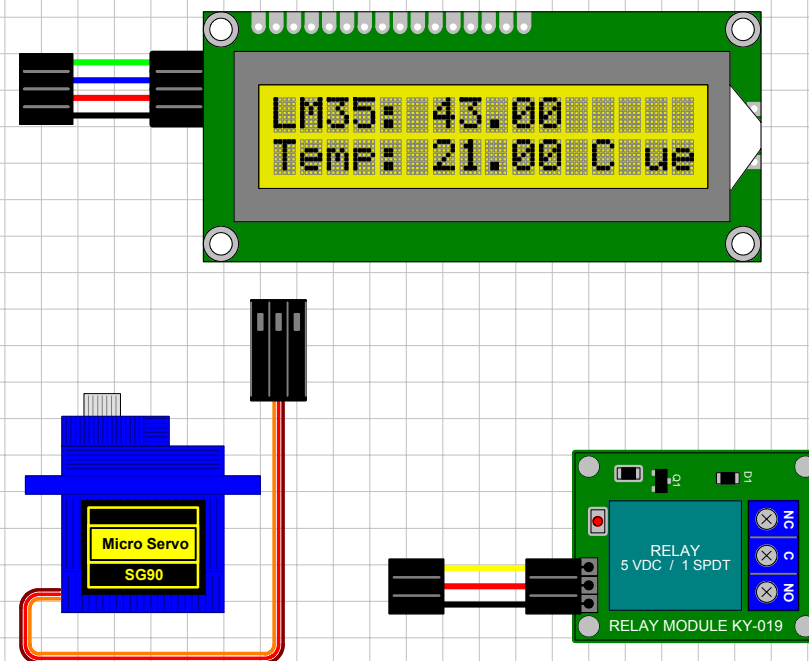
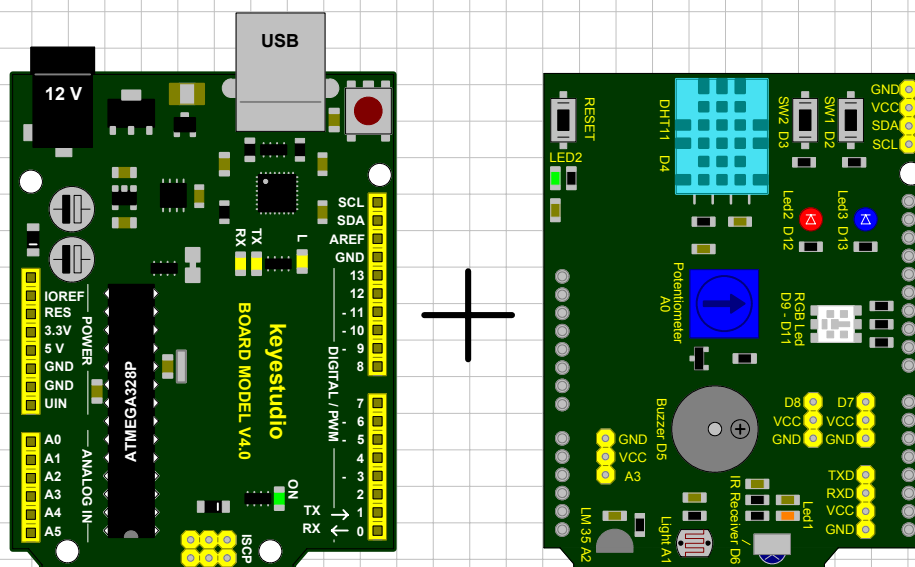


AR-1

...PROGRAMMING WITH ARDUINO IDE...

THIS ARDUINO SKETCH COLLECTION CONTAINS 93 EXPERIMENTS
FOR THE KEYESTUDIO MULTI-PURPOSE EASY MODULE SHIELD V1.



EMS-V1	A4	udo@elgers.com	ue-ERT20220522-01	22-MAY-2022
001	A	KEYESTUDIO EASY MODULE SHIELD V1		

www.retro-circuits.com

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Bad Bentheim, 27th. MAY 2022

Udo Elger

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48455 Bad Bentheim / Kuhlenkamp 22
Germany
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MAIN CONTENT: 93 EXPERIMENTS IN 9 PROJECTS WITH KEYESTUDIO KS0183 EASY MODULE SHIELD V1

SHEET	DESIGNATION
4	PROJECT 1 - CONTENT: 8 LED EXPERIMENTS
5	PROJECT 2 - CONTENT: 22 RGB LED EXPERIMENTS
6	PROJECT 3 - CONTENT: 14 RGB LED & POTENTIOMETER EXPERIMENTS
7	PROJECT 4 - CONTENT: 7 PUSH BUTTON EXPERIMENTS
8	PROJECT 5 - CONTENT: 14 PASSIVE BUZZER (SOUND GENERATOR) EXPERIMENTS
9	PROJECT 6 - CONTENT: 6 HUMIDITY & TEMPERATURE SENSOR DHT11 EXPERIMENTS
10	PROJECT 7 - CONTENT: 7 LIGHT DEPENDENT RESISTOR (LDR) EXPERIMENTS
11	PROJECT 8 - CONTENT: 4 LM35 LINEAR TEMPERATURE SENSOR EXPERIMENTS
12	PROJECT 9 - CONTENT 11 IR RECEIVER EXPERIMENTS
13	ADDENDUM - CONTENT IR REMOTE CODE EXAMPLES
14	ADDENDUM - KEYESTUDIO V4.0 DEVELOPMENT UNO R3 BOARD + MULTI PURPOSE EASY MODULE SHIELD V1 PIN OUT
15	ADDENDUM - PASSIVE BUZZER MODULE WITH NPN TRANSISTOR DRIVER
16	ADDENDUM - SERVO SG90
17	ADDENDUM - 5 VDC LASER TRANSMITTER MODULE KY-008
18	ADDENDUM - 5 VDC HIGH TRIGGER RELAY MODULE KY-019
19	DISCLAIMER

EMS-V1	A4	udo@elgers.com	ue-ERT20220527-03	27-MAY-2022
003	A	KEYESTUDIO SOLAR TRACKING KIT		

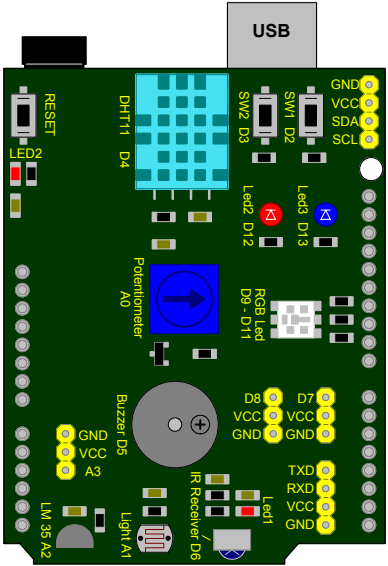
CONTENT: PROJECT 01 - LED EXPERIMENTS

ARDUINO SKETCH

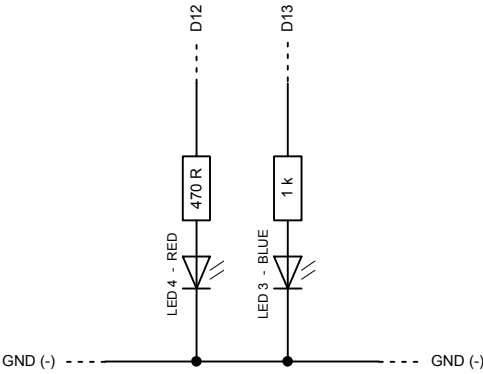
PROJECT DESIGNATION

ue_AR-EMSV1_Exp-001.ino	LED FLASHER 01, RED LED AT D12 IS BLINKING WITH 1 Hz (500 ms ON & 500 ms OFF)
ue_AR-EMSV1_Exp-002.ino	LED FLASHER 02, RED LED AT D12 IS BLINKING WITH 10 Hz (50 ms ON & 50 ms OFF)
ue_AR-EMSV1_Exp-003.ino	LED FLASHER 03, BLUE LED AT D13 IS BLINKING WITH 2 Hz (250 ms ON & 250 ms OFF)
ue_AR-EMSV1_Exp-004.ino	LED FLASHER 04, BLUE LED AT D13 IS BLINKING WITH 0.5 Hz (1000 ms ON & 1000 ms OFF)
ue_AR-EMSV1_Exp-005.ino	LED FLASHER 05, RED & BLUE LEDS ALTERNATING WITH 0.5 Hz
ue_AR-EMSV1_Exp-006.ino	LED FLASHER 06, RED & BLUE LEDS ALTERNATING & SIMULATING POLICE CAR FLASHER
ue_AR-EMSV1_Exp-007.ino	LED FADER 01, BLUE LED AT D13 FADE IN & OUT (2.55 sec / CYCLE)
ue_AR-EMSV1_Exp-008.ino	LED FADER 02, BLUE LED AT D13 FADE IN & OUT (12.75 sec / CYCLE)

KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220521-01	21-MAY-2022
004	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 01		

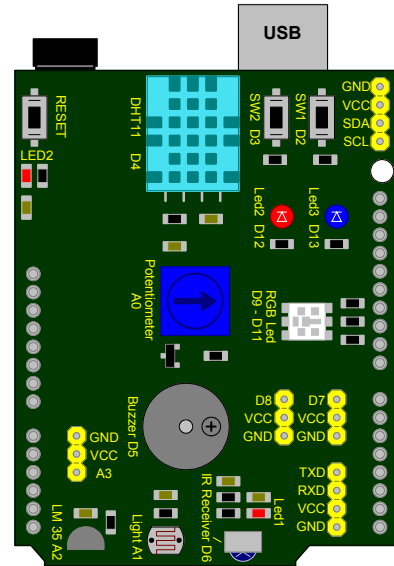
CONTENT: PROJECT 02 - RGB LED EXPERIMENTS

ARDUINO SKETCH

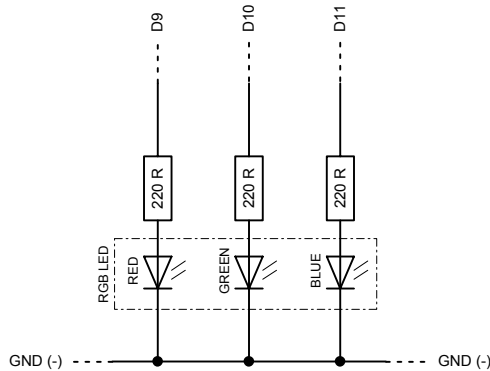
PROJECT DESIGNATION

- ue_AR-EMSV1_Exp-009.ino LED FLASHER 07, RGB RED LED AT D9 IS BLINKING WITH 1 Hz (500 ms ON & 500 ms OFF)
- ue_AR-EMSV1_Exp-010.ino LED FLASHER 08, RGB GREEN LED AT D10 IS BLINKING WITH 1 Hz (500 ms ON & 500 ms OFF)
- ue_AR-EMSV1_Exp-011.ino LED FLASHER 09, RGB BLUE LED AT D11 IS BLINKING WITH 1 Hz (500 ms ON & 500 ms OFF)
- ue_AR-EMSV1_Exp-012.ino LED FLASHER 10, RGB RED & BLUE LEDS APPEARING PINK
- ue_AR-EMSV1_Exp-013.ino LED FLASHER 11, RGB RED & GREEN LEDS APPEARING YELLOW
- ue_AR-EMSV1_Exp-014.ino LED FLASHER 12, RGB GREEN & BLUE LEDS APPEARING TURQUOISE
- ue_AR-EMSV1_Exp-015.ino LED FLASHER 13, RGB RED, GREEN & BLUE LEDS APPEARING WHITE
- ue_AR-EMSV1_Exp-016.ino LED FLASHER 14, RED & BLUE RGB LEDS ALTERNATING WITH 1 Hz
- ue_AR-EMSV1_Exp-017.ino LED FLASHER 15, RED, GREEN & BLUE RGB LEDS ALTERNATING PINK / TURQUOISE
- ue_AR-EMSV1_Exp-018.ino LED FLASHER 16, RED & BLUE RGB LEDS - RED, GREEN, BLUE, PINK, YELLOW, TURQUOISE, WHITE
- ue_AR-EMSV1_Exp-019.ino LED FLASHER 17, RED & BLUE RGB LEDS ALTERNATING & SIMULATING POLICE BIKE FLASHER 1
- ue_AR-EMSV1_Exp-020.ino LED FLASHER 18, RED & BLUE RGB LEDS ALTERNATING & SIMULATING POLICE BIKE FLASHER 2
- ue_AR-EMSV1_Exp-021.ino LED FADER 03, RGB RED LED AT D9 FADE IN & OUT (12.75 sec / CYCLE)
- ue_AR-EMSV1_Exp-022.ino LED FADER 04, RGB GREEN LED AT D10 FADE IN & OUT (12.75 sec / CYCLE)
- ue_AR-EMSV1_Exp-023.ino LED FADER 05, RGB BLUE LED AT D11 FADE IN & OUT (12.75 sec / CYCLE)
- ue_AR-EMSV1_Exp-024.ino LED FADER 06, RGB RED & BLUE LEDS FADING OVER ...BLUE...PINK...RED...VIOLETT...BLUE...
- ue_AR-EMSV1_Exp-025.ino LED FADER 07, RGB LEDS FADING OVER ...BLUE...TURQUOISE...GREEN...TURQUOISE...BLUE...
- ue_AR-EMSV1_Exp-026.ino LED FADER 08, RGB RED & GREEN LEDS FADING OVER ...GREEN...ORANGE...RED...YELLOW...GREEN...
- ue_AR-EMSV1_Exp-027.ino LED FADER 09, ...RED...PINK...VIOLETT...BLUE...TURQUOISE...GREEN...YELLOW...ORANGE...RED.....
- ue_AR-EMSV1_Exp-028.ino LED FLASHER 19, RGB RED, GREEN & BLUE LEDS SIMULATING A WHITE STROPE LIGHT
- ue_AR-EMSV1_Exp-029.ino LED FLASHER 20, RGB RED, GREEN & BLUE LEDS SIMULATING A OFFSHORE OBSTRUCTION LIGHT
- ue_AR-EMSV1_Exp-030.ino LED FLASHER 21, RGB RED, GREEN & BLUE LEDS SIMULATING A SOS MORSE CALL

KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220521-02	21-MAY-2022
005	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 02		

