

SL POWER TF Series GUI Manual

Communication Protocol AN-0028



TF series power supplies support digital communication interface with a Host PC based on RS 232 communication protocol. The UART control interface RXD and TXD are TTL signals. These signals must be transformed to communicate with host PC by CT-2XX Communication Board. This can be acquired from SL Power Electronics. Then, the functions below can be operated:

- 1. ON / OFF control and ON / OFF Status query.
- 2. Output voltage / current limit setting and query.
- 3. Actual output voltage, output current and internal temperature query.
- 4. Status of the unit query.
- 5. Manufacturing related data query (Include model name, serial number, MFG date etc ...).

REQUIRED HARDWARE

- Host PC
- CT-XXX communication board with 24-wire cable mating to C2 connector on TF power supply
- USB to RS 232 adapter (with cable)
- TF series power supply
- Load (recommended, optional)

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SW INSTALLATION

- 1. Run setup.exe file from SL-TF Installer and follow the recommended steps in SW installer tool. (Hint: The SW installer adds NI LabVIEW run-time 2011 and SL-TF_Demo Project to the system.)
- 2. If USB to RS232 adapter is used for first time, install drivers according to instructions provided with the hardware. (Hint: most likely Windows OS will recognize and install default USB drivers which are suitable for required use.)



CONNECTION SETUP

Follow the steps listed below to connect CT-XXX communication board to TF series power supply:

- 1. Remove supplied jumper from C2 connector.
- 2. Connect first end of 24-wire cable to C2 connector on TF power supply.
- 3. Connect second end of 24-wire cable to CN1 port on CT-XXX communication board.
- 4. Connect USB to RS 232 Adapter to host PC.
- 5. Connect USB to RS 232 to CT-XXX communication board (9 pin RS 232).
- 6. Make sure the address potentiometer is selected correctly. This is important for parallel operation of PS where two PS are not allowed to have same address.
- 7. Connect AC power cord to TF power supply.



Figure 1: Connection example TF800 power supply to CT-251 communication board to RS 232 - USB adapter

- 8. Connect load to TF power supply (recommended, optional). Apply AC Power to TF power supply.
 - Power supply remains in stand-by mode.
 - Green LED is blinking slowly indicating power stand-by mode.



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FIRST RUN

- 1. Perform connection setup described in section 4.
- 2. Run SL-TF Prog_RT.exe on host PC.
- 3. Select applicable communication port before setting the program (COM7 in this example).
- 4. After selecting the applicable COM port, press SEARCH button.
- 5. ADDS0 will show power supply model voltage, output signals status and the information including DC output voltage, current and temperature).
 - ADDS0-ADDS7 are monitored in respect to potentiometer selection on TF power supply.

	ommand														
COM7 Response													SEAR	СН	
Type Set SETT													ΜΟΝΙΤ	OR	
GLOB													CLEA	AR	
OFF													EXI.	т	
ADDS 0	ADDS 0 ADDS 1		AD	ADDS 2		ADDS 3		ADDS 4		ADDS 5		ADDS 6		ADDS 7	
24.00V	24.00V														
0,00 V	0,00 V		0,00 V		0,00 V		0,00 V		0,00 V		0,00 V		0,00 V		
0,00 A	0,00 A		0,00 A		0,00 A		0,00 A		0,00 A		0,00 A		0,00 A		
27,0 degC	0,0 degC		0,0 degC		0,0 c	legC	0,0 c	legC	0,0 c	legC	0,0 c	legC	0,0 c	legC	
OVP OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	
OTP Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	
FAN Fail Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	
AC Fail AC Down	C Down AC Fail AC Down		AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	
VCI/ACI or Enable VCI/ACI or Enable		VCI/AC	CI or Enable	VCI/ACI or Enable		VCI/ACI or Enable		VCI/ACI or Enable		VCI/A	CI or Enable	e VCI/ACI or Enable			
Software Command	Softwa	are Comm.	Softv	vare Comm.	Softwar	e Command	Softwar	e Command	Softwar	e Command	Softwar	e Command	Software Command		
Not used. Not used.			Not used.		Not used.		Not used.		Not used.	_	Not used.		Not used.		
Not used. Not used. Power Power		_	Power	Not used.			Power		Power	Not used.		Not used.			
Not used. Not used.		Not used.		Not used.		Not used.		Not used.	Not used.		Not used.		Not used.		
Not used.		Not used.		Not used.		Not used.		Not used.	Not used.		Not used.		Not used.		
Remote	Remote Remote			Remote		Remote	Remote		Remote		Remote		Remote		

