

OROLOGIO DIGITALE A DISPLAY CON SECONDI ROTANTI A LED

(with PIC 16F887 microcontroller)

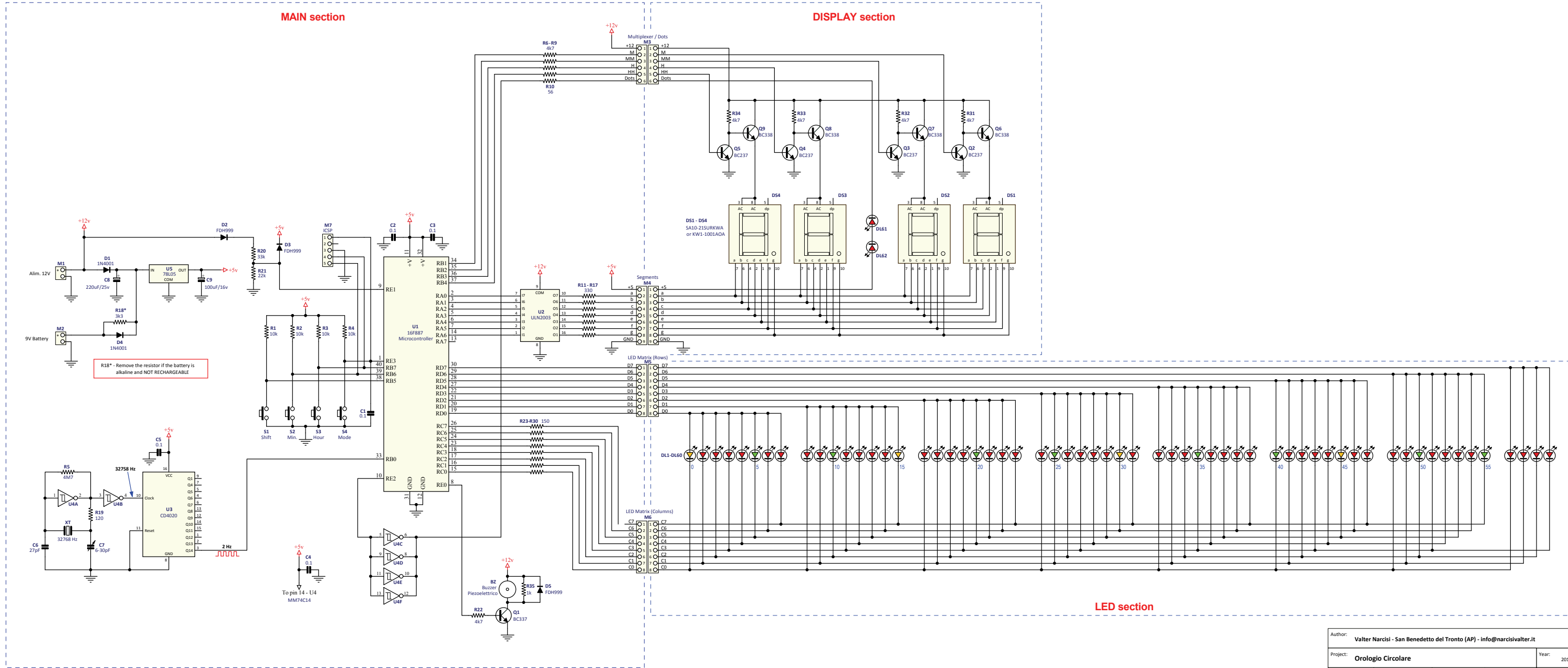


*Realizzazione di un preciso orologio digitale (formato HH:MM)
con secondi rotativi a LED (utilizzando il PIC16F887)*