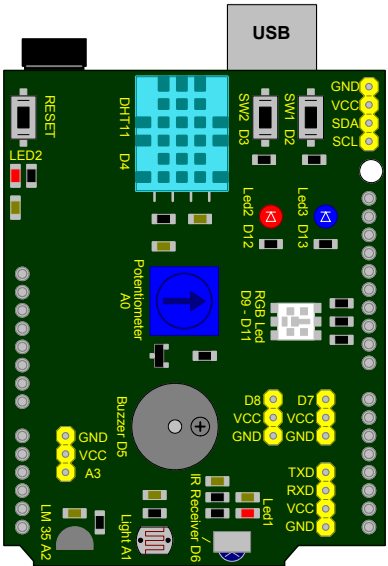
CONTENT: PROJECT 03 - RGB LED POTENTIOMETER EXPERIMENTS

ARDUINO SKETCH

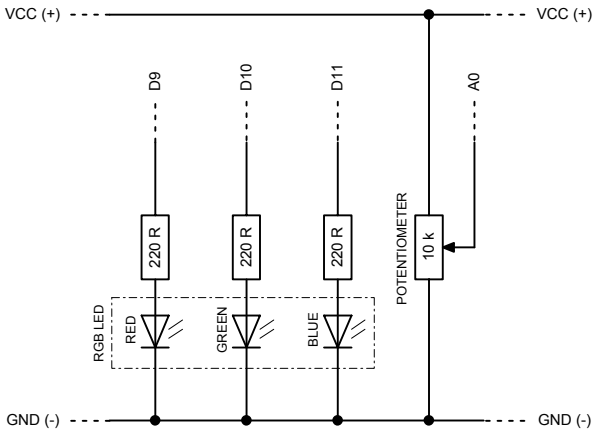
ue_AR-EMSV1_Exp-031.ino	POTENTIOMETER READ OUT AT SERIAL MONITOR
ue_AR-EMSV1_Exp-032.ino	POTENTIOMETER & 10 BIT TO 8 BIT CONVERTER READ OUT AT SERIAL MONITOR
ue_AR-EMSV1_Exp-033.ino	POTENTIOMETER & 10 BIT TO 8 BIT MAPPING READ OUT AT SERIAL MONITOR
ue_AR-EMSV1_Exp-034.ino	LED FLASHER 22, RGB RED LED, VARIABLE FREQUENCY WITH POTENTIOMETER
ue_AR-EMSV1_Exp-035.ino	LED FADER 10, RGB RED LED, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-036.ino	LED FADER 11, RGB GREEN LED, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-037.ino	LED FADER 12, RGB BLUE LED, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-038.ino	LED FADER 13, RGB RED, GREEN & BLUE LEDS, WHITE, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-039.ino	LED FADER 14, RGB RED & GREEN LEDS, APPEARING YELLOW, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-040.ino	LED FADER 15, RGB RED & BLUE LEDS, APPEARING PINK, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-041.ino	LED FADER 16, RGB GREEN & BLUE LEDS, TURQUOISE, FADIN IN & OUT WITH POTENTIOMETER
ue_AR-EMSV1_Exp-042.ino	LED FADER 17, RGB RED LED, FADIN OVER ...BLUE...RED... (SET LED COLOR WITH POTENTIOMETER)
ue_AR-EMSV1_Exp-043.ino	LED FADER 18, RGB RED LED, FADIN OVER ...BLUE...GREEN... (SET LED COLOR WITH POTENTIOMETER)
ue_AR-EMSV1_Exp-044.ino	LED FADER 19, RGB RED LED, FADIN OVER ...GREEN...RED... (SET LED COLOR WITH POTENTIOMETER)

PROJECT DESIGNATION

KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220521-03	21-MAY-2022
006	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 03		

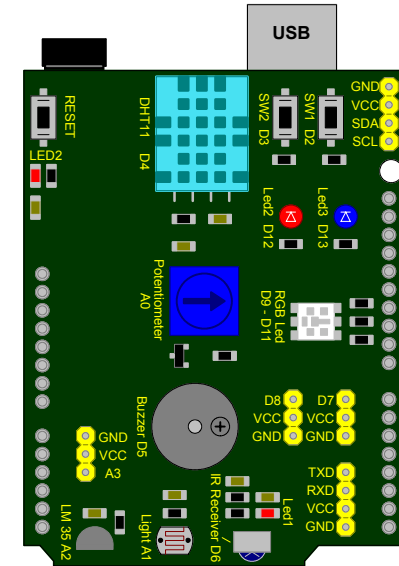
CONTENT: PROJECT 04 - PUSH BUTTON EXPERIMENTS

ARDUINO SKETCH

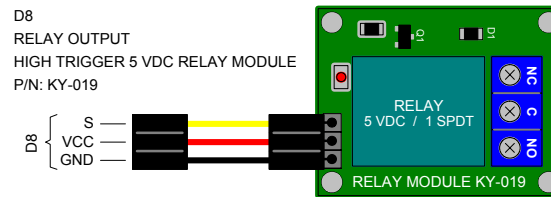
PROJECT DESIGNATION

ue_AR-EMSV1_Exp-045.ino	PUSH BUTTON SW1 STATUS READ OUT AT SERIAL MONITOR
ue_AR-EMSV1_Exp-046.ino	MOMENTARY RELAY CONTROL WITH SW1
ue_AR-EMSV1_Exp-047.ino	PUSH BUTTON WITH 5 SEC DELAY OFF FUNCTION (DELAY OFF RELAY TIMER)
ue_AR-EMSV1_Exp-048.ino	PUSH BUTTON WITH 1-30 SEC DELAY OFF FUNCTION (DELAY OFF RELAY TIMER), OFF DELAY TIME ADJUSTABLE WITH ON-BOARD POT.
ue_AR-EMSV1_Exp-049.ino	PUSH BUTTON START/STOP WITH 1-15 SEC DELAY ON FUNCTION (DELAY ON RELAY TIMER), ON DELAY TIME ADJUSTABLE WITH ON-BOARD POT, FLASHING BLUE LED INDICATES DELAY TIME.
ue_AR-EMSV1_Exp-050.ino	2 PUSH BUTTON START / STOP FUNCTION, SW1 = START / SW2 = STOP, WITH RELAY OUTPUT
ue_AR-EMSV1_Exp-051.ino	1 PUSH BUTTON START / STOP (TOGGLE) FUNCTION, WITH RELAY OUTPUT

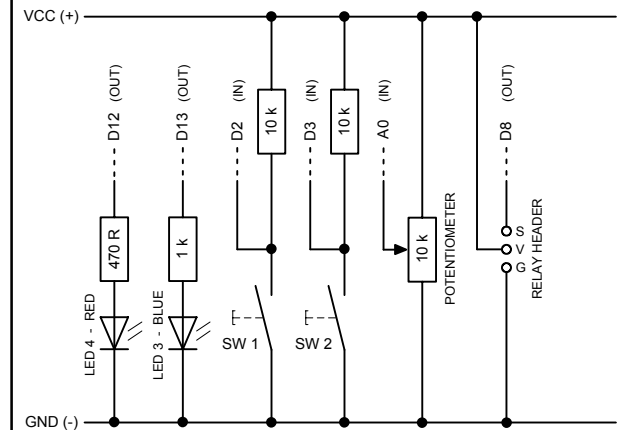
KEYESTUDIO Easy Module Shield V1:



SOME EXPERIMENTS REQUIRES THE ADDITIONAL MODULE BELOW:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220522-02	22-MAY-2022
007	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 04		

CONTENT: PROJECT 05 - PASSIVE BUZZER EXPERIMENTS

ARDUINO SKETCH

ue_AR-EMSV1_Exp-052.ino	PUSH BUTTON SW1 ACTIVATES MOMENTARY SOUND GENERATOR, 150 Hz TONE
ue_AR-EMSV1_Exp-053.ino	PUSH BUTTON SW1 PLAYS MOMENTARY 150 Hz & SW2 PLAYS 300 Hz TONE
ue_AR-EMSV1_Exp-054.ino	PUSH BUTTON SW1 PLAYS FOR 1 SEC 1 - 1000 Hz TONE, FREQUENCY ADJUSTABLE WITH ON-BOARD POT
ue_AR-EMSV1_Exp-055.ino	PUSH BUTTON SW1 PLAYS SIREN 1
ue_AR-EMSV1_Exp-056.ino	PUSH BUTTON SW1 PLAYS SIREN 2
ue_AR-EMSV1_Exp-057.ino	PUSH BUTTON SW1 PLAYS SIREN 3
ue_AR-EMSV1_Exp-058.ino	PUSH BUTTON SW1 PLAYS SIREN 4
ue_AR-EMSV1_Exp-059.ino	PUSH BUTTON SW1 PLAYS SIREN 5
ue_AR-EMSV1_Exp-060.ino	OFFSHORE FOGHORN ---
ue_AR-EMSV1_Exp-061.ino	SOS MORSE SIGNAL --- ---
ue_AR-EMSV1_Exp-062.ino	PUSH BUTTON SW1 PLAYS „do re mi fa so la is do“
ue_AR-EMSV1_Exp-063.ino	PUSH BUTTON SW1 PLAYS „HAPPY BIRTHDAY REFRAIN“
ue_AR-EMSV1_Exp-064.ino	PUSH BUTTON SW1 PLAYS „STAR WARS JINGLE“
ue_AR-EMSV1_Exp-065.ino	PUSH BUTTON SW1 PLAYS „JINGLE BELLS“

