Model 3360

Dual Pulse Train Generator

INSTRUCTION MANUAL

February, 1987

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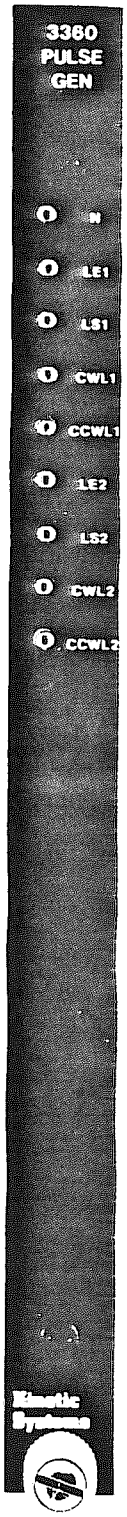
KineticSystems Corporation

Standardized Data Acquisition and Control Systems **3360**

Dual Pulse Train Generator



FEATURES

- Two independent channels
- Two outputs per channel
- Transformer coupled outputs
- Internal clocks
- Programmable number of pulses
- 32,768 maximum count

APPLICATIONS

- Drive x-y incremental plotter
- Drive two stepping motor translators
- Generate test pulse trains

GENERAL DESCRIPTION

The Model 3360 is a single-width CAMAC module containing contains two separate channels for producing trains of output pulses. Writing a 16-bit sign and magnitude word into a countdown register initiates a process that counts the register down to zero while generating an output pulse at each count. This module can be used to drive two stepping motors, an x-y plotter, or any similar two-coordinate device.

Two transformer-coupled outputs are provided for each pulse train; the pulse train is steered to one or the other by the sign bit. The countdown is halted at a count of zero or upon ground closure of one of two external inputs. The sign bit determines which external input is able to inhibit the counting process, and an attempt will fail to restart the counting by writing a signed number while the related input is grounded. The number will not be written, and Q = 0 will be returned. The countdown registers can be read and written.

A separate clock is provided for each channel, and pulse rates are adjustable from 50 to 400 pulses per second. Nominal pulse width is 70 microseconds. Means are provided to allow external control of the pulse rates.

A LAM source, provided for each channel, is cleared by a Write command and is set by the count reaching zero or stopping due to external inhibit. The LAM sources may be tested, or the 8-bit status register, which contains LAM source information, may be read. The LAM sources may be separately enabled and disabled.

The 3360 is used primarily as a dual-channel stepping motor controller. The pulses for clockwise (CW) rotation are available at one output and for counterclockwise (CCW) rotation at the other. A "1" in the sign bit designates CCW rotation. CW and CCW limit switches can be ground-connected to the external inputs. Operation of the CW limit switch, for example, will inhibit a CW pulse train, will not inhibit a CCW pulse train, and will cause any Write commands with 0 in the sign bit to fail.

A transistor output for each channel drives a relay controlling power to the motor. An 8-bit status register may be read (four bits per channel) to ascertain the motor status. The four bits are LAM source, CCW limit, CW limit, and motor power.

On power-up, the outputs are inhibited, and the LAM sources are set.

