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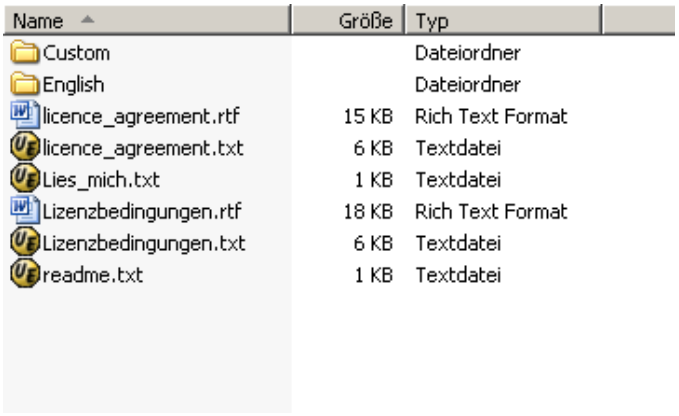
2 Introduction

The parameterisation software Metronix ServoCommander for the servo positioning controller of the DIS-2 and ARS 2000 series can be individually customized. This can be done by the customer himself by simply updating some parts of the installation CD. This application note shall describe the single steps to be executed in order to customize the software. The way to do this is the same for both DIS-2 and ARS 2000 ServoCommander software.

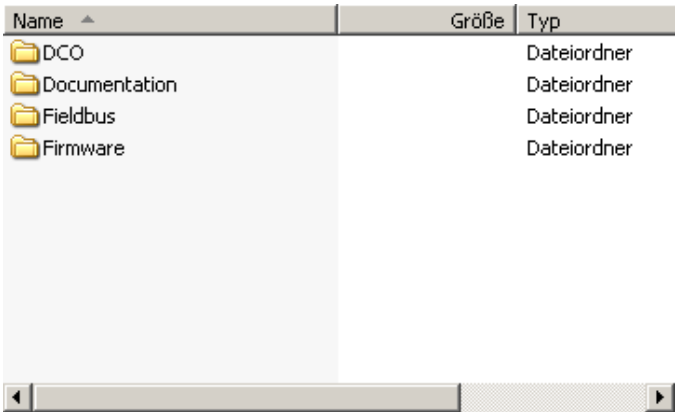
3 Customizable components

3.1 Overview

To customize the Metronix ServoCommander software, the entire installation CD, as delivered to you from Metronix, has to be copied to a directory on your local hard disk. Afterwards the following subdirectories will be available:



As you can see in the picture above, the directory contain a folder named “CUSTOM”. This folder is used to customize the installation of the ServoCommander software. After the completion of the standard installation the contents of the “CUSTOM” folder are automatically copied to the installation directory. Any files, installed by the standard installation process, will be replaced with the customized files of the “CUSTOM” folder, if they exist. The “CUSTOM” folder contains the following subdirectories:



In the folder “DCO” you may place your own DCO files (parameter sets), that should be available to the customer after installation. In the folder “Documentation” you may place your own documents, like manuals, application notes, etc, that shall be copied to the ServoCommander installation directory.

The folder “Firmware” may contain all firmware versions, that shall be installed along with the ServoCommander software.

The folder “Fieldbus” may contain further field bus files, that shall be installed along with the ServoCommander software. Such files can be for example CAN EDS or Profibus GSD files.

The following parts of the parameterisation software can be customized using the “CUSTOM” folder:

- Software logo / Start up logo
- The name of the parameterisation software
- The manufacturer information, shown in the window “About”
- The list with the supported motors

The following table describes the customizable files. These files must be contained in the top level of the “CUSTOM” folder and should not be renamed. Please note, that all pictures and icons should have the same size and resolution as the Metronix standard components in order to be correctly displayed. The following components of the ServoCommander software can be customized.

