

WESCHLER INSTRUMENTS

DIVISION OF HUGHES CORP.

# Advantage CT Software Manual



# Manual Part Number SMG4T200

# Revision 1, October, 2004

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## Firmware & Software Covered by this Manual:

Firmware:	G4TSYS0202
Configuration Software:	G4TCFG0203
Monitor Software:	G4TMNT0203

### Monitor and Configuration Software

Weschler monitor and configuration software is designed to allow users to fully exploit the measurement capability and programmability of the Advantage product line. The software runs on computers which run the Microsoft Windows operating system and have an available serial comm port. It has been run successfully on platforms loaded with Windows 95, 98, 98SE, 2000 and XP. The software is included when the communications option is ordered.

The configuration software allows users to compose a complete set of configuration parameters at any time and download them immediately, or at a later date, at their convenience. The files can be uploaded locally from a portable computer or remotely through the utility's intranet. The configuration files which are generated are very compact text files, typically less than 5 KB in size. This makes maintenance and storage of Advantage configuration files, for even the largest inventory of transformers an easy task.

The text files generated by the configuration program must not be edited and saved by a word processor. They may be viewed and printed but not saved. It is suggested that the user set the attributes of the file to read only once its content is satisfactory.

The monitor software allows users to remotely view thermal and loading conditions which an Advantage is measuring, and reset peak and valley values at any time. The status and configuration settings of alarms and cooling control relays are also tabulated. The user is also able to test or exercise alarms and equipment under the Advantage's control.

Both software types include a simple installer which is explained below. The software is model-specific, which means that a monitor or configuration program for one model will not work with another model. Although the software itself is model specific, the install process is identical for all models.

#### Firmware Installation (flashing) Method

The Advantage uses the HyperTerminal© program to upload firmware using digital communications. HyperTerminal© was developed by Hilgraeve Corporation for MicroSoft Corporation for inclusion with the Windows© operating system. This method only requires that the operator remove the terminal cover and plug in an RJ-12 connector which is connected to the host PC. The firmware is then uploaded in a painless process that takes approximately three minutes.

### Peak and Valley Second Level Memory Download

The second level peak and valley memory stores historical values that were collected in between points in time where the values were reset remotely or locally. Each time a peak or valley reset command or keystroke is received, the value is saved before it is replaced with the value which is presently being measured. The second level peak and valley memory is capable of storing 1000 peak or valley values for each measured quantity. Refer to the owners manual for details of peak and valley storage and resetting procedures.

The Advantage also uses HyperTerminal© to download the peak and valley values.

## Preparation to Install

For an example of the installation process we will use the CT configuration software. The process is the same regardless of whether you are loading monitor or configuration software, and it is also model independent. This means the process for removing software from or installing software to your PC is the same regardless of whether you are doing the process for a CT, CTX, CT/LTC or TC or any other model in the ColdFire Advantage line.

If you already have a version of the software loaded and you are upgrading to a higher revision, level, you must first remove the currently loaded version, using the procedure of plates 1 to 4 below. If you do not have a version installed, skip down to plate 5.

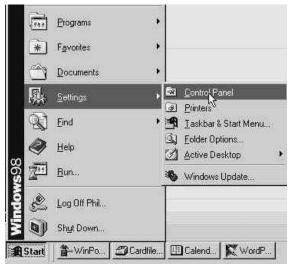


Plate 1. Click Start>Settings>Control Panel

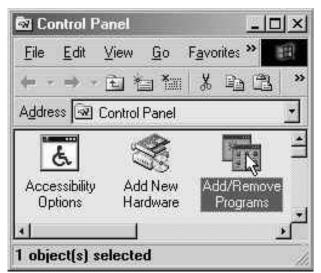


Plate 2. Double click on the Add/Remove Programs icon

.dd/Remo	ove Programs Properties	? ×
Install/Ur	ninstall   Windows Setup   Startup D	Disk ]
Z	To install a new program from a flo drive, click Install.	oppy disk or CD-ROM
		Install
3	Ihe following software can be au Windows. To remove a program o components, select it from the list Add/Remove.	or to modify its installed
Adobe ADT C ADT M Advani Advani Advani Advani	Acrobat 5.0 PhotoDeluxe Home Edition 3.1 alibration lonitor tage CT Configuration tage CT Monitor tage CT-LTC Cofiguration tage CT-LTC Monitor	
		Add/ <u>R</u> emove
-	OKC	ancel

Plate 3. Click on the software you want to remove, then click "Add/Remove". You cannot remove more than one program at a time. If you want to remove more than one program, you will need to return to this screen again.

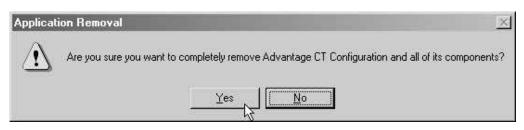


Plate 4. When you click the Yes button the old program will be removed. If you are here in error, click the No button.

### Monitor and Configuration Software Installation

If any Windows programs are running, they should be terminated before running the set up software



Plate 5. Click Start>Run to open the browse dialog box.

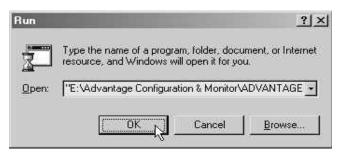




Plate 8. If no Windows Programs are running, click OK, otherwise click Exit Setup and close any running Programs.



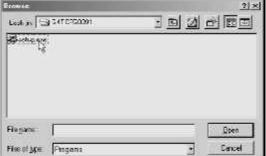


Plate 6. Click the Browse button and navigate to the directory which contains the setup.exe file for the Advantage model of interest. Open the setup.exe file.

Plate 7. Click the OK Button to initiate the installation program

Advantage CT Configuration Set Regit the installation by clicking the bu		×
Got the button to specified destrate	onfiguration roltware to the	
Directory		2011
Directory, C. Vrogi im Files)art chapped (	garge brockey	

Plate 9. If you are satisfied with the directory the setup program has selected, skip to plate 11. Otherwise, click Change Directory.

st-:	
d∕Adventage⊂onfiguration 3 Monitor	
roctoriza:	
jel	, эк
Adventage Configuration & Monitor ADVONTAGE SETUE OND MON. CR.	<u> </u>
	Cancel
	-
YOSI	

Plate 10. Browse to the directory into which you want the software to install and click OK.

🛃 Advantage CT Configuration Setup	<u>×</u>
Bogin the installation by disking the isotrom below.	
	Configuration software to the
- Checkoly: st)Advantage Configuration, Moniton	Change Directory

Plate 11. Click the computer icon to continue with the installation

roups	IDC.
	Program Group:
	Advantage Configuration
	Existing Groups:
	v10.3
	Adaptec Easy CD Creator 4
	Adobe
	Adobe Acrobat Advantage Configuration
	Advantage Monitor
	Aist ASE2000 Comm Test Set
	AutoCAD 2000i

Plate 12. Select a program group into which to place the software's startup files, or accept the setup program's suggested name. A menu item will be conveniently added to the programs listing in the start menu. As configuration software for additional Advantage model's are loaded, they will also be placed in this group. It is strongly advised that this naming convention be accepted.

