Var.. name	Description summary	Detailed description	Speciality behaviour, additional note	Unit	R/W	min val	max val	Reset val
	BOARD MODEL:	Tinaxis Plus STP400 - STP600						
	Tinaxis Plus STP60 - Registers / Variables complete description. This is the complement of the document named "Software manual 3.x"							
ACC	Acceleration	Set the acceleration ramp in trapezoidal move (mode 6 and 8). Example: 1000 gives an acceleration of 1000 RPM each second	Only positive values are accepted.	RPM / sec	RW	0		1000
BUS_ADR	Addressing mode and address, related to COM1	if value is 0: no addressing mode. Values form 1 to the maximum address (for example 9999).	Remote language: When addressing is used, breodcast address is 0 and device address is BUS_ADR Modbus (when present): device address		RW			0
CHOPER		Chopper mode: fast or slow decay modes	slow decay has more efficiency and fast decay allows more torque at hagh speed. The best compromize must be find in each application.		RW			
D_P_SET	Digital potentiometer settings	The digital potentiometer is a special function of IN1 and IN2: when active, a button "+" and a button "-" must be connected to IN1 and IN2. Then the action on each of these buttons increase or decrease the value of D_POT	0 = disable 1= enabled, without counting limit 2 to 10000: counting between 0 and the value		RW			0
D_POT	Digital potentiometer value				RW			0
DATE	Firmware date code				RW			
DEBUG	Debug system	Show information on the serial connection RS232/USB cable or RS485	0: no debug info 1: print every operation executed		RW			0
DEC	Deceleration			RPM / sec	RW	0		1000
DM_CTRL	Manufacturer (Dynamic Motion) control register	There is only manufacturing related actions concerned by this register. Please do not use.			RW			
EE_1,	Flash memory 1	Non volatile memory (is saved to flash at power-off, when the voltage drops below the minimum allowed voltage). Attention, after 20'000 cycles of write, data integrity in not guaranteed. Cycles of write occurs at both conditions: value has been changed and power supply is cut-off	Note: when logical voltage drops faster than power voltage, the values may not be saved, because it's the measured voltage on POWER supply that trigs saving at a defined threshold, form volatile memory to flash memory		RW			-1 when new, then saved value
EE_10,	Flash memory 10	same			RW			same
EE_2,	Flash memory 2	same			RW			same
EE_3,	Flash memory 3	same			RW			same
EE_4,	Flash memory 4	same			RW			same
EE_5,	Flash memory 5	same			RW			same
EE_6,	Flash memory 6	same			RW			same
EE_7,	Flash memory 7	same			RW			same
EE_8,	Flash memory 8	same			RW			same
EE_9,	Flash memory 9	same			RW			same
ERR_BAS		Last error and it's line number	6 first digits: line number digit 10 and 11: error code	-	RW			0

Var.. name	Description summary	Detailed description	Speciality behaviour, additional note	Unit	R/W	min val	max val	Reset val
ERROR		BITS indicating each of the error: Bits 0 to 7: present only when the error is active Bit 0: Over temperature Bit 1: Over voltage Bits 8 to 15: the same bits but not reset when error is cleared Bit 8: Over temperature Bit 9: Over voltage Example: Hexa 301 is 769 decimal, means over temperature and over voltage has occured but is not present currently.	Note: to access a bit, use logical calculation. Exemple: 8 is binary 1000, so this expression take an action when the 4th bit is active. If ERROR & 8 > 0 then goto 99	-	RW			0
I_ACC	Acceleration current	Phase current when motor is accelerating or decelerating	I_ACC can be changed individually or is automatically set at 100% of I_MAX when I_MAX is set	mA	RW	0		500
I_IDL	Idle current	Phase current when motor is idle (not moving but active mode as mode 8 or mode 6)	I_IDL can be changed individually or is automatically set at 50% of I_MAX when I_MAX is set Note: the reason to decrease I_IDL compared to I_ACC is only heat dissipation. Heat dissipation is $R \cdot i^2$. Reducing i by 50% decreases heat by 75%.	mA	RW	0		250