Figure 3: GUI, 24 V TF Series power supply connected to ADDS 0 at COM7 in local mode (green)

- 6. Change the power supply mode from Power Standby to remote mode by pressing the GLOB button from OFF to ON.
 - Orange solid LED on TF power supply is indicating power remote mode.
 - Switching GLOB function off will return TF power supply to remote stand-by mode, blinking orange LED.



FIRST RUN

7. Click SEARCH to read and update GUI information from TF power supply.

- Voltage indication in GUI will change its color from green to orange.
- This indicates successful communication setup with GUI.
- Output voltage is 0 V and output current is 0 A.

COM7 - Response													SEAR	СН	
Type Set SETT														MONIT	OR
GLOB														CLEA	AR
ON														EXI	т
				L											
ADDS 0		AD	DS 1	ADDS 2		ADDS 3		ADDS 4		ADDS 5		ADDS 6		ADDS 7	
24.00V															
0,0	0 V	0,00 V		0,00 V		0,0	0 V	0,0	0 V	0,0	0 V	0,0	0 V	0,0	0 V
0.0	0 A	0.00 A		0.00 A		0.0	0 A	0.0	0 A	0.0	0 A 0	0.0	0 A	0.0	0 A
32,0 degC		0,0 c	legC	0,0 c	legC	0,0 c	legC	0,0 c	legC	0,0 c	legC	0,0 c	legC	0,0 c	legC
OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP
OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.
FAN Fail Power Fail FAN Fail Pov		Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	
AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down
VCI/ACI or Enable		VCI/ACI or Enable		VCI/ACI or Enable VCI/ACI or Enable Software Command			CI or Enable	VCI/A	CI or Enable e Command	VCI/ACI or Enable		VCI/ACI or Enable			

Figure 3: : GUI, 24 V TF Series power supply connected to ADDS 0 at COM7 in remote mode (orange)

- 8. Set desired output voltage by entering command line: SV XX (XX for voltage value according to datasheet).
- 9. Set desired output current limit by entering command line SI YY (YY for current value according to datasheet).
- 10. Click MONITOR button for status query in continuous loop or SEARCH button for single query to readout values from TF power supply.
- 11. Get exact output voltage or current by entering command line RV? Or RI?



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EXAMPLE USING A 24 VOLT MODEL

- 1. Perform connection setup described in section 4.
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 - ADDS0-ADDS7 are monitored in respect to potentiometer selection on TF power supply.

COM7 Response						ADDS 0								SEARCH		
Type Set SETT						SV 22.23								моні	OR	
GSV 10,00 SET														CLE/	٨R	
ON														EXI	т	
ADDS 0		ADI	ADDS 1 ADDS 2		DS 2	ADDS 3		ADDS 4		ADDS 5		ADDS 6		ADI	DS 7	
24.00V																
22,0	0 V	0,00 V		0,00 V		0,00 V		0,0	0 V	0,00 V		0,00 V		0,00 V		
2,00) A	0,00 A		0,00 A		0,00 A		0,00 A		0,00 A		0,00 A		0,00 A		
34,0 degC		0,0 degC		degC 0,0 deg		0,0 degC		0,0 degC		0,0 degC		0,0 0	degC	C 0,0 degC		
OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	
OTP FAN Fail	Hi-Temp.	OTP EAN Eail	Hi-Temp. Power Eail	OTP EAN Eail	Hi-Temp. Power Eail	OTP EAN East	Hi-Temp. Prover Eail	OTP FAN East	Hi-Temp. Promer Eail	OTP EAN Eat	Hi-Temp. Power Eail	OTP EAN Eatl	Hi-Temp.	OTP EAN Eail	Hi-Temp. Power Eail	
AC Fail	AC Fail AC Down AC Fail AC Down		AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down	AC Fail	AC Down		
VCIWCI or Enable		VCUACI or Enable VCUACI or Enable		Vel/A	CI or Enable	VCVA	CI or Enable	VCIA	CI or Enable	VCI/ACI or Enable		VCUACI or Enable				