Advantage CT Configuration Setup	
Advantage CT Configuration Setup was completed successfully.	
Plate 13. The software installation will be	
successfully completed when this dialog box appears. Click the OK button to close the box.	X

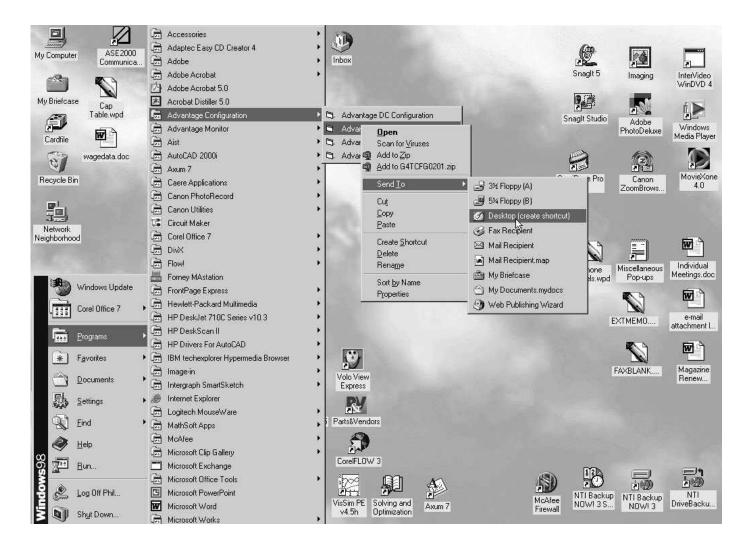


Plate 14. If you want to place a shortcut ICON on your desktop, navigate to and right-click on the program name, then click "Send To" then click "Desktop (create shortcut)". This is the preferred Windows method of creating a desktop icon. Other more cumbersome methods can be used, but they may cause problems if not executed properly. The Windows 3.1 method of copying a program file to the desktop will not work, and will cause uninstall problems.

Note how all Advantage configuration programs have been conveniently grouped into the same location. This is the result of accepting the installation program's default program locations during the installation procedure as described in plate 12 above.

## 3.0 Monitor Software Operation

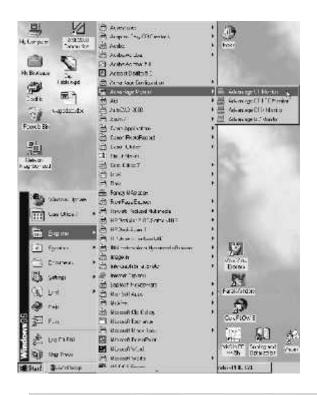


Plate 15. Navigate to the monitor program's filename and click on it.

Unit ID		Value	Winding	ा	luid	Hoad		
		Present					_	
WES	CHLER	Peak					-	
	RUMENTS	Valley						
Peak Reset	Relay	84	2	3	.4	5	6	
reak neset	Source	C	C		1	со		
1000007000	Sequencing				8	3		
Winding	Check		1		] ]	1		
	Sensor Failure		1			1		
Fluid	Sensor Fail Effect		-			S		
	Connected Equipment					2	1	
ILoad	Set Point							
	Unalarmed Status				]	0		
	Present Status					.e		
Valley Reset	Belay	7 (AUX)	8(SFR)	9	10	-11	12	
Taney neser	Source	r (22. at	N/A			-		
100000	Sequencing		N/A					
Winding	Check		N/A					
	Sensor Failure		N/A					
Fluid	Sensor Fail Effect		N/A					
	Connected Equipment		N/A		ê (j. 1			
ILoad	Set Point		N/A					
	Unalarmed Status							
	Present Status		· · · · · · · · · · · · · · · · · · ·					

Plate 16. The initial monitoring screen will open. Before monitoring can begin, the Advantage's unit ID must be selected. Click on the selection box arrow to present a choice of unit ID's.

Jnit ID		Value	Winding	- ii	luid	fload		
		Present		-				
WES		Peak			8			
INS	1 k	Valley						
	2 <b>5</b>				άτι.			
5 (DA)	4 5 6 tay	a	2	3	4	5	6	
eak Reset	5					10		
	/ Sequencing		: 				2	
Winding	Check							
	Sensor Failure							
Fluid	Sensor Fail Effect					1		
	Connected Equipment		8		2	2		
ILoad	Set Point							
1.790.40	Unalarmed Status							
	Present Status							
	Belay	7.(AUX)	8(SFR)	9	10	11	12	
alley Reset	Source		N/A					
	Sequencing		N/A	-				
Winding	Check		N/A					
	Sensor Failure		N/A		-			
Fluid	Sensor Fail Effect		N/A		-			
	Connected Equipment		N/A	(	8 8			
ILoad	Set Point		N/A					
	Unalarmed Status							
	Present Status				-			

Plate 17. Select the communications unit ID. The factory default is 0. If the factory default has not been changed, select 0. If the unit ID has been changed, select the new unit ID number. When the unit ID has been entered and accepted, monitoring begins automatically.

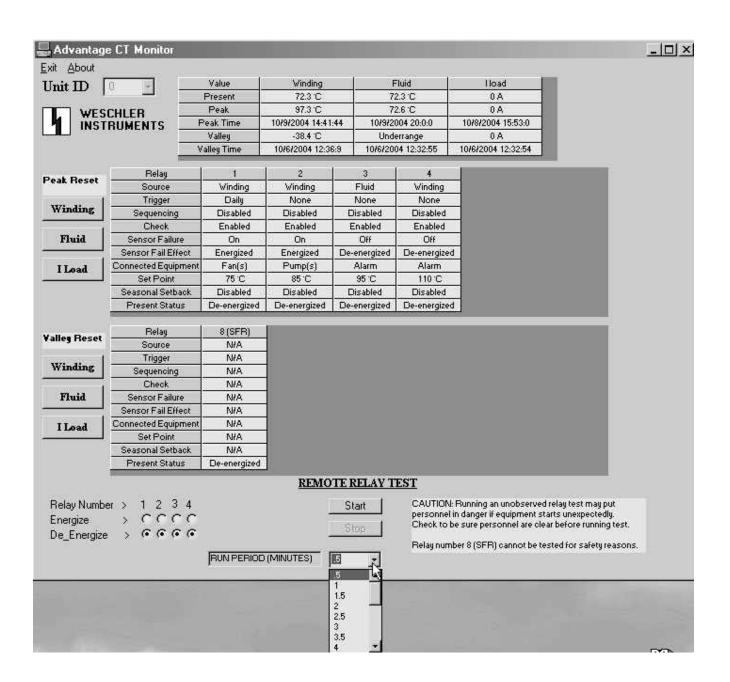


Plate 18. Once monitoring has begun, the relay test function can be used. Click the run period selection box arrow and select an interval between 0.5 and 10 minutes. This will cause execution of the test to end when the period expires. If the comm link is severed, the Advantage will "know" to end the test at the expiration of the specified period.

xit <u>A</u> bout							
Unit ID 0		Value	Winding	F	luid	lload	
June 10		Present	72.3 °C	7:	2.3 °C	0 A	
WES	CHLER	Peak	97.3 °C	7:	2.6 °C	0 A	
		Peak Time	10/9/2004 14:41	:44 10/9/2	004 20:0:0	10/8/2004 15:53:0	
		Valley	-38.4 °C	Und	errange	0 A .	
	<u> </u>	alley Time	10/6/2004 12:3	6:9 10/6/20	04 12:32:55	10/6/2004 12:32:54	
	Relay		2	3	4		
'eak Reset	Source	Winding	Vinding	Fluid	Winding	-	
	Trigger	Daily	None	None	None		
Winding	Sequencing	Disabled	Disabled	Disabled	Disabled		
	Check	Enabled	Enabled	Enabled	Enabled		
Fluid	Sensor Failure	On	On	Off	Off		
	Sensor Fail Effect	Energized	Energized	De-energized	De-energized		
ILoad	Connected Equipment	Fan(s)	Pump(s)	Alarm	Alarm		
	Set Point	75 °C	85 °C	95 °C	110 °C		
	Seasonal Setback	Disabled	Disabled	Disabled	Disabled		
	Present Status	De-energized	De-energized	De-energized	De-energized		
	8	×	20 I.2		Ø	15	
alley Reset	Relay	8 (SFR)					
	Source	N/A	-				
Winding	Trigger	N/A					
mining	Sequencing	N/A	8				
Marca 1	Check	N/A					
Fluid	Sensor Failure	N/A N/A					
1	Sensor Fail Effect	N/A N/A	8				
ILoad	Connected Equipment Set Point	N/A	8°				
5	Seasonal Setback	N/A	1				
	Present Status	De-energized					
	These works	Derenergized	46				
			REMO	TE RELAY T	<u>EST</u>		
Relay Numbr	er > 1 2 3 4			Start N		Running an unobserved relay te	
Energize	5555		1			n danger if equipment starts une	
De Energize				Stop	Check to b	e sure personnel are clear befo	e running test.
De_cheigize					Belay numb	ber 8 (SFR) cannot be tested fo	r safetu reasons.

