

MODULE SPECIFICATION

PROGRAMMABLE DAILY ON/OFF PLUS CYCLE TIMER MODULE

MODEL NO.: KS1500AM

A. Brief Features:

- Physical Size:
Plastic Frame: 34 x 22 mm
Thickness: 8 mm (connector not included)
- LCD Display:
 - Screen Size: 27 x 13 mm
 - Number of Digit: 4 digits
 - Digit Height: about 4.5 mm
- Power Source:
Main Power – 3.6 VDC, converted from AC normally
Back Up Power – Battery, 3.0 VDC
- Low Power Detector (should be added externally): Warning mark (broken battery) flashing when backup voltage below 2.70 VDC
- Three Main Modes:
 - START/STOP – daily on/off time setting
 - CYCLE – repeatable on/off interval setting
 - Combination of the above two modes – at the ON time period in a day executing CYCLE setting
- Output Control Signal:
* Timer ON : + 3.60 VDC
* Timer OFF : 0 VDC
- Operation Temperature: -10 ~ +50 °C
- Storage Temperature: -20 ~ +60 °C



B. LCD FORMAT & SYMBOLS (ref to Fig. a)

- START/STOP** – appear to indicate the START/STOP function is activated, or at the setting mode of START/STOP function
- CYCLE** – appear to indicate the CYCLE function is activated, or at the setting model of CYCLE function
- Broken Battery** – the symbol blinking to indicate the power of backup batteries are at low level; battery replacement suggested
- Second Flag** – appear with blinking once per second, to indicate the screen shown in real time clock
- ON** – at real time mode, appear to tell the timer at “ON” status currently
- OFF** – at real time mode, appear to tell the timer at “OFF” status currently

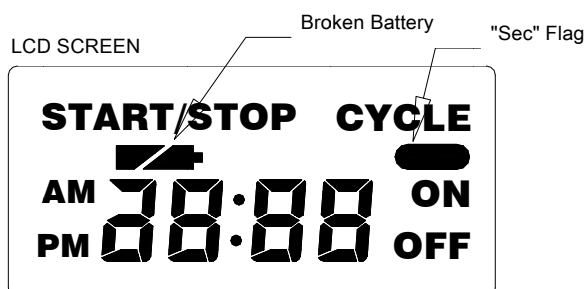
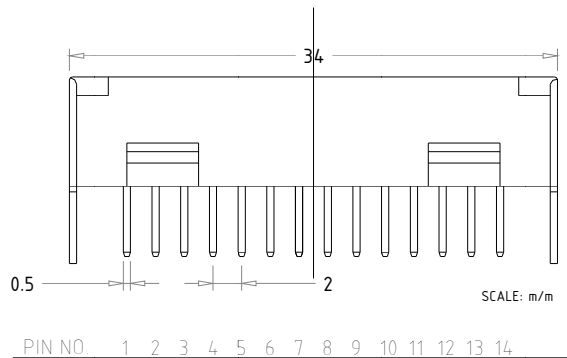


FIG. a

C. I/O PIN CONNECTION:



PIN SELECTION, SLIDE S/W1:

RD1	FUNCTION
HIGH	SETTING FOR TIME
LOW	SETTING PROHIBITED

PIN SELECTION, SLIDE S/W2:

RD3	RD2	FUNCTION
LOW	LOW	START COUNTING
LOW	HIGH	SETTING FOR CYCLE
HIGH	LOW	SETTING FOR START STOP

PIN Description:

NO.	PIN NAME	FUNCTION	NO.	PIN NAME	FUNCTION
1	VSS	Power source, 0 V	8	RC0	Minute adjustment
2	RD3	Slide S/W	9	RA1	AC power detector
3	RD2	Slide S/W	10	RA0	DC power detector
4	RD1	Time setting On/Off	11	MFP	Output to control RELAY ON/OFF
5	RC3	Cancel key	12	RESET	To reset all the settings to default
6	RC2	Setting key	13	VDD	Power source, + 3 V
7	RC1	Hour adjustment	14	VDD3	

D. ABSOLUTE MAXIMUM RATING:

Parameter	Rating	Unit
Supply Voltage to Ground Potential	-0.3 to +7.0	V
Applied IN/OUT Voltage	-0.3 to + 0.7	V
Power Dissipation	120	mW
Ambient Operating Temperature	0 to +50	°C
Storage Temperature	-20 to +60	°C