Component Name	Description
“icon.ico” for Metronix ServoCommander  “DIS-2.ico” for DIS-2 ServoCommander 	This file contains the icon, that is displayed in the parameterisation software. This file can be edited by the customer and will replace the Metronix default icon. Please note, that the icon of the *.exe file will not change, because it is statically linked into the *.exe file at compile time. The icon of the *.exe file can only be changed using a resource editor, such as the tool XN Resource Editor. Replacing the icon file is only supported by the Metronix ServoCommander 4.0.0.1.2 and higher and by the DIS-2 ServoCommander 2.4.0.3.4 and higher.
“logo40.bmp”  ARS 2000  DIS-2	This file contains the picture, that is shown on start up of the parameterisation software and as bitmap in the “About” window. This image can be edited by your needs. Please note, that the size and the resolution of the bitmap must stay the same. Otherwise the bitmap may be shown incorrectly.
“logo.sys” ``` ; Metronix ; Version from 2003-02-10 ; [Optionen] logo=1 Copyright=Metronix GmbH Copyright_01=Metronix Copyright_02=Meßgeräte und Elektronik GmbH Copyright_03=Kocherstrasse 3 Copyright_04=D-38120 Braunschweig, Germany Copyright_05=Phone : +49 - (0) 531 / 8668 - 0 Copyright_06=Fax : +49 - (0) 531 / 8668 - 555 Internet=http://www.metronix.de email=Support-Metronix@CooperTools.com s_progname=Metronix ServoCommander s_company=Metronix GmbH ```	This file contains the software name, shown in the title, and the manufacturer information, shown in the “About” window parameterisation software. This information can be changed to your needs. Please note, that the names of the variables must stay the same. Just the values should be changed.

“motor.ini” (Metronix ServoCommander)
`[motor_000]`
`name=SH055-80013 Resolver`
`connection=X2A`
`pole_number=6`
`i_nenn_mA=1350`
`i_max_mA=4000`
`w_offset_d10=181`
`k_nm_per_A_100=70`
`n_max=8000`
`phase_index=1`
`temp_ctrl_dig=1`
`temp_ctrl_ana=0`
`temp_ctrl_opener=1`
 	
“motor.ini” (DIS-2 ServoCommander)
`[motor_000]`
`name=MH3-0270-30-48/T1`
`encoder=Resolver`
`pole_number=10`
`i_nenn_mA=20330`
`i_max_mA=32000`
`w_offset_d10=-950`
`phase_index=right`
`k_nm_per_A_100=12`
`n_max=4000`
`nenn_mot_speed=3000`
`u_nenn_mot=30`
`l_mot_0p1mH=2`
`r_mot_0p1mOhm=500`
`currc_p=112066`
`currc_i=18000`
`spdc_p=45875`
`spdc_i=160000`
	This file contains the description of the individual drives and the motors, that can be selected by the user in the “Motor selection” window of the parameterisation software.
	In this file you may add new motor types, or change the existing ones to your needs. An entry like the one shown in the left column must be created for each motor. The structure of this file is described in chapter 3.2.

If the manufacturer information in the logo.sys is modified, so the manufacturer information, shown during the installation and used to create the default installation path, must also be modified. The installation disk contains the file “English\setup.ini”, which contains the manufacturer information for the installation process.

After all the changes have been made to the “CUSTOM” directory of the installation CD, you may use this directory to create your new installation CDs. Therefore simply burn the contents of this directory to a new CD-ROM.

3.2 File „motor.ini“

The structure of the file „motor.ini“ is not completely identical for the Metronix ServoCommander and the DIS-2 ServoCommander. It’s structure for the both parameterisation software is described in the following chapters.

3.2.1 “motor.ini” for the Metronix ServoCommander

The „motor.ini“ of the Metronix ServoCommander contains motor descriptions and temperature characteristic curves.

Motor description:

```
[motor_000]
name=SH055-80013 Resolver
connection=X2A
pole_number=6
i_nenn_mA=1350
i_max_mA=4000
w_offset_d10=181
k_nm_per_A_100=70
n_max=8000
phase_index=1
temp_ctrl_dig=1
temp_ctrl_ana=0
temp_ctrl_opener=1
```