Plate 19. Click start, then select which relays to test. Once a relay is selected, the start and stop buttons will be grayed out until the command is executed by Advantage. If a relay is in an alarm state and it is selected for test, it will drop out of the alarm state for the duration of the test. The test can be aborted at any time by clicking the stop button, or the test will stop automatically at the expiration of the run period interval.

xit <u>A</u> bout		2000-000 E		-			
Unit ID	0 -	Value	Winding		Fluid	Hoad	
		Present	98.5 °C		8.5°C	0 A	
	CHLER	Peak	98.5 °C		8.5 °C	0 A	
INST	RUMENTS	Peak Time	10/11/2004 10:4		004 10:4:56	10/8/2004 15:53:0	
		Valley	-38.4 °C		errange	0 A	
	- 1	/alley Time	10/6/2004 12:3	6:9 10/6/20	04 12:32:55	10/6/2004 12:32:54	
	Relay	1	2	3	4		
Peak Reset	Source	Winding	Winding	Fluid	Winding	-	
1	Trigger	Daily	None	None	None		
Winding	Sequencing	Disabled	Disabled	Disabled	Disabled		
	Check	Enabled	Enabled	Enabled	Enabled		
Fluid	Sensor Failure	On	On	Off	Off		
	Sensor Fail Effect	Energized	Energized	De-energized	De-energized		
ILoad	Connected Equipment	Fan(s)	Pump(s)	Alarm	Alarm	8	
	Set Point	75 °C	85 °C	95°C	110 °C		
	Seasonal Setback	Disabled	Disabled	Disabled	Disabled		
	Present Status	ENERGIZED	ENERGIZED	ENERGIZED	De-energized		
				- L	7	/2	
alley Reset	Relay	8 (SFR)			-		
	Source	N/A					
Winding	Trigger	N/A					
Thung	Sequencing	N/A	8				
	Check	N/A	2				
Fluid	Sensor Failure Sensor Fail Effect	N/A N/A					
1	Connected Equipment	N/A N/A					
ILoad	Set Point	N/A					
	Seasonal Setback	N/A	8				
	Present Status	De-energized	8				
	The state state of the state of	are chergized	40.				
			REMO	TE RELAY T	<u>EST</u>		
Belau Numb	er > 1 2 3 4			Start	CAUTION	Running an unobserved relay test m	hay put
Energize	7999 4			otar	personnel i	n danger if equipment starts unexpe	ctedly.
				Stop	Check to b	e sure personnel are clear before ru	nning test.
De_Energize	· · · · · ·						

Plate 20. Any relay which is in an alarm state will be shown highlighted with a red background.

xit <u>A</u> bout		Value	(Course)	31. 24	Juid	lload	
Unit ID	0 🗾	1.112225	Winding 46.3 °C		6.3 °C	0 A	
	· · · · · · · · · · · · · · · · · · ·	Present Peak	98.5 °C		8.5°C	0A	
	CHLER	Peak Time	10/11/2004 10:4		004 10:4:56	10/8/2004 15:53:0	
	RUMENTS	the product of the local sector of the local s			ANGAACCATIC.		
	<u> </u>	Valley /alley Time	-38.4 °C 10/6/2004 12:30		errange 04 12:32:55	0 A 10/6/2004 12:32:54	
		raney nime	10/6/2004 12:3	5:5 10/6/200	04 12:32:00	10/6/2004 12:32:54	
	Relay	1	2	3	4		
Peak Reset	Source	Winding	Winding	Fluid	Winding		
	Trigger	Daily	None	None	None		
Winding	Sequencing	Disabled	Disabled	Disabled	Disabled		
	Check	Enabled	Enabled	Enabled	Enabled		
Fluid	Sensor Failure	On	On	Off	Off		
	Sensor Fail Effect	Energized	Energized	De-energized	De-energized		
ILoad	Connected Equipment	Fan(s)	Pump(s)	Alarm	Alarm		
	Set Point	75 °C	85 °C	95 °C	110 °C		
2	Seasonal Setback	Disabled	Disabled	Disabled	Disabled		
	Present Status	De-energized	De-energized	De-energized	De-energized		
	18	(c	20 V/2		Ø		
Valley Reset	Relay	8 (SFR)					
	Source	N/A					
Winding	Trigger	N/A					
whiting	Sequencing	N/A					
I	Check	N/A	8				
Fluid	Sensor Failure	N/A					
	Sensor Fail Effect	N/A					
ILoad	Connected Equipment	N/A	2				
	Set Point	N/A					
	Seasonal Setback	N/A	6				
	Present Status	De-energized					
			REMO	TE RELAY T	EST		
-	on of the second						
	er > 1 2 3 4		-	Start		Running an unobserved relay test may put n danger if equipment starts unexpectedly.	
Energize	> < < < <			Circa I		e sure personnel are clear before running t	
				Stop		a second s	
De_Energize						per 8 (SFR) cannot be tested for safety rea	

Plate 21. Peak and valley values may be reset at any time by clicking the appropriate button. The buttons will be temporarily grayed out until the Advantage executes the reset command. The monitor program is terminated by clicking the close "X" in the upper right corner of the form.

## 4.0 Configuration Software Operation

Navigate to the configuration program the same as described in plate 14 for the monitor program.

🖨 Advantage CT Configuration	- Untitled			-D×
<u>File Edit Search Communication</u>	Advantage Parameters	Form	About	
AL TIM 1: ENABLED				<u>.</u>
ALARM 2: ENABLED				
ALARM 3: ENABLED ALARM 4: ENABLED				
ALARM 5: ENABLED				
ALARM 6: ENABLED				
ALARM 7 (AUX): ENABLED				
ALARM 8 (SFR): ENABLED				
ALARM 9: ENABLED				
ALARM 10: ENABLED				
ALARM 11: ENABLED ALARM 12: ENABLED				
BTX 1: ENABLED				
RTX 2: ENABLED				
RTX 3: ENABLED				
DISPLAY CONSERVER: DISABLED				
DISPLAY FLASH: ENABLED				
SCALE RANGE: 200 °C OPERATOR SETUP: ENABLED				
ALARM 8 (SFR) COIL STATUS: NORI				
PEAK/VALLEY EVENT: CONTINUE				
DAY LIGHT SAVING: ENABLE				
RTD OFFSET: 0 °C				
FLUID TYPE: MINERAL				
FLUID CAPACITY: 5000 GAL				
FLUID CIRCULATION: FORCED				
AIT CITEOLATION, FONCED				<u>×</u>
Weschler Instruments				
Division of HUGHES CO	DRPORATION			
Advantage CT				

Plate 22. The opening screen of the configuration program displays the default configuration file for the Advantage model being configured. This file is present each time the program starts. If you have a stored configuration file which is to be opened, click the File menu item to activate the drop-down.