PROJECT DESIGNATION

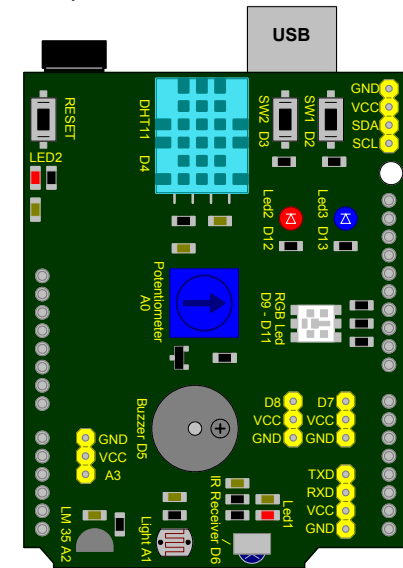
FREQUENCIES IN Hz OF MUSICAL PITCHES

	C	C#	D	Eb	E	F	F#	G	G#	A	Bb	B
0	16.35	17.32	18.35	19.45	20.60	21.83	23.12	24.50	25.96	27.50	29.14	30.87
1	32.70	34.65	36.71	38.89	41.20	43.65	46.25	49.00	51.91	55.00	58.27	61.74
2	65.41	69.30	73.42	77.78	82.41	87.31	92.50	98.00	103.8	110.0	116.5	123.5
3	130.8	138.6	146.8	155.6	164.8	174.6	185.0	196.0	207.7	220.0	233.1	246.9
4	261.6	277.2	293.7	311.1	329.6	349.2	370.0	392.0	415.3	440.0	466.2	493.9
5	523.3	554.4	587.3	622.3	659.3	698.5	740.0	784.0	830.6	880.0	932.3	987.8
6	1047	1109	1175	1245	1319	1397	1480	1568	166.1	1760	1865	1976
7	2093	2217	2349	2489	2637	2794	2960	3136	3322	3520	3729	3951
8	4186	4435	4699	4978	5274	5588	5920	6272	6645	7040	7459	7902

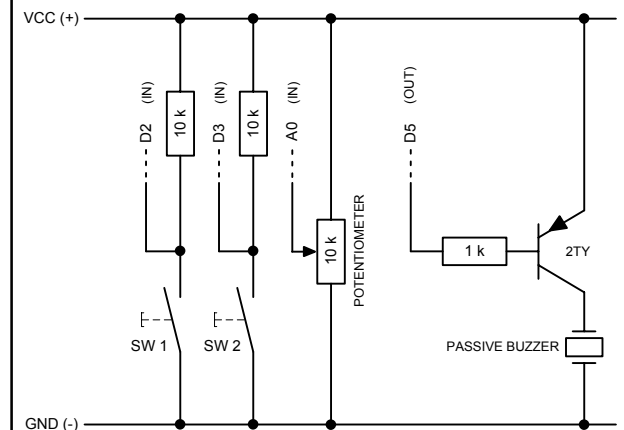
MORSE SIGNALS

A	---	J	--- ---	S	---	1	---
B	---	K	---	T	---	2	---
C	---	L	---	U	---	3	---
D	---	M	---	V	---	4	---
E	-	N	---	W	---	5	---
F	---	O	---	X	---	6	---
G	---	P	---	Y	---	7	---
H	---	Q	---	Z	---	8	---
I	---	R	---			9	---
						0	---

KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220523-01	23-MAY-2022
008	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 05		

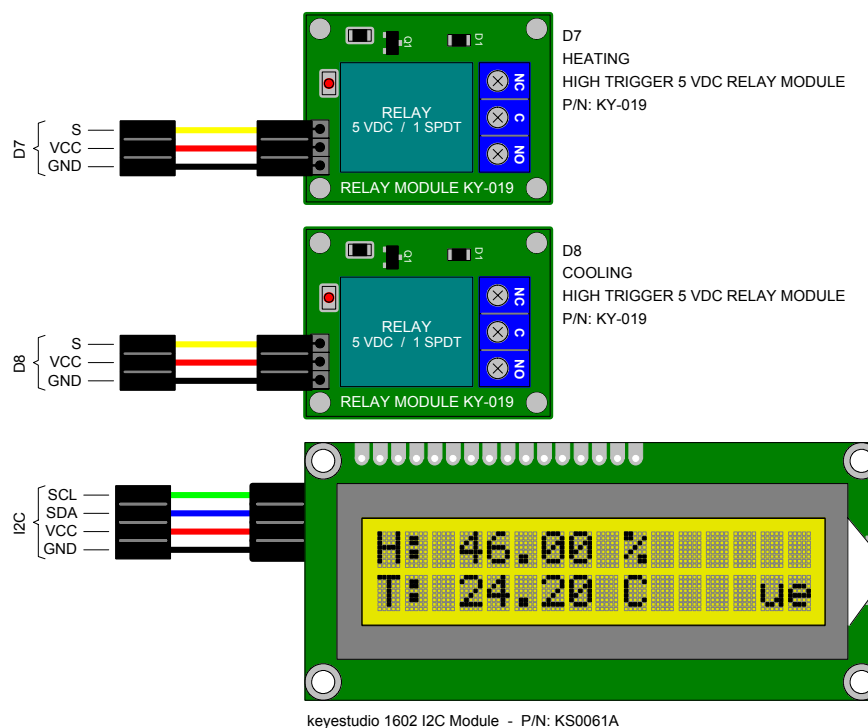
CONTENT: PROJECT 06 - DHT11 HUMIDITY & TEMPERATURE SENSOR

ARDUINO SKETCH

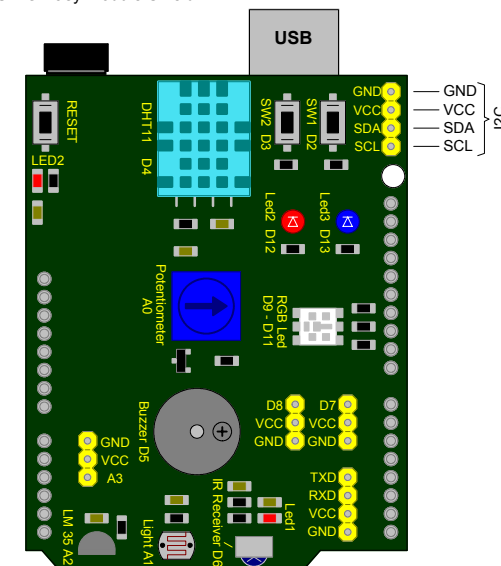
ue_AR-EMSV1_Exp-066.ino	HUMIDITY & TEMPERATURE VALUE READ OUT AT SERIAL MONITOR
ue_AR-EMSV1_Exp-067.ino	TEMPERATURE VALUE READ OUT AT SERIAL MONITOR, WITH TOO WARM & TOO COLD INDICATOR
ue_AR-EMSV1_Exp-068.ino	TEMPERATURE VALUE READ OUT AT SERIAL MONITOR, WITH TOO WARM & TOO COLD INDICATOR, INCL. HEATER AND COOLING RELAY. UPPER SWITCH POINT = 22.5 °C, LOWER SWITCH POINT = 17.5 °C)
ue_AR-EMSV1_Exp-069.ino	TEMPERATURE VALUE READ OUT AT SERIAL MONITOR, WITH TOO WARM & TOO COLD INDICATOR INCL. HEATER AND COOLING RELAY, TRIGGER TEMPERATURE ADJUSTABLE WITH ON-BOARD POT UPPER SWITCH POINT = 15...30 °C, LOWER SWITCH POINT = 10...25 °C)
ue_AR-EMSV1_Exp-070.ino	INTERFACING I2C 1602 LCD WITH EASY MODULE SHIELD V1
ue_AR-EMSV1_Exp-071.ino	HUMIDITY & TEMPERATURE VALUE READ OUT AT I2C 1602 LCD

PROJECT DESIGNATION

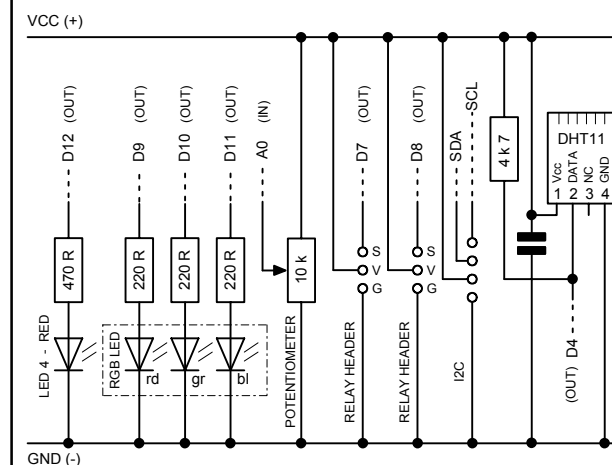
SOME EXPERIMENTS REQUIRES THE ADDITIONAL MODULE BELOW:



KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220523-02	23-MAY-2022
009	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 06		