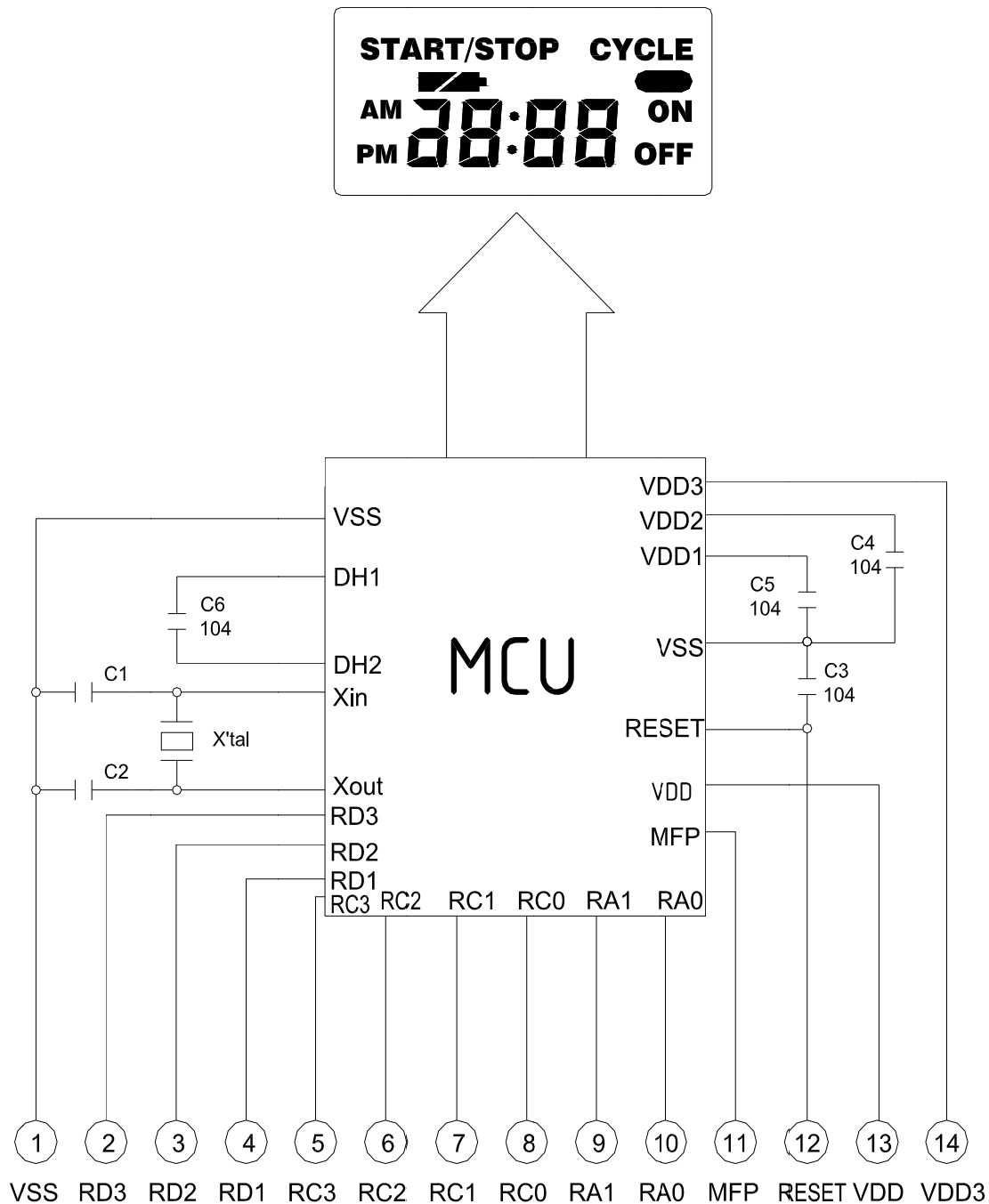
E. DC CHARACTERISTICS:

Parameter	Minimum.	Typical	Maximum	Unit
Operating Voltage	2.4	3.6	5.5	V
Operating Current	-		1	mA