Beset Defaults	<u>File</u> <u>E</u> dit	- 1000 million (1100 - 1000	212 22	Advantage <u>P</u> aram		NTAGE\Se <u>A</u> bout		
Save Save As Save As Print Exit E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 01.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 04.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 02.TXT DISPLAY CONSERVER: DISABLED DISPLAY FLASH: ENABLED SCALE RANGE: 250 °C OPERATOR SETUP: ENABLED ALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED PEAK.VALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE RTD OFFSET: 0 °C FLUID TYPE: MINERAL	10000000000000000000000000000000000000							
Save Às Print Exit Exit E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 01.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 04.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 02.TXT DISPLAY CONSERVER: DISABLED DISPLAY CONSERVER: DISABLED DISPLAY CONSERVER: DISABLED DISPLAY CONSERVER: DISABLED DISPLAY CONSERVER: DISABLED ALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED PEAK.VALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE RTD OFFSET: 0 "C FLUID TYPE: MINERAL			_	_	_	_		
Bint         Exit         E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 01.TXT         E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 04.TXT         E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT         E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT         E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 02.TXT         DISPLAY CONSERVER: DISABLED         DISPLAY CONSERVER: DISABLED         DISPLAY CONSERVER: DISABLED         DISPLAY CONSERVER: DISABLED         DALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED         PEAK.VALLEY EVENT: CONTINUE         DAY LIGHT SAVING: ENABLE         TIO DEFSET: 0 "C         FUDIF TSAVING: ENABLE         TIO DEFSET: 0 "C         FUDIF TYPE: MINERAL								
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E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 03.TXT E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 02.TXT DISPLAY CONSERVER: DISABLED DISPLAY CONSERVER: DISABLED DISPLAY FLASH: ENABLED DEPERATOR SETUP: ENABLED ALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED PEAK-WALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE ATD OFFSET: 0 "C FLUID TYPE: MINERAL	E:\DE	SIGN.SPC\E	S ADVANTAG	iE\Set-ups\G4TSYS	0203 CFG TI	EST 01.TXT		
E:\DESIGN.SPC\DS ADVANTAGE\Set-ups\G4TSYS0203 CFG TEST 02.TXT DISPLAY CONSERVER: DISABLED DISPLAY FLASH: ENABLED SCALE RANGE: 250 °C DPERATOR SETUP: ENABLED ALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED PEAK/VALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE RTD OFFSET: 0 °C FLUID TYPE: MINERAL	E:\DE	SIGN.SPC\E	S ADVANTAG	iE\Set-ups\G4TSYS	0203 CFG T	EST 04.TXT		
DISPLAY CONSERVER: DISABLED DISPLAY FLASH: ENABLED SCALE RANGE: 250 °C DPERATOR SETUP: ENABLED ALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED PEAK/VALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE RTD OFFSET: 0 °C FLUID TYPE: MINERAL	E:\DE	ESIGN.SPC\E	S ADVANTAG	iE\Set-ups\G4TSYS	0203 CFG T	EST 03.TXT		
DISPLAY FLASH: ENABLED SCALE RANGE: 250 °C OPERATOR SETUP: ENABLED ALARM 8 (SFR) COIL STATUS: NORMALLY DE-ENERGIZED PEAK-AVALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE ATD OFFSET: 0 °C FLUID TYPE: MINERAL	E:\DE	ESIGN.SPC\E	S ADVANTAG	iE\Set-ups\G4TSYS	0203 CFG T	EST 02.TXT		
AIR CIRCULATION: NATURAL AIR CIRCULATION: FORCED	DISPLAY SCALE RA OPERATO ALARM 8 PEAK/VAI DAY LIGH RTD OFFS FLUID TY FLUID CA FLUID CA FLUID CIF AIR CIRCI	FLASH: ENA ANGE: 250 °C DR SETUP: E (SFR) COILS LLEY EVENT T SAVING: E SET: 0 °C 'PE: MINERA PACITY: 500 RCULATION: FC	BLED NABLED TATUS: NORI CONTINUE NABLE L O GAL NATURAL RCED	MALLY DE-ENERGI	ZED			
				RPORATION				

Plate 23. Browse to and open the new configuration file using standard Windows methods. The file type is text (extension .txt)

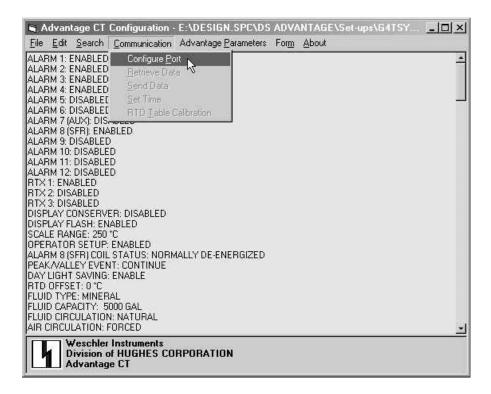


Plate 24. If the configuration file to be opened is stored in the Advantage's memory, communications will need to be set up. Click on the Communications menu item drop-down, then click Configure Port.

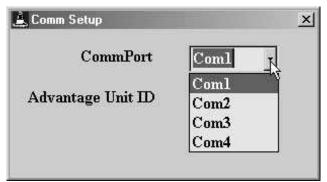


Plate 25. Select one of the four PC comm ports which will be used to communicate with Advantage.

🚊 Comm Setup			×
CommPort	Coml	Ŧ	
Advantage Unit ID	0	R	
	0	Ĩ	
	1		
1	2		

Plate 26. Select the Advantage's unit ID. The factory default is 0.

🚊 Comm Setup			×
CommPort	Coml	Ŧ	
Advantage Unit ID	0	7	
Communication	established.		

Plate 27. If the settings are correct and the data path's integrity is sound, the words "Communication established" will appear on the comm setup box.

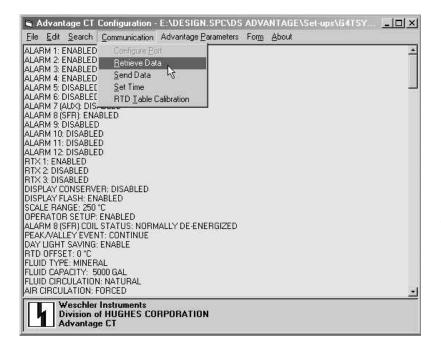


Plate 28. Once communications have been established, the configuration file which has been stored in Advantages memory can be retrieved. Click the Retrieve Data menu item under the Communications drop-down.

×

Advantage CT Configuration

Communicating. Please wait.

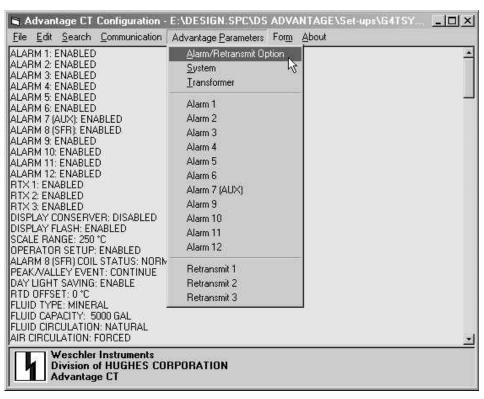


Figure 29. While the file is being retrieved, this information box will flash on the screen.