Entry	Type	Physical Unit	Description
[motor_xxx]	--	--	This entry is used to describe a new motor. xxx is decimal, begins at 0 and must be ascending.
name	string	--	The name of the motor, which appears in the selection list in the window "*Motor selection*".
connection	string	--	Encoder type Valid values: X2A, X2B and X10
pole_number	decimal	--	Number of poles
i_nenn_mA	decimal	mA	Nominal current
i_max_mA	decimal	mA	Maximum current
w_offset_d10	decimal	0.1°	Encoder offset
k_nm_per_A_100	decimal	0.01 Nm/A	Torque constant
n_max	decimal	rpm	Maximum speed
phase_index	decimal	--	Phase sequence Valid values: 0 = right, 1 = left
temp_ctrl_dig	decimal / boolean	--	Defines whether a digital temperature control is supported or not. Valid values: 0 = not supported, 1 = supported
temp_ctrl_ana	decimal / boolean	--	Defines whether an analogue temperature control is supported or not. Valid values: 0 = not supported, 1 = supported
temp_ctrl_opener	decimal	--	Only for digital temperature monitoring: Polarity of the motor temperature control Valid values: 0 = Normally closed, 1 = Normally opened
temp_ctrl_limit	decimal	°C	Only for analogue temperature monitoring: Threshold over-temperature motor

In the window *Motor selection* (called via the button "Select new motor" in the window *Parameters / Device parameters / Motor data*) you can choose one of the motors, defined in the file motor.ini:

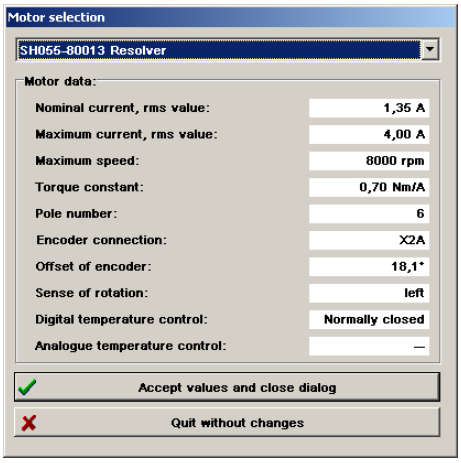


Figure 1: Window *Motor selection*

Definition of temperature characteristic curves (as of Metronix ServoCommander 2.8.0.1.1):

```
[temp_sensor_000]
name=Vishay NTC 2322-640-6
linear=0
motor_temp_max=100
motor_temp_warn=90
short_circuit=0.63
wire_break=108192
curve_entry_0_R=42160
curve_entry_0_T=-5
curve_entry_1_R=32560
curve_entry_1_T=0
curve_entry_2_R=19870
curve_entry_2_T=10
curve_entry_3_R=12490
curve_entry_3_T=20
curve_entry_4_R=8059
curve_entry_4_T=30
curve_entry_5_R=4372
curve_entry_5_T=45
curve_entry_6_R=2490
curve_entry_6_T=60
curve_entry_7_R=1753
curve_entry_7_T=70
curve_entry_8_R=915
curve_entry_8_T=90
curve_entry_9_R=386
curve_entry_9_T=120
```

Entry	Type	Physical Unit	Description
[temp_sensor_000]	--	--	This entry describes a temperature sensor. xxx is decimal, begins at 0 and must be ascending.
Name	string	--	Name of the temperature sensor
Linear	decimal / boolean	--	Defines whether the temperature characteristic curve is linear or nonlinear. Valid values: 0 = nonlinear, 1 = linear
motor_temp_max	double[1]	°C	Threshold overtemperature motor
motor_temp_warn	double[1]	°C	Warning threshold motor temperature. Set this value to 0 in order to disable this monitoring function.
short_circuit	double[1]	Ω	Short circuit monitoring. Set this value to 0 in order to disable this monitoring function.
wire_break	double[1]	Ω	Wire break monitoring. Set this value to 0 in order to disable this monitoring function.
R25	double[1]	Ω	Only for linear temperature characteristic curves: Motor resistor at 25 °C
R100	double[1]	Ω	Only for linear temperature characteristic curves: Motor resistor at 100 °C
curve_entry_x_R	double[1]	Ω	Only for nonlinear temperature characteristic curves: Resistor value of interpolation point x of the temperature curve (x is decimal, begins at 0 and must be ascending. This number must not be filled with leading zeros!) The number of interpolation points is limited to 10!
curve_entry_x_T	double[1]	°C	Only for nonlinear temperature characteristic curves: Temperature value of interpolation point x of the temperature curve (x is decimal, begins at 0 and must be ascending. This number must not be filled with leading zeros!) The number of interpolation points is limited to 10!