* C	COM7 Response					ADDS 0			SEARCH							
Туре	Type Set SETT				Si 2.73								MONITOR			
– °	GLOB													CLEA	R	
ON													EXI	г		
			ADI	ADDS 2		ADDS 3		ADDS 4		ADDS 5		ADDS 6		DS 7		
24.	24.00V															
22,0	00 V	0,0	0,00 V 0		0 V	0,0	0 V	0,0	0 V	0,0	0 V	0,0	0 V	0,00 V		
2,0	0 A	0,0	0,00 A 0,00 A		0 A 0	0,0	0,00 A		0,00 A		0,00 A		0,00 A		0,00 A	
34,0	34,0 degC 0,0 degC		legC	0,0 0	legC	0,0 0	degC	0,0 0	legC	0,0 0	degC	0,0 0	legC	0,0 c	legC	
OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	OVP	OLP	
OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	OTP	Hi-Temp.	
FAN Fail	il Power Fail FAN Fail Power Fail FAN Fail Power Fail		Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail	FAN Fail	Power Fail			
AC Fail	all AC Down AC Fail AC Down AC Fail AC		AC Down	AC Fail	AC Down	ACFail	AC Down	AC Fail	AC Down	AC Parl AC Down		AC Fail AC Down				
VCI/A Softwar	VCUACI or Enable Software Command Software Comm		Veua Soft	VCUACI or Enable Software Comm.		VCUACI or Enable Software Command		VCI/ACI or Enable Software Command								

Figure 4: GUI, response to executed command "SV 22.23"

Figure 6: GUI, response to executed command "RI?"

Figure 5: GUI, response to executed command "SI 2.73"

6. Click MONITOR or SEARCH to get updated data from TF power supply

7. Get more exact voltage query by entering command lines RV? and RI?

	& COM7	•	Response	ADDS 0				SEARCH	S COM7		Respo	
	Type Set	SETT	-	RI? 2.73A				MONITOR Type Set SETT				
GSV 10,00 SET GLOB								CLEAR	GSV	GLOB		
		ON						EXIT		ON		
	ADDS 0	ADDS 1	ADDS 2	ADDS 3	ADDS 4	ADDS 5	ADDS 6	ADDS 7	ADDS 0	ADDS 1	ADDS	
	24.00V								24.00V			
	22,00 V	0,00 V	0,00 V	0,00 V	0,00 V	0,00 V	0,00 V	0,00 V	22,00 V	0,00 V	0,00 V	
	2,00 A	0,00 A	0,00 A	0,00 A	0,00 A	0,00 A	0,00 A	0,00 A	2,00 A	0,00 A	0,00 A	
	34,0 degC	0,0 degC	0,0 degC	0,0 degC	0,0 degC	0,0 degC	0,0 degC	0,0 degC	34,0 degC	0,0 degC	0,0 deg	
	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP OLP	OVP O	
	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP Hi-Temp.	OTP HI-T	
	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fail	FAN Fail Power Fai	FAN Fail Power Fail	FAN Fail Powe	
	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fail AC Down	AC Fall AC 0	
	VCI/ACI or Enable Software Command	VCUACI or Enable Software Comm	VCI/ACI or Enable Software Comm	VCUACI or Enable Software Command	VCIACI or Enable Software Command	VCI/ACI or Enable Software Command	VCI/ACI or Enable Software Command	VCIACI or Enable Software Command	VCI/ACI or Enabl Software Comman	VCIVACI or Enable Software Comm.	VCI/ACI or E Software C	

Figure 7: GUI, response to executed command "RV?"

Contact your local application support or use Communication Protocol User's Manual for more details to additional commands.



EXIT



Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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