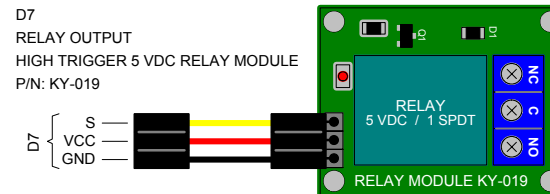
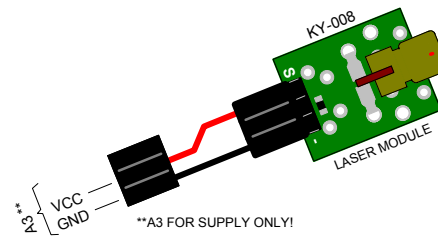
CONTENT: PROJECT 07 - LIGHT DEPENDENT RESISTOR EXPERIMENTS

ARDUINO SKETCH

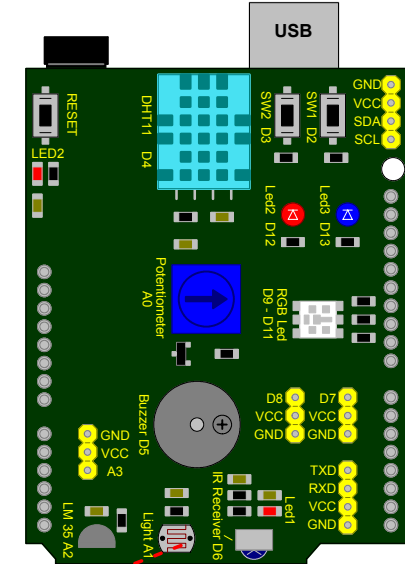
ue_AR-EMSV1_Exp-072.ino	LDR READ OUT AT SERIAL MONITOR (10 BIT)
ue_AR-EMSV1_Exp-073.ino	SIMPLE TWILIGHT SWITCH
ue_AR-EMSV1_Exp-074.ino	TWILIGHT WITH ON-BOARD POT ADJUSTMENT AND RELAY OUTPUT
ue_AR-EMSV1_Exp-075.ino	SHOP DOOR BELL TRIGGER WITH LASER BARRIER
ue_AR-EMSV1_Exp-076.ino	INTRUDER ALARM WITH LASER BARRIER AND RELAY OUTPUT
ue_AR-EMSV1_Exp-077.ino	COUNTER WITH LASER BARRIER, COUNT READ OUT AT SERIAL MONITOR
ue_AR-EMSV1_Exp-078.ino	SAFETY SHUTDOWN WITH LASER BARRIER AND RELAY OUTPUT

PROJECT DESIGNATION

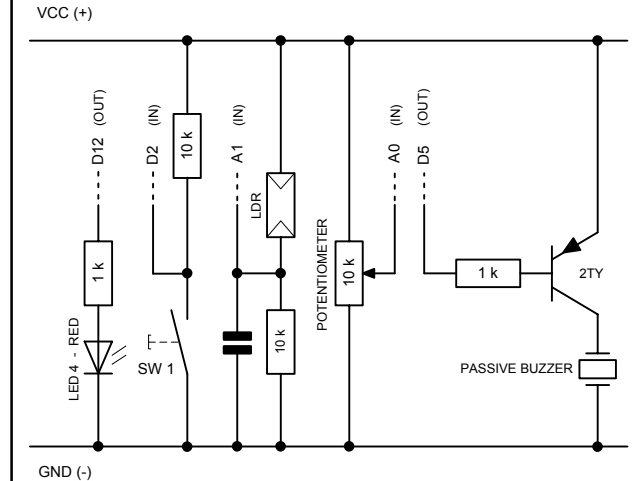
SOME EXPERIMENTS REQUIRES THE ADDITIONAL MODULE BELOW:



KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220525-01	25-MAY-2022
010	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 07		

CONTENT: PROJECT 08 - LM35 TEMPERATURE SENSOR EXPERIMENTS

ARDUINO SKETCH

PROJECT DESIGNATION

ue_AR-EMSV1_Exp-079.ino LM35 TEMPERATURE READ OUT AT SERIAL MONITOR

ue_AR-EMSV1_Exp-080.ino LM35 VALUE & TEMPERATURE READ OUT AT I2C 1602 LCD

ue_AR-EMSV1_Exp-081.ino COMPARE LM35 & DHT11 TEMPERATURE READ OUT AT I2C 1602 LCD

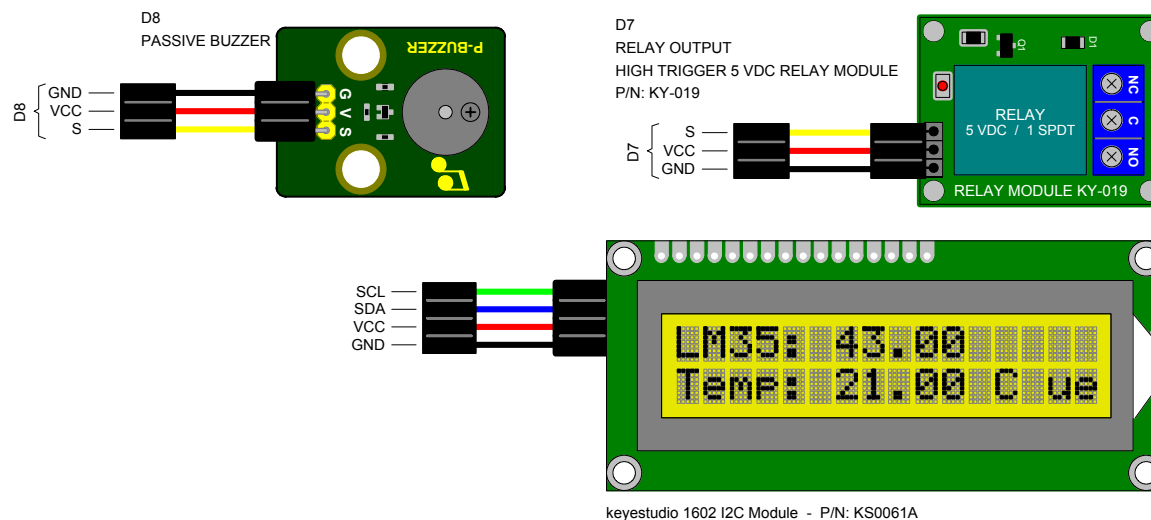
ue_AR-EMSV1_Exp-082.ino LM35 TEMPERATURE & HIGH ALARM SET POINT READ OUT AT I2C 1602 LCD
SET POINT ADJUSTABLE WITH ON-BOARD POT

LM35: 43.00
Temp: 21.00 C ue

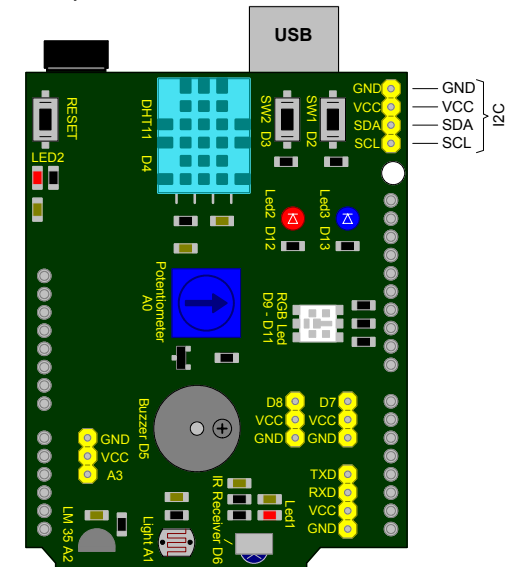
DHT11: 20.50 C
LM35 : 19.04 C

Set : 24.00 C
Temp: 21.97 C ue

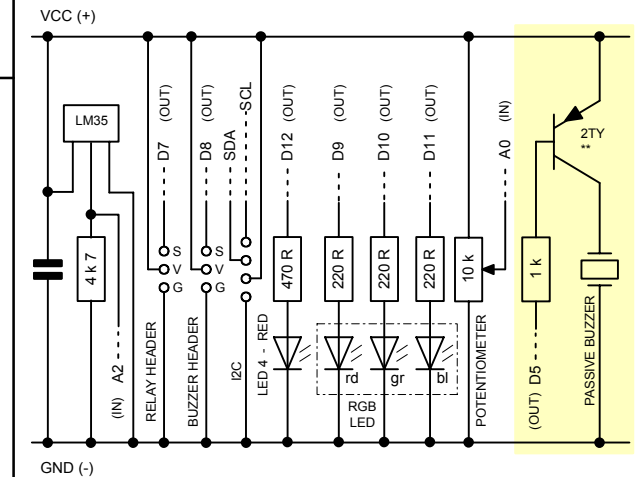
SOME EXPERIMENTS REQUIRES THE ADDITIONAL MODULE BELOW:



KEYESTUDIO Easy Module Shield V1:



PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:



** ...THE ON-BOARD PASSIVE BUZZER WITH THE PNP TRANSISTOR DRIVER CAUSING ISSUES WITH THE LM35 TEMPERATURE SENSOR, THE SENSOR IS GETTING WARM SOON AS D5 IS INITIALIZED.
FOR THAT I RECOMMEND AN EXTERNAL PASSIVE BUZZER WITH NPN TRANSISTOR DRIVER CONNECTED TO D8 IN THIS APPLICATION.

FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220525-02	25-MAY-2022
011	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 08		

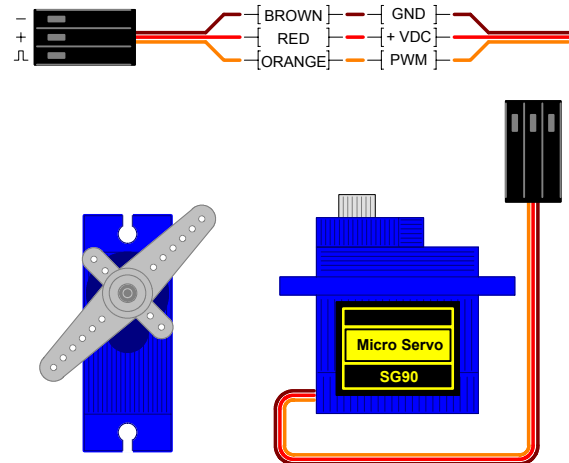
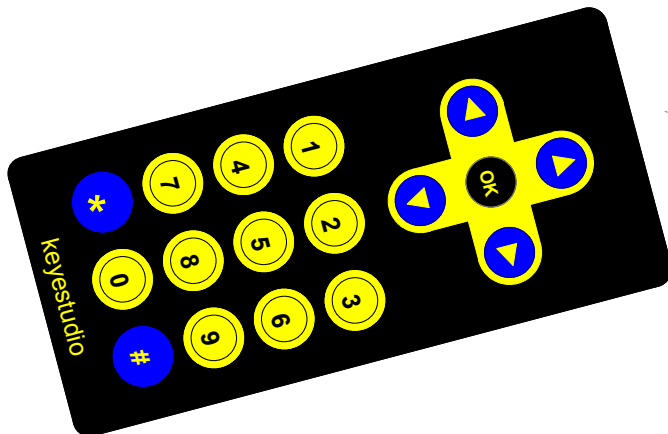
CONTENT: PROJECT 09 - IR-RECEIVER EXPERIMENTS

ARDUINO SKETCH

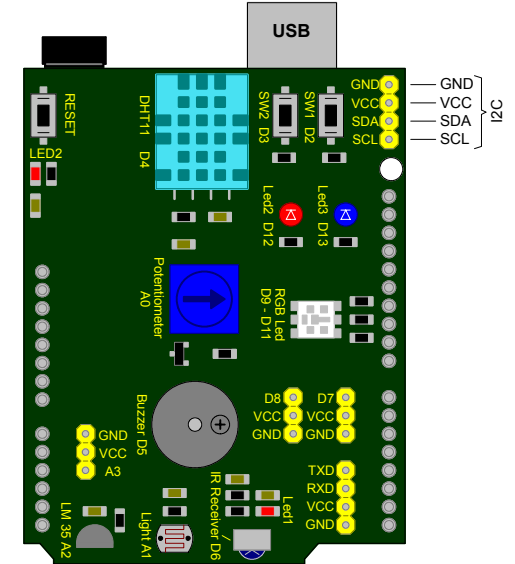
ue_AR-EMSV1_Exp-083.ino	IR-REMOTE-BUTTON-CODE AS BINARY NUMBER READ OUT TO SERIAL MONITOR
ue_AR-EMSV1_Exp-084.ino	IR-REMOTE-BUTTON-CODE AS HEXADECIMAL NUMBER READ OUT TO SERIAL MONITOR
ue_AR-EMSV1_Exp-085.ino	IR-REMOTE-BUTTON-CODE AS DECIMAL NUMBER READ OUT TO SERIAL MONITOR
ue_AR-EMSV1_Exp-086.ino	IR-REMOTE-BUTTON-CODE AS OCTAL NUMBER READ OUT TO SERIAL MONITOR
ue_AR-EMSV1_Exp-087.ino	   RED / OFF / BLUE
ue_AR-EMSV1_Exp-088.ino	    RGB - RED / GREEN / BLUE / OFF
ue_AR-EMSV1_Exp-089.ino	        RGB - RED / GREEN / BLUE / PINK / YELLOW TURQUOISE / WHITE / OFF
ue_AR-EMSV1_Exp-090.ino	    RGB GREEN - OFF / ON / BRIGHT / DARK
ue_AR-EMSV1_Exp-091.ino	   SERVO - 0° / 90° / 180°
ue_AR-EMSV1_Exp-092.ino	          SERVO - 0°...180° IN 20° STEPS
ue_AR-EMSV1_Exp-093.ino	     SERVO - 0° / 90° / 180° / 0°...180° / 180°...0°

PROJECT DESIGNATION

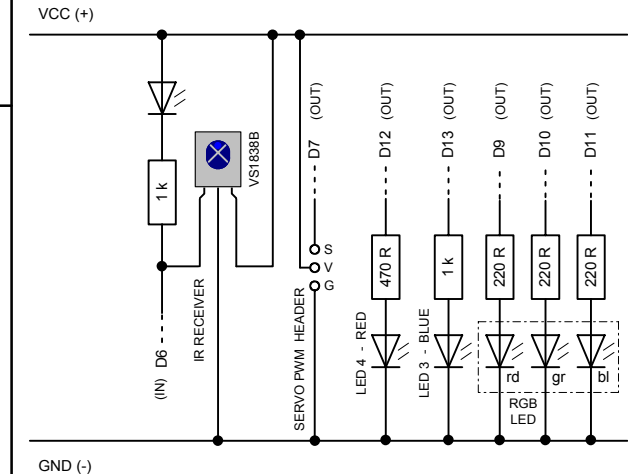
SOME EXPERIMENTS REQUIRES THE ADDITIONAL MODULE BELOW:



KEYESTUDIO Easy Module Shield V1:

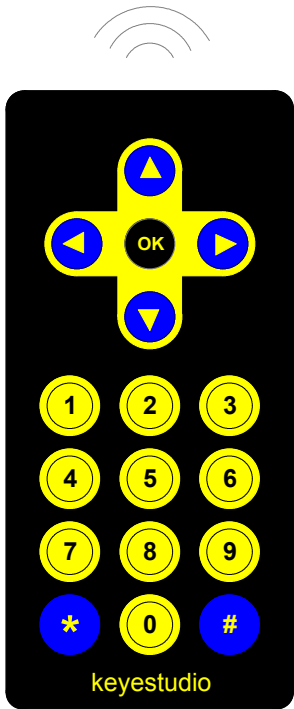


PRINCIPLE SCHEMATICS OF BOARD COMPONENTS IN USE:

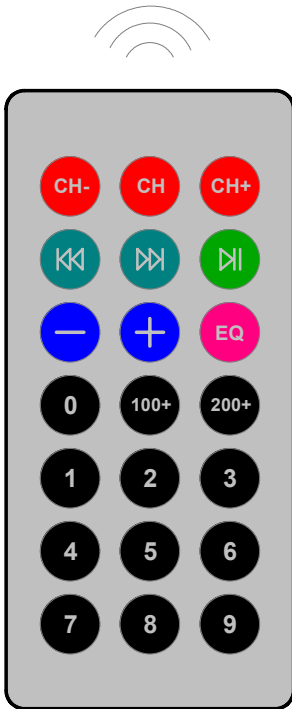


FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220527-01	27-MAY-2022
012	A	KEYESTUDIO EASY MODULE SHIELD V1 - PROJECT 08		



