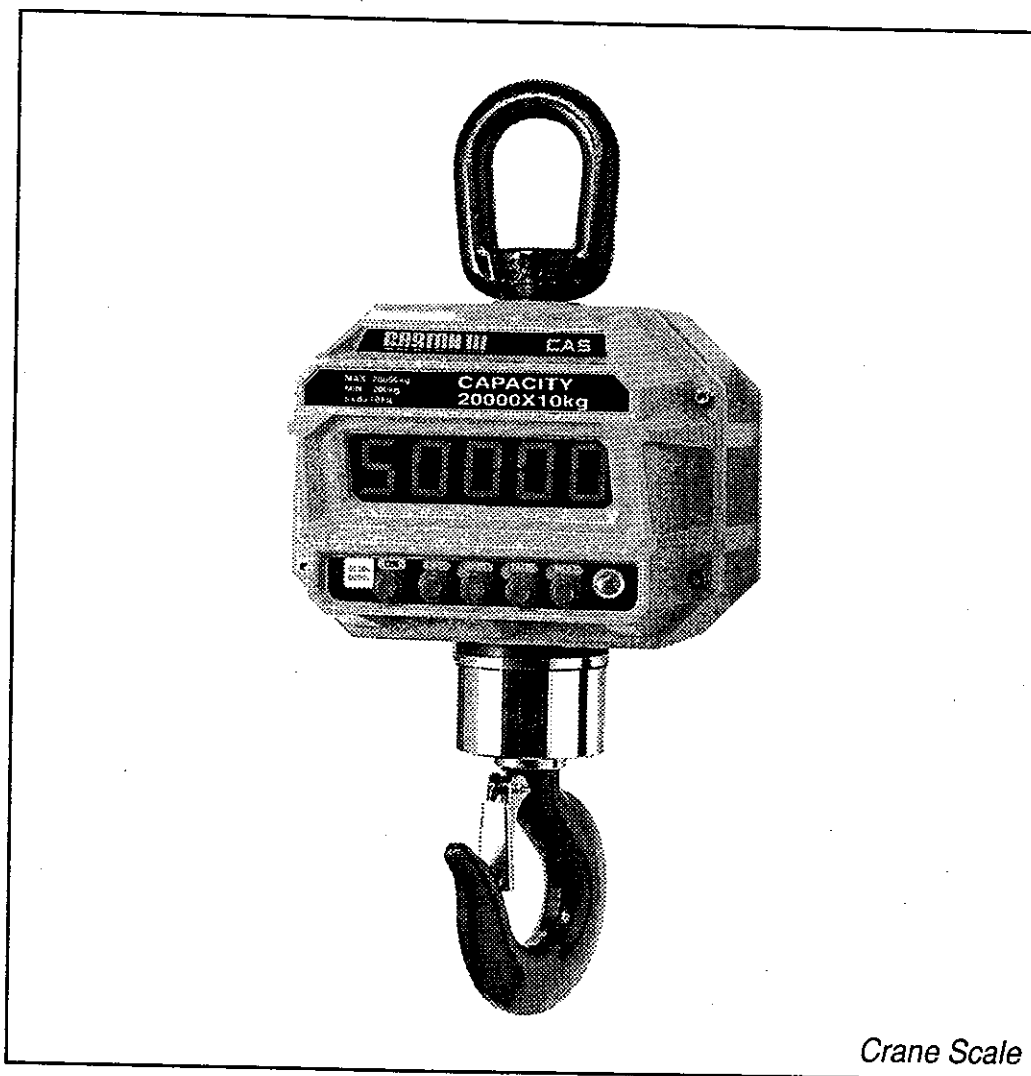


REV: 00
JUNE 16, 1999

CASTON III

SERVICE MANUAL

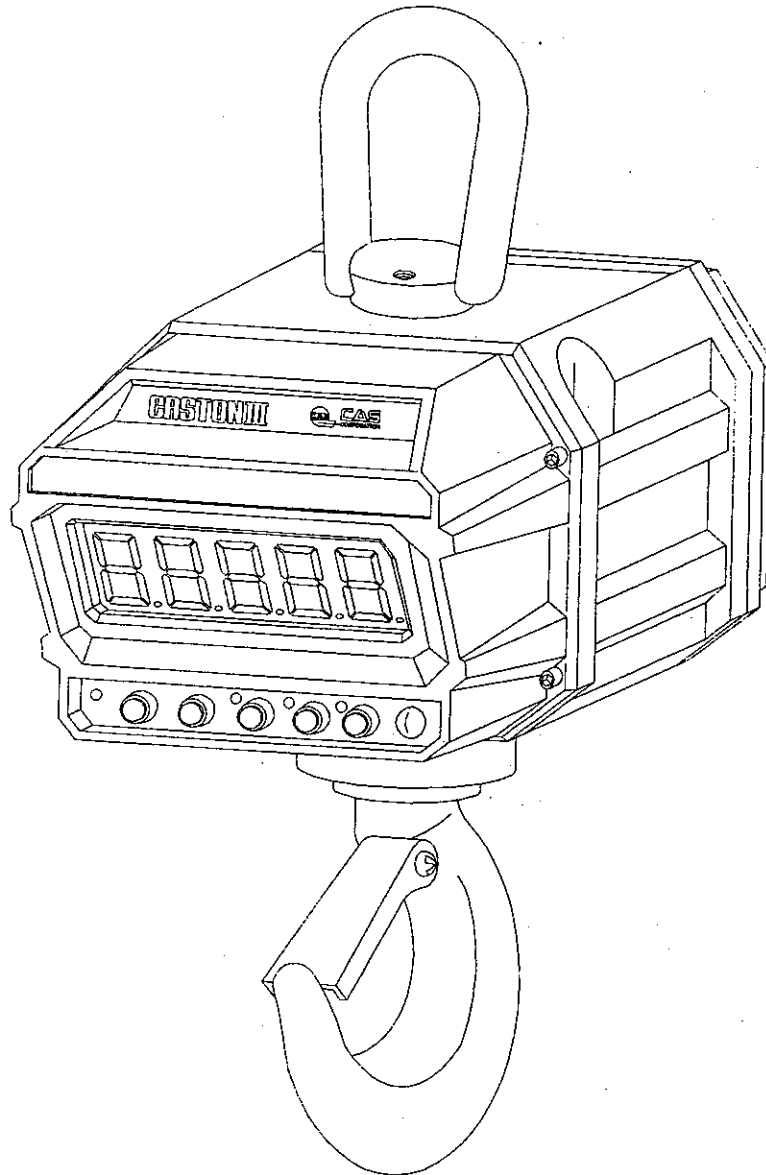


CAS

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1. OVERALL VIEW



2. INTRODUCTION

This SERVICE MANUAL is the specification for the CASTON III. The CASTON III is the product of years of design, development, and in-field testing.

This CASTON III has been designed with CAS reliability, under rigid quality control and with outstanding performance.

This MANUAL included basic technics about composition of hardware and programal fuctions.

(1) Main features of CASTON III

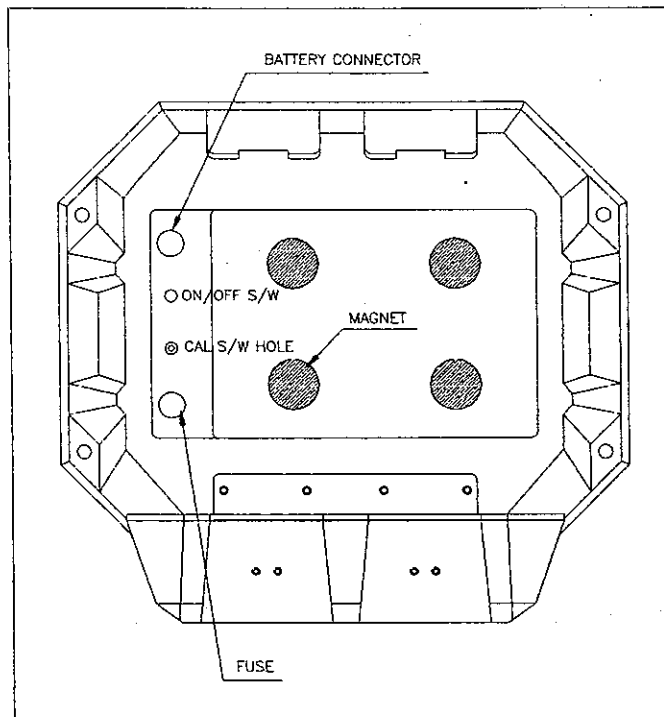
- Programal mode conversion
- Programal span calibration
- Simply function of remote control
- Use large capacity of battery(10AH)
- Use fuse L.E.D (1.5inch)
- Moisture proof design
- HOLD function(Manual, Automatic)
- Moisture proof design

3. PRECAUTIONS

- Don't install the CASTON III in direct sunlight.
- Avoid sudden temperature changes, vibration , wind, water, or excessive dirt.
- Avoid from the shock of excessive weight.
- Use away from heavy R.F noise.

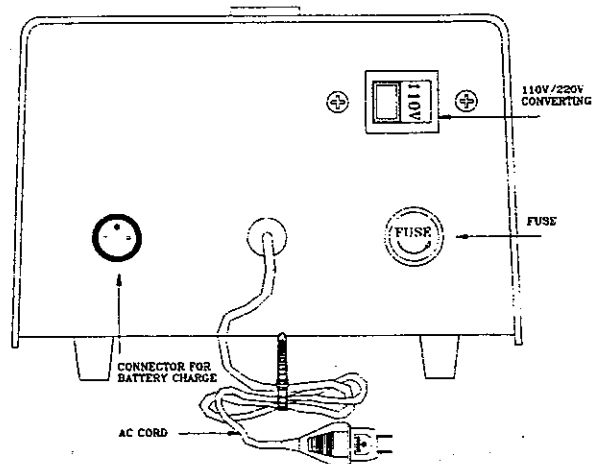
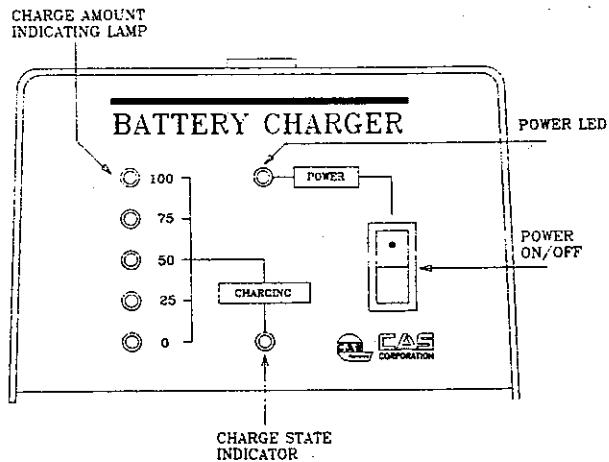
4. BATTERY INSERTING & CHARGING

1) USE OF BATTERY INSERTING



- Open the battery lid located in back of the scale and turn main power switch off.
- Separate the battery connector and take out the discharged battery.
- Put a charged battery in rear and connect the battery connector. Turn main power switch on and cover the battery lid.