Plate 30. The default or retrieved file may be edited to suit the application. Click Advantage Parameters, then Alarm/Retransmit Parameters to start

🖷 Alarm/Retransmit	Option		×
ALM1	📀 Enable	C Disable	
ALM2	📀 Enable	C Disable	
ALM3	📀 Enable	C Disable	
ALM4	📀 Enable	C Disable	
ALM5	📀 Enable	C Disable	
ALM6	C Enable	C Disable	
ALM7 (AUX)	Enable	C Disable	
ALM8 (SFR)	Always	Enabled	
ALM9		C Disable	
ALM10	Enable	C Disable	
ALM11	Enable	C Disable	
ALM12	Enable	C Disable	
RETRANS 1	Enable	C Disable	
RETRANS 2	🗭 Enable	C Disable	
RETRANS 3	C Enable	Disable	
-	Apply		
	15		

Plate 31. Select the alarms and retransmit items that are to be enabled or disabled. When finished, if you want to keep the changes, be sure to click the Apply button.

Alarm/Retransmit	Optic	חי			ł
ALM1	Ģ	Enable	c	Disable	
ALM2	(F	Enable	C	Disable	
ALM3		Enable	C	Disable	
ALM4		Enable	C	Disable	
ALM5	(•	Enable	C	Disable	
ALM6	C	Enable		Disable	
ALM7 (AUX)		Enable	C	Disable	
ALM8 (SFR)		Always	Ene	abled	
ALM9	(F	Enable	C	Disable	
ALM10	(F	Enable	C	Disable	
ALM11	(F	Enable	C	Disable	
ALM12	•	Enable	C	Disable	
RETRANS 1	•	Enable	c	Disable	
RETRANS 2	(·	Enable	C	Disable	
RETRANS 3	c	Enable	•	Disable	
	Арр	ily			

Plate 32. To close the information box, click the X in the upper right-hand corner. If you do not click the Apply button prior to closing the box, the settings you have changed will be ignored. If you made changes that you want to keep, be sure to click the Apply button before closing.

🖷 System Parameters		×
Alarm 8 (SFR) Coil Normally De-energized Normally Energized	Seasonal Setback (*C)	Alarm Time Daily Start Time (HH:MM)
Display Conserver Con Coff Display Flash	Seasonal Setback (A) 0 Start Date (MM/DD)	13:0 Length (HH:MM)  0:5
© On ⊂ Off Operator Setup	1/1 Start Time (HH:MM)	Calendar Start Date (MM/DD)
<ul> <li>€ Enable</li> <li>C Disable</li> <li>Day Light Saving</li> <li>€ Enable</li> <li>C Disable</li> </ul>	0:0 Stop Date (MM/DD)	1/1 Start Time (HH:MM) 0:0
Peak/Valley Event C Hourly C Continuous	1/1	Stop Date (MM/DD) 1/1
Scale Range © 250 °C © 200 °C DTD 0% - 1 (°C)	Stop Time (HH:MM) 0:0	Stop Time (HH:MM) 0:0
RTD Offset (°C)		

Plate 33. Click the System menu item below the Advantage Parameters drop-down and the System Parameters option box will open. Make any parametric changes then click the Apply button to accept the

Туре о	f Cooling Fluid	Winding Type	Power Rating (MVA)		
Mine	eral	C Cylindrical	20		
C Silic	on	Rectangular	*		
Cooling	g Fluid Circulation	Air Circulation	Fluid Capacity (Gallons)		
• Nati		Forced 5000			
C Dire		C Natural			
C Forc			5 5 65		
	/eight (Tons) 	Maximum Curren	it Hating (A)		
5		1000			
Gradie	nt (*C)	Low Voltage Wi	nding R (mohm)		
20	Oil Natural (ON)	10			
20	Oil Forced (OF)	High Voltage W	inding R (ohm)		
20	Oil Directed (OD)	1			

Plate 34. Click the Transformer menu item under the Advantage Parameters drop-down and the Transformer Parameters option box will open. Make any parametric changes then click the Apply button to accept the changes.

larm Setup		IF		
Alarm 1 Alarm Source C Remote	<ul> <li>Alarm Check</li> <li>C Disable</li> <li>I € Enable</li> </ul>	Connected Equipment C Alarm Fan(s)		
C Fluid ♥ Winding ♥ I load	<ul> <li>Normal Coil Status</li> <li>De-energized</li> <li>Energized</li> </ul>	C Pump(s) C Spray C None		
Alarm Time Trigger None Conely Colendar Colendar Colent	Sensor Failure	Alarm Setpoint		
	Sensor Effect C De-energized C Energized	Alarm Hysteresis		
Alarm Sequencing	C Toggle			
<ul> <li>Disable</li> <li>Enable</li> </ul>	Seasonal Setback	Apply		

Plate 35. Click the Alarm1 menu item under the Advantage Parameters drop-down and the Alarm Setup option box will open. All alarm setup option boxes present their choices in the same way. Make any parametric changes and then click the Apply button to accept the changes.

🛱 Advantage CT Configuration -	E:\DESIGN.SPC\DS	ADVAN	NTAGE\Set-ups\G4TSY	- UX
<u>File Edit Search Communication</u>	Advantage Parameters	Form	About	
AIR CIRCULATION: FORCED WINDING TYPE: CYLINDRICAL CORE WEIGHT: 5 T I MAX: 1000 A P RATING: 30 MVA ON GRADIENT: 25 °C OF GRADIENT: 0 °C	Alarm/Retransmit Op <u>S</u> ystem Iransformer Alarm 1 Alarm 2	otion		
OD GRADIENT: 0 °C LOW RES: 20 m0HM HIGH RES: 5 0HM SEASONAL SETBACK TEMPERATUF SEASONAL SETBACK CURRENT: 0 A SETBACK START DATE: 01/01 SETBACK START TIME: 00:00 SETBACK STOP DATE: 01/01 SETBACK STOP DATE: 01/01 SETBACK STOP TIME: 00:00 ALARM TIME DAILY START: 13:00 ALARM TIME DAILY LENGTH: 00:05 ALARM TIME CALENDAR START DA	Alarm 3 Alarm 4 Alarm 5 Alarm 6 Alarm 7 (AUX) Alarm 9 Alarm 10 Alarm 11 Alarm 12			
ALARM TIME CALENDAR START TIM ALARM TIME CALENDAR STOP DAT ALARM TIME CALENDAR STOP TIME ALARM 1 SOURCE: WINDING ALARM 1 TRIGGER: DAILY ALARM 1 SEQUENCING: DISABLED ALARM 1 CHECK: ENABLED ALARM 1 SETBACK: DISABLED	Retransmit 1 Retransmit 2 Retransmit 3	3		
Weschler Instruments Division of HUGHES CO Advantage CT	RPORATION			

Plate 36. Click the Retransmit 1 menu item under the Advantage Parameters drop-down.

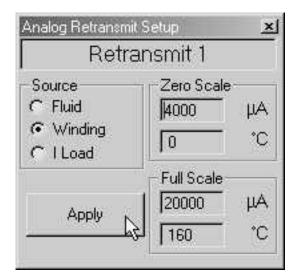


Plate 37. The retransmit options box offers parameters for setting the magnitude of the output signal current which corresponds to the measured quantity (temperature, load current etc.) Be sure to click the Apply button to accept the changes.

