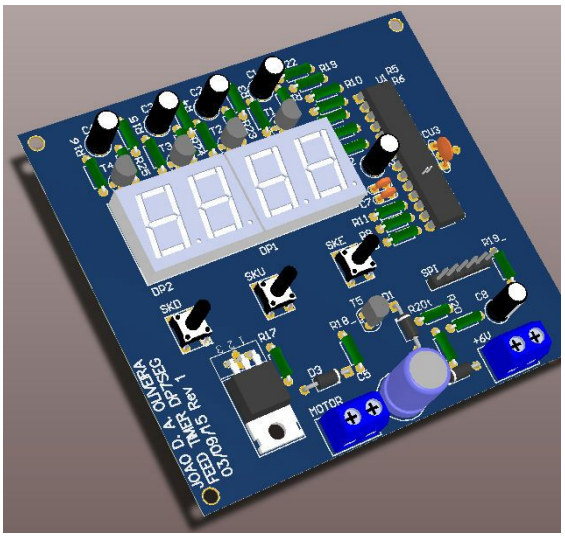
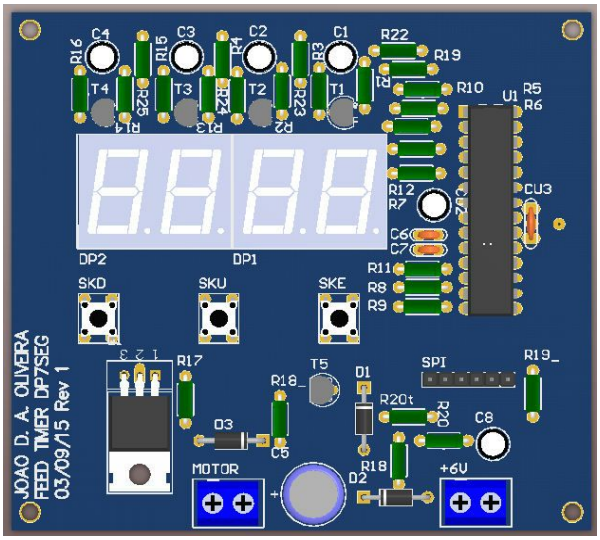
FeedTimer Version 1.0 with Atmel ATMega328P user Manual





Definition

Feed Timer is a Project developed using Atmel ATMega328P with intention of make ease animal's feed (or a generic use of Timer with capacity to handle multiples events and allow activation of devices like Motor, Relay, Coils etc at programmed time). The project is electronic board with the following features:

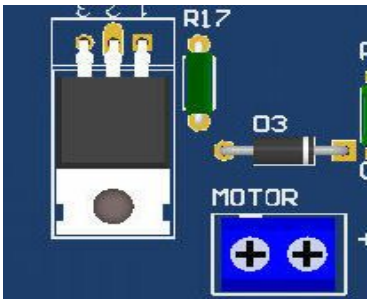
1. Display of 4 digits 7 segments. used for include and exclude of events.

4 Digits 7 Segments

2. 3 Buttons to control access a Menu. Using the following definition (DOWN,UP,ENTER)

Down,Up,Enter Keys

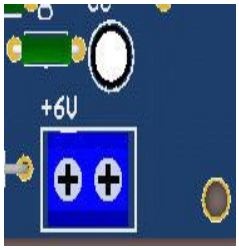
3. Output of Feed using a Mosfet high current (30V 20A), the will be used to drive Motor,Relay, Lamp , etc



Connector of MosFet Output can be used to activate Motor,Lamp,Relay

etc

4. Power supply 6Volts (generally a battery of 6Volts 4 or 2 Amps/hour)



Power Connector 6Volts

5. Low consumption:
    1. When editing 7ma.
    2. When processing events 0.3ma.

6. Quick access to main informations, follow:
    1. To see the time at any moment when press (DOWN) and hold it by a second

In example above showing 7 Hour and 26 Minutes AM

After 1.5 seconds show day of week, in this case Tuesday

After 3 seconds show seconds, in this case 37 seconds

2. To modify Time,Include Events,Exclude Events,Reset or Exit, press(UP) and hold it by a second and after first press, press many times until reach a desired option or press(Down) to return to previous option or press(Enter) to confirm a chosen option.

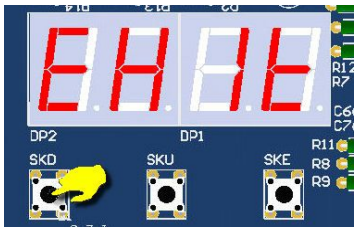
1st press(Up) key to show Set Timer Option.

2nd press(Up) key to show Include Event Option.

3rd press(Up) key again to show Delete Event Option.

4th press(Up) to show Reset Option.