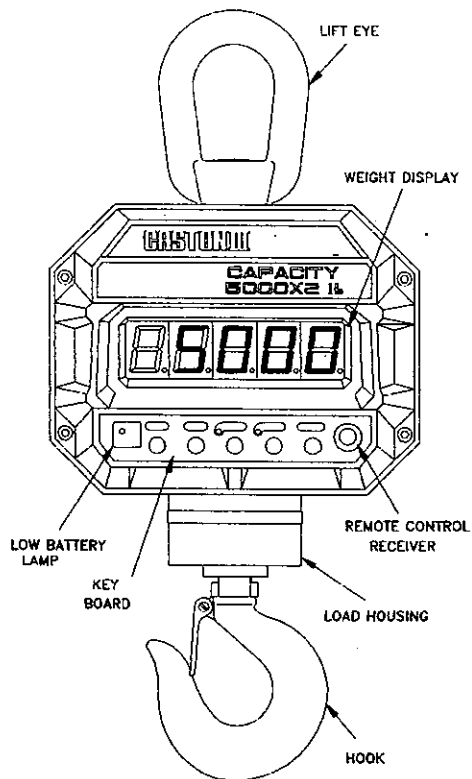
2) USE OF BATTERY CHARGING



- Check the voltage of battery charger before use.
(It is fixed to 220V before shipping)
- Insert charger A.C cord into the power source and connect the discharged battery to the connector.
- Turn ON the switch on the battery charger, charging will start.
- You can check charging condition with red L.E.D in CHARGER.
When red L.E.D is off, this means that it is fully charged.
- Estimated time for charging is 8 hours.
(Charging time can be vary according to the battery condition)

5. NAME AND FUNCTION OF EACH SECTION

NAME OF EACH SECTION

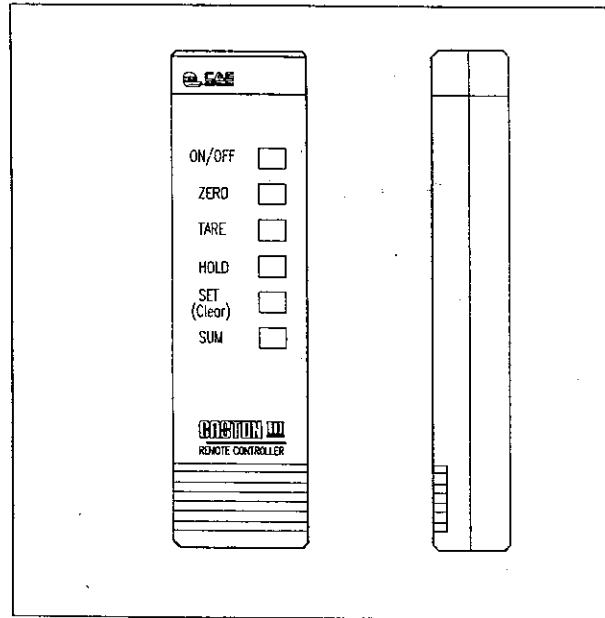


- **WEIGHT DISPLAY** : Displays weight or messages.
- **ZERO LAMP** : Indicates that scale is stable and at zero.
- **TARE LAMP** : Indicates that scale is currently using a tare.
- **HOLD LAMP** : Indicates that the HOLD feature has been activated.
- **LOW BATTERY LAMP** : Indicates that battery is low and must be changed soon.

KEYBOARD

- **ON KEY**: Used to turn the scale on.
- **OFF KEY**: Used to turn the scale off.
- **ZERO KEY**: Resets scale to zero.
- **TARE KEY**: Used to enter a tare weight.
- **HOLD KEY**: Used to weight unstable things. (liquids, livestock, etc.)

REMOTE CONTROL



- **ON/OFF** KEY: Does not turn scale OFF, only saves power by pausing display.
- **ZERO** KEY: Same as KeyBoard.
- **TARE** KEY: Same as KeyBoard.
- **HOLD** KEY: Same as KeyBoard.
- **SET**
(Clear) KEY : Used to clear previously added weights.
- **SUM** KEY : Used to add weights.

* Note: To cut power completely from scale, you must use main power switch on rear of scale.

6. OPERATION

* Press the **ON** KEY located in front of the scale. The scale will perform self test on the WEIGHT DISPLAY and will be ready for weighing when ZERO LAMP is on.

Note> While the power is off, the **ON/OFF** KEY on the remote controller wouldn't operate.

* Use the **ON/OFF** KEY on the remote controller when the power is on.

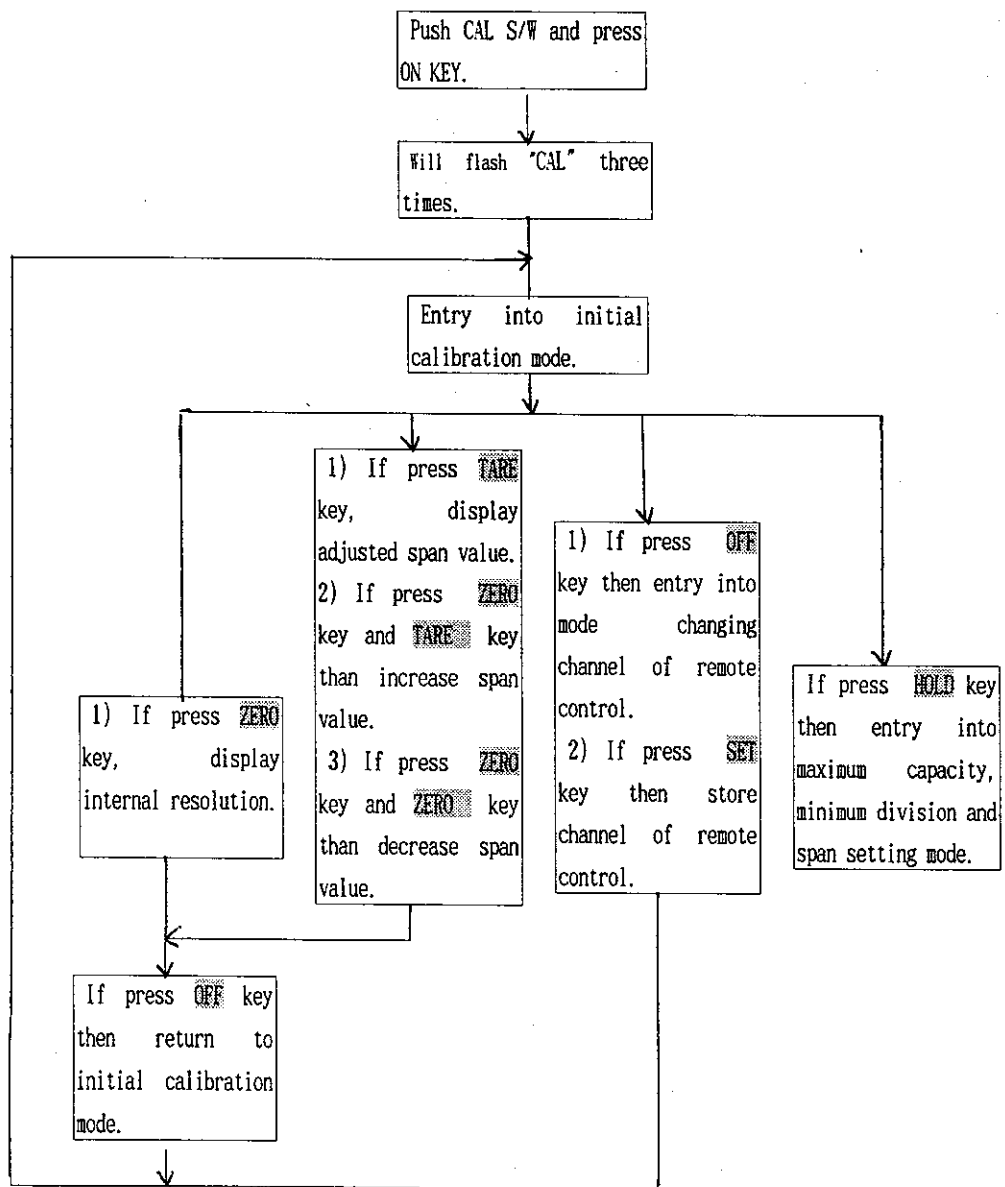
Note> When hang a tare or a thing weight on the HOOK and turn the scale on, if the tare or thing weight is over Tare weight of following table then the scale does not operate.

Maximum Capacity	Tare weight
1000kg	100kg
2000kg	200kg
3000kg	400kg
5000kg	800kg
10000kg	1000kg
15000kg	1500kg
20000kg	2000kg

1) CALIBRATION MODE

Span Calibration and display format could be set from the beginning of program. Therefore, this calibration should be done at the beginning of manufacturing or when a mode changed.

I. flow chart of calibration mode.



USE OF DETAIL SPAN ADJUSTMENT

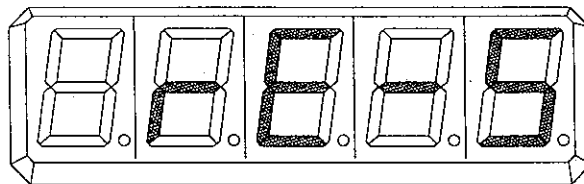
- A. Press **TARE** KEY while the display shows initial menu. This value is adjusted zero value. To check span value, make the display to "0" by pressing **TARE** KEY once.
- B. Hang up weight on the hook. If displayed value is higher than span value of table 1, press **ZERO** KEY twice to decrease the value. or if displayed value is lower than span value, press **ZERO** KEY and **TARE** KEY sequently to increase the value. Here, if press **ZERO** KEY once, the scale will turn HOLD LAMP on.

Display Resolution	SPAN
under 1/2500	Display Resolution X 10
over 1/2500	Display Resolution X 5

table 1

3) **OFF** KEY: At initial calibration mode, press this key, the scale will entry into channel setting mode of remote control. The scale displays message as fig 3 for about three second on WEIGHT DISPLAY. At this time, if press **SET (Clear)** key on the remote control, the scale will store channel of remote control at memory. When you press any key of remote control at weighing mode, the scale will work key's function of remote control when the channel of this remote control is same as channel stored at memory.

Note> If you use several scales, you remove channel choice diodes D1~D5 as table 2 in the remote control. The channel of remote control will be changed. Surely you must set channel of remote control at channel setting mode. Then you can use remote control.



fit 3

D1	D2	D3	D4	D5	channel	D1	D2	D3	D4	D5	channel
X	X	X	X	X	1	0	X	X	X	X	17
X	X	X	X	0	2	0	X	X	X	0	18
X	X	X	0	X	3	0	X	X	0	X	19
X	X	X	0	0	4	0	X	X	0	0	20
X	X	0	X	X	5	0	X	0	X	X	21
X	X	0	X	0	6	0	X	0	X	0	22
X	X	0	0	X	7	0	X	0	0	X	23
X	X	0	0	0	8	0	X	0	0	0	24
X	0	X	X	X	9	0	0	X	X	X	25
X	0	X	X	0	10	0	0	X	X	0	26
X	0	X	0	X	11	0	0	X	0	X	27
X	0	X	0	0	12	0	0	X	0	0	28
X	0	0	X	X	13	0	0	0	X	X	29
X	0	0	X	0	14	0	0	0	X	0	30
X	0	0	0	X	15	0	0	0	0	X	31
X	0	0	0	0	16	0	0	0	0	0	32

table2

X : Remove channel choice diodes.

0 : Exist channel choice diodes.

- 4) **HOLD** KEY : This key is used to enter into CAL setting mode for setting maximum capacity,, minimum division, span, and factor. If you press **HOLD** KEY for displaying initial menu on WEIGHT DISPLAY will show message as fig 4 and the scale turn to CAL setting mode.

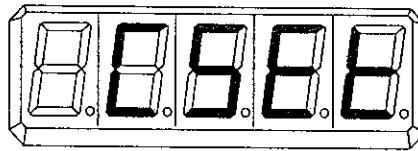


fig 4

III CAL SETTING MODE

A. MAXIMUM CAPACITY SETTING MODE

8.8.8.8.8.8.8.8.8.8 will appear on the WEIGHT DISPLAY and stored maximum capacity value will appear.

Input these numerise by using keys as follows usage setting numerals.

USAGE SETTING NUMERALS

- ① **ZERO** KEY: Used to clear inputted numerals.
- ② **OFF** KEY: Used to increase first digit.
- ③ **TARE** KEY: Used to shift digit to left.
- ④ **HOLD** KEY: Used to change to next mode after completing data input.

Example) In case of input 5000

1. Press **ZERO** KEY to clear inputted numerals.
2. Press **OFF** KEY five times.
3. Press **TARE** KEY three times.
4. Press **HOLD** KEY to change to next mode after completing data input.

D. ZERO CALIBRATION MODE.

When the message of display shows as **0.0000**, confirm that hook should be empty and allow enough time for the scale to stabilize. If press **HOLD** KEY. And the scale will check stability and count down 9 though 1 and entry into next mode.

E. SPAN CALIBRATION MODE

When the message of display shows as **0.000**, load the weight which was inputed in span weight setting mode on hook and allow enough time for the scale to stabilize. If press **HOLD** KEY, the scale will check stability and count down 9 though 1. If the calibration isn't right, error message as "HHHH" or "LLLL" will appear. In this condition, check whether span weight setting is correctly made.

F.If setting is completed, WEIGHT DISPLAY shows as **0.0000** and CAL setting mode is completed.

* Because the scale isn't POWER OFF function at CAL mode, open the battery lid located in back of the scale and turn main power switch ON after turn main power switch OFF.

7. FUNCTIONS & DESCRIPTIONS

(1) ZERO FUNCTION

- Used to correct drifted zero value when the scale is unloaded (User selected within $\pm 2\%$ of the maximum capacity), and motion is not detected. This function works when **ZERO** KEY is pressed, and the ZERO LAMP is on.

Example) If the weight has drifted you can press **ZERO** key to bring back to zero. 20kg on weight display will go to 0kg when you press the **ZERO** key.

(2) SETTING TARE WEIGHT FUNCTION.

