

Ønskeliste:

- Radio til alarmlyd
- Styres over Android phone, trådløst
- Lys som går gradvis på
- RGB-lys
- Klokkedisplay som kan skrues av og på
- Klokkedisplay bevegelsesstyrt/ lydstyrt
- Valgfri alarmlyd (usb/sd kort/ spotify)
- Kraftig lys, justerbar maksstyrke
- Skal fungere som en vanlig lyskilde utenom alarm bruk
- Eksternt rele som kan skru av/på andre kilder

Essensielle funksjoner

- Klokke
- Utskiftbar lyskilde
- Klokkedisplay som kan skrues av og på
- Lydalarm
- Slumrefunksjon

Soundcard

http://phantasmagorium.net/?page_id=117

Constant Current drive High Power LED

<http://www.instructables.com/id/Build-the-Ultimate-Larson-Scanner/>

PCB bestilling

<http://imall.iteadstudio.com/> 10 kort for 14 USD inkludert frakt

Dimmer link

<http://www.instructables.com/id/Arduino-controlled-light-dimmer-The-circuit/>

<http://thinkingtinkering.blogspot.no/2010/10/dim-flickers-of-progress.html>

Dimmer komponenter til

<http://www.inmojo.com/store/inmojo-market/item/digital-ac-dimmer-module-lite-v.2/>

Type	Schematic	Digikey	Farnell	Farnell pris
Zero crossing detection	4N25SR2VM	4N25SR2VMCT-ND	1021153	3,5
Optoisolator, Triac driver	MOC3021SM	MOC3021SM-ND	2083161	15
Rectifier	DF1504S	DF1504SDITR-ND	1470962	5,5
Triac	BT136S	568-3652-2-ND	1757881	6
R1 10k. 0,25 W, 3216			2333546	
R2, R3 120k. 0,5W, 3225			1750946	0,8
R4 330, 0,25 W	trengs ikke			
R5 470. 0,25 W			2333573	
R6 1k. 0,25 W			2333539	
2* Inngang 2 hull				
Inductor				Har
Capacitator				Har

Problemer med generering av støy?

http://educyclopedia.karadimov.info/library/Light_dimmer_circuits.pdf

Tips: Typiske verdier på spolen 40..100 uH coil).

Fire 7-segment display:

<https://www.sparkfun.com/products/11405> Krever 12 gpio linjer

Deler

Type	Antall	Link	Note	3.3 or 5 V	USD
MCU	1	https://www.sparkfun.com/products/11113	Nok GPIO?	5V	10
FTDI Breakout	1	https://www.sparkfun.com/products/9716		5V	15
Encoder hjul	1	https://www.sparkfun.com/products/10596			3
Select/sett knapp/snooze	1	https://www.sparkfun.com/products/9178	33 mm hull		1
Alarm av/på bryter	1	https://www.sparkfun.com/products/11138	20 mm hull		1
Lydkort	1	https://www.sparkfun.com/products/11125	3 pins eller serial interface	5V med regulator på kortet	20
Speakers	1	https://www.sparkfun.com/products/9151	0.5 W		2
Display	1	https://www.sparkfun.com/products/11405	GPIO, trenger 8 gpio pinner. Tar opp en timer interrupt	Samme	2
CD4511B	1		7-segment common cathode driver		-
Display resistors	8		150 Ohm = 3V / 20mA	Ved 5V	-
RTC	1	https://www.sparkfun.com/products/99	I2C	5V	15

Frakt					?
Totalt					

Type	Antall	Link	Note	3.3 or 5 V	USD
Radiomodul	1	https://www.sparkfun.com/products/11043		70	
Smart Display rødt	0	https://www.sparkfun.com/products/11441	I2C		13
Digitalt potmeter	0	https://www.sparkfun.com/products/10613	I2C		1.5
Dimmer	0	http://www.casohlson.com/no/Gulvdimmer/36-2823#moreinfo	230 V/20-500 W Alternativ?		22