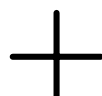
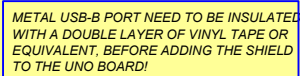
-  DEC: 16736925
HEX: FF629D
-  DEC: 16720605
HEX: FF22DD
-  DEC: 16761405
HEX: FFC23D
-  DEC: 16754775
HEX: FFA857
-  DEC: 16712445
HEX: FF02FD
-  DEC: 16738455
HEX: FF6897
-  DEC: 16750695
HEX: FF9867
-  DEC: 16756815
HEX: FFB04F
-  DEC: 16724175
HEX: FF30CF
-  DEC: 16718055
HEX: FF18E7
-  DEC: 16743045
HEX: FF7A85
-  DEC: 16716015
HEX: FF10EF
-  DEC: 16726215
HEX: FF38C7
-  DEC: 16734885
HEX: FF5AA5
-  DEC: 16730805
HEX: FF4AB5
-  DEC: 16728765
HEX: FF42BD
-  DEC: 16732845
HEX: FF52AD



- | | | | |
|---|------------------------------|---|------------------------------|
|  | DEC: 16753245
HEX: FFA25D |  | DEC: 16738455
HEX: FF6897 |
|  | DEC: 16736925
HEX: FF629D |  | DEC: 16750695
HEX: FF9897 |
|  | DEC: 16769565
HEX: FFE21D |  | DEC: 16756815
HEX: FFB04F |
|  | DEC: 16720605
HEX: FF22DD |  | DEC: 16724175
HEX: FF30CF |
|  | DEC: 16712445
HEX: FF02FD |  | DEC: 16718055
HEX: FF18E7 |
|  | DEC: 16761405
HEX: FFC23D |  | DEC: 16743045
HEX: FF7A85 |
|  | DEC: 16769055
HEX: FFE01F |  | DEC: 16716015
HEX: FF10EF |
|  | DEC: 16754775
HEX: FFA857 |  | DEC: 16726215
HEX: FF38C7 |
|  | DEC: 16748655
HEX: FF906F |  | DEC: 16734885
HEX: FF5AA5 |
| | |  | DEC: 16728765
HEX: FF42BD |
| | |  | DEC: 16738805
HEX: FF4AB5 |
| | |  | DEC: 16732845
HEX: FF52AD |

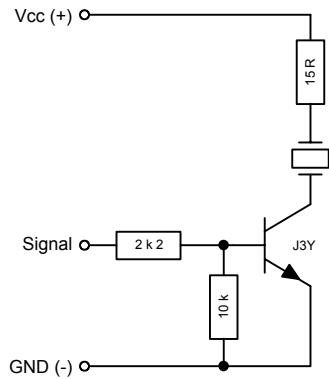
EVERY REMOTE HAS ITS OWN TRANSMITTING CODES, HERE ARE 2 EXAMPLE				
EMS-V1	A4	udo@elgers.com	ue-ERT20220526-01	26-MAY-2022
013	A	KEYESTUDIO EASY MODULE SHIELD V1 PROJECT 09		

KEYESTUDIO Easy Module Shield V1
P/N: KS0497

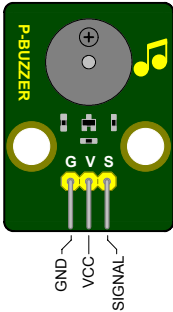


FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS				
EMS-V1	A4	udo@elgers.com	ue-ERT20220527-03	27-MAY-2022
014	A	KEYESTUDIO UNO V4 & SHIELD V1 SANDWICH		

PASSIVE BUZZER MODULE:

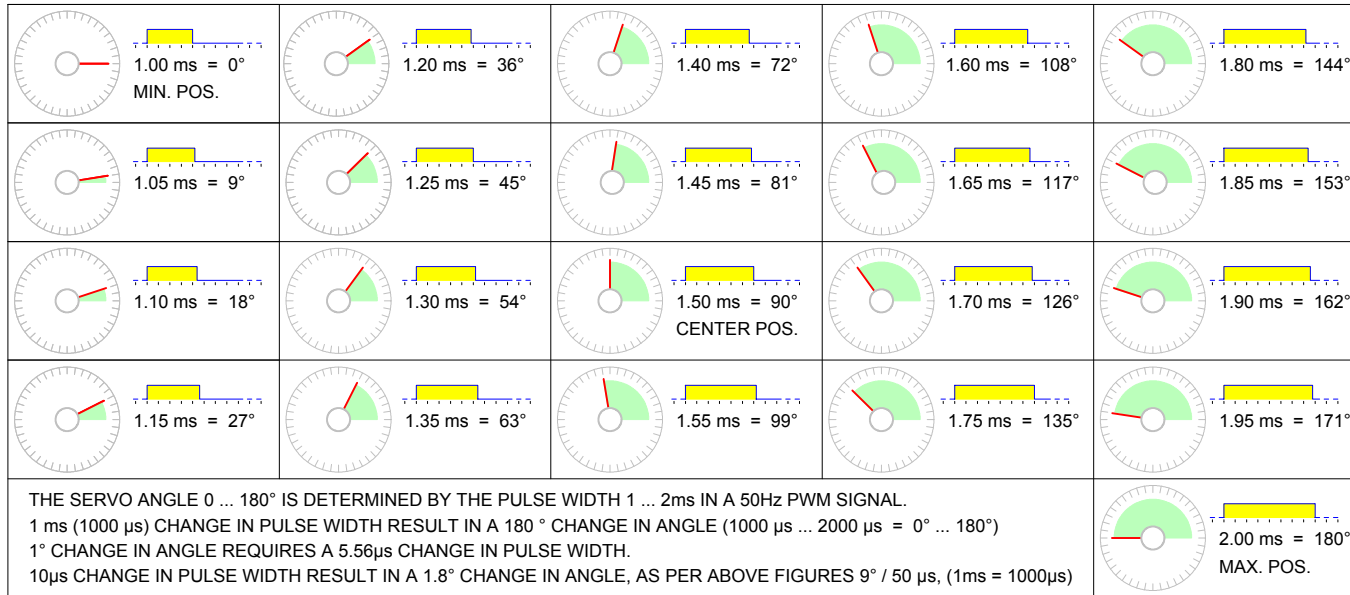


PASSIVE BUZZER MODULE:

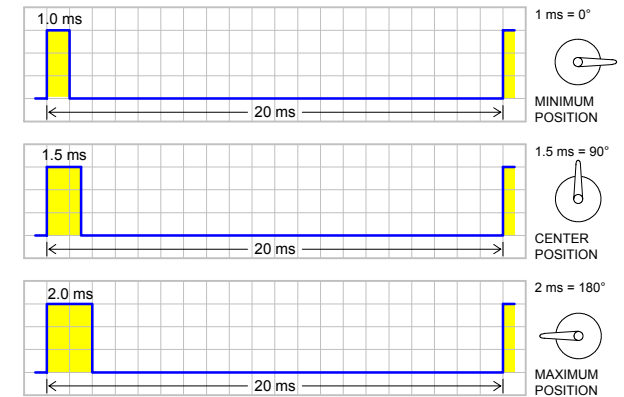


FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220528-01	28-MAY-2022
015	A	KEYESTUDIO PASSIVE BUZZER MODULE		



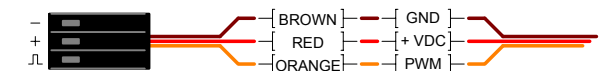
180° SERVO PWM SIGNAL TIMINGS:



SG90 MICRO SERVO WITH BIDIRECTIONAL ROTATION, PULSE DURATION (PULSE WIDTH) DETERMINES THE DIRECTION.