- Used to weigh with a tare.
 - After hanging a weight to be tared on the HOOK, press the **TARE** KEY. Then the scale will memorize the weight of the tare and will display zero value "0"kg. The TARE LAMP will be on.
 - After the TARE LAMP is on, if you weigh something then the scale displays weight of item minus the weight of the tare.
 - To cancel this function, remove everything from the HOOK and the thing, and press the **TARE** key. Then the TARE LAMP will be off and this function is terminated.
- * note : The sum weight of the tare and any item on HOOK cannot exceed maximum capacity.

(3) HOLD FUNCTION

AUTOMATIC HOLD FUNCTION

(This function works whenever the scale weighs moving things)

- Press the **HOLD** key when the hook is empty(initial zero state.)
The WEIGHT DISPLAY will display "Auto HOLD On" sequentially.
The scale will change from the normal mode to hold mode, and HOLD LAMP will be on.
- If you weigh unstable things in hold mode, "HOLD" will appear on the WEIGHT DISPLAY. And then, average weight will appear.
- The weight will remain on display even if the weight is removed.
To delete holded value, press the **HOLD** key again.
- To escape from hold mode, press the **HOLD** key when the hook is empty. The message "Auto HOLD OFF" will be displayed and hold lamp will be off.

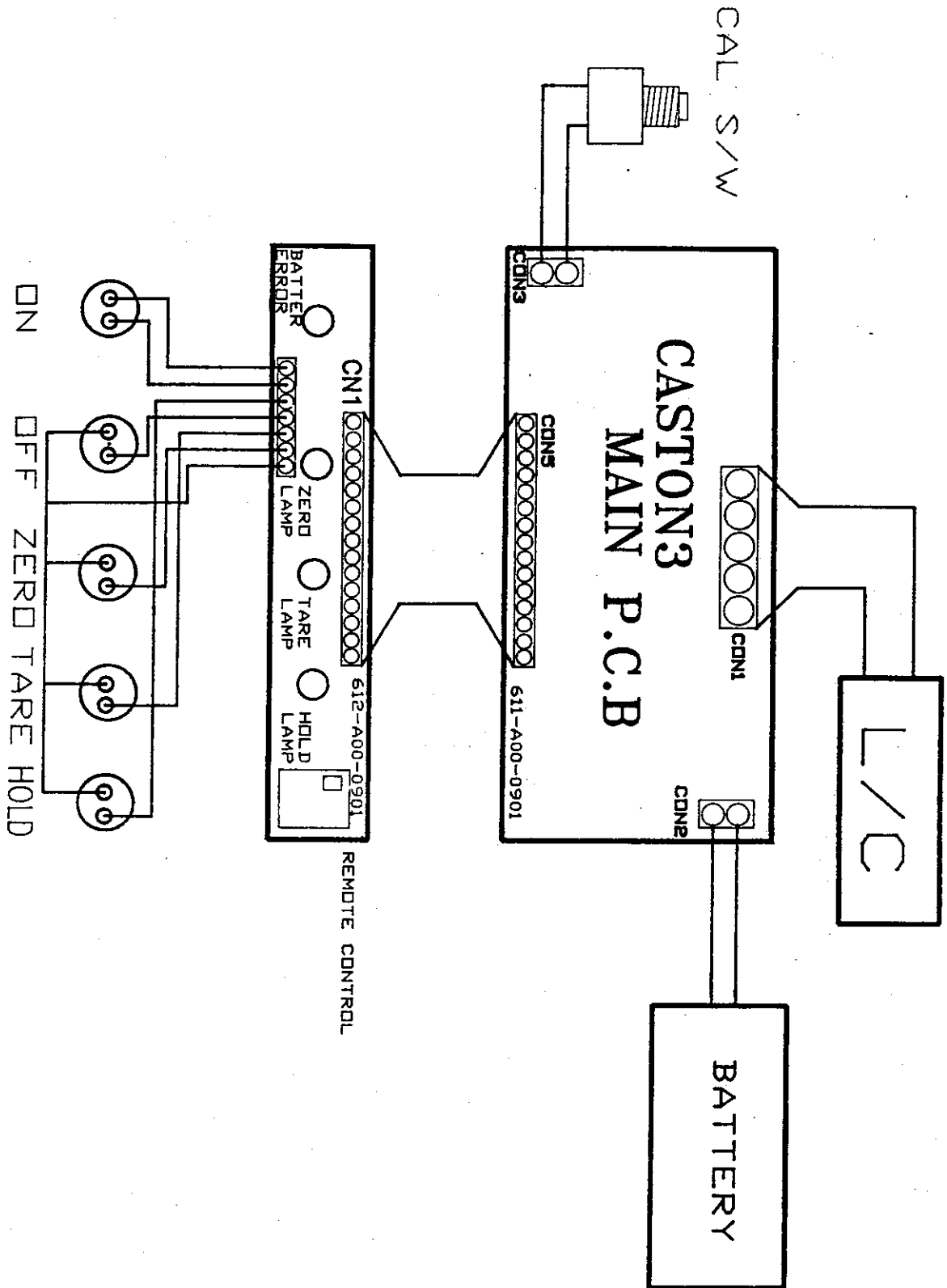
MANUAL HOLD FUNCTION

- Press the **HOLD** key while weighing an unstable item.
"HOLD" will appear and after a while, average weight will appear on the WEIGHT DISPLAY.
- To escape from this mode, press the **HOLD** key again. Then the scale changes from hold mode to normal mode.

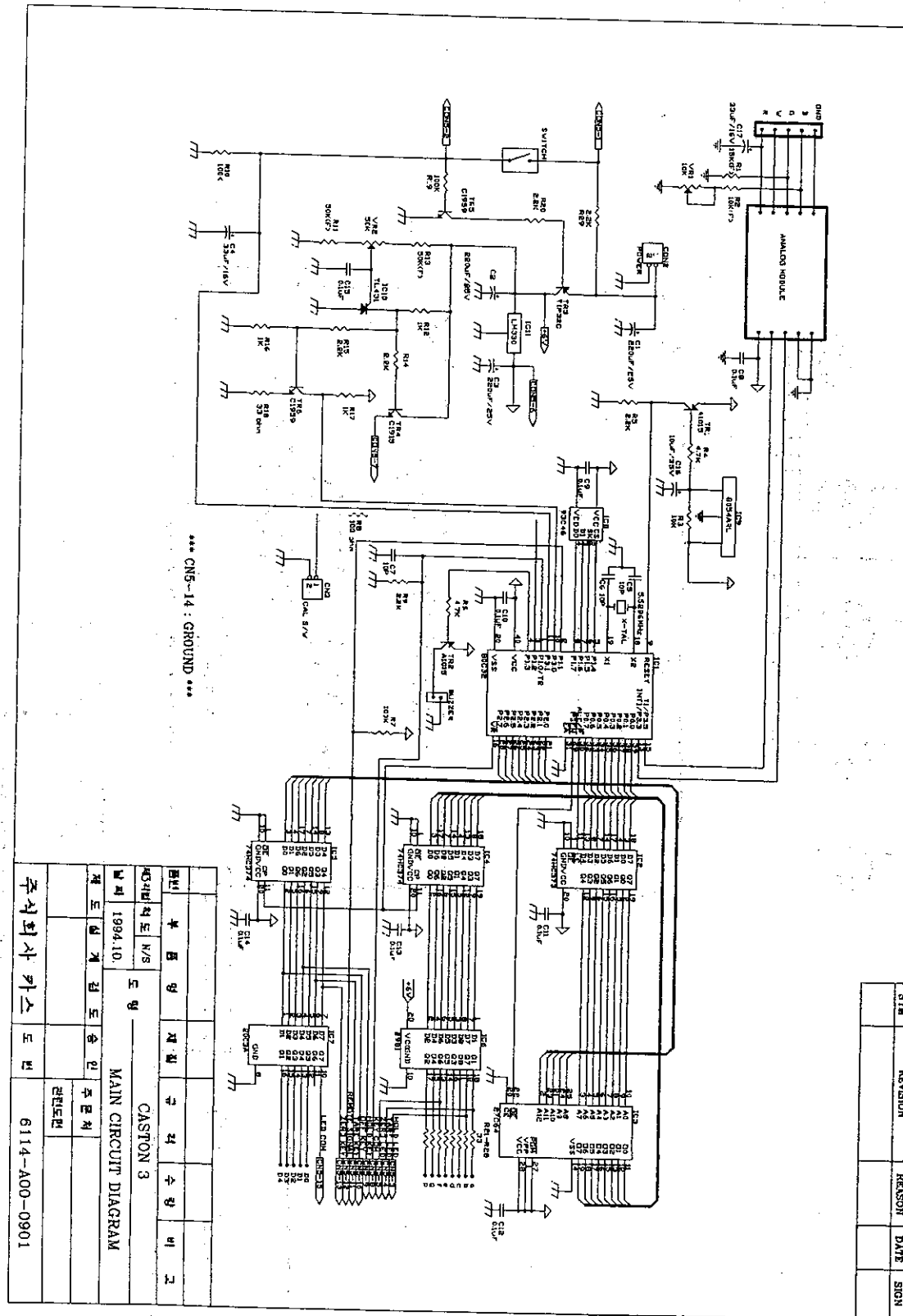
(4) FUNCTION OF REMOTE CONTROL

- Key functions of remote control are the same as those of the scale key board.
- **SUM FUNCTION:** Press **SUM** key when a thing is hang on the hook in weighing mode. Then the scale will change weighing mode to sum mode and will add old and new weights. This added weighing value will be memorized and displayed on the **WEIGHT DISPLAY**.
- To clear the added weights, press **SUM** key in weighing mode, and the scale will change to sum mode. Press **SET (CLEAR)** key, and then the scale will clear the added weights.
- To escape from this sum mode, press **SUM** key again.

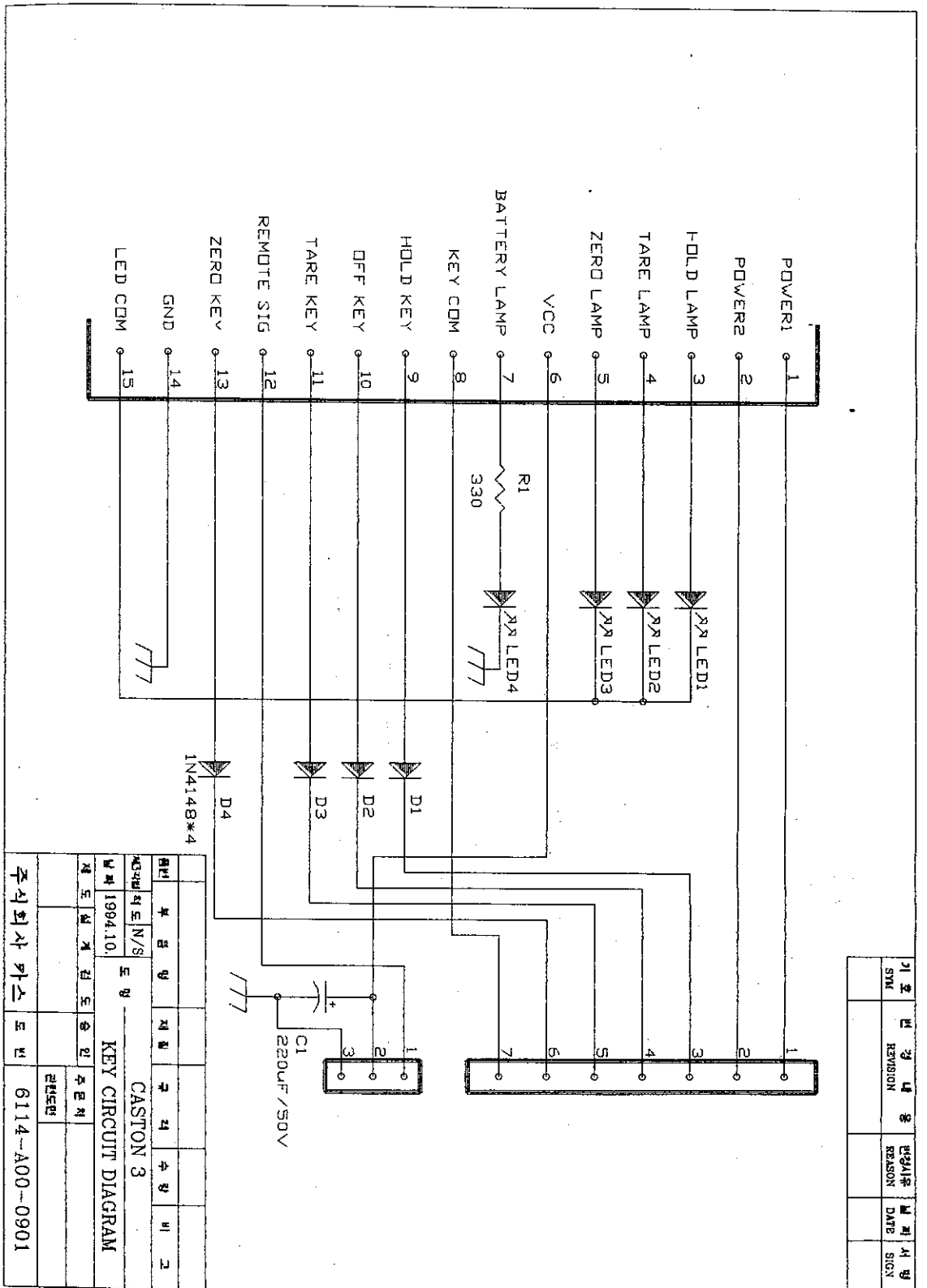
8. ELECTRONIC CIRCUIT
 (1) BLOCK DIAGRAM