F. Circuit Diagram

LCD Panel

1/4 Duty, 1/3 Bias, 3V



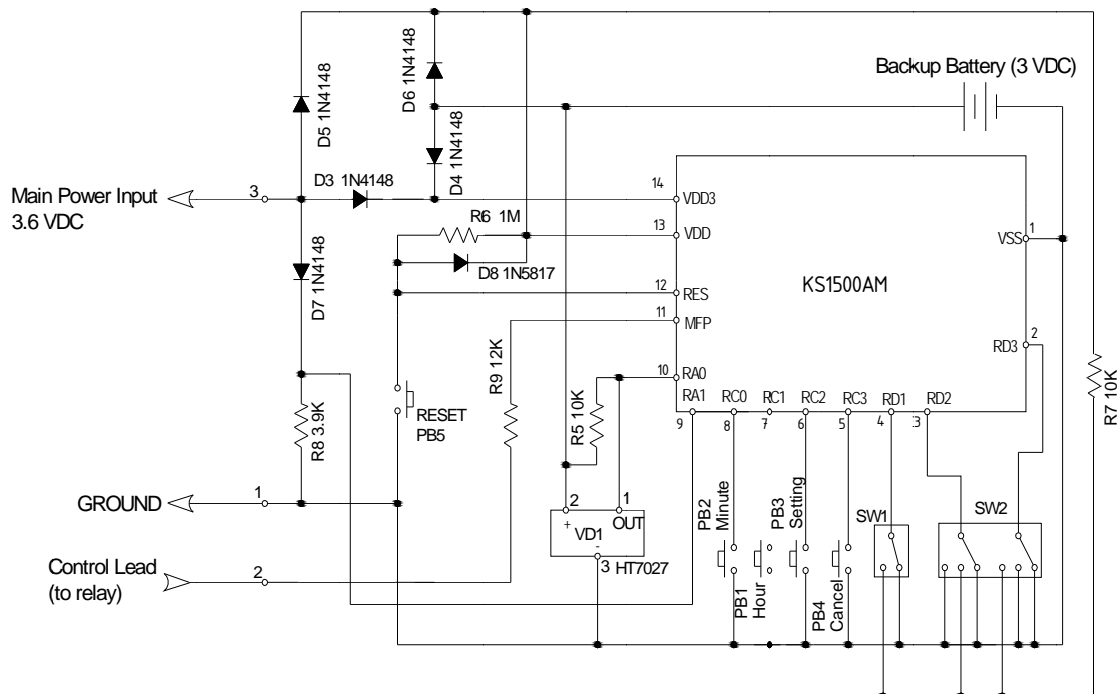
M1, KS1500AM CIRCUIT DIAGRAM

1.30.2015

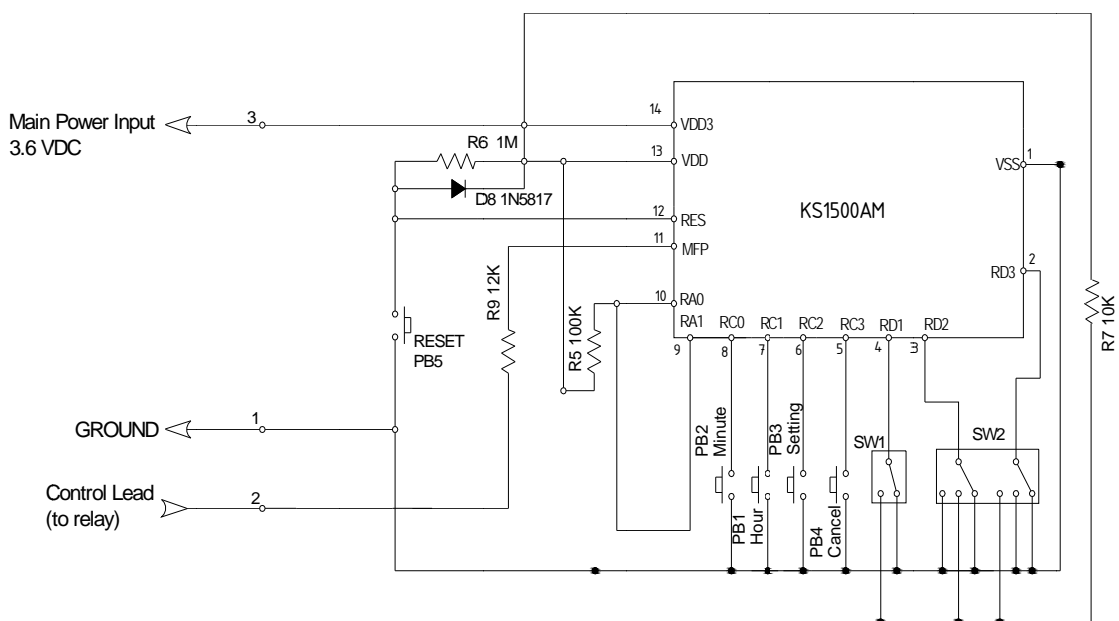
G. Applications Circuits

Suggested Application Circuit of KS1500AM

a. with Backup Power



b. w/o Backup Power



By VOSCA
11.25.2010

H. Operation Manual of Keys & Slide S/W's (please refer to paragraph G.)

1. Key Definition

PB2 (RC0) – Minute; set high to adjust minute

PB1 (RC1) – Hour; set high to adjust hour

PB3 (RC2) – Setting; set high to enter setting mode

PB4 (RC3) – Cancel; set high to cancel the whole display reading

2. Slide Switch

SW1 (RD1) – set high for real time setting

SW2 (RD2 & RD3) – Mode;

SW2	RD2	RD3	MODE
	Low	Low	Start to Run
	Low	High	Setting of CYCLE Function
	High	Low	Setting of power On/Off Time (START/STOP function)

3. LCD Symbol Indication (refer to paragraph B.)

[illegible][illegible][illegible]

In order to provide a clear picture of the keys operation, here we offer the operation manual for an end product AC ON/OFF & Cycling Timer KS1500A, in which this module is applied, as an example to explain.

EXAMPLE

KEYS & SLIDE SWITCHES (refer to Fig. b)

- **HOUR** – to adjust the reading of hour
- **MIN** – to adjust the reading of minute
- **CANCEL** – to erase the whole readings