In the window *Temperature – Characteristic curve* (to reach via the button "…" in the window *Parameters / Device parameters / Temperature monitoring*), one of the stored temperature characteristics in the file motor.ini can be selected and loaded.

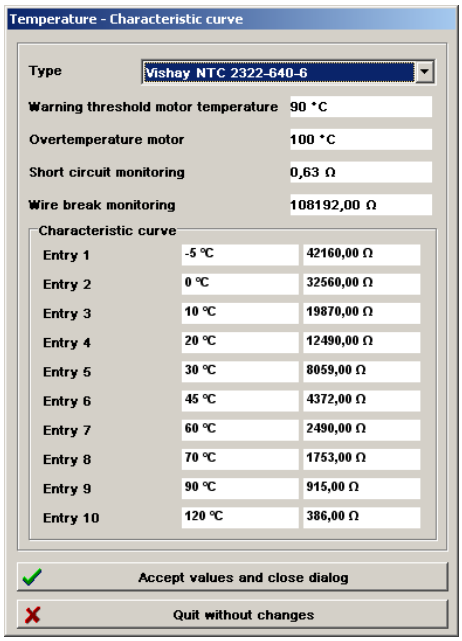


Figure 2: Window *Temperature – Characteristic curve*

[1] The decimal separator of the floating point numbers is the point "."!

3.2.2 "motor.ini" for the DIS-2 ServoCommander

The „motor.ini" of the DIS-2 ServoCommander contains only motor descriptions.

Motor description:

```
[motor_000]
name=MH3-0270-30-48/T1
encoder=Resolver
pole_number=10
i_nenn_mA=20330
i_max_mA=32000
w_offset_d10=-950
phase_index=right
k_nm_per_A_100=12
n_max=4000
nenn_mot_speed=3000
u_nenn_mot=30
l_mot_0p1mH=2
r_mot_0p1mOhm=500
currc_p=112066
currc_i=18000
spdc_p=45875
spdc_i=160000
```

Entry	Type	Physical Unit	Description
[motor_xxx]	--	--	This entry is used to describe a new motor. xxx is decimal, begins at 0 and must be ascending.
name	string	--	The name of the motor, which appears in the selection list in the window "*Motor selection*".
encoder	string	--	Encoder type Valid values: *Resolver*, *SinCos*, *DigitalHall* (= Hall encoder (Six Step)), *AnalogueHall* (= analogue hall encoder)
pole_number	decimal	--	Number of poles
i_nenn_mA	decimal	mA	Nominal current
i_max_mA	decimal	mA	Maximum current
w_offset_d10	decimal	0.1°	Encoder offset
k_nm_per_A_100	decimal	0.01 Nm/A	Torque constant
n_max	decimal	rpm	Maximum speed
phase_index	decimal	--	Phase sequence Valid values: 0 or *right* = right, 1 or *left* = left
nenn_mot_speed	decimal	rpm	Idling speed
u_nenn_mot	decimal	V	Real voltage
l_mot_0p1mH	decimal	0.1 mH	Stator inductance
r_mot_0p1mOhm	decimal	0.1 mΩ	Stator resistance
currc_p	decimal	Internal units 1 = 65536	Current controller: Gain
currc_i	decimal	Internal units 1 ms = 10000	Current controller: Time constant
spdc_p	decimal	Internal units 1 = 65536	Speed controller: Gain
spdc_i	decimal	Internal units 1 ms = 10000	Speed controller: Time constant

In the window *Motor selection* (to reach via the button "Select new motor" in the window *Parameters / Device parameters / Motor data*) you can choose one of the motors, defined in the file motor.ini:

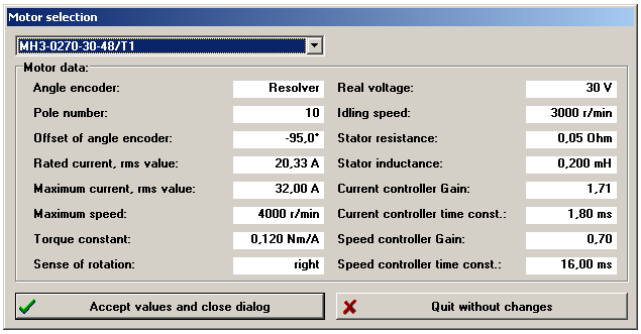


Figure 3: Window *Motor selection*