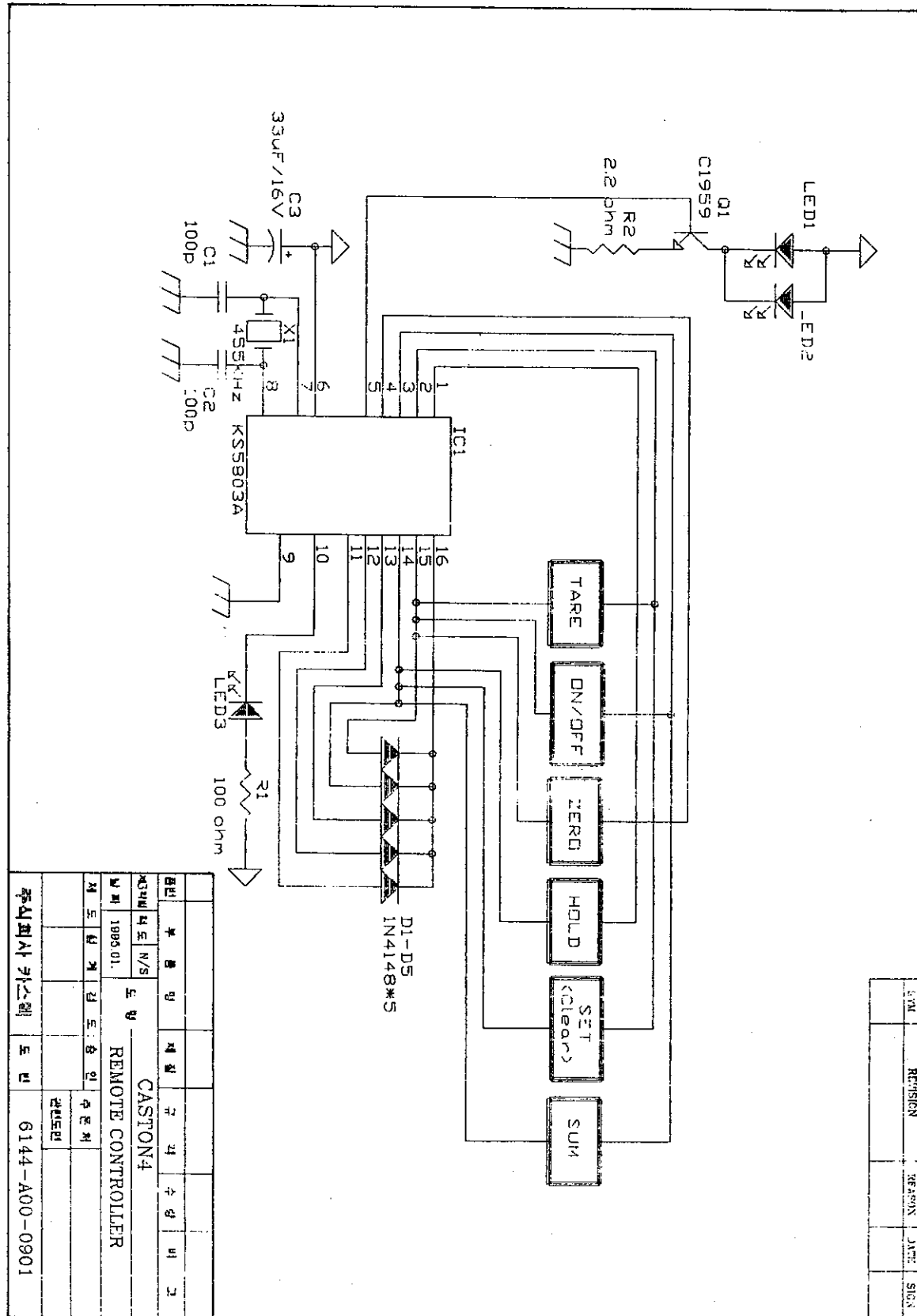
(2) MAIN CIRCUIT DIAGRAM



(3) KEY CIRCUIT DIAGRAM



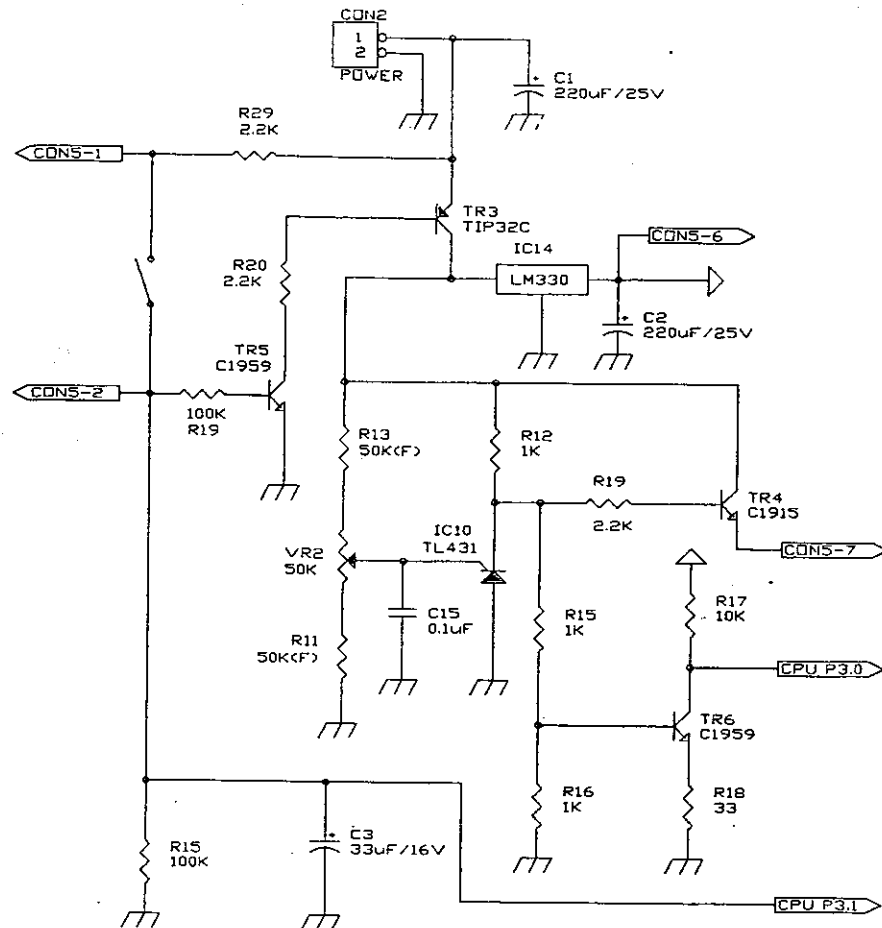
(4) REMOTE CONTROL CIRCUIT DIAGRAM



제 도 인	제 도 인	제 도 인	제 도 인	제 도 인	제 도 인	제 도 인	제 도 인	제 도 인	제 도 인
부	부	부	부	부	부	부	부	부	부
명	명	명	명	명	명	명	명	명	명
구	구	구	구	구	구	구	구	구	구
리	리	리	리	리	리	리	리	리	리
수	수	수	수	수	수	수	수	수	수
장	장	장	장	장	장	장	장	장	장
비	비	비	비	비	비	비	비	비	비
고	고	고	고	고	고	고	고	고	고
CASTON4									
REMOTE CONTROLLER									
1993.01.									
주식회사 캐스톤									
도 인 6144-A00-0901									

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(5) BATTERY CIRCUIT DIAGRAM



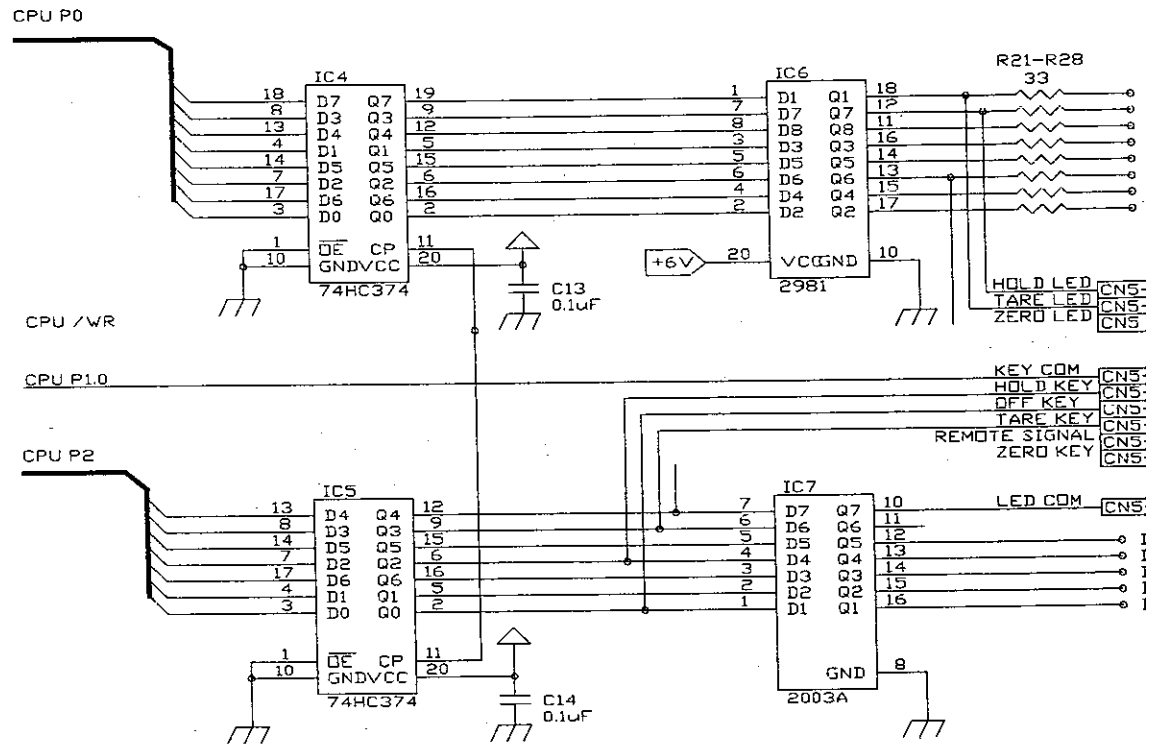
Battery power supplied to the circuit through TIP32C.

This supplied power life reduced by battery using time. Reduced power is sensed through IC10(TL431), turn Low Battery Lamp on and send a Low Battery signal to the CPU.

Then, CPU will express battery error message and CPU turns the power off by interrupting TR2 base power through pin 10.

To adjust battery low level, supply power with input terminal at test mode. Next, come down the power to 5.6V and make Low Battery lamp turned on by adjusting VR2.

(6) DISPLAY CIRCUIT DIAGRAM



* After latch segment signal and digit signal to 74HC373IC , segment signal is transmitted through 2891IC at L.E.D and a signal to decide position of L.E.D is transmitted through 200IC.

The signal of a digit is transmitted by sequence with segment at L.E.D.

9. OPERATION OF REMOTE CONTROL

* Remote control LSI 5803AIC uses 455KHz ceramic resonator.

Therefore, carrier cycle is about 38KHz. This LSI is available to connect twenty switches with matrix outputs of four input KI₀~KI₄. CCS is output to sense custom code.

Custom Code can be define every different code. ($2^5=32$)

It means remote control can owe 32 each different channels is it.

Sensing of a certain key can be checked by confirming signal at each time when digit signal is sent step by step.

0 1 2 3 4 5 6 7 8 9

10 11 12 13

14 15

16 17 18 19

20

21

22

23

24

KS5803A/KS5803B

CMOS INTEGRATED CIRCUIT

REMOTE CONTROL TRANSMITTER

The KS5803 is a CMOS LSI for infrared remote control transmitter function which is available for C/TV, VTR and TOY etc.

Originally the KS5803 is designed to have 20 pin but practically is divided two types.