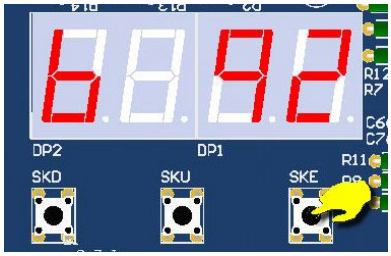
5fh press(Up) to show Exit Option.



Press(Down) key to return to previous options.

Press(Enter) key to confirm any above select option.

3. To see a Battery charge in Percentage at any moment press(ENTER) and hold by a second.

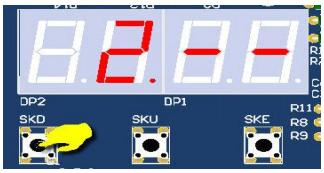


Show Battery Level any time when press(Enter) key and hold it for 1 second. in this show charge at 92%

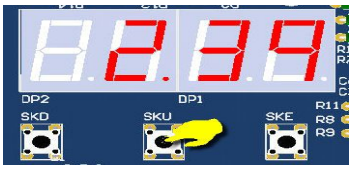
Setting Time Option.

After choose this option an actual time is displayed with center point Blinking.

- ➔ Press (Down) key to increment Hours by one(1) or remain pressed to enter in rapid increment mode.
- ➔ Press(Up) key to increment Minutes by one(1) or remain pressed to enter in rapid increment mode.
- ➔ Press(Enter) for time set.



Press(Down) many times until a required hour is reached in this case 2 hours



Press(Up) many times until a required minute is reached in this case 2 hours 39 minutes

Press (Enter) when finished

After this steps an actual weekdays is displayed followed by point.

- ➔ Press(Down) key to show a Previous weekday.
- ➔ Press(Up) key to show a next weekday.
- ➔ Press(Enter) key to confirm.

Press (Up) key to navigate forward each time this key is pressed in following way
Sunday->Monday->Tuesday->Wednesday->Thursday->Friday->Saturday







Press (Down) key to navigate forward each time this key is pressed in following way
Saturday->Friday->Thursday->Wednesday->Tuesday->Monday->Sunday

Event Inclusion Option

After choose this option a Repeat mode is displayed.

- ➔ Press(Down) key to show previous Menu options.
- ➔ Press(Up) key to show next Menu options.
- ➔ Press(Enter) key to confirm.

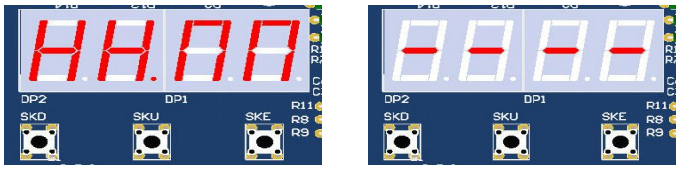
Press (Up) key to navigate forward each time this key is pressed in following way
Repetitive->Diary->Weekly->Exit.




Press(Down) key to navigate backward each time this key pressed in following way
Exit->Weekly->Diary->Repetitive.

A. When Repeat or Diary is chosen.

A Display start Blinking between (HH.MM to --.-- to HH.MM) meaning that waiting to user input a Hour and Minute. Press(Down) key to increment Hour by one(1) or keep pressed to enter in rapid increment mode. Press(Up) key to increment Minute by one(1) or keep pressed to enter in rapid increment mode. Press(Enter) when a required time is reached, in Repeat Mode the provided time is a repetitive interval of time that will fire an event and in Diary Mode the provided time is a time that an event will fire.

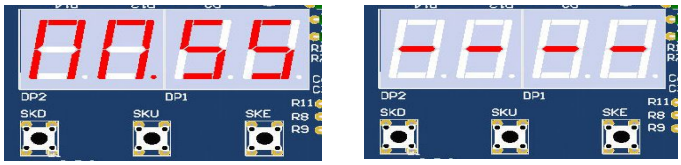


Display Blinking (HH.MM to --.-- to HH.MM)

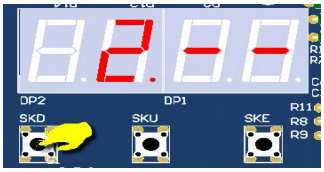
Press(Down) many times until a required hour is reached in this case 2 hours

Press(Up) many times until a required minute is reached in this case 2 hours 39 minutes

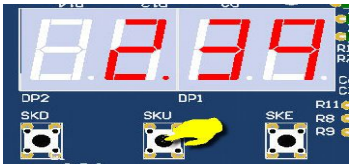
Press (Enter) when finished



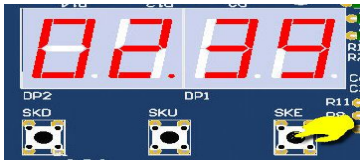
Display Blinking (MM:SS to --.-- to MM:SS)



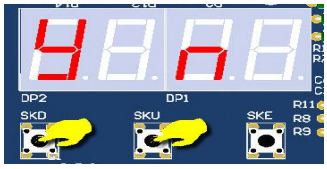
Press(Down) many times until a required minute is reached in this case 2 minutes



Press(Up) many times until a required second is reached in this case 2 hours 39 seconds



Press (Enter) when finished



Press(Down) to confirm Inclusion of Press(Up) to cancel

Message Displayed if (Down) key (Yes) pressed will appear indicating an Event Index in this case Event 2.