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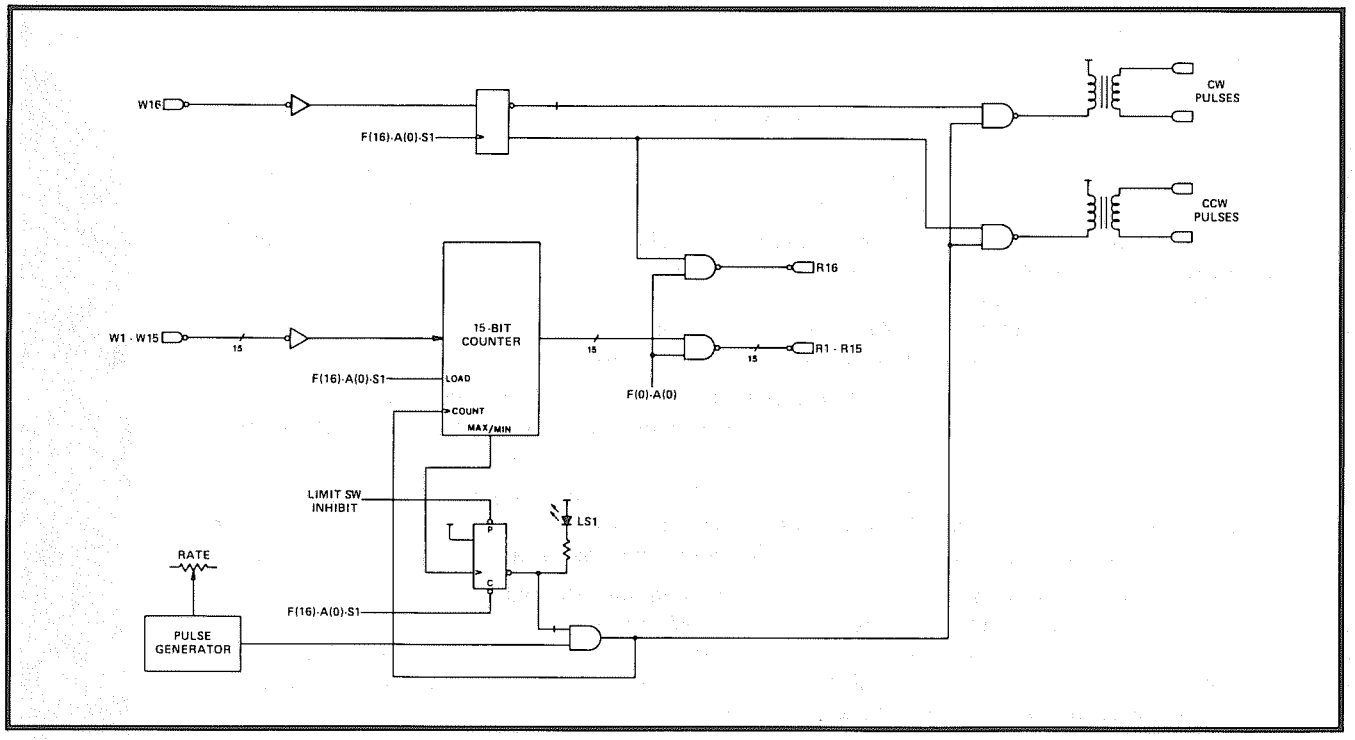
FUNCTION CODES

Command		Q	Action
F(0)·A(i)	RD1	1	Reads the Countdown register i.
F(1)·A(0)	RD2	1	Reads the Status register.
F(6)·A(0)	F06	1	Reads the module identifying number ($3360 = 6440_8$).
F(8)·A(i)	TLM	LS	Tests whether a LAM source is present.
F(16)·A(i)	WT1	$\overline{\text{LIMIT}}$	Writes the Countdown register i.
F(24)·A(i)	DIS	1	Disables the LAM request i.
F(26)·A(i)	ENB	1	Enables the LAM request i.
F(28)·A(i)	F28	1	Opens the Control switch i.
F(30)·A(i)	F30	1	Closes the Control switch i.
Z	CZ	0	Disables the LAM requests.

Notes: i can be either 0 or 1.
X = 1 for all valid addressed commands.

SIMPLIFIED BLOCK DIAGRAM (Channel 1 shown)



POWER REQUIREMENTS

+6 volts — 1200 mA
+24 volts — 30 mA

ORDERING INFORMATION

Weight: .70 kg. (1 lb. 8 oz.)

Model 3360-P1A — Dual Pulse Train Generator
Accessories — Model 5960-Z1A or 5960-Z1B Mating Connector
Model 1850-P1D Rack Termination Panel

FRONT PANEL

LED's

N - Flashes whenever this module is addressed.

LE - Indicates that the LAM request is enabled.

LS - Indicates that the LAM source is set.

CWL - Indicates that the clockwise limit is present.

CCWL - Indicates that the counter-clockwise limit is present.

EXTERNAL CONTROL SIGNALS

The rate or clock can be controlled by external signals. Use of the external clock requires removal of strap 1 PR. A high to low transition of the external clock signal constitutes one tick of the clock. Use of the external rate control also requires removal of strap 1 PR. The rate can be controlled by a 0 to 24 volt signal.

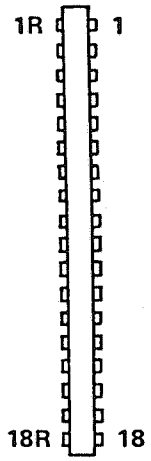
OUTPUT SIGNALS

The pulse rate is set at 100 pps at the factory. The pulse output is five volts into 390 ohms, transformer coupled.