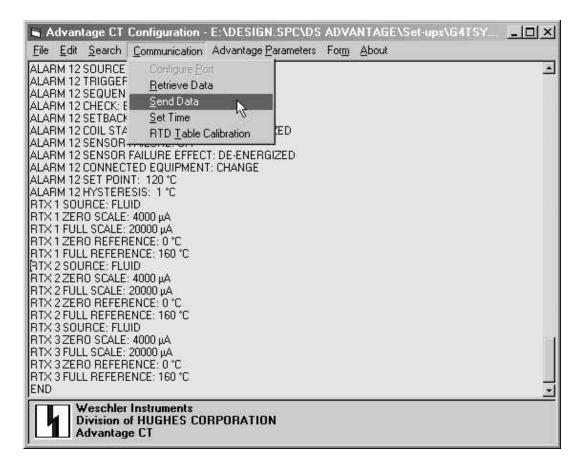


Plate 38. After all parametric edits are completed, the file can be uploaded to the Advantage by clicking the Send Data selection under the Communications menu. The file can also be saved as a text file by clicking the file menu and then clicking the Save As option. THIS TEXT FILE MUST NOT BE EDITED USING A WORD PROCESSOR OR UNPREDICTABLE EFFECTS MAY RESULT. Sending a corrupted file to the Advantage may cause mis-operation. To recover from a corrupt file upload, simply upload the default configuration file (presented upon program startup) and re-edit parameters using the configuration software.



<!\

The Data Being Sent Will Overwrite ALL Data Currently Stored in the Advantage. Default Values Will Replace ALL Parameters Not Changed by the User. If the Set Up Parameters Currently Stored in the Advantage or in a Source File Stored on Disk are Correct Except for a Few Changes, It is Advised to Retrieve the Source File from the Advantage or Disk First and Edit that File, Rather than Start with a Default File.



Plate 39.Before the upload begins, this message will be presented to give the user an opportunity to abort the upload if (s)he navigated here in error.

is A	dvar	tage CT	Configuration -	E:\DESIGN.SPC\D	s adv/	ANTAGE\Set-ups\G4TSY	- UX
Eile	Edit	<u>S</u> earch	<u>Communication</u>	Advantage Parameter	s For <u>m</u>	About	
ALAF	RM 1:	ENABLED	Configure Po	iit			
		ENABLED		a			
		ENABLED	Cand Date				
		ENABLED					
		ENABLED		N. S.			
		ENABLED		Calibitation			
		AUX): ENA					
		SFR): EN/					
		ENABLED					
		: ENABLE : ENABLE					
		: ENABLE					
		ABLED	D .				
		ABLED					
		ABLED					
			ER: DISABLED				
		LASH: EN					
SCAL	E RA	NGE: 250	°C				
			ENABLED				
				IALLY DE ENERGIZED			
			NT: CONTINUE				
			: ENABLE				
		ET: 0°C	141				
		PE: MINEF PACITY: 5					
			N: NATURAL				
		LATION: I					
			10000000				
	11		Instruments of HUGHES CO je CT	RPORATION			

Plate 40. The time function sets the time stored in the Advantage to the same time as the system time on the host PC. Be sure the time on your PC is correct before using this function.

×

🛤 Advantage CT Configuration	- E:\DESIGN.SPC\DS ADV/	ANTAGE\Set-ups\G4TSY 📃	
Eile Edit Search Communication	Advantage Parameters Form	About	
ALARM 1: ENABLED Configure E	oit		-
ALARM 2: ENABLED Retrieve D.	ata		
ALARM 3: ENABLED Send Data			
ALARM 4: ENABLED Set Time			
	6 m / 1		100
ALARM 7 (AUX): ENABLED RTU Lable	Calibration		
ALARM 8 (SFR): ENABLED	.0		
ALARM 9: ENABLED			
ALARM 10: ENABLED			
ALARM 11: ENABLED			
ALARM 12: ENABLED			
RTX 1: ENABLED RTX 2: ENABLED			
RTX 3: ENABLED			
DISPLAY CONSERVER: DISABLED			
DISPLAY FLASH: ENABLED			
SCALE RANGE: 250 °C			
OPERATOR SETUP: ENABLED			
ALARM 8 (SFR) COIL STATUS: NOR	MALLY DE-ENERGIZED		
PEAK/VALLEY EVENT: CONTINUE DAY LIGHT SAVING: ENABLE			
RTD OFFSET: 0 °C			
FLUID TYPE: MINEBAL			
FLUID CAPACITY: 5000 GAL			
FLUID CIRCULATION: NATURAL			
AIR CIRCULATION: FORCED			-
Weschler Instruments			
Division of HUGHES C	DRPORATION		
Advantage CT			

Plate 41. To perform calibration of the linearization table, select the option of the same name from the communications drop-down. There is only one table in this model. Please refer to the calibration section of the users manual for details regarding calibration functions.

🖌 Login	×
Password:	жж.
ок	Cancel

Plate 42. The calibration function is password protected to insure that it is accessed only by authorized utility and factory personnel. The table can be corrupted if it is not entered properly, using the correct methods and equipment. The password is available by calling Weschler Marketing at 440-238-2550.

Set resistor v	alue to 64.3 ohm
Next	Done
	1

Plate 43. The calibration process presents ten screens with temperature values and resistance equivalents for each calibration point. The temperature is set on a connected RTD simulator or a resistance value is set on a precision resistance standard and the value is uploaded to the Advantage when the send button is clicked. The Next button is then clicked to advance to the next calibration point.

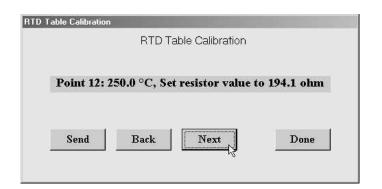


Plate 44. After the tenth point is calibrated, clicking the Next button will terminate the table calibration process.

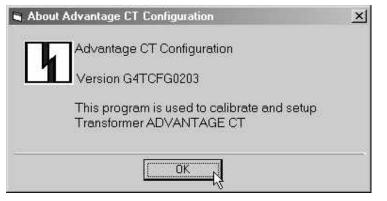


Plate 45. Clicking the About menu item opens the program version information box. This information will be requested to help diagnose any communications difficulties.

## 5.0 Installing New Firmware

#### Introduction

This ColdFire® equipped Advantage has the capability of having its firmware replaced by rewriting the memory with new program code. The program code is stored in a type of non-volatile memory called flash memory, and the process of rewriting the program code is referred to as flashing the memory.

The Advantage must be equipped with the digital communications option in order to perform this operation, and the user must have access to a computer which has a communications program which conforms to the Trivial File Transfer (TFT) protocol. A common program which posses this capability is HyperTerminal®, which is included in Microsoft Windows product lines. The instruction series which follows this introduction uses HyperTerminal to demonstrate the TFT memory flashing process.

The actual program code is a text file which is typically less than 500 KB in size, which makes it easily possible to transport the new code on a floppy disk or by electronic means such as email. Thus it is always fast and easy to keep the latest firmware installed.

The Advantage also has the capability of changing its species from one model to another using the flash capability. Although recalibration may be necessary when changing from one model to another, if the hardware is common from one model to another, recalibration and uploading of a new configuration file will be all that is necessary. As an example, the dual channel and LTC models share the same hardware, but not the same firmware. The firmware for either model can be flashed into the other, and with a simple RTD calibration and configurations settings, one model can become the other. The CT/LTC has hardware which is common to all other Advantage models, and it can have its species changed to any other model. Consult the factory for species changes and their associated requirements.

#### Process Description and Preparation to Flash

Memory flashing traditionally has been jokingly referred to as a "plug-and-pray" operation because of the risk of overwriting the firmware with corrupted data and thus requiring a trip to the factory for correction. The Advantage is equipped with redundant memory systems and error checking algorithms which make the file transfer safe and reliable.