B. When Weekly is chosen

- ➔ Press (Down) key to switch the actual state of displayed weekday to On or Off according we want to Timer fire in this weekday.
- ➔ Press(Up) key to navigate to next weekday.
- ➔ Press(Enter) for time set and proceed to **(A. When Repeat or Diary is chosen.)**

Event Delete Option

After chosen this option and no Events to Delete a message ‘E=0’ appear.

No Events

Message

But if exist an Event to Delete a message formatted “E.nn.T” will appear on Display, where E=Event, nn=Event Number and T=Event Type.

- ➔ Press (Down) key to navigate in display modes to see event parameters like E.nn.T(Event index and type),HH:MM (time of event), MM:SS(time of output is remain activate) and “==-” (weekdays enables).
- ➔ Press(Up) key to navigate to next Event.

- ➔ Press(Enter) key to show a message of confirmation for Deleting Event.

Example of Event 02 Repetitive

Example of Event 02 Diary

Example of Event 02 Weekly

Example showing fire timing to 17 Hours and 26 Minutes

Example showing output with fire remain On in above case 12 minutes and 28 seconds.

Example above showing all weekdays enable, the top most left starting from Monday to Sunday

Compiler Settings

A Following compiler parameters is used in this project

SYMBOL **-DF_CPU=1000000L -D_TIME_TIMER_NUMBER_=0**
OPTIMIZATION **-OS**
MISCELLANEOUS **-std=gnu++11**

During chip programing set low clock speed because a 1Mhz is used.