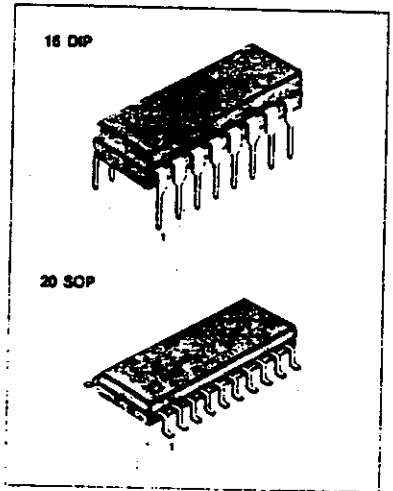
One type (KS5803A) has 16 pins to transmit 736 commands. The other (KS5803B) has 20 pins to transmit 8960 commands.

These commands is made to a P.P.M system of 16 bit code, which transmit the code twice (invert in the second time) to prevent operation false code.

The KS5803 is designed to be received with 4 bit CPU (DTS).

FEATURES

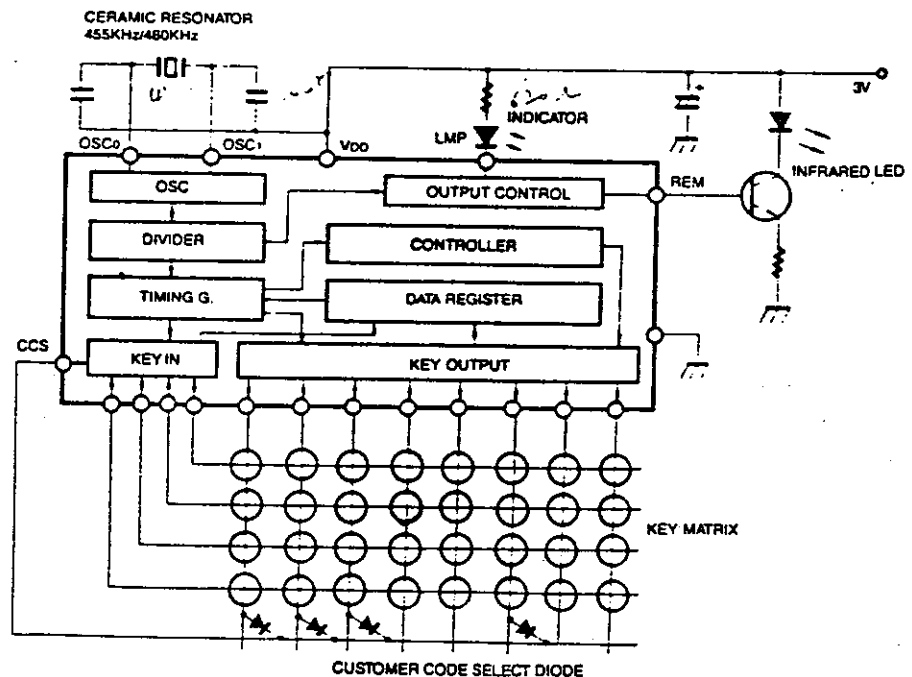
- Low voltage operation: $V_{DD} = 2.0$ to $3.3V$
- Low power consumption (CMOS): $I_{DD} < 1\mu A$ at standby mode
- 32 function KEY and 3 dual action KEY (KS5803A is 20 function KEY)
- 256 custom codes selected by external diode (KS5803A is 32 custom codes)
- 16 bit pulse position modulated code
- High efficiency transmission: IR LED ON Duty 3%
- Indicator output
- Package KS5803A: 16 PIN DIP
Package KS5803B: 20 PIN SOP



ORDERING INFORMATION

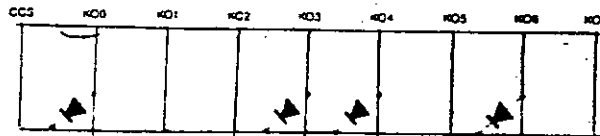
Device	Package	Operating Temperature
KA5803A	16 DIP	- 20 ~ + 70°C
KS5803B	20 SOP	

BLOCK DIAGRAM

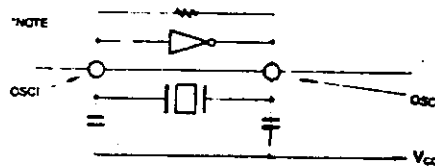


PIN FUNCTION

PIN (KS5803B)	PIN (KS5803A)	FUNCTION
1	1	KI0 Key Input 0
2	2	KI1 Key Input 1 Internally Pulldown
3	3	KI2 Key Input 2 to V _{CC} by Resistor
4	4	KI3 Key Input 3
5	5	REM Remote Output
6	6	V _{DD} Positive Supply . . . 2.0 to 3.3V
7	—	TEST TEST Terminal . . . Normally Open
8	7	*OSC0 Oscillator Output
9	8	*OSC1 Oscillator Input } Ceramic Resonator (400 to 500Hz)
		(*NOTE)
10	9	V _{SS} Ground
11	10	LMP Lamp Output . . . Indicator for Transmission
12	—	Ko7 Key Output 7
13	11	Ko6 Key Output 6
14	12	Ko5 Key Output 5
15	13	Ko4 Key Output 4
16	—	Ko3 Key Output 3
17	14	Ko2 Key Output 2
18	—	Ko1 Key Output 1
19	15	Ko0 Key Output 0
20	16	CCS Custom Code Select input Custom Code is selected by diode Connection to Key Output Ko0 to Ko7. This terminal is usually pull up to V _{CC} by internal Resistor.



Custom Code Select
Example Co to C7=10011010



ABSOLUTE MAXIMUM RATINGS ($T_s = 25^\circ\text{C}$)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	4.0	V
Input Voltage	V_{IN}	$-3.0 - V_{DD}$	V
Output Current	I_{OH} (REM. LMP)	-15.0	mA
Power Dissipation	P_D	250	mW
Operating Temperature	T_{OP}	$-20 - +70$	$^\circ\text{C}$
Storage Temperature	T_{STG}	$-65 - +75$	$^\circ\text{C}$

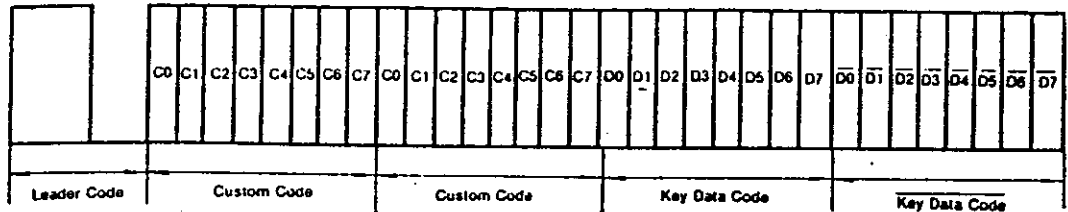
RECOMMENDED OPERATING CONDITIONS

Characteristic	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	2.0	3.0	3.3	V
Oscillation Frequency	f_{osc}	400	455	500	kHz
Lamp Output Current	I_o (LMP)		1		mA

ELECTRICAL CHARACTERISTICS ($T_s = 25^\circ\text{C}$, $V_{DD} = 3.0\text{V}$)

Characteristic	Symbol	Test Condition	Min	Typ	Max
Supply Current	$I_{DD} (DP)$	$f_{osc} = 455\text{KHz}$		0.1	1.0
Supply Current	$I_{DD} (ST)$	$f_{osc} = \text{STOP}$			1
Input High Voltage	$V_{IH} (KI)$		$0.7 V_{CC}$		V_{CC}
Input Low Voltage	$V_{IL} (KI)$		0		$0.3 V_{CC}$
Input Pull Down Resistor	$R (KI)$		150	300	600
Output Current	$I_{OH} (REM)$	$V_{OH} (REM) = 1.5\text{V}$	-5		
Output Low Voltage	$V_{OL} (LMP)$	$I_{OL} = 1.0\text{mA}$			0.3

4. Remote Output (REM)

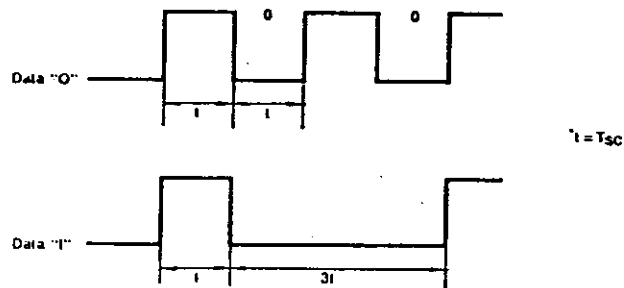


The transmission output consists of the leader code, 8 bit custom code and the same 8 bit custom code, another 8 bit key data code and the complementary code of key data code and data totalling 32 bits.

The leader pulse code consists of 8 T_{sc} High and 8 T_{sc} Low signal. This enables effective usage of time relations between reception detection and other processings when the receiver is micro-computerized.

The succeeding codes are PPM (pulse position modulation) which depends on the time between pulses.

Each code consists of 2 custom code, data code and complementary data code are simultaneously transmitted. This transmission is low failure rate operation.



When the same key remains, the second transmission only transmits leader code and complementary the first custom code $\bar{C0}$ for saving of the infrared LED power drain.

In this case the leader code transmission duty is predominant and the average power drain of the LED is about 1.8% of peak. In case of 455KHz oscillation the signal is modulated by 1/12 duty 37.9KHz.

5. Double Key Operation

Double key input activates the multiple input inhibiting circuit except KS21 to KS28. When a pair key inputs, KS21 + KS22, KS21 + KS23, KS21 + KS24, KS25 + KS26, KS25 + KS27, KS25 + KS28, give "1" to D5 and operate double key transmission. But this function is assured only when one of the KS22 to KS24 (KS26 to KS28) is pressed 108 ms (when one of three MSB bits of custom code is "1"; 126ms) at the minimum after KS21 (KS25).

The inhibiting function circuit assures the prevention of malfunction except this condition.

SERIES UDN-2980A HIGH-VOLTAGE, HIGH-CURRENT SOURCE DRIVE

FEATURES

- TTL, DTL, PMOS, or CMOS Compatible Inputs
- 500 mA Output Source Current Capability
- Transient-Protected Outputs
- Output Breakdown Voltage to 30 V

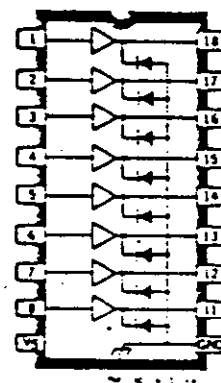
RECOMMENDED for applications requiring separate logic and load grounds, load supply voltage to +80 V, and load currents to 500 mA, Series UDN-2980A source drivers are used as interfaces between standard low-power digital logic and relays, solenoids, stepping motors, and LEDs.

Under normal operating conditions, these devices will sustain 120 mA continuously for each of the eight outputs at an ambient temperature of +50°C and a supply of +15 V. All devices in this series incorporate input current limiting resistors and output transient suppression diodes.

Type UDN-2981A and UDN-2983A drivers are for use with +5 V logic systems — TTL, Schottky TTL, DTL, and 5 V CMOS. Type UDN-2982A and UDN-2984A drivers are intended for MOS interface (PMOS and CMOS) operating from supply voltages

of 6 to 16 V. Types UDN-2981A and L will withstand a maximum output OFF +50 V, while Types UDN-2983A and L will withstand an output voltage of -10 V. In all cases, the output is switched ON by an input level.

Series UDN-2980A high-voltage, 1 source drivers are supplied in 18-lead packages. On special order, hermetically sealed versions of these devices (with reduced power dissipation capability) can also be turned



ABSOLUTE MAXIMUM RATINGS at 25°C Free-Air Temperature

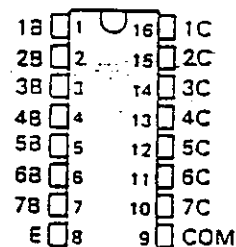
Output Voltage Range, V_{OL} (UDN-2981A & UDN-2982A)	.....	+5 V
(UDN-2983A & UDN-2984A)	.....	+35 V
Input Voltage, V_{in} (UDN-2981A & UDN-2983A)	.....
(UDN-2982A & UDN-2984A)	.....
Output Current, I_{OL}	.....
Power Dissipation, P_D (any one driver)	.....
(total package)	.....
Operating Temperature Range, T_c	.....	-20°C
Storage Temperature Range, T_s	.....	55°C

*Derate at the rate of 18 mW/°C above +25°C

HIGH-VOLTAGE HIGH-CURRENT DARLINGTON TRANSISTOR ARRAYS

- 1 500 mA Rated Collector Current (Single Output)
- 2 High-Voltage Outputs . . . 50 V
- 3 Output Clamp Diodes
- 4 Inputs Compatible with Various Types of Logic
- 5 Relay Driver Applications
- 6 Designed to be Interchangeable with Sprague ULN2001A Series

D OR N PACKAGE
(TOP VIEW)

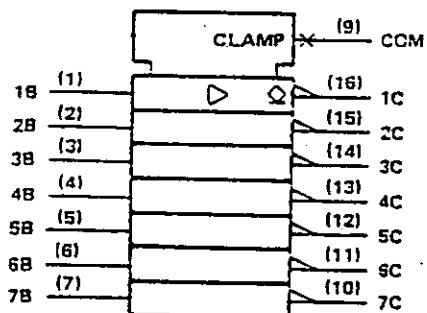


Description

The ULN2001A, ULN2002A, ULN2003A, ULN2004A, and ULN2005A are monolithic high-voltage, high-current Darlington transistor arrays. Each consists of seven n-p-n Darlington pairs that feature high-voltage outputs with common-cathode clamp diodes for switching inductive loads. The collector-current of a single Darlington pair is 500 milliamperes. The Darlington pairs may be paralleled for higher current capability. Applications include relay drivers, hammer drivers, lamp drivers, display drivers (LED anode discharge), line drivers, and logic buffers. For 100-volt (otherwise interchangeable) versions, see SN75465 through SN75469.