- **SET** – at the setting mode of START/STOP or CYCLE, to select ON time or OFF time setting
- **RESET** – to system reset the timer
- **ON - OFF SWITCH** – 2 sections slide s/w; set upper position “ON” to enter setting mode of real time; set to lower position “OFF” to initiate real time clock running
- **START/STOP – CYCLE – RUN** – 3 sections slide s/w; set to lower position, “RUN”, for normal display; set to the upper position, “START/STOP”, to enter the setting mode of power ON or OFF; set to the center, CYCLE, to enter its setting mode of power ON or OFF

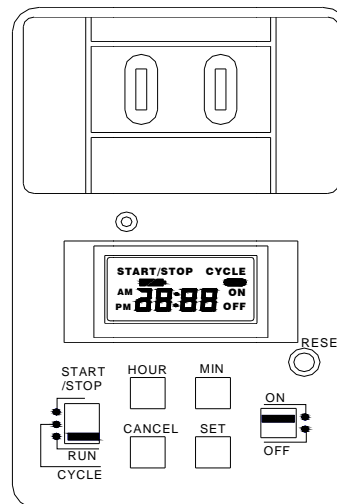


FIG. b

HOW TO SET CURRENT TIME

Before plug the timer onto an outlet for application, set the current time as follows. Make sure the two batteries, type LR44, are installed correctly. Refer to the indication of Fig. b. Press button "RESET" to system reset the timer. The LCD screen turns on fully for 3 seconds and then display "0:00" with symbols "AM" and "OFF" appeared and the "Sec Flag" symbol blinking once per second. Set the ON-OFF S/W to the "ON" position. The "Sec Flag" disappeared. Apply HOUR and MIN buttons to adjust hour and minute to the current time. Then set the S/W to "OFF" position to activate the real time clock running. The "Sec Flag" symbol becomes blinking steady per second.

