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CAEN (i) Electronic Instrumentation

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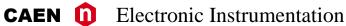
1 Address map

This chapter describes the accessible HV channel registers of DT5790 Digital Pulse Analyzer and x780 Digital MCAs, and the format of the read/write data.

Table 1: DT57xx HV Channel registers

CHANNEL n PARAMETERS (CH0 n = 2; CH1 n = 3)					
Address	Register Name	Data type	Mode	Function	
0x1n20	VSET	16 bit	RW	Set channel voltage	
0x1n24	ISET	16 bit	RW	Set channel current	
0x1n28	RAMP UP	16 bit	RW	Ramp Up Rate	
0x1n2C	RAMP DOWN	16 bit	RW	Ramp Down Rate	
0x1n30	VMAX	16 bit	RW	Software VMAX	
0x1n34	CONTROL	16 bit	RW	Control register	
0x1n38	STATUS	16 bit	R	Channel Status	
0x1n40	VMON	16 bit	R	Channel voltage monitor	
0x1n44	IMON	16 bit	R	Channel current monitor	

NOTE: "n" in the register address has to be intended as "2" for HV CH0 and "3" for HV CH1.



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2 Registers description

See Technical Specifications of the relevant board for parameters allowed ranges.

2.1 VSET

Address	0x1n20
Resolution	0.1V
	This register can be used to set channel voltage: the set output voltage is given by the product
Description	between register value and Vset resolution; for example in order to set 2500 V, set register to 25000
	(resolution 0.1 V).

2.2 **ISET**

Address	0x1n24
Resolution	DT5780: 10 nA; DT5790: 50 nA
	This register can be used to set channel current limit: set current is given by the product between
Description	register value and Iset resolution; for example in order to set 2000 μA (DT5790), set register to 40000
	(resolution 50 nA).

2.3 RAMP UP

Address	0x1n28
Resolution	1 V/s
Description	This register can be used to set RAMP UP rate.

2.4 RAMP DOWN

Address	0x1n2C
Resolution	1 V/s
Description	This register can be used to set RAMP DOWN rate.

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2.5 **VMAX**

Address	0x1n30
Resolution	20V
Description	This register can be used to set hardware max voltage, the Vmax is given by the product between
	register value and resolution.

2.6 **CONTROL**

Address	0x1n3	0x1n34				
	BIT	0	Power On/Off	0 : CH OFF 1 : CH ON		
Description	BIT	1	Power Down Mode	0 : KILL 1 : RAMP		
	BIT	7	Monitor Mode	0 : Vmon, Imon, Status. 1 : Analog In, Temperature In, A639 Firmware Release		
	Other BITs		Reserved			

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2.7 **STATUS**

Address	0x1n38					
	this register allows to read STATUS word, whose bits mean:					
	Bit 0	= 1	->	ON		
	Bit 1	= 1	->	Ramp UP		
	Bit 2	= 1	->	Ramp DOWN		
	Bit 3	= 1	->	OVER CURRENT (IMON > ISET)		
	Bit 4	= 1	->	OVER VOLTAGE (VMON > VSET + 2%)		
	Bit 5	= 1	->	UNDER VOLTAGE (VMON < VSET - 2%)		
	Bit 6	= 1	->	MAX VOLTAGE (VOUT > VMAX)		
	Bit 7	= 1	->	MAX CURRENT (IOUT > Absolute Max lout)		
	Bit 8	= 1	->	TEMPERATURE WARNING (TEMP > 80°C)		
	Bit 9	= 1	->	OVER TEMPERATURE (TEMP > 125°C)		
	Bit 10	= 1	->	DISABLED (External Inhibit active)		
	Bit 11	= 1	->	CALIBRATION ERROR		
	Bit 12	= 1	->	Resetting		
Description	Bit 13	= 1	->	Going Off		
Description	Bit 14	= 1	->	MAX POWER (OUTPUT POWER > 4W; meaningless for		
	DT5780))				
	Bit 15	= 1	->	FAN SPEED HIGH		
	In case o	of:				
		DISABLE	D			
		OVER CL	JRRENT			
		OVER TE	MPERATU	JRE		
		MAX PO	WER			
	Channel is turned off according to Power Down Mode (see CONTROL register)					
	If Monitor Mode (Bit 7 Control Register) = 1, this register is used to read the management					
	firmwar	e release	of A639.			
	E.g.: Release Firmware 1:03 (READ: 0x103); Status Word High Byte = 1, Status Word L Byte = 3					

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2.8 **VMON**

Address	0x1n40
Resolution	See below
	If Monitor Mode (Bit 7 Control Register) = 0, this register provides the value of the monitored voltage. The value of VMON is equal to the contents of the register multiplied by the resolution of 0.1V. Ex: VMON Reg = 10238 = VMON 1023.8V
Description	If Monitor Mode (Bit 7 Control Register) = 1, this register is used to read the value of the voltage between Pin 3 (EXT_ANALOG) and Pin 1 (GND) of the DB9 connector related to the selected channel. The voltage value is equal to the content of the register multiplied by the inverse of the resolution of 0.001V.

2.9 **IMON**

Address	0x1n44
Resolution	See below
	If Monitor Mode (Bit 7 Control Register) = 0, this register provides the monitored current value. The value of Imon is equal to the content of the register multiplied by the resolution (DT5780: 10 nA; DT5790: 50 nA)
	Ex : Imon Reg = 10238; IMon = 102.38 uA (DT5780) Ex : Imon Reg = 10238; IMon = 511.9 uA (DT5790)
Description	If Monitor Mode (Bit 7 Control Register) = 1 this register is used to read the value of the resistance between Pin 8 (EXT_TEMP) and Pin 1 (GND). The resistance value is that of a temperature probe PT100 or PT1000. The resistance value is equal to the contents of the register multiplied by the resolution of 0.10hm.
	E.g.: Imon Reg = 1234 = 123.4 Ohm Resistance

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