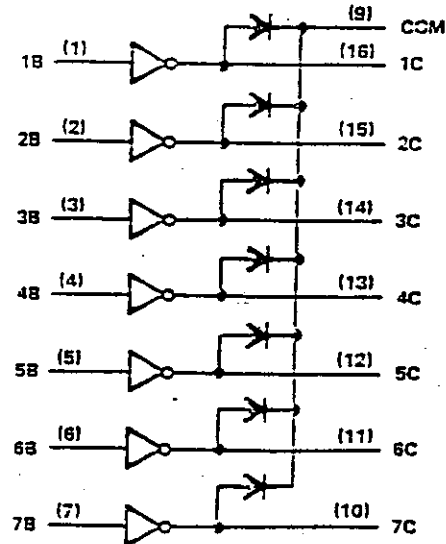
The ULN2001A is a general-purpose array and may be used with TTL, P-MOS, CMOS, and other technologies. The ULN2002A is specifically designed for use with 14- to 25-volt P-MOS devices and its input has a zener diode and resistor in series to limit the input current to a safe limit. The ULN2003A has a 2700-ohm series base resistor for each Darlington pair for operation directly with TTL or 5-volt CMOS. The ULN2004A has a 10.5-kilohm series base resistor to allow its operation directly from CMOS MOS that use supply voltages of 6 to 15 volts. The required input current is below that of the ULN2002A and the required voltage is less than that required by the ULN2002A. The ULN2005A has a 1050-ohm series base resistor and is especially designed for use with TTL where higher output current is required and loading of the driving source is not a concern.

Logic Symbol



The logic symbol is in accordance with ANSI/IEEE Std 91-1984 and Publication 617-12.

Logic Diagram



PRODUCTION DATA documents contain information not as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

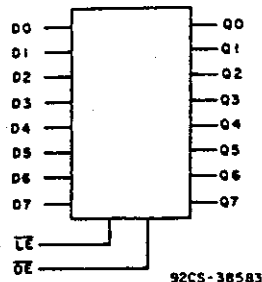


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CD54/74HC373, CD54/74HCT373 CD54/74HC573, CD54/74HCT573

File Number 167:

High-Speed CMOS Logic



FUNCTIONAL DIAGRAM

Octal Transparent Latch, 3-State Output

Type Features:

- Common latch enable control
- Common 3-state output enable control
- Buffered inputs
- 3-State outputs
- Bus line driving capacity
- Typical propagation delay = 12 ns @ $V_{CC} = 5V$, $C_L = 15$ pF, $T_A = 25^\circ C$ (Data to Output for HC373)

The RCA CD54/74HC373/573 and CD54/74HCT373/573 are high speed Octal Transparent Latches manufactured with silicon gate CMOS technology. They possess the low power consumption of standard CMOS integrated circuits, as well as the ability to drive 15 LSTTL devices. The CD54/74HCT373/573 are functionally as well as pin compatible with the standard 54/74LS373 and 573.

The outputs are transparent to the inputs when the latch enable (\overline{LE}) is high. When the latch enable (\overline{LE}) goes low the data is latched. The output enable (\overline{OE}) controls the 3-state outputs. When the output enable (\overline{OE}) is high the outputs are in the high impedance state. The latch operation is independent to the state of the output enable. The 373 and 573 are identical in function and differ only in their pinout arrangements.

The CD54HC/HCT373/573 are supplied in 20 lead ceramic dual-in-line packages (F suffix). The CD74HC/HCT373/573 are supplied in a 20-lead plastic dual-in-line plastic package (E suffix) and in 20-lead surface mount plastic packages (M suffix). Both types are also available in chip form (H suffix).

Family Features:

- Fanout (Over Temperature Range):
Standard Outputs - 10 LSTTL Loads
Bus Driver Outputs - 15 LSTTL Loads
- Wide Operating Temperature Range:
CD74HC/HCT: -40 to $+85^\circ C$
- Balanced Propagation Delay and Transition Times
- Significant Power Reduction Compared to LSTTL Logic ICs
- Alternate Source is Philips/Signetics
- CD54HC/CD74HC Types:
2 to 6 V Operation
High Noise Immunity: $N_{IL} = 30\%$, $N_{IH} = 30\%$ of V_{CC}
@ $V_{CC} = 5$ V
- CD54HCT/CD74HCT Types:
4.5 to 5.5 V Operation
Direct LSTTL Input Logic Compatibility
 $V_{IL} = 0.8$ V Max., $V_{IH} = 2$ V Min.
CMOS Input Compatibility
 $I_I \leq 1 \mu A$ @ V_{OL} , V_{OH}

TRUTH TABLE

Output Enable	Latch Enable	Data	Output
L	H	H	H
L	H	L	L
L	L	l	L
L	L	h	H
H	X	X	Z

Note:

- L = Low voltage level
H = High voltage level
l = Low voltage level one set-up time prior to the high to low latch enable transition
h = High voltage level one set-up time prior to the high to low latch enable transition
X = Don't Care
Z = High Impedance State

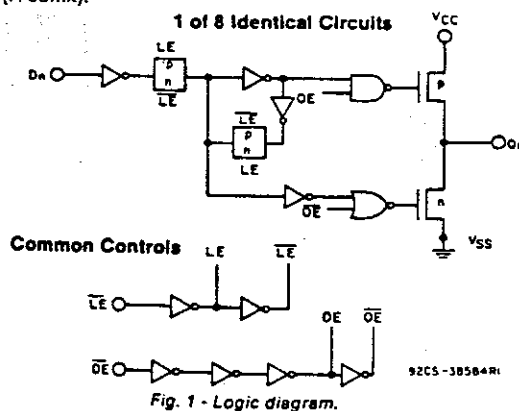


Fig. 1 - Logic diagram.

**CD54/74HC373, CD54/74HCT373
CD54/74HC573, CD54/74HCT573**

MAXIMUM RATINGS, Absolute-Maximum Values:

DC SUPPLY-VOLTAGE, (V_{CC}):
(Voltages referenced to ground) -0.5 to +7 V

DC INPUT DIODE CURRENT, I_{IK} (FOR $V_i < -0.5$ V OR $V_i > V_{CC} + 0.5$ V) ± 20 mA

DC OUTPUT DIODE CURRENT, I_{OK} (FOR $V_o < -0.5$ V OR $V_o > V_{CC} + 0.5$ V) ± 20 mA

DC DRAIN CURRENT, PER OUTPUT (I_o) (FOR -0.5 V $< V_o < V_{CC} + 0.5$ V) ± 35 mA

DC V_{CC} OR GROUND CURRENT, (I_{CC}) ± 70 mA

POWER DISSIPATION PER PACKAGE (P_o):

For $T_A = -40$ to $+60^\circ\text{C}$ (PACKAGE TYPE E) 500 mW

For $T_A = +60$ to $+85^\circ\text{C}$ (PACKAGE TYPE E) Derate Linearly at 8 mW/ $^\circ\text{C}$ to 300 mW

For $T_A = -55$ to $+100^\circ\text{C}$ (PACKAGE TYPE F, H) 500 mW

For $T_A = +100$ to $+125^\circ\text{C}$ (PACKAGE TYPE F, H) Derate Linearly at 8 mW/ $^\circ\text{C}$ to 300 mW

For $T_A = -40$ to $+70^\circ\text{C}$ (PACKAGE TYPE M) 400 mW

For $T_A = +70$ to $+125^\circ\text{C}$ (PACKAGE TYPE M) Derate Linearly at 6 mW/ $^\circ\text{C}$ to 70 mW

OPERATING-TEMPERATURE RANGE (T_A):

PACKAGE TYPE F, H -55 to $+125^\circ\text{C}$

PACKAGE TYPE E, M -40 to $+85^\circ\text{C}$

STORAGE TEMPERATURE (T_{stg}) -65 to $+150^\circ\text{C}$

LEAD TEMPERATURE (DURING SOLDERING):

At distance $1/16 \pm 1/32$ in. (1.59 ± 0.79 mm) from case for 10 s max. $+265^\circ\text{C}$

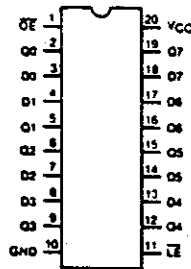
Unit inserted into a PC Board (min. thickness $1/16$ in., 1.59 mm) with solder contacting lead tips only $+300^\circ\text{C}$

RECOMMENDED OPERATING CONDITIONS:

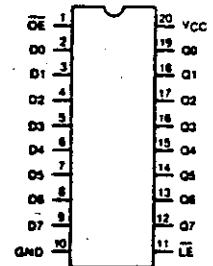
For maximum reliability, nominal operating conditions should be selected so that operation is always within the following ranges:

CHARACTERISTIC	LIMITS		UNITS
	MIN.	MAX.	
Supply-Voltage Range (For $T_A =$ Full Package-Temperature Range) V_{CC} *			
CD54/74HC Types	2	6	V
CD54/74HCT Types	4.5	5.5	V
DC Input or Output Voltage V_i, V_o	0	V_{CC}	V
Operating Temperature T_A :			
CD74 Types	-40	+85	$^\circ\text{C}$
CD54 Types	-55	+125	$^\circ\text{C}$
Input Rise and Fall Times, t_r, t_f			
at 2 V	0	1000	ns
at 4.5 V	0	500	ns
at 6 V	0	400	ns

*Unless otherwise specified, all voltages are referenced to Ground.



**CD54/74HC373, CD54/74HCT373
TERMINAL ASSIGNMENT**



**CD54/74HC573, CD54/74HCT573
TERMINAL ASSIGNMENT**

**CD54/74HC374, CD54/74HCT374
CD54/74HC574, CD54/74HCT574**

MAXIMUM RATINGS, Absolute-Maximum Values:

DC SUPPLY-VOLTAGE, (V_{CC}):
(Voltages referenced to ground) -0.5 to + 7 V

DC INPUT DIODE CURRENT, I_{IK} (FOR $V_i < -0.5$ V OR $V_i > V_{CC} + 0.5$ V) ± 20 mA

DC OUTPUT DIODE CURRENT, I_{OK} (FOR $V_o < -0.5$ V OR $V_o > V_{CC} + 0.5$ V) ± 20 mA

DC DRAIN CURRENT, PER OUTPUT (I_{O1}) (FOR -0.5 V $< V_o < V_{CC} + 0.5$ V) ± 35 mA

DC V_{CC} OR GROUND CURRENT, PER PIN (I_{CC}) ± 70 mA

POWER DISSIPATION PER PACKAGE (P_D):

For $T_A = -40$ to $+60^\circ$ C (PACKAGE TYPE E) 500 mW

For $T_A = +60$ to $+85^\circ$ C (PACKAGE TYPE E) Derate Linearly at 8 mW/ $^\circ$ C to 300 mW

For $T_A = -55$ to $+100^\circ$ C (PACKAGE TYPE F, H) 500 mW

For $T_A = +100$ to $+125^\circ$ C (PACKAGE TYPE F, H) Derate Linearly at 8 mW/ $^\circ$ C to 300 mW

For $T_A = -40$ to $+70^\circ$ C (PACKAGE TYPE M) 400 mW

For $T_A = +70$ to $+125^\circ$ C (PACKAGE TYPE M) Derate Linearly at 6 mW/ $^\circ$ C to 70 mW

OPERATING-TEMPERATURE RANGE (T_A):

PACKAGE TYPE F, H -55 to $+125^\circ$ C

PACKAGE TYPE E, M -40 to $+85^\circ$ C

STORAGE TEMPERATURE (T_{STG}) -65 to $+150^\circ$ C

LEAD TEMPERATURE (DURING SOLDERING):

At distance $1/16 \pm 1/32$ in. (1.59 ± 0.79 mm) from case for 10 s max. $+265^\circ$ C

Unit inserted into a PC Board (min. thickness $1/16$ in., 1.59 mm) with solder contacting lead tips only $+300^\circ$ C

RECOMMENDED OPERATING CONDITIONS:

For maximum reliability, nominal operating conditions should be selected so that operation is always within the following ranges:

CHARACTERISTIC	LIMITS		UNITS
	MIN.	MAX.	
Supply-Voltage Range (For $T_A =$ Full Package-Temperature Range) V_{CC} .*			
CD54/74HC Types	2	6	V
CD54/74HCT Types	4.5	5.5	V
DC Input or Output Voltage V_i, V_o	0	V_{CC}	V
Operating Temperature T_A :			
CD74 Types	-40	+85	$^\circ$ C
CD54 Types	-55	+125	$^\circ$ C
Input Rise and Fall Times t_r, t_f			
at 2 V	0	1000	ns
at 4.5 V	0	500	ns
at 6 V	0	400	ns

*Unless otherwise specified, all voltages are referenced to Ground.