The new firmware is uploaded by connecting a serial com port of a computer to the Advantage port 1 receptacle using an RJ12 to DB-9 adapter and a six conductor telephone cable. The port 1 receptacle is located behind the Advantage's terminal access cover plate. To remove the cover plate, unscrew and remove the two bottom screws, then loosen the top screws four or five turns and slide the plate off. See figure 1 for an illustration of the actual location of port 1. To replace the plate, slide the top edge up under the lip in the display cavity and install the two bottom screws snugly. Tighten the two top screws snugly. Use caution to avoid damage to the gasket.

The cable and adaptor are supplied as part of the communications option package, and additional cables and adapters can be ordered from Weschler. The standard cable is ten feet in length, part number 600000710. The adapter is part number 2100000102.

Prior to initiating the flash procedure, the communications parameters will need to be set up, from the front panel keypad. Referring to figure 12D, in the owner's manual, enter the COMM loop and set the BAUD to the highest speed your computer can support, then enter the PORT2 sub-loop and set the unit ID to the desired number. Record the baud and unit ID for use when setting up the TFT program.

The following sequence is based on the Microsoft Windows 95 and 98 standard installation. Non-standard installations and other versions of Microsoft Windows may have different file locations, but the operation of HyperTerminal is the same. It has been noted that the version of HyperTerminal which ships with Microsoft Windows XP is significantly slower than the version that ships with Windows 95 and 98. In some cases a firmware flash that would take 1 minute with the Windows 98 version of HyperTerminal takes 35 minutes with the Windows XP version of HyperTerminal. The Windows 98 version of HyperTerminal will run under Windows XP, and it is therefor suggested that the version that is shipped with Windows 98 be copied to the hard drive of your Windows XP machine, and that this version be used for firmware flashing.

📾 HyperTerminal		
<u>E</u> ile <u>E</u> dit ⊻iew <u>G</u>	<u>i</u> o F <u>a</u> vorites <u>H</u> elp	
← - → - ⊡ 档	*	ລ X 🗗 🖩 •
Address 🗋 C:\Program	n Files\Accessories\Hy	perTerminal 🔄
hticons.dll hypertrm.	dll Hypertrm.exe	Advantage Flash.ht
		·
		-
•		L L
6 object(s)		🛄 My Computer 🏼 🏿

Plate 46. Navigate to the HyperTerminal folder.

Click start>programs>accessories>communications>HyperTerminal and the HyperTerminal folder will open. If a connection has been defined for the Advantage previously (Advantage Flash in the example above), double click it's icon to open the HyperTerminal comm window and establish communications, then continue this sequence at plate 50. If a connection has not been previously defined, double click the Hypertrm.exe icon and continue the sequence at plate 47.

Connection Description				?×
New Connection				
Enter a name and choose an	icon for	the conn	ection:	
<u>N</u> ame:				
Advantage Flash				
lcon:				
	мст	88	ß	المحتيم ا
		OK	Car	ncel

Plate 47. Enter a name for the new connection and select an icon, then click OK.

Connect To		? ×
Advanta	age Flash	
Enter details for	the phone number that you want t	o dial:
<u>C</u> ountry code:	United States of America (1)	÷
Ar <u>e</u> a code:	954	
Phone number:		
Connect using:	Direct to Com1	-
	HSP56 AUDIOMODEM RISER U.S. Robotics 56K Win INT	
	Direct to Com1	
	Direct to Com2 15	
	Direct to Com3 Direct to Com4	
	TCP/IP (Winsock)	

Plate 48. Select the serial comport on your computer that you connected the adapter to.

1 Properties	-		
t Settings			
<u>B</u> its per second:	57600		-
<u>D</u> ata bits:	4800 9600 19200		<u> </u>
	38400 57600	N	-
<u>P</u> arity:	None	- Ng	-
<u>S</u> top bits:	1		•
<u>F</u> low control:	None		•
<u>A</u> dvanced	]	<u>R</u> estore	Defaults
0	ĸ	Cancel	Ap

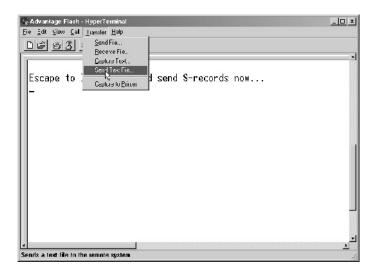
Plate 49. Set the flow control to "None" stop bits to "1", parity bits to "None" and data bits to "8". Advantage can communicate at up to 57600 baud (bits per second). Select the highest baud that your computer can communicate at, up to 57600.

🍪 Advantage Flash								
Fie cot View Call								
06 93								
Escape to	local host	and send	d S-rec	ords	now.			
		C3						
		15						
								1
								-
4 Company 4 0:00:20		ETCOD C N L	SCROLL	CARE	hund	Casturo	Drint onko	•
Connected 0:00:30	Auto detect	57500 8-N-I	Jachorr	CAPS	NUM	capture	Print echo	11.

Plate 50. Type the command :IDUPL in upper case and press the enter key. The "ID" part of :IDUPL is the unit ID recorded in the set up steps, above. Substitute the unit ID into the command when it is typed. For example, if the unit ID which was recorded is 00, the correct command would be :00UPL . The command will not echo (appear) on the screen due to limitations of the HyperTerminal program. If the command has been entered properly, the text above will appear on-screen. If the text does not appear, check the command's syntax and reenter the command.



As soon as the :IDUPL command is accepted, this display appears on the Advantage



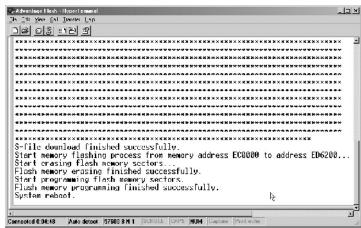
🗟 Advantage Flash	<ul> <li>HyperTerminal</li> </ul>							_ 🗆 ×
Ele Edit View Cal	<u>_</u> tarsfer <u>_</u> elp							
02883	0 13 12							
Escape to	local hos	t and sen	d S-rea	:ords	now.	••		-
	Send Text File						2×	
	Look n: 🔁 F	Tash Procedule		·È				
	≣ fashtxt						-	
11								
						5		
	Fie <u>n</u> ame: [	fash:xl				<u>I</u> pen		
	Fiesofyte:	Tavk Se (* TVT)			-	Carcel		
	11000 910.	-M (6(.171)			-			
		_						
Connected 0:02:18	Auto delect	57600 8-N-1	SCROLL	CAPS	NIIM	Capture	Print echo	브
Transferration and the second	and the second se		an presentation of the	1	1	No. of Concession, Name	1	1

😪 Advantage Hash - Hyperi erminal	<u>_0×</u>
File Edil View Cal Transfer Telp	
<u>D12 85 00 5</u>	
Escape to local host and send S-records in Start loading	now
***************************************	*********************
***************************************	****************
	ĥt -
	-1
	Ľ
Connected 0.03.21 Auto detect 57600 8-N-1 SCNOLL CAPS	NUM Capture Print echo

Plate 53. The HyperTerminal window will begin filling with asterisks as the transfer progresses.

Plate 51. Click the Transfer menu item on the tool bar then click the Send Text File option.

Plate 52. Navigate to the folder which contains the firmware text file (flash.txt in this example) and open it.





When the transfer is complete, the display changes from LOADING to PROGRAMING

Plate 54. When the file transfer finishes, the data is checked for accuracy and programmed into the flash memory. The HyperTerminal window logs progress. The complete reflash process, from file selection to reboot takes about 45 seconds at 56700 baud.

When the memory flash process finishes, the Advantage enters the reboot loop. The display changes from "PROGRAMING" to "WAIT INIT" to "00000 00000" (lamp test) to the new firmware version and finally resumes normal display function.

