

This Application Note is pertinent to our Unidrive SP, Mentor/Quantum MP and Affinity Drive Families

Backing Up Critical Drive Setup Info Using CTSoft

Modern drives such as the Unidrive SP, Mentor/Quantum MP and Affinity contain in excess of 500 parameters permitting applications ranging from very simple to quite complex to be accomplished through basic parameter adjustments and selection settings. More complex applications may use in addition, a ladder logic program executed by the drives built-in PLC capability. To perform with optimum response characteristics, certain critical motor data and tuning information was derived during original commissioning.

Regardless of the complexity, this setup data defines the essence of the application and allows the drive to perform as it was intended for that application. Should it become necessary to replace a drive, without this critical data, the drive would be unable to perform as it was originally intended.

Control Techniques will be able to provide you with a replacement drive but we will not have the "*recipe*" (data) that was specific for your application. Therefore, <u>it is imperative</u> that the OEM, System Integrator, Field Engineer or Installer back up this critical information and leave a copy with the End User following the commissioning process. Failure to do so often results in unnecessary and costly machine downtime and End User customer frustration.

This application note will cover using the CTSoft as a method of "backing up" drive setup data.



Smart Card Method

<u>Regardless</u> whether your intention is to back up the drive data using CTSoft (our PC software), <u>one should</u> <u>always utilize the SMART CARD</u> to provide another level of drive data backup.

Control Techniques provides a Smart Card with each drive. The Smart Card provides a convenient, quick, simple method of capturing and restoring drive setup data.

Unfortunately it is our experience that very few End

SmartCard



Users are aware of this Smart Card or unable to find it during critical times or if they do find it, it is often unlabelled and blank. This is highly unfortunate because "recommissioning" can take hours, even days, whereas a SmartCard could have the drive setup and back in operation in a minute.

The OEM, System Integrator, Field Engineer or Installer should instruct the End User customer on how to restore drive data from the Smart Card should it become necessary.



Consult <u>CTAN352</u> for Smart Card Parameter Back Up Procedures

<u>CTSoft</u>

CTSoft is a drive configuration software tool for use with use with current Control Techniques drives. For more information on CTSoft and to obtain a free copy click on the link below:

CTSoft

Computer Cables to utilize CTSoft

Saving Drive Parameters using CTSoft

Upon opening CTSoft, select **Work with a Drive** then select the family type of drive you will be recording data for.



We would encourage you to include a descriptive name of the drive which is kept with this data file.

Drive Prop	perties			×
Commur	nications <u>P</u> rotocol: CT-RTU Convins <u>S</u> ettings	Node a 1 Slot:	address: Sub node:	
<u>D</u> rive Nam	ne:			
Chrome F	foll Drive		Detect Drive Configuration	
- Drive Co	Drive <u>T</u> ype: Unidrive SP	- Option I	Modules Slot <u>1</u> : Empty	•
	Drive Mode <u>I</u> : SP14×1		Slot <u>2</u> : Empty	•
	Drive <u>M</u> ode:		Slot <u>3</u> : Empty	•
	De <u>f</u> aults: Firmware ⊻ersion: USA ▼ 01.19.00 ▼			
Drive Des	cription:			
	<u>-</u>			A
	Help OK		Cancel	

Then perform a quick verification that CTSoft is able to communicate with your drive by clicking on **Detect Drive Configuration**.



If communications fail and this dialog box appears;



Click OK and click on Comm Settings.

35 36 722 CTSoft-My Proj: Drive F Eile Edit Drive Explorer My Drive Drive F Drive F Dr	Voperties munications Protocol: CT-RTU Comms Setting Name:	0**** 216**** 252** 28	Node address:	· 360 · · · 396 · · · 432	××
Explorer My Drive Drive Drive	Comms Settin	gs			Memory A
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Toolbox Upload paran Download pa Reset drive	Defaults: F USA T Description:	irmune Version:		Cancel	0.0 0.0 Ld Fr 1.000 0 0 no

Try an alternate Comm port. Make sure protocol and Node address are correct and re-try.