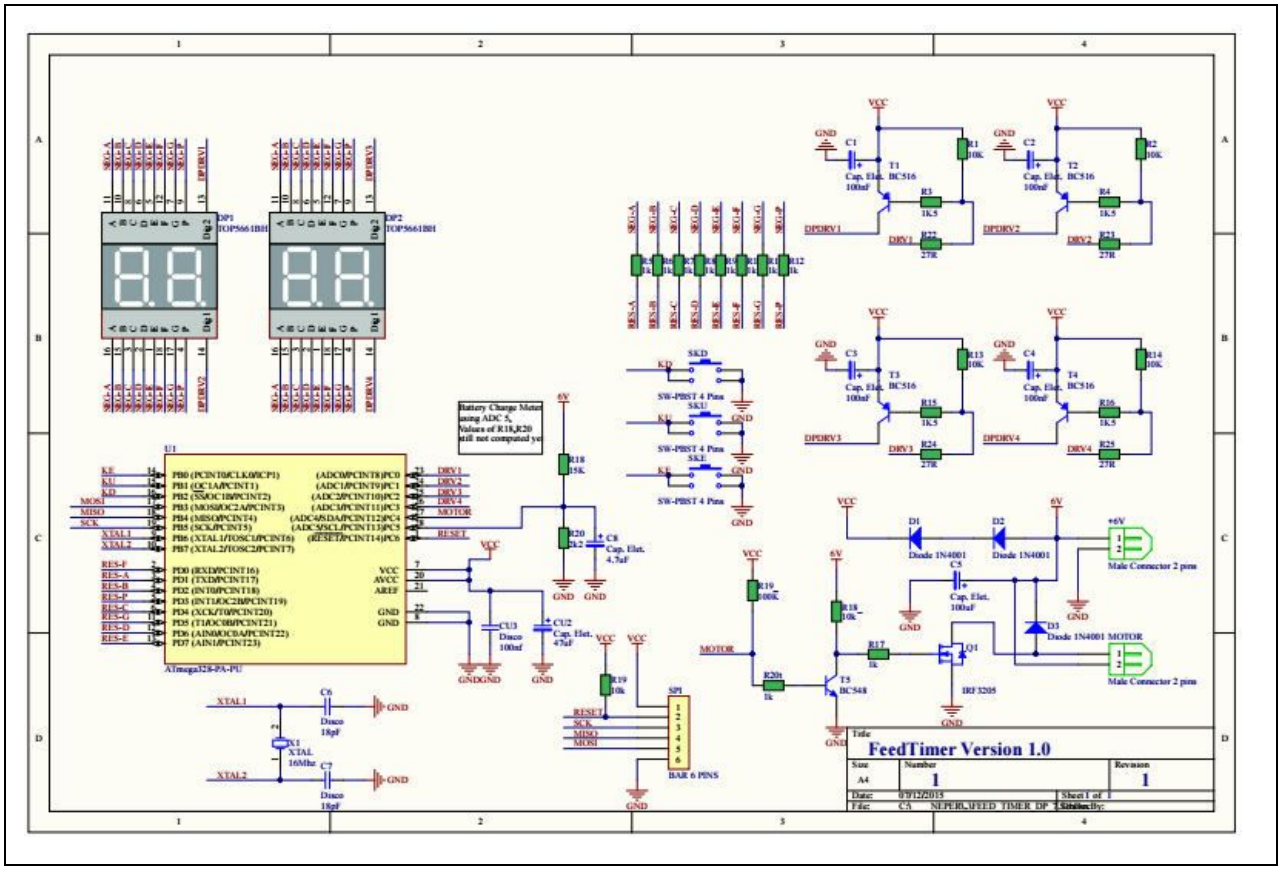
Fuse Bits for ATMega328p

Type	Binary	Hex
Low Fuse Bits	0b01110010	0x72
High Fuse Bits	0b11011111	0xDF
Extended Fuse Bits	0b11111111	0xFF
Lock Bits	0b11111111	0xFF

Click Here to Download complete Code

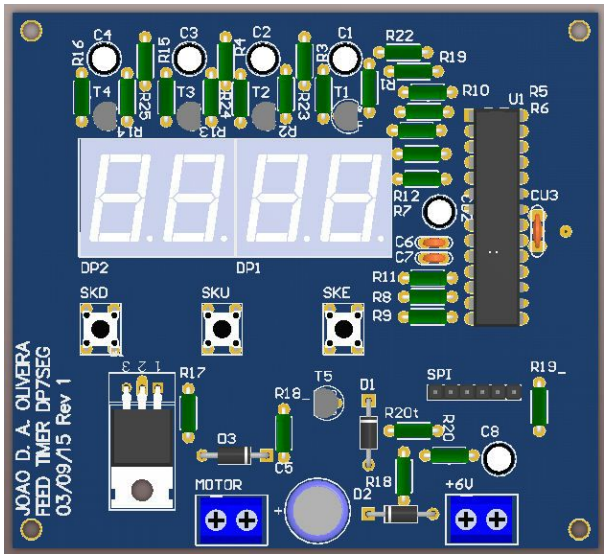
Schematic

Click Here to See complete Schematic and board drawing

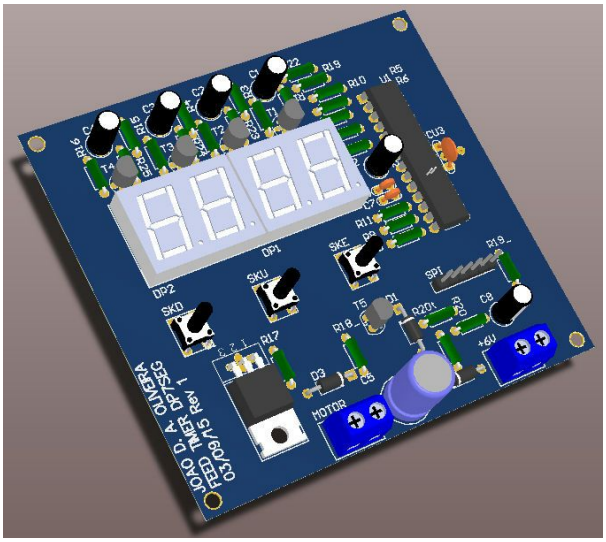


Some Views of the FeedTimer Board

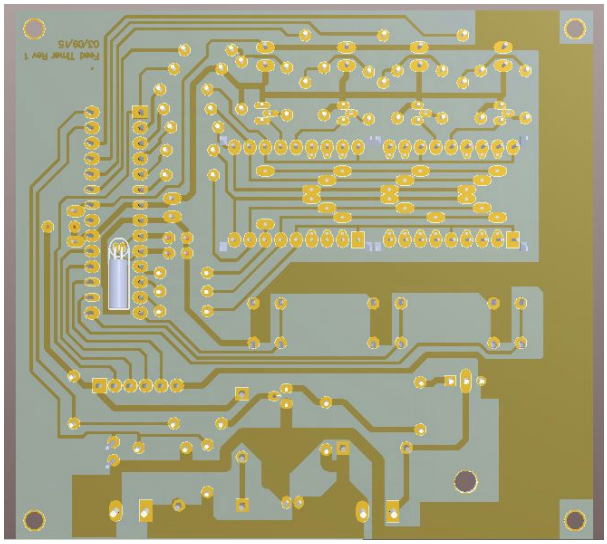
Installed in FeedTimer mechanism



Up View



Perspective View



Back View

Disclaimers

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