Advantage Flash - HyperTemi	nal	
le <u>Ett Vew Cal I</u> lersfer <u>H</u> e	lp.	
Cal Wait for a Cal		
******** Step Wating	*******	*
******	- × × × × × × × × × × × × × × × × × × ×	×
Degreet	***************************************	**
**************	******************	×
*************	***************************************	*
****************	***************************************	*
****************	***************************************	×
**************		**
*******	************	×
************	***************************************	*
********	** > * * * * * * * * * * * * * * * * *	**
*****************	***************************************	×
*******		**
******************	**************************************	
S-Tile download ti	inished successfully.	
	ning process from memory address EC0000 to address ED6200	J
	sh memory sectors	
	ing finished successfully.	
Start programming	flash memory sectors.	
	amming finished successfully.	
System reboot		
		<u>•</u>
connects from the remote syste	n	

Plate 55. To properly exit the HyperTerminal program, click the Call menu item, click the Disconnect option then click the X in the upper right hand corner of the window.



Once the new firmware is installed, the release notes which came with the new fam therefite is beclevited this displaying whether the monitor and/or configuration software which is current presselled to the the two and the formation software. The new graded. See the previous sections for details regarding loading of new monitor and configuration software. The new features of the firmware may also require a new owner's manual. To determine if new documentation is required, compare the required revisions listed in the release notes with the revision levels shown on the Owner Manual's cover page and in the software's "Help" window. When the firmware is distributed on a cd, the correct corresponding manual, configuration and monitor software are included on the CD.

## 6.0 Downloading Historical Peak and Valley Values

The peak and valley download process shares the same connection that the flashing process uses. If you have not yet set up the connection, do so now following the steps of plates 47 through 50 above.

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Plate 56. Open HyperTerminal and establish a connection with Advantage. Click on the Transfer drop-down then click the Capture Text menu item.

Capture	l ext		? ×
Folder:	E:\DESIGN.SPC\DS		
<u>F</u> ile:	E:\DESIGN:SPC\DS ADVANTAGE\Soft		Browse.
		Start	Cancel
		Start	Cancel

Plate 57. Browse to a folder where the peak and valley text file will be stored.

Select Captu	re File				? ×
Save jn: 🔂	Firmware	· 🗈		ď	
G4TSYS0	201				
File <u>n</u> ame:	CT P&V 01			1	Cause 1
The Hame.				<u></u>	Save
Save as type:	Text file (*.TXT)		-		Cancel

Plate 58. Create a name for the file.

Capture	l ext	<u>? ×</u>
Folder:	E:\DESIGN.SPC\DS	
<u>F</u> ile:	E:\DESIGN.SPC\DS ADVANTAGE\Soft	Browse
	Star	Cancel

Plate 59. Click the start button to arm the transfer.

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Conversion of the last of the conversion of the	C Pagana (Post alla)

Plate 60. Type the command :IDP&V in UPPER CASE. The "ID" is the communications ID. The ID choices are 00 to 99. You must fill in both digits of the ID. The factory default unit ID is 00. The command will not echo on the screen, so enter it carefully.



Plate 61. If the command was entered properly, the peak and valley text will begin to download into the window. If the download does not begin, try reentering the download command. Close HyperTerminal by clicking the X in the upper right hand corner of the window.

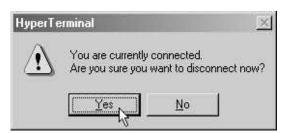


Plate 62. Click the yes button to disconnect with Advantage.

Open your favorite word processor program and browse to the peak and valley text file. You may use almost any word processor which is capable of displaying text files. If the file is fairly short, it may be opened in Notepad. The file below is an example of a peak and valley file with two data points for each of the three measured quantity's peak and valley events.

0,95,6,17,2003,17,43,42 0,62.7,2,2003,17,41,28 128,41,6,17,2003,17,44,16 128,37,7,2,2003,17,48,38 1,80,6,17,2003,17,43,48 1,29,7,2,2003,17,45,1 129,24,6,17,2003,17,44,24 129,20,7,2,2003,17,58,4 2,494,6,17,2003,17,43,54 2,498,7,2,2003,17,42,8 130,0,6,17,2003,18,30,40 130,0,7,2,2003,18,5,34

The data file is downloaded in simple comma delimited ASCII with a carriage return at the end of each event record. Data items are separated by commas. This file arrangement can also be loaded by popular spreadsheet programs such as Corel QuattroPro and Microsoft Excel.

The first data item in each event record is coded to indicate the type of event record. The codes are as follows:

0 = Winding Temperature Peak 1 = Fluid Temperature Peak

2 = Load Current Peak

128 = Winding Temperature Valley129 = Fluid Temperature Valley130 = Load Current Valley

The split in coding between 2 and 128 allows for a future total of 128 peak and 128 valley categories.

The second data item is the actual reading in decimal representation. The third data item is the month of the year that the event occurred. The fourth data item is the day of the year that the event occurred. The fifth data item is the year that the event occurred. The sixth, seventh and eighth data items are the hour (in 24 hour format), minute and second that the event occurred.

0,95,6,17,2003,17,43,42

As an example, the first event above indicates that a winding temperature peak event of 95 °C occurred on June 17<sup>th</sup>, 2003 at 17:43:42 hours (5:43PM and 42 seconds).

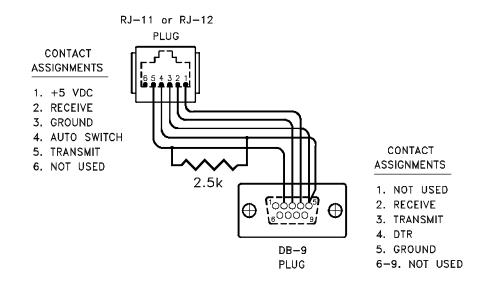
## 7.0 Physical Layer (Cabling Connections)

There are two ports available for hard wire connections. Port one uses an RJ-11 or RJ-12 connector. The RJ-11 has four contacts and the RJ-12 has six contacts. Port one is primarily intended for connection of a portable or desk-top computer for configuration of Advantage settings, monitoring of transformer conditions and flashing the firmware. The RJ-11 or RJ-12 connectors with an appropriate four or six conductor extension cable and a RJ-12 to DB-9 (telecom cable to PC port) adaptor is used for this process. Either the RJ-11 or 12 connector will fit the adaptor. The six-pin RJ-12 must be used with a six conductor telecom cable and the adapter to provide a 5 vdc DTR signal for some fiber-optic adaptor devices which are port-powered. The current drawn from this port must not exceed 25 madc, and it must be isolated from EMI / RFI sources.

Port two is connected through the terminal strip on the I/O module. See the terminal assignments diagrams in the owner's manuals for terminal numbers. This port does not provide a 5 vdc source for port-powered devices.

The ports are exclusive; meaning that they cannot communicate simultaneously. Port two is the default port, but if the RJ-11 or 12 connector with the adapter attached are plugged into port one, communications will automatically be switched to port one and port two will be disabled. When the RJ connector or the adapter are removed, communications will automatically be switched back to port two. In order for this switching to work properly, the connections diagramed in the Communications Port One Cabling figure below must be followed, when adapters are made in the field. The adapter supplied by Weschler (part number 2100000101) is wired this way. The adapter is available with a ten foot, six-wire telecon cable as part number 1000001701.

It is strongly recommended that only port one or port two configured for RS-232 operation be used for firmware flashing. While port 2 has been successfully used in RS-485 mode using carefully controlled laboratory conditions, signal noise variables associated with long data lines and RS-232 to RS-485 converters can make reliable real-world firmware flashing a challenge. In addition, the RS-485 connection provides no echo back to the host computer indicating progress of the flash procedure.



#### **Communications Port One Cabling**