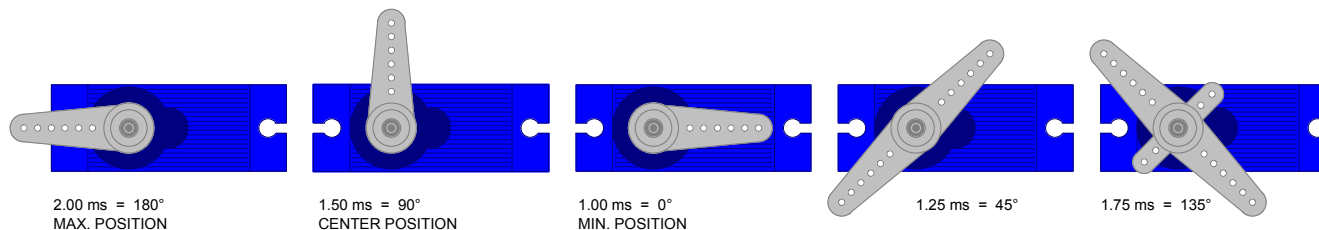
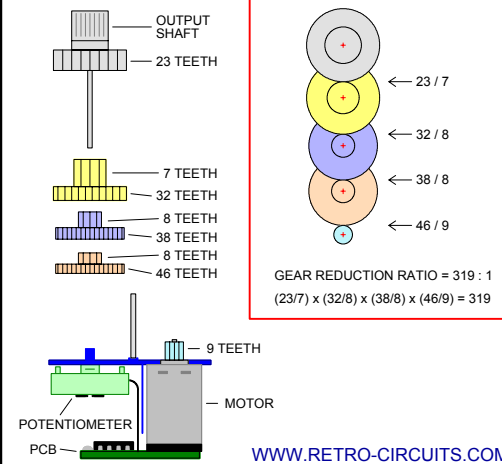
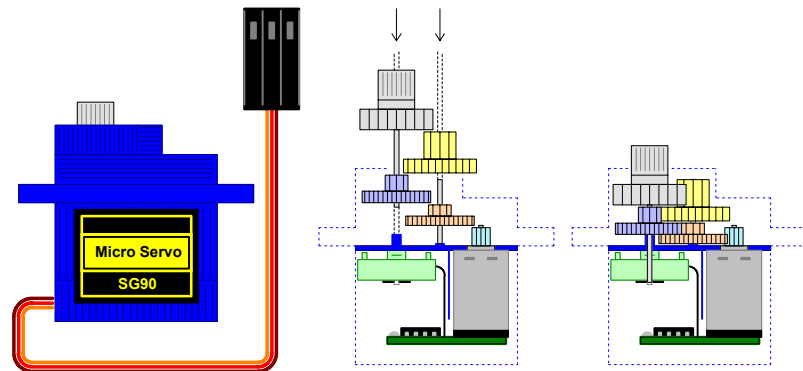
OPERATING VOLTAGE: 4.8 - 6 VDC
 MAX. CURRENT: < 600 mA

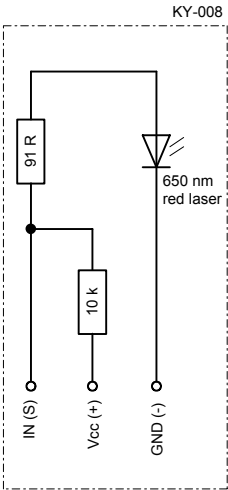
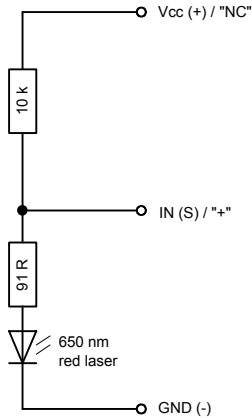
CONTROL SYSTEM: PWM (PULSE WIDTH MODULATION)
 PWM FREQUENCY: 50 Hz - 20 ms SQUARE WAVE
 ROTATION ANGLE: 0° ... 180° (...SEE ABOVE)
 LINEAR RESPONSE TO PWM, 1 ... 2 ms (1000 ... 2000 μ s) = 0° ... 180°
 TORQUE 1.8 kg/cm (11 Ncm) @ 4.8 VDC, 2.4 kg/cm (15 Ncm) @ 6 VDC
 SPEED 120 ms / 60° @ 4.8 VDC, 100 ms / 60° @ 6 VDC
 CCW DIRECTION WITH INCREASING PWM SIGNAL



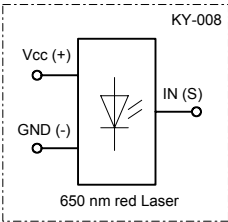
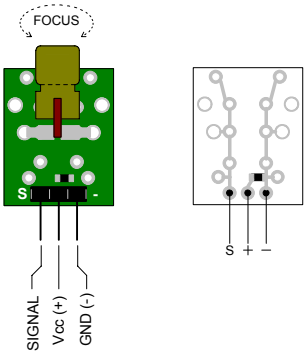
FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220528-02	28-MAY-2022
016	A	ADDENDUM: SG90 - MICRO SERVO SPECIFICATION		





KY-008 LASER TRANSMITTER MODULE:



OPERATING VOLTAGE: 5 VDC
CURRENT DRAW: 30 mA
WAVELENGTH: 650 nm (RED)

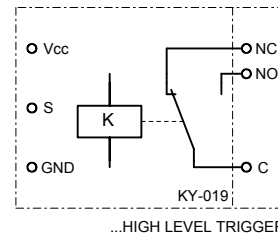
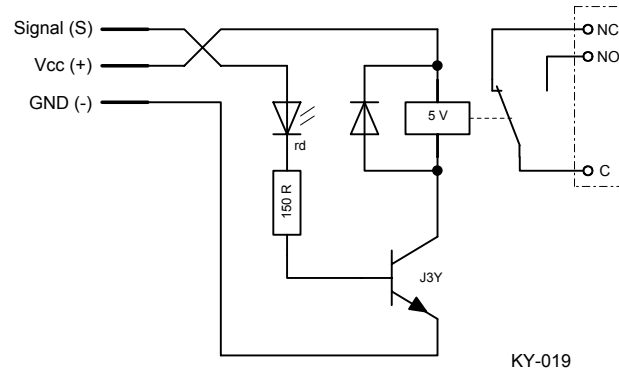
CAUTION

 **LASER RADIATION**
DO NOT STARE INTO BEAM

**LASER PROTECTIVE EYEWEAR
REQUIRED**

FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

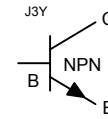
EMS-V1	A4	udo@elgers.com	ue-ERT20220528-04	28-MAY-2022
017	A	LASER TRANSMITTER MODULE KY-008		



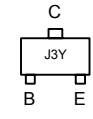
...HIGH LEVEL TRIGGER

KY-019

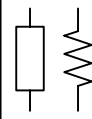
TRANSISTOR:



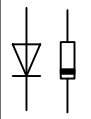
TOP VIEW



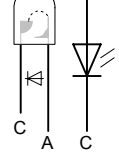
RESISTOR:



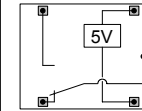
DIODE:



LED:

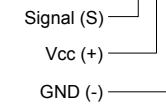
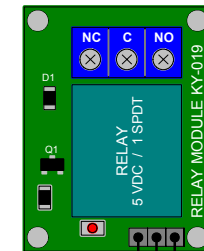
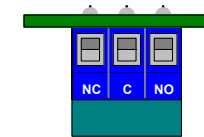


RELAY SRD-05VDC-SL-C:



TOP VIEW

5 VDC / 10 A - 250 VAC



FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS

EMS-V1	A4	udo@elgers.com	ue-ERT20220528-05	28-MAY-2022
018	A	5 VDC, 1 CH., HIGH TRIGGER RELAY MODULE KY-019		

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This brochure provides a selection of general everyday information.

The information in this brochure is believed correct.

However the author can not have full knowledge of your application.

Therefore you are responsible for ensuring the safety and operability of your design.

The author cannot be held responsible for any damages resulting from the information in this brochure.

If you do not agree with this disclaimer, pls. do not use the information out of this brochure!

WARNING:

IF YOU'RE NOT FAMILIAR WITH THE PRECAUTIONS THAT SHOULD BE TAKEN WHEN WORKING WITH VOLTAGES OVER 24 V, SEEK FOR ADDITIONAL GUIDANCE BEFORE CONNECTING ANY CIRCUIT TO HIGH VOLTAGE SOURCES SUCH AS HOUSEHOLD MAINS LINES OF 120 ... 240 VAC OR EVEN HIGHER. THESE VOLTAGE LEVELS ARE VERY DANGEROUS!

ACCORDING TO LOCAL AND INTERNATIONAL REGULATIONS, WORKING WITH MAINS VOLTAGE IS RESERVED FOR QUALIFIED ELECTRICIANS ONLY!!!



Bad Bentheim, 27th. MAY 2022

Udo Elger

Impressum: (Legal Information)
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