TRUTH TABLE			
INPUTS			OUTPUTS
\overline{OE}	CP	D_n	Q_n
L		H	H
L		L	L
L	L	X	Q0
H	X	X	Z

- H = high level (steady state)
- L = low level (steady state)
- X = don't care
- = transition from low to high level
- Q0 = the level of Q before the indicated steady-state input conditions were established.
- Z = high impedance

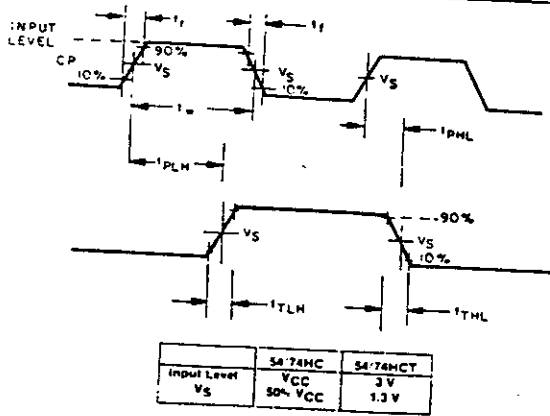
HC/HCT374,574

Technical Data

CD54/74HC374, CD54/74HCT374
CD54/74HC574, CD54/74HCT574

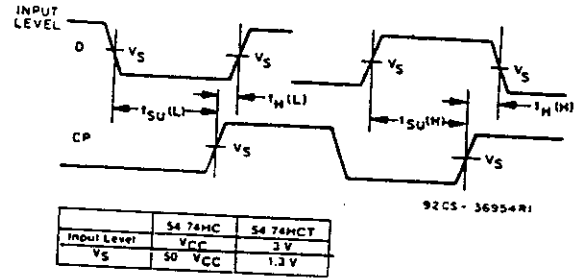
SWITCHING CHARACTERISTICS (C_L = 50 pF, Input t_r, t_f = 6 ns)

CHARACTERISTIC	V _{CC} V	25°C				-40°C to +85°C				-55°C to +125°C				UNITS
		HC		HCT		74HC		74HCT		54HC		54HCT		
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Propagation Delay Clock to Output Fig. 2	t _{PLH}	2	165	—	—	—	205	—	—	—	250	—	—	ns
	t _{PHL}	4.5	33	—	33	—	41	—	41	—	50	—	50	
		6	28	—	—	—	35	—	—	—	43	—	—	
Propagation Delay Output Disable to Q Fig. 4	t _{PLZ}	2	135	—	—	170	—	—	—	205	—	—	ns	
	t _{PHZ}	4.5	27	—	28	—	34	—	35	—	41	—		42
		6	23	—	—	—	29	—	—	—	35	—		—
Propagation Delay Output Enable to Q Fig. 4	t _{PZL}	2	150	—	—	190	—	—	—	225	—	—	ns	
	t _{PZH}	4.5	30	—	30	—	38	—	38	—	45	—		45
		6	26	—	—	—	33	—	—	—	38	—		—
Output Transition Time Fig. 2	t _{TLH}	2	60	—	—	75	—	—	—	90	—	—	ns	
	t _{THL}	4.5	12	—	12	—	15	—	15	—	18	—		18
		6	10	—	—	—	13	—	—	—	15	—		18
Input Capacitance	C _I	—	10	—	10	—	10	—	10	—	10	—	10	pF
3-State Output Capacitance	C _O	—	20	—	20	—	20	—	20	—	20	—	20	pF



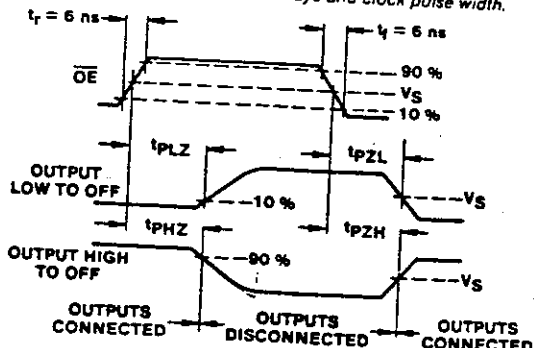
92CS-38404

Fig. 2 — Clock to output delays and clock pulse width.



92CS-36954 R1

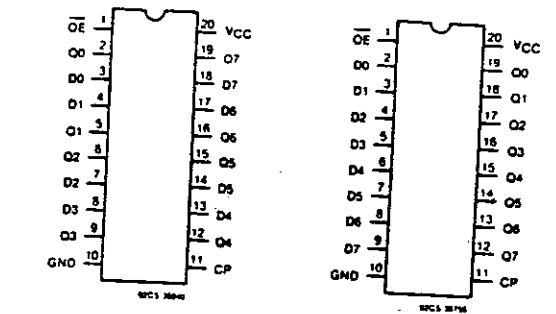
Fig. 3 — Data set-up and hold times.



92CS-38562

Input Level	54/74HC	54/74HCT
Input Level	V _{CC}	3 V
Switching Voltage, V _S	50% V _{CC}	1.3 V

Fig. 4 — Transition times and propagation delay times.

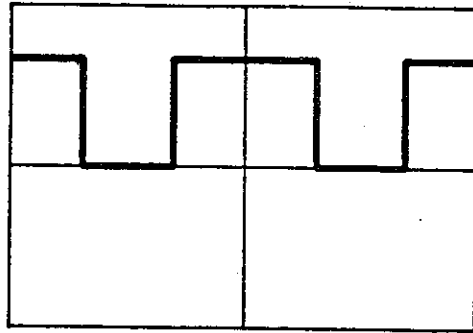


CD54/74HC, HCT374 Types
TERMINAL ASSIGNMENT

CD54/74HC, HCT574 Types
TERMINAL ASSIGNMENT

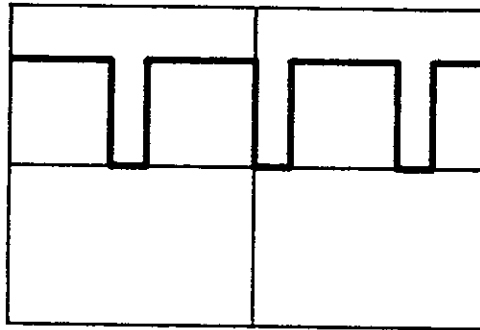
WAVEFORM

①



Charging and discharging wave applied convertor.

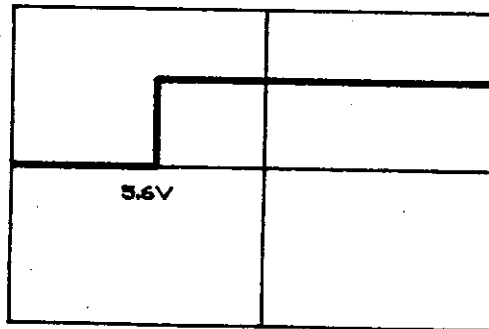
②



Wave outputed from A/D by weight variance. If this signal isn't appear, the scale operate incorrectly.

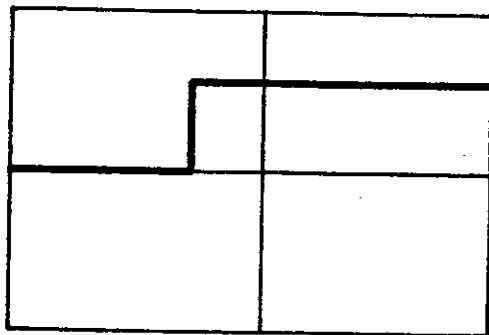
③

0V

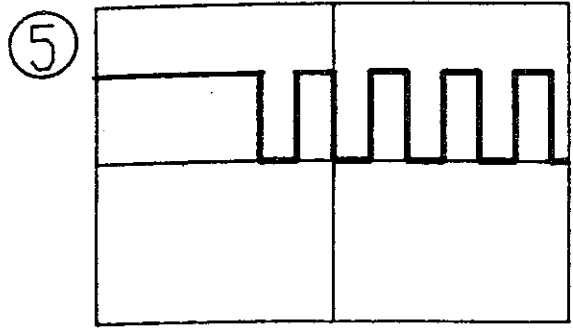


When battery voltage is applied to circuit 5.6V, the scale will operate correctly.

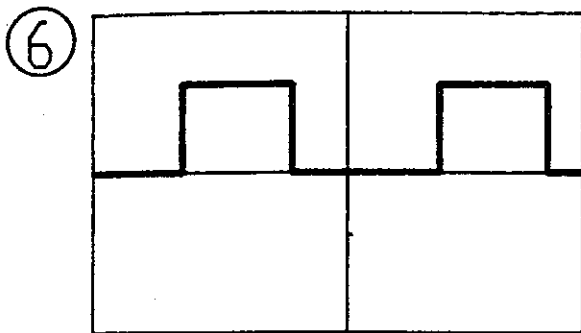
④



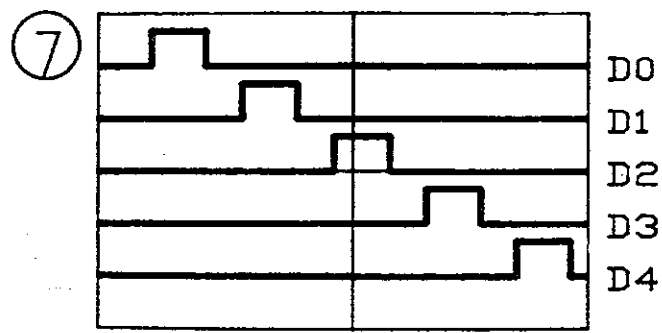
When press any key, the signal is in high.



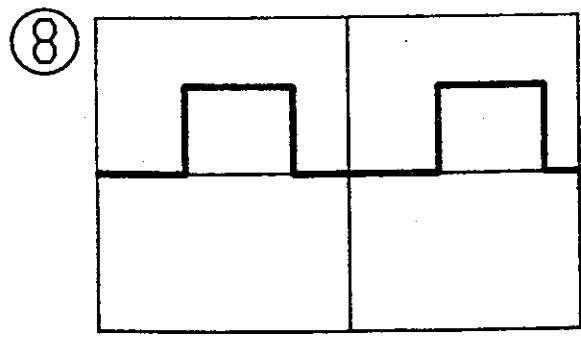
When press any key of remote control, this wave will be occurred.



This wave is signal to display segment signal latched to 74HC374 IC.



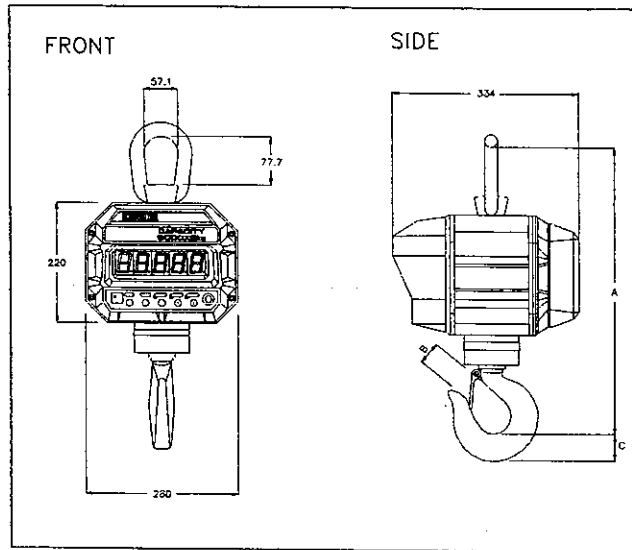
This wave is signal to display digit signal latched to 74HC374 IC.



