



**The DT 950 is a programmable digital Trigger logic module with adjustable DELAY and WIDTH, 4 NIM Inputs, 1 INHIBIT, 1 VETO, 1 RESET, and 1 Ext. CLK. in a 6U VME module. 10ps resolution with 32-bit full-scale delay range. 4 NIM Output, NIM Endmark, NIM CLK Output, 4 TTL Output.**

- INPUT NIM (1)**                      Lemo connector, bipolar input  
 NIM input  
 input impedance 50 Ω  
 "0" = 0V, "1" = -0.7V  
 TTL input  
 "0" = 0V, "1" = 2.0 to 5.0V
- INPUT INHIBIT (Input)**        Lemo connector, bipolar input  
 NIM input  
 input impedance 50 Ω  
 "0" = 0V, "1" = -0.7V  
 TTL input  
 "0" = 0V, "1" = 2.0 to 5.0V  
 As long as INHIBIT is active, input is suppressed
- INPUT VETO (Output)**           Lemo connector, bipolar input  
 NIM input  
 input impedance 50 Ω  
 "0" = 0V, "1" = -0.7V  
 TTL input  
 "0" = 0V, "1" = 2.0 to 5.0V  
 As long as VETO is active, input is suppressed
- INPUT RESET**                      Lemo connector, bipolar input  
 NIM input  
 input impedance 50 Ω  
 "0" = 0V, "1" = -0.7V  
 TTL input  
 "0" = 0V, "1" = 2.0 to 5.0V  
 As long as RESET is active, input is suppressed
- INPUT CLK**                          Lemo connector, bipolar input  
 NIM input  
 input impedance 50 Ω  
 "0" = 0V, "1" = -0.7V  
 TTL input  
 "0" = 0V, "1" = 2.0 to 5.0V  
 Ext. ref clock, (200MHz)

OUT NIM	2 Lemo connector Output with logic signal "1", -0.7V output impedance 50 $\Omega$
$\overline{\text{OUT NIM}}$	2 Lemo connector Output with logic signal "0", 0V output impedance 50 $\Omega$
END MARK (NIM)	Lemo connector Output with logic signal "1", -0.7V output impedance 50 $\Omega$ , 10ns
CLK (NIM)	Lemo connector output impedance 50 $\Omega$ , 200MHz
OUT TTL	2 Lemo connector Output with logic signal "1", 5V output impedance 50 $\Omega$
$\overline{\text{OUT TTL}}$	2 Lemo connector Output with logic signal "1", 0V output impedance 50 $\Omega$
Indicator	LED, light indicates IN, OUT signals
Switching times	$t_r = t_f$ ca. 250 ps, (NIM)
Propagation delay	INPUT to OUTPUT 49 ns,
Configuration Bus	RS485, connector on the front panel
Skew	Output to Output (max) +/- 25 ps, (NIM)
Jitter	over the whole range approx. 333ps
Timebase	10.000MHz Oscillator, +/- 25ppm
Packing	6U-high, 4U-wide VME Unit
Temperature range	0 – 50 $^{\circ}\text{C}$
Dimension	6U-high, 4U-wide, VME unit
Power requirements	+ 5V, 1.6A, +12V, 0.5A