I_MAX	Maximum current (setup current for both current generators)	Max phase current. Set this value according to the motor constructor specification and reduce this value when the motor does not need to provide torque. The next 3 values are automatically updated: I_ACC = I_MAX I_MOV =75% of I_MAX I_IDL =50% of I_MAX	The values used by the amplifier are I_ACC, I_MOV and I_IDL. The only purpose of I_MAX is a convenient way of setting the 3 above values at once.	mA	RW	0		500
I_MOV	Move current	Phase current when motor is moving at constant speed	I_MOV can be changed individually or is automatically set at 75% of I_MAX when I_MAX is set	mA	RW	0		375
IN1	Analog input	measured voltage (in mV)			R			
IN2		Same as IN1			R			
IN3		Same as IN1			R			
IN4		Same as IN1			R			
IN5		Same as IN1			R			
IN6		Same as IN1			R			
IN7		Digital input						
JOG	Speed target	Speed target: this value controls the mouvements in trapezoidal speed mode	When the mode is set to automatic (default state after power-up, or after setting mode to 0), the mode automatically switch to 6 when JOG is set.	RPM	RW			0
LCD	LCD Enable	0 = no LCD / LCD OFF 1 = LCD ON, no backlight 2= LCD ON, with backlight						
LCD_SZ	LCD size		example: 208 = 2 lines of 8 characters, 420 = 4 lines of 20 characters					

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LOCATE	Locate the cursor on embedded display	set next character position on LCD get the current cursor position	0 to 1323 3rd digit (x1xx)= line 2 left digit (x23) = raw Be careful to stay in visible aria; the vis. aria depend on the LCD used (see hardware description) Right digit: 1xxx: will clear screen before display					
LST_COM	Last communication time, COM1	Represent the time in ms since last communication.	This helps to detect a failure on the communication. The user software can test this value and get into emergency procedure when communication has beed lost for a long period.	ms				0
M_SP_N	Maximum speed in negative direction	Max speed during a move in positioning mode, negative direction		RPM		0		1000
M_SP_P	Maximum speed in positive direction	Max speed during a move in positioning mode, positive direction		RPM		0		1000
MAX_T	Maximum temperature (form measured "TEMPER")	Will disable power stage when this temperature is reached. A thresold of 10° lower must be reached before starting again	Tinaxis Plus STP60: default value 70000 (70°C) and maximum value 90000	1/1000 °C	RW			70000
MIN_VIN	Minimum voltage	Below minimum voltage, the power amplifier is not enabled	This register is ignored, an hardware security disable the motor power when voltage is too low.					
MODE	System mode	Possible values: 0: Unpowerd, AUTOMATIC 6: Speed (jog mode) 8: Positionning	When the mode is not changed explicitly, it will be changed automatically with the use of motion variables: assign JOG -> change mode to 6 assign TARGET -> mode to 8 assign U_MOT -> mode to 4 AUTOMATIC is enabled by writing 0 and disabling by writing any other value. It is by default enabled	-	RW			0
MODEL		Driver model code			R			
OSC_1	Oscilloscope channel 1	Index of the register to record	Example of use: OSC_1="POS" or OSC_1=0 (0 is the index of "A")		RW			"SPEED"
OSC_2	Oscilloscope channel 2	Index of the register to record			RW			"POS"
OSC_P	Oscilloscope memory (number of points)				R			
OSC_T	Oscilloscope period of recording	Changing this value immediately reset and start oscilloscope recording.	Setting a value of 4 will record 1 sample each 4 ms.	ms	RW			
OUT_CFG	Outputs configuration	Allowed values: 0: Normal outputs 1: OUT1= encoder output 2: same as 1, but no reset while setting the OUT_CFG 3: period pulses, square wave (OUT_V1= half period in ms) 4: period pulses (OUT_V1 is period time in ms). OUT1 is active only during 1ms. 5: same as 4, but OUT1 is inactive during 1ms	example: OUT_V1=10 OUT_CFG=1 then OUT1 will change every 10 motor (micro)step. When this value is changed, the internal counter between transition is reset in stepper mode.		RW			0