Liste over states/events/output

States	Event	Output
Normal	EncoderUp	LightUp
Set_(min/hour)_alarm	EncoderDown	LightDown
Set_(min/hour)_clock	EncoderButton	DisplayShow
Alarm_on	SetButton	DisplayHide
Sunrise	AlarmOn	SoundOn
Wakeup	AlarmOff	SoundOff
Snooze	Wakeuptime	[Inc/Dec]MinClock
DisplayOff	SnoozeTimeout	[Inc/Dec]MinAlarm
	Sunrisetime	EncoderLedGreen
	MinuteElapsed	EncoderLedRed
	DisplayOffTime	

State diagram

State	Event	Output	Next State
Normal	SetButton	-	Set_clock
Normal	AlarmOn	-	Alarm_on
Normal	EncoderUp	LightUp	-
Normal	EncoderDown	LightDown	-

Normal	DisplayOffTime	DisplayHide	DisplayOff
Set_min_clock	EncoderUp	IncMinClock	-
Set_min_clock	EncoderDown	DecMinClock	-
Set_min_clock	SetButton	-	Set_hour_clock
Set_min_clock	AlarmOn		AlarmOn
Set_min_clock			
Set_hour_clock	EncoderUp	IncHourClock	-
Set_hour_clock	EncoderDown	DecHourClock	-
Set_hour_clock	SetButton		Normal
Set_hour_clock	AlarmOn		AlarmOn
Set_hour_clock			
Set_min_alarm	EncoderUp	IncMinAlarm	-
Set_min_alarm	EncoderDown	DecMinAlarm	-
Set_min_alarm	SetButton	-	Set_hour_alarm
Set_min_alarm	AlarmOff		Normal
Set_min_alarm			
Set_hour_alarm	EncoderUp	IncHourAlarm	-
Set_hour_alarm	EncoderDown	DecHourAlarm	-
Set_hour_alarm	SetButton		Alarm_on
Set_hour_alarm	AlarmOff		Normal
Set_hour_alarm			

Alarm_on	SetButton	-	Set_min_alarm
Alarm_on	EncoderUp	LightUp	-
Alarm_on	EncoderDown	LightDown	-
Alarm_on	AlarmOff	SoundOff	Normal
Alarm_on	Wakeup	SoundOn	Wakeup
Alarm_on	Sunrisetime		Sunrise
Wakeup	SetButton	SoundOff	Snooze
Wakeup	AlarmOff	SoundOff	Normal
Wakeup	EncoderUp	LightUp	-
Wakeup	EncoderDown	LightDown	-
Wakeup			
Snooze	AlarmOff		Normal
Snooze	EncoderUp	LightUp	-
Snooze	EncoderDown	LightDown	-
Snooze	SnoozeTimeout	SoundOn	Wakeup
Snooze			
Sunrise	AlarmOff		Normal
Sunrise	MinuteElapsed	LightUp	-
Sunrise	Wakeup	SoundOn	Wakeup
Sunrise	EncoderUp	LightUp	-
Sunrise	EncoderDown	LightDown	-
Sunrise			

DisplayOff	EncoderUp	DisplayShow	goto previous state
DisplayOff	EncoderDown	DisplayShow	goto previous state
DisplayOff	SetButton	DisplayShow	goto previous state
DisplayOff	AlarmOn	DisplayShow	Alarm_on
DisplayOff	AlarmOff	DisplayShow	Normal
DisplayOff	WakeupTime	DisplayShow SoundOn	Wakeup
DisplayOff	SnoozeTimeout	DisplayShow SoundOn	Wakeup
DisplayOff	SunriseTime	DisplayShow (teit)	Sunrise
DisplayOff	MinuteElapsed	... går ikke	

Software diagram

Dimmer_driver

Input_driver

Sound_driver

RTC_driver

State_machine

Display_driver

main

Hardware moduler