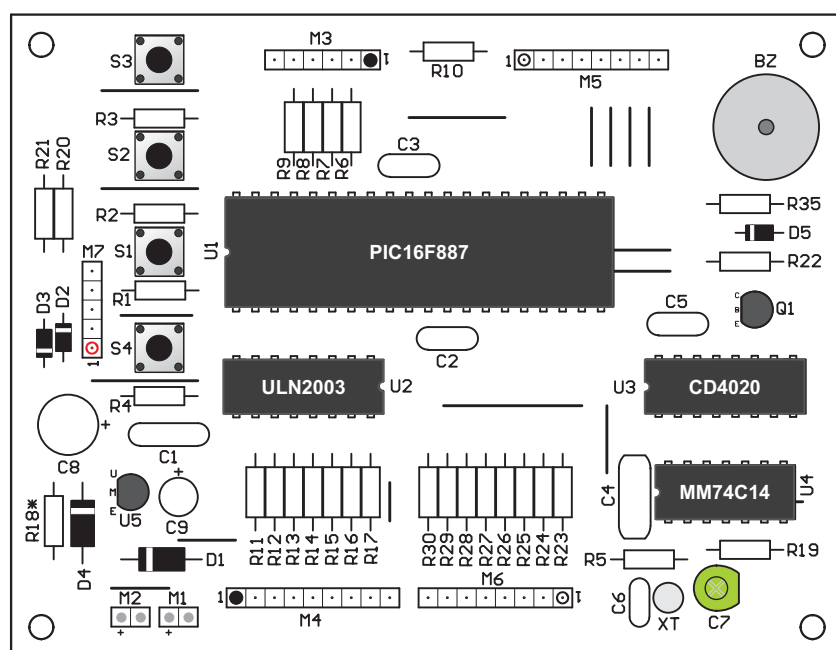
MANUALE TECNICO E ISTRUZIONI

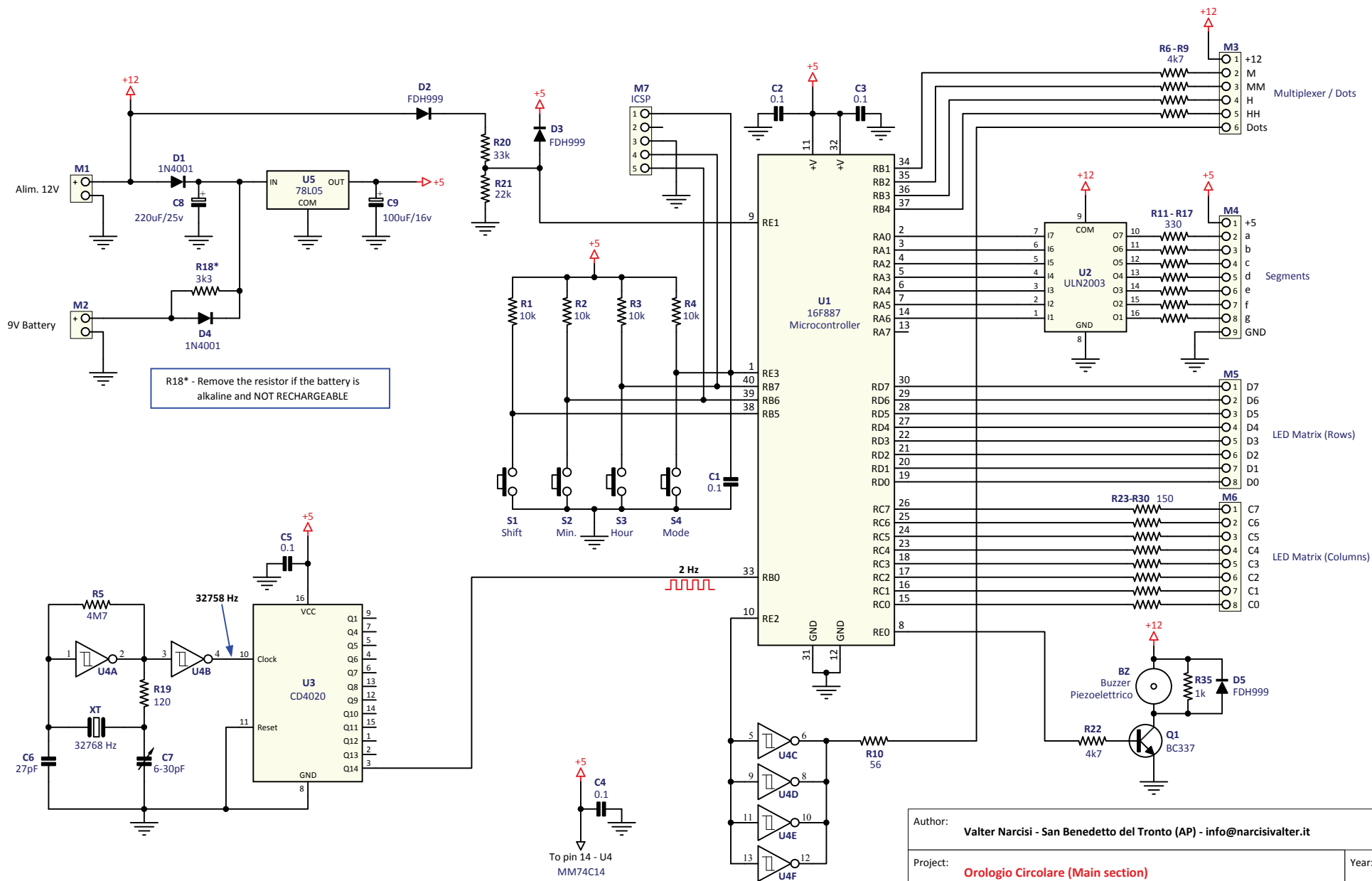


oct-2016

