3. Method for transmitting data via TCP

- (a) Ensure that a valid PCM data stream is present at the PCM input. Otherwise the device will send nothing over TCP.
- (b) Open the socket defined in the box "Telemetry" with your own client software (see paragraph 2).
- (c) The IP-LAN device will immediately start to transmit the data stream (see paragraph 1).
- (d) Note that your software must be fast enough to prevent an overflow of the TCP buffer. Otherwise you could receive garbage. The only way to check data integrity is to check the plausibility of the header. In particular, the frame size must never change within a session, and the number of frames must not contain idiotic values.

Data frame:

For 4 Channels: 32 bit Barker Synch Code + 4x16 bit Data + 4x16 bit Data + 4x16 bit Data + 4x16 bit Data + 32 bit reserved

For 8 Channels: 32 bit Barker Synch Code + 8x16 bit Data + 8x16 bit Data + 32 bit reserved

For 16 Channels: 32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved

For 32 Channels: 32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved (Frame Nr.1 = CH1..Ch16) +

32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved (Frame Nr.2 = CH17..Ch32)

For 64 Channels: 32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved (Frame Nr.1 = CH1..Ch16) +

32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved (Frame Nr.2 = CH17..Ch32) +

32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved (Frame Nr.3 = CH33..Ch48) +

32 bit Barker Synch Code + 16x16 bit Data + 32 bit reserved (Frame Nr.4 = CH49..Ch64)

MTP-NT-DIG-DEC-V2 - Range of digital values in TCP data stream:

This is a table of the whole range of digital values: <u>nt_digital_range.xlsb</u> The column "decimal" shows the unsigned short value, coming in the TCP data stream. This values must be converted into signed short (by subtracting 32768). The column "bipolar" shows the result that represents the measured value.

Calculation of the bipolar value: [incoming digital value] - 32768 = [bipolar value] Examples:

Analog measurement (strain gauge, voltage etc.):

The range of bipolar values is -32768 to 32767. The fullscale signal range is -32704 to 32704. Example 1 (STG module): * input range setting = ±5 mV/V

* applied bridge unbalance = +5 mV/V

* digital value (unsigned short) = 65472

* bipolar value = 32704

Example 2 (Volt module):

- * input range setting = ±10 Volt
- * applied input voltage = +10 Volt
- * digital value (unsigned short) = 65472
- * bipolar value = 32704

Temperature measurement:

The digital output resolution is 0.05K/step^{*} (20 steps/Kelvin) This means that the bipolar value must be divided by 20 to get the temperature. Example:

* sensor temperature = +100°C

* digital value (unsigned short) = 34768

* bipolar value = 2000

sensor fault message (sensor break): Temperature value = -999.0°C unreasonable value message (overflow): Temperature value = -998.0°C • This means the mathematically generated output resolution after linearization; the true ADC resolution depends on sensor type and temperature range and may be significantly lower

Analog Decoder output:

The bipolar fullscale value (±32704) generates an analog output Voltage of ±10.00 Volt.

Analog Decoder output	Data Stream		Analog Out	Temperature (depending on module setting)			
(Temperature Values):	decimal	bipolar	(±10V)	-273/+1635	-273/+1000	-273/+500	-250/+250
The 10.00 Volts analog fullscale			Volt	°C	°C	°C	°C
value corresponds to the full-	65535	32767	10,019264	1638,35	1001,93	500,96	250,48
scale temperature of 1635.20	65472	32704	10,000000	1635,20	1000,00	500,00	250,00
egrees Celsius. Therefore, the	45850	13082	4,000122	654,10	400,01	200,01	100,00
factor for obtaining the tempera-	39309	6541	2,000061	327,05	200,01	100,00	50,00
ture value from the analog	36039	3271	1,000183	163,55	100,02	50,01	25,00
decoder output is 163.52	32768	0	0,000000	0,00	0,00	0,00	0,00
(example: 1.00 volts analog	27305	-5463	-1,670438	-273,15	-167,04	-83,52	-41,76
output voltage multiplied by	23835	-8933	-2,731470		-273,15	-136,57	-68,29
163.52 gives the reading 163.52	14902	-17866	-5,462940			-273,15	-136,57
egrees Celsius).	64	-32704	-10,000000				-250,00
Version 005	0	-32768	-10,019569				-250,49