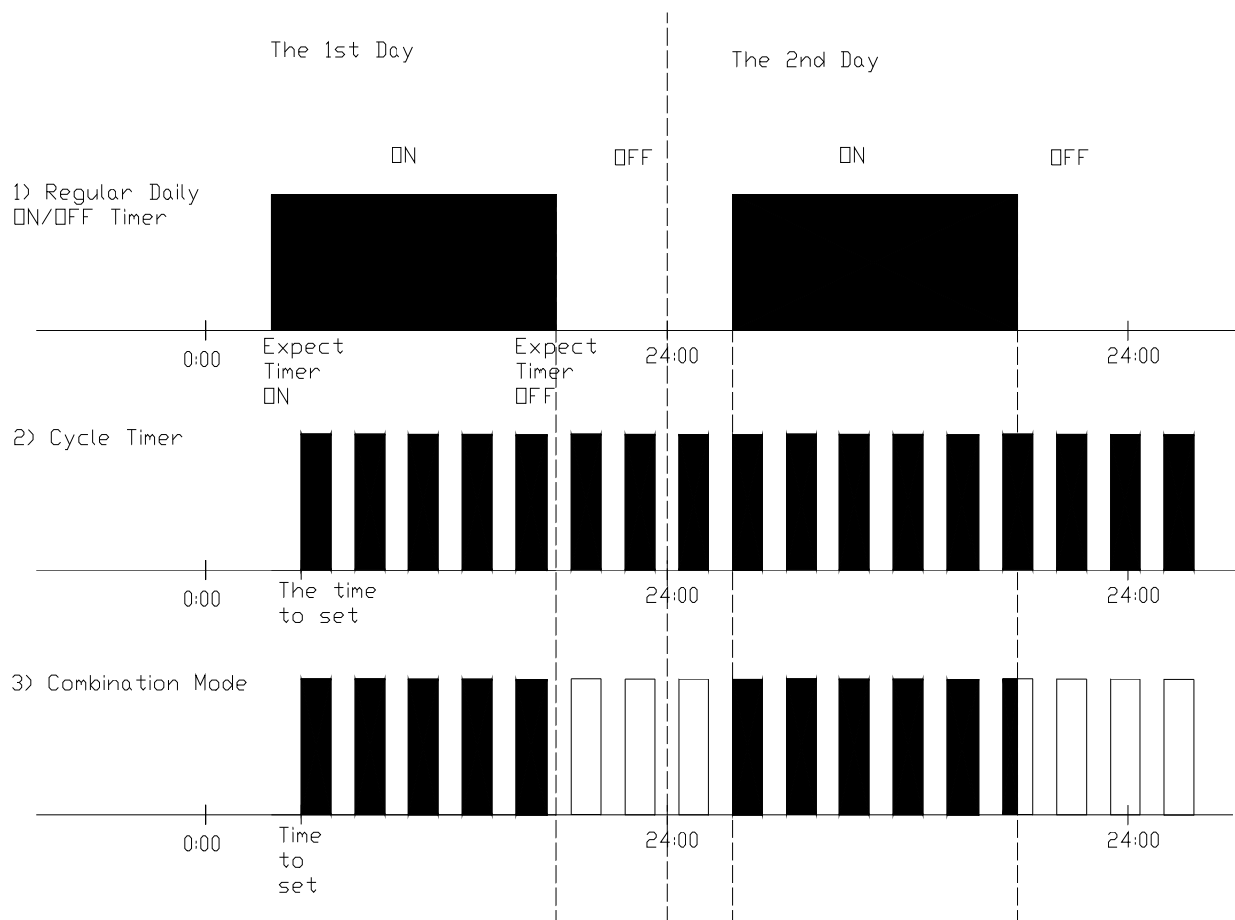
HOW TO SET THE DAILY POWER “ON/OFF” TIME (i.e., START/STOP function)

Set the 3-section S/W to the upper position. Symbol "START/STOP" displayed in blinking to indicate the setting mode of START/STOP function is activated. Along with "- : -" the ON symbol appears steady displayed, waiting for setting the power on time. Apply button HOUR and MIN to adjust the time. Then press button "SET" to switch to the setting of power OFF time. Apply "HOUR" and "MIN" again to adjust the off time. Be sure the settings are as you wish, then depress "SET" again to return to the setting mode of power ON time. Then set the S/W back to the lowest position to activate the On/Off timer and return to real time mode. As well as the symbol "d" changes back to blinking again, the

LCD returns to show real time.

HOW TO SET THE ON/OFF INTERVALS OF "CYCLE" FUNCTION

Set the 3-section S/W to the center position. Symbol "CYCLE" displayed in blinking, indicating the setting mode of cycle timer is activated. The symbol "ON" becomes steady displayed waiting for "ON" time interval setting. Apply button "HOUR" and "MIN" to adjust the duration of "ON" interval you wish. Then press button "SET" to change the setting mode to the duration of "OFF" time. Then use the same method to adjust the "OFF" time interval you wish. Be sure to



The illustration of
Timer ON/OFF Status

SPECIFICATIONS

- a. Supply voltage: AC100V $\pm 10\%$
- b. Max. Power output: 1500W
- c. Frequency: 50~60Hz
- d. Back-up battery: 2 x 1.5V LR44 or equivalence