OUT_V1	Output special configuration value	Value for special output configuration (Tinaxis+STP60)	This register is related with OUT_CFG		RW			0
OUT1	Output 1 data	NPN output (pull down when active) digital state (logical state) 0 or 1. 0 is not conducting and 1 is conducting			RW			0
OUT2	Output 2 data	same ad OUT1			RW			0
OUT3		same ad OUT1						

Var.. name	Description summary	Detailed description	Speciality behaviour, additional note	Unit	R/W	min val	max val	Reset val
OUT4		same ad OUT1						
OUT5		same ad OUT1						
OUT6		same ad OUT1						
OUT7		same ad OUT1						
POS	Current position	Current position (instantaneous)	Changing POS also reset motion vectors. It is better to change this value with motor "OFF" Range is 32 bit signed: -2147483648 to + 2147483647, value is circular (example: 2147483647 +1 = -2147483648)	encoder or microstep count	RW			0
PR_CONF	instruction "PRINT" configuration and ERROR messages		see table below. Recommended: 1 in normal use, 9 during software tests, 11=default BIT 0: allow print to LCD display BIT 1: Allow print to UART main channel BIT 2: Print errors on LCD display BIT 3: Print exceptions on UART main channel		RW			11
SER_SP	Serial communication speed	Serial communication speed Default is 9600 bps The speed is blocked at 9600 bps during the first 2 seconds (this gives the time to stop the software after power-up, in case of wrong programming and communication loss.) The available speeds are: 1200, 2400, 4800, 9600, 19400, 38400, 57600. Programming connector and RS485 share the same channel, therfore it is the same register	Default value: 9600	bits / sec	RW			9600
SERIAL	Serial number	Generally unused. Optionnaly filled with unique serial number			RW			
SPEED	Current speed		Speed calculation uses u_step and stp_cnt	RPM	R			
STP_CNT	Step per revolution count	Amount of motor step per revolution. Example: a motor with 1.8°/step has 200 step per revolution	Note: this value can be used to convert rotor speed speed to application speed. Example: a 200 step/rev motor coupled with a gearbox of 5:1: use STP_CNT=1000 to work with final resolution. The same can be used with linear move	-	RW			100
TARGET	Position target	Position target: this value controls the mouvements in trapezoidal positionning mode. Unit: native resolution Examples: 1/1024 revolution in BLDC with integrated encoder, 1/6 rev. in BLDC with only hall sensors, microstep count in steppers		enc/microstep	RW			0
TEMPER	Measured temperature	Temperature of the driver (measured in the middle of the board)		1/1000 °C	R			
TIME		Time in seconds since the last power-up		s	R			0
TIME_D1		Timer counting DOWN continuously, decrement 1 each millisecond and stops at 0		ms	RW			0
TIME_D2		Same as TIME_D1		ms	RW			0
TIME_U1		Timer counting UP continuously, increment 1 each millisecond, a negative value stops counting. Default value = -1		ms	RW			-1
TIME_U2		Same as TIME_U1		ms	RW			-1
U_STEP	Microstep count	Amount of microsteps per step	Tinaxis Plus STP 60 board: available values: 1, 2, 4, 16		RW			16
UART	UART mode (main UART, programming connector)	Mode for serial communication (for standard bus, please refer to the corresponding section)	Programming connector always activated BIT0, BIT1: unused BIT 2: Redundancy check enabled		RW			0

Var.. name	*Description summary*	*Detailed description*	*Speciality behaviour, additional note*	*Unit*	*R/W*	*min val*	*max val*	*Reset val*
V_IN	Voltage measured on Power supply	Voltage present on power supply bus		mV	R			
V_LOG	Voltage measured on Logic supply	Not measured. Shows the same voltage as V_IN		mV	R			
	Tinaxis Plus STP400 Additional registers	In order to provide maximum software compatibility between board models, additional registers are present but no action are related to them. They can be used as additional free user register but this is not recomended when compatibility with future models may be guaranted.						