In order to capture all the drive setup data using CTSoft, one should use the **UPLOAD** function.



This will ensure that CTSoft has copied all the drive parameter changes into it's RAM memory area.

Then you need to **Save Parameter File**. It is easiest to simply click on the ICON located in the Toolbox.

CTSoft - My Project		B	-8×
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Explorer × My Drive 1 • Drive Properties • Parameters • Block Diagrams • Overview Diagram • Menu 1 Diagram: Speed Inf. 5 • Menu 3 Diagram: Currer Cont • Menu 4 Diagram: Currer Cont • Menu 5 Diagram: Moto Contro • Menu 6 Diagram: Digual I/O • Menu 9 Diagram: Ingula I/O • Menu 9 Diagram: Provammabl • Menu 1 2 Diagram: Frogrammal • Menu 1 4 Diagram: Frogrammal •			
Toolbox P ×			
Not Upload parameters			
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🔞 Reset drive			
Save parameters in drive			
Save parameter file			
Open parameter file			
Communications has been lost with drive: My Drive 1		My Drive 1 is Online	TIMEOUT!

Or if you'd rather, click on **File** then select **Save Parameter File**.

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Then use the **Folder Selection** Icon to select a location to place your drive file(s).



You may need or want to place all your drive files into a Folder for better organization. To do this, click the **Create New Folder** icon and give that folder a name.

Then you need to provide a file name for the actual drive data file

Save As		? ×					
Save in: 📋 My Documer	nts 💽 🌶 🗊 (⊳ 🖽					
Program Files Regen Remote Access SK Class SK Pump Info Speed Regulation Sypware Tools SyPTLite	TechSupportGroup TimeSheets Training Warranty Web WebEx MyDrive Data						
File <u>n</u> ame: MyPumpDri	veParameterFile.par 🗾	<u>S</u> ave					
Save as type: Parameter Files (*.par)							
Add link to this parameter file in the explorer tree? Save differences from defaults only.							

An option you may wish to consider

Another good step toward backing up Drive Configuration information would be to provide a concise hard copy print out list of the drive parameter settings that are unique to your particular application.

To facilitate creation of this list, CTSoft provides a function that will list out only those parameters that are different than factory settings. Before using this function one needs to ensure that CTSoft is set per the region that a replacement drive would be expected to be supplied from. For example, if a customer machine made in Italy is installed in the USA, should a drive replacement become necessary, CT-USA would most likely provide the replacement drive. In this case the replacement drive would be set for USA factory default settings. Therefore, CTSoft would best be set for USA defaults prior to using the following procedure.

Drive Properties	×
Communications Protocol: CT-RTU Comms Settings	Node address: 1 Slot: Sub node:
Drive Name:	
Chrome Roll Drive	Detect Drive Configuration
Drive Configuration	Option Modules
Drive <u>T</u> ype:	Slot <u>1</u> :
Unidrive SP	Empty 💌
Drive Mode <u>!</u> SP14X1 Drive <u>M</u> ode: Open-loop	Slot <u>2</u> : Empty Slot <u>3</u> : Empty
De <u>f</u> aults: Firmware <u>V</u> ersion: USA ▼ 01.19.00 ▼	
Drive Descri <u>p</u> tion:	
<u>H</u> elp <u>D</u> K	Cancel

Creating a "Different from Default" Parameter List

CTSoft provides a function that will list out only those parameters that are different than factory settings.