This wave is signal to check pressing key.

11. PRODUCT SIZE

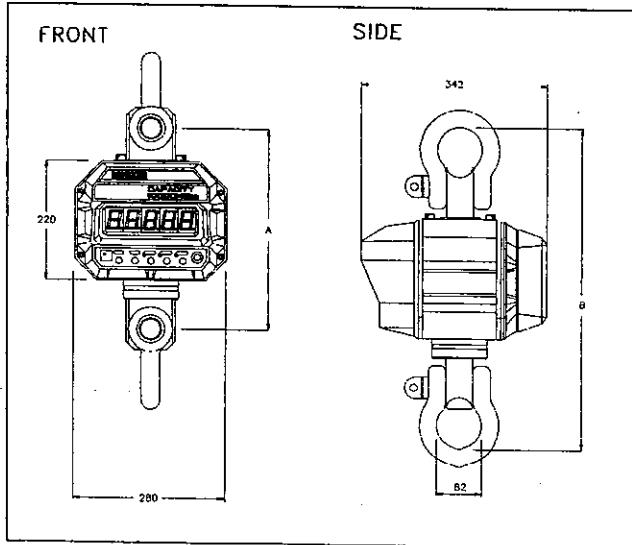
1) 1TON ~ 5TON



MODEL	CAPACITY	GRADUATION	A	B	C	WEIGHT
1THD	1 TON	500g	455	21.5	30	26kg
2THD	2TON	1kg	468	28	30	28kg
3THD	3TON	2kg	512	44.5	42.9	31kg
5THD	5TON	2kg	512	44.5	42.9	31kg

(UNIT : mm)

2) 10TON~20TON



MODEL	CAPACITY	GRADUATION	A	B	WEIGHT
10THD	10 TON	5kg	377	641	34kg
15THD	15 TON	10kg	382	645	34.6kg
20THD	20 TON	10kg	387	651	35.1kg

(UNIT : mm)

12 SPECIFICATIONS

CASTON III

MODEL	CASTON III
MAX. TARE WEIGHT	FULL TARE
DISPLAY	LED (1.5 inch)
TEMPERATURE	-5~35°
POWER	6V
POWER CONSUMPTION	1.2W
DISPLAY LAMP	ZERO, TARE, HOLD, LOW BATTERY LAMP

REMOTE CONTROL

AVAILABLE DISTANCE	6m ~10m
AVAILABLE ANGLE	60°
POWER	3V (1.5V AMM*2)

13. CASTON III PART LIST

(1) MAIN P.C.B

1994年 11月 10日

NO	Part cord	Part name	Specification	Q'TY	UNIT	REMARK
1	6114-A00-0901	MAIN P.C.B	611-A00-0901 (C-3 NEW)	1	EA	VERSION T1.00
2	6204-C00-8032	IC (CPU)	80C32	1	EA	IC1
3	6202-E00-0373	IC (C-MOS)	HD74HC373P	1	EA	IC2
4	6222-C00-2764	IC (EPROM)	NMC27C64Q	1	EA	IC3
5	6202-A00-0374	IC (C-MOS)	HD74HC374P	2	EA	IC4,5
6	6206-A00-2981	IC (DRIVER)	UDN2981A	1	EA	IC6
7	6206-A00-2003	IC (DRIVER)	ULN2003A	1	EA	IC7
8	6222-C00-9346	IC (EEPROM)	KM93C46	1	EA	IC8
9	6218-E00-8054	IC (RESET)	S-8054ALB (T0-92)	1	EA	IC9
10	6218-A00-0431	IC (REGULATER)	TL431	1	EA	IC10
11	6214-A00-0330	IC (LINEAR)	LM330T	1	EA	IC11
12	6300-A00-0028	IC SOCKET	28PIN	1	EA	SOCKET OF IC3
13	6280-AC0-1015	TRANSISTOR	2SA1015	2	EA	TR1,2
14	6280-AC0-0032	TRANSISTOR	TIP32C	1	EA	TR3
15	6280-AC0-1959	TRANSISTOR	2SC1959	3	EA	TR4,5,6
16	6500-K00-0100	RESISTER ¼W	MFR 10K (±0.1%)-B급	1	EA	R2
17	6500-K00-0150	RESISTER ¼W	MFR 15K (±0.1%)-B급	1	EA	R1
18	6506-K00-0500	RESISTER ¼W	MFR 50K (±0.1%)-F급	2	EA	R11,13
19	6534-A00-0330	RESISTER ¼W	CFR 33Ω(±5%)	9	EA	R18,R21-28
20	6534-A00-1000	RESISTER ¼W	CFR 100Ω(±5%)	1	EA	R8
21	6534-K00-0010	RESISTER ¼W	CFR 1KΩ(±5%)	3	EA	R12,16,17
22	6534-K00-0022	RESISTER ¼W	CFR 2.2KΩ(±5%)	6	EA	R5,9,14,15,20,29
23	6534-K00-0047	RESISTER ¼W	CFR 4.7KΩ(±5%)	2	EA	R4,6
24	6534-K00-0100	RESISTER ¼W	CFR 10KΩ(±5%)	1	EA	R3
25	6534-K00-1000	RESISTER ¼W	CFR 100KΩ(±5%)	3	EA	R7,10,19
26	6704-A25-0220	E_CONDENSER	220uF/25V	3	EA	C1,2,3
27	6704-A16-0033	E_CONDENSER	33uF/16V	2	EA	C4,17
28	6704-A50-0010	C_CONDENSER	10uF/50V	1	EA	C16
29	6704-A00-0010	C_CONDENSER	10pF/50V	3	EA	C5,6,7
30	6710-U00-0100	C_CONDENSER	0.1uF/25V	8	EA	C8-15
31	6570-K68-0100	POTENTIO METER	68WR10KΩ	1	EA	VR1
32	6570-K68-0500	POTENTIO METER	68WR50KΩ	1	EA	VR2
33	7004-A00-0070	PIEZO BUZZER	20BP-4F	1	EA	
34	7214-A00-1501	LED DISPLAY	CSS-1519D	5	EA	D0-D4
35	7104-A00-5529	CRYSTAL	5.5296MHZ	1	EA	X-TAL

(3) DISPLAY P. C. B

NO	Part cord	Part name	Specification	Q'TY	UNIT	REMARK
1	6124-A00-0901	DISPLAY P. C. B	612-A00-0901 (C-3 NEW)	1	EA	VERSION T1.00
2	6287-A00-4148	SWITCHING DIODE	IN4148P	4	EA	DI -D4
3	7218-A00-0005	REMOCON MODULE	SG-05L	1	EA	
4	6534-A00-2200	RESISTER ¼W	CFR 220Ω(±5%)	1	EA	R1
5	7212-A00-0050	LED LAMP	Ø5-RED	4	EA	LED1-LED4
6	6702-A50-0220	E_CONDENSER	220uF/50V(SG)	1	EA	C1
7	7804-A00-0007	CONNECTOR(WAFER)	LW-0640-07	1	EA	CN2
8	7862-A00-1510	CONNECTOR WIRE	15P*100m/m	1	EA	DISPLAY & MAIN

(4) REMOCON P. C. B & CONNECTOR WIRE

NO	Part cord	Part name	Specification	Q'TY	UNIT	REMARK
1	6144-A00-0901	REMOCON P. C. B	614-A00-0901 (C-3 NEW)	1	EA	VERSION T1.00
2	6214-A00-5803	IC(LINEAR)	KS5803A	1	EA	IC1
3	6287-A00-4148	SWICHING DIODE	IN4148P	5	EA	DI - D5
4	6715-A00-0455	CERAMIC FILTER	455E	1	EA	XTAL
5	7212-A00-0106	LED LAMP	SSL-106	1	EA	LED1
6	7215-A00-8925	IR-LED	OSI-8925	2	EA	LED2, 3
7	6280-AC0-1815	TRANSISTER	2SC1815A	1	EA	TRI
8	6534-A00-0022	RESISTER ¼W	CFR 2.2Ω(±5%)	1	EA	R2
9	6534-A00-1000	RESISTER ¼W	CFR 100Ω(±5%)	1	EA	R1
10	6704-A16-0033	E_CONDENSER	33uF/16V	1	EA	C3
11	6710-A00-0100	C_CONDENSER	100pF/50V	2	EA	C1, 2
12	6794-A00-0040	ALKALINE BATTERY	LR6(AM3) 1.5V/206mA	2	EA	
13	1702-A00-0060	REMOCON CASE ASS'Y	CAS20N2, CAS20N3	1	EA	
14	1730-A00-1020	REMOCON BAG	ASS'Y	1	EA	
15	7862-A00-0237	CONNECTOR WIRE	2P*370m/m	1	EA	
16	7862-A00-0248	CONNECTOR WIRE	2P*480m/m	1	EA	
17	7862-A00-0816	CONNECTOR WIRE	8P*160m/m	1	EA	KEY & DISPLAY P. C. B
18	7862-A00-	CONNECTOR WIRE	XLR-3-32C*195 m/m	2	EA	BATTERY CONNECTOR
19						
20						

(5) MECHANISM

NO	Part cord	Part name	Specification	Q'TY	UNIT	REMARK
1	1110-A00-	BODY	280*220*150(2-5TON)	1	EA	C-3 NEW
2	1110-A00-	BODY	10TON	1	EA	C-3 NEW
3	1110-A00-	FRONT COVER	280*/220*105	1	EA	C-3 NEW
4	1110-A00-1080	REAR COVER	280*212*31	1	EA	C-3 NEW
5		UPPER PLATE	Ø138*117*3T	1	EA	10TON-Ø
6		LOWER PLATE	Ø164*139*3T	1	EA	10TON-Ø
7	1110-A00-1090	BATTERY COVER	216*189*53	1	EA	
8	1034-A00-0300	BATTERY CASE	CASTON 3	2	EA	
9	1082-A00-4060	GUIDE PIN	Ø5.5*15 (THD)	1	EA	2, 3, 5TON
10	1596-A00-0020	STEEL BAND	90-110	1	EA	2, 3, 5, 10TON
12	1805-A00-0010	NAME PLATE	CASTON 3	1	EA	
15	1816-A00-0010	SPEC PLATE	CASTON 3	1	EA	
18	1816-A00-0010	CAPA' PLATE	CASTON 3(Kg)	1	EA	2, 3, 5, 10TON
19	1816-A00-0011	CAPA' PLATE	CASTON 3(LB)	1	EA	2, 3, 5, 10TON
21	2125-A00-	KEY BOARD PAD	CASTON 3	1	EA	C-3 NEW
22	2600-A00-3080	UPPER GASKET	Ø116*137*2.0T	1	EA	10TON
23	2604-A00-0020	S/W KNOB RUBBER	Ø21.5*4	5	EA	2-5TON
24	2607-A00-0000	F. I. P CUSTION	30*20*2T	13	EA	
26	6792-A00-0001	BATTERY CHARGER	6V/10A(120/240V)	1	SET	
28	6794-A00-0020	NI-CD BATTERY	ES10-6 6V/10A	2	EA	
29	7524-A00-5500	FUSE	5A/250(Ø5*20m/m)	2	EA	
30	7534-A00-0020	FUSE HOLDER	FH-20(Ø13))	1	EA	
31	7570-G00-0011	LEAD WIRE	0.18*20C*110m/m(GRN)	3	EA	
32	7624-A00-0100	TIE BAND	100mm	4	EA	
33	7654-A00-0504	CORD STOPPER	5N4	2	EA	
34	1034-A00-0710	SAFE LINK	2-5TON	1	EA	2-5TON
35	1595-S00-0040	HOOK SPRING	Ø1.2(L)	1	EA	2-5TON
36	1120-A00-0010	HOOK	165*20L	1	EA	2-5TON
37	1120-A00-0200	LIFT EYE BOLT	114*193	1	EA	2-5TON
38		LOAD HOUSING (UPPER)		1	EA	2-3TON
39		LOAD HOUSING (LOWER)		1	EA	2-3TON
40		LOAD HOUSING (UPPER)		1	EA	5TON
41		LOAD HOUSING (LOWER)		1	EA	5TON

(6) PACKING

NO	Part cord	Part name	Specification	Q'TY	UNIT	REMARK
1	9000-A00-2050	MANUAL	CASTON3	1	EA	
2	9050-A00-1509	FUSE POLY BAG	150*90*0.05T	1	EA	
3	9050-A00-2517	MANUAL POLY BAG	245*170*0.05T	1	EA	
4	9053-A00-0010	SILICAGEL	10g	3	EA	
6	9205-A00-0010	PACKING BOX	CASTON III	1	EA	
7		BODY POLY BAG				