STATUS REGISTER

Bit	True State Definition
1	Lam Source Set 1
2	Counter Clockwise Limit 1
3	Clockwise Limit 1
4	Motor 1 Power On
5	Lam Source Set 2
6	Counter Clockwise Limit 2
7	Clockwise Limit 2
8	Motor 2 Power On

Model 3360



FACE VIEW

Pin/Wire List

18/36 POSTION P.C. EDGE

PIN NO.		PIN NO.	
1R	Chassis common	1	Chassis common
2R	CH-1, CW pulse out +	2	CH-1, CW pulse out -
3R	CH-1, CCW pulse out +	3	CH-1, CCW pulse out -
4R	CH-2, CW pulse out +	4	CH-2, CW pulse out -
5R	CH-2, CCW pulse out +	5	CH-2, CCW pulse out -
6R		6	
7R		7	
8R		8	
9R	CH-1, external clock	9	
10R	CH-1, external rate control	10	
11R	CH-2, external clock	11	
12R	CH-2, external rate control	12	
13R	CH-2, control out	13	
14R	CH-1, control out	14	
15R	CH-1, CW limit in	15	Chassis common
16R	CH-1, CCW limit in	16	
17R	CH-2, CW limit in	17	
18R	CH-2, CCW limit in	18	Chassis common

Pulse rates factory set for 100 pps.

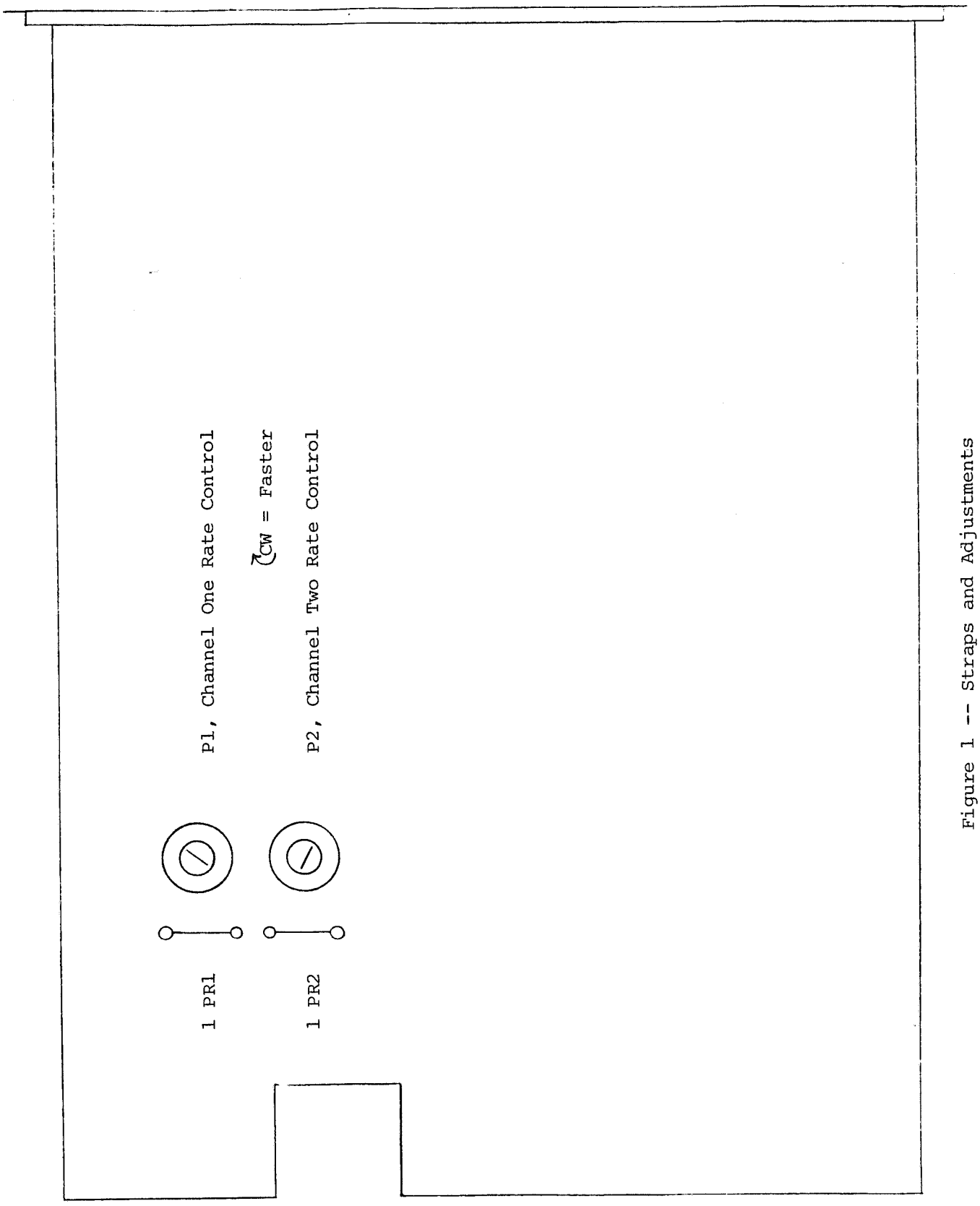


Figure 1 -- Straps and Adjustments