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File Edit Drive Monitoring	View Win	idow Help				~ ~		
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		00.03	Deceleration rate 1	2,000	5.000	c/1000 RPM		
		00.05	Reference selector	A1.A2	A1.A2	3/1000 10111		
+ Parameters		00.06	Symmetrical current limit	175.0	175.0	%		
🗄 🖓 🌺 Block Diagrams		00.07	Speed controller proportional gai	n (Kp1) 0.0300	0.0400	1/rad s-1		
E Parameter Files		00.08	Speed controller integral gain (Ki	1) 0.10	0.10	1/rad		
		00.09	Speed controller differential feed	back g 0.00000	0.00000	5		
🖽 🔲 Custom Lists		00.10	Speed feedback	0.0	0.0	RPM		
🗄 🤳 Terminal Configuration		00.11	Output frequency	0.0	0.0	Hz		
Monitoring		00.12	Current magnitude	0.00	0.00	A		
Honiconing		00.13	Active current	0.00	0.00	A		
🐨 🐨 Linking Screen		00.14	Torque mode selector	Speed	Speed			
		00.15	Ramp mode select	Std	Std			
The Modules		00.16	Ramp enable	On	On			
		00.17	Lurrent demand filter 1	0.0	1.0	ms		
		00.10	T3 analog input 2 mode	Un Volt	Volt			
		00.19	T7 analog input 2 dectination	1 37	1 37	menu naram		
		00.21	T8 analog input 3 mode	1.57 th	Volt	monarparam		
		00.22	Binolar reference enable	OFF	OFF			
		00.23	Jog reference	0.0	0.0	RPM		
		00.24	Preset reference 1	0.0	0.0	RPM		
		00.25	Preset reference 2	0.0	0.0	RPM		
1		00.26	Oversneed threshold	0	n	RPM		

Clicking on this function creates a concise list of parameter differences for your application vs the settings as it leaves the factory.

In this particular case there were 11 differences

		4							
🗿 CTSoft - My Project - [My Drive - Compare Results @ 16:35:34 (11 differences)]									
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Eile Edit Drive Monitoring View	<u>M</u> indow <u>H</u> elp							_ & ×	
Explorer 7	× Parameter	Description	Default	Memory	Units				
My Drive Drive Properties Parameters Block Diagrams Parameter Files Custom Lists Custom Lists Custom Lists Monitorios	 02.06 02.21 03.10 03.34 04.12 05.07 05.08 05.10 06.21 07.15 11.44 	S ramp enable Deceleration rate 1 Speed controller proportional gain (Kp1) Drive encoder lines per revolution Current demand filter 1 Motor rated current Rated load rpm / rated speed Rated power factor Powered-up time: hours.minutes T8 analog input 3 mode Security status	OFF 2.000 0.0300 1024 0.0 2.10 1770.00 0.850 0.00 th L1	On 5.000 0.0400 2048 1.0 2.00 1775.00 0.870 0.870 0.12 Volt L2	s/1000 RPM 1/rad s-1 ms A RPM hh.mm		1		

To create a formatted hard copy print out, simply '**right click**' on the white space in the area pointed to above.

Creating a Hard Copy Printout

After right clicking you would click on Print



The print facility will list the possible printers to send the file to or offer other printing options such as creating an Adobe Acrobat[™] .pdf file or Microsoft[™] Document Writer file.

Shown below is the formatted .pdf file.

Parameter Comparison Listing Project: My Project : RMcGranor Drive Name: Chrome Roll Drive (Unidrive SP) Drive Mode: Closed loop vector Drive Address: 1 Parameter Description Default Memory Units 02.06 S ramp enable OFF On 02.21 Deceleration rate 1 2.000 5.000 s/1000 RPM Speed controller proportional gain (Kp1) 0.0400 03.10 0.0300 1/rad s-1 03.34 Drive encoder lines per revolution 1024 2048 04.12 Current demand filter 1 0.0 1.0 ms 2.00 05.07 Motor rated current 2.10 A 05.08 Rated load rpm / rated speed 1770.00 1775.00 RPM 05.10 Rated power factor 0.850 0.870 06.21 Powered-up time: hours.minutes 0.00 0.12 hh.mm T8 analog input 3 mode 07.15 th Volt 11.44 Security status 11 12 **Factory Settings**

With such a print-out a customer could at the very least "hand enter" those parameters that define his/her application should a replacement become necessary.

We would suggest that one keeps a hard copy of this print out with the drive should one need to know what parameters have been altered for the application.

Questions ?? Ask the Author:



Tel: (65) 6561 0488

Email: sales@scigate.com.sg

Business Hours: Monday - Friday 8.30am - 6.15pm

Fax: (65) 6562 0588

Web: www.scigate.com.sg