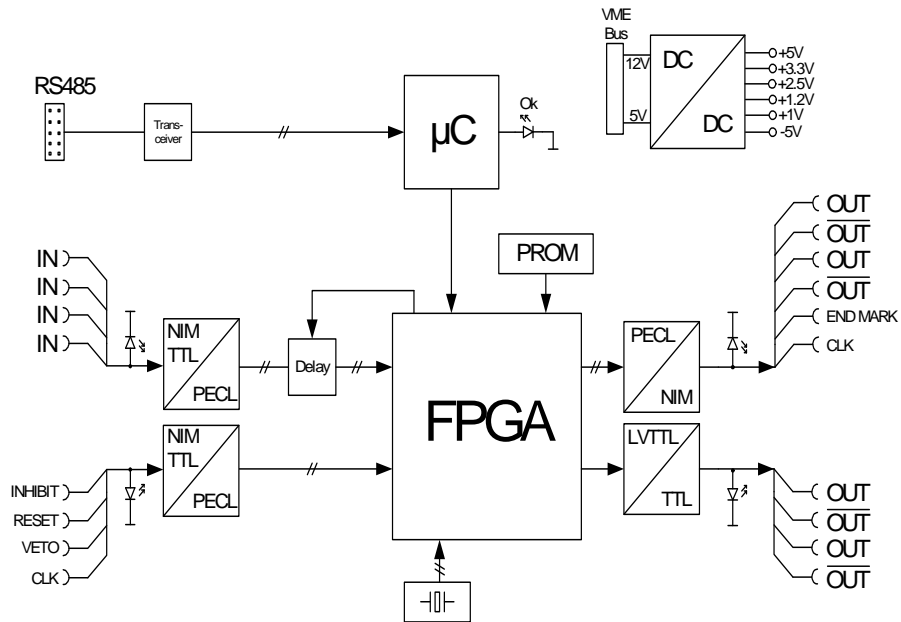


Figure 1. Functional Block Diagram

Setting Delay and Width

The delay and width is adjustable from 10 ns to 4s.

- s 0 - 4
- ms 0 - 999
- us 0 - 999
- ns 0 - 995, 5ns steps

Delay in ps

- ps 10ps - 10ns, in 10ps steps

**Table 4. Variable classification**

<u>index</u>	<u>parameter</u>		<u>value</u>	<u>hex</u>	<u>unit</u>	remarks
0	+5.0V	16bit U	1000	(0x03EB)	millivolt	
1	+3.3V	16bit U	1000	(0x03EB)	millivolt	
2	+2.5V	16bit U	1000	(0x03EB)	millivolt	
3	+1.2V	16bit U	1000	(0x03EB)	millivolt	
4	+1.0	16bit U	1000	(0x03EB)	millivolt	
5	-5.0V	16bit U	1000	(0x03EB)	millivolt	
6	Voltage6	16bit U	0	(0x0000)	millivolt	
7	Voltage7	16bit U	0	(0x0000)	millivolt	
8	BUTTON	8bit U	60	(0x3C)/00111100)	byte	
9	CHANNEL	8bit U	0	(0x00/00000000)	byte	
10	MODE	8bit U	0	(0x00/00000000)	byte	
11	Delay s	32bit U	0	(0x00000000)	dword	1s steps
12	Delay ms	32bit U	0	(0x00000000)	dword	1ms steps
13	Delay us	32bit U	0	(0x00000000)	dword	1us steps
14	Delay ns	32bit U	0	(0x00000000)	dword	5ns steps
15	Width s	32bit U	0	(0x00000000)	dword	1s steps
16	Width ms	32bit U	0	(0x00000000)	dword	1ms steps
17	Width us	32bit U	0	(0x00000000)	dword	1us steps
18	Width ns	32bit U	0	(0x00000000)	dword	5ns steps
19	Delay 1 ps	16bit U	0	(0x0000)	word	Delay Chip 10ps
20	Delay 2 ps	16bit U	0	(0x0000)	word	steps
21	Delay 3 ps	16bit U	0	(0x0000)	word	
22	Delay 4 ps	16bit U	0	(0x0000)	word	
23	Config	8bit U	0	(0x00/00000000)	byte	for MORE ON/OFF

**Table 5. Delay values, MC100EP195 (delay chip)**

<u>index</u>	<u>Hex</u>	<u>Bin</u>	<u>Dec</u>	<u>Delay</u>
1	0x0000	00'0000'0000	0	0 ps
2	0x0001	00'0000'0001	1	10 ps
3	0x0002	00'0000'0010	2	20 ps
4	0x0003	00'0000'0011	3	30 ps
5	0x0004	00'0000'0100	4	40 ps
6	0x0005	00'0000'0101	5	50 ps
7	0x0006	00'0000'0110	6	60 ps
8	0x0007	00'0000'0111	7	70 ps
9	0x0008	00'0000'1000	8	80 ps
10	0x0010	00'0001'0000	16	160 ps
11	0x0020	00'0010'0000	32	320 ps
12	0x0040	00'0100'0000	64	640 ps
13	0x0080	00'1000'0000	128	1280 ps
14	0x0100	01'0000'0000	256	2560 ps
15	0x0200	10'0000'0000	512	5120 ps
16	0x03FF	11'1111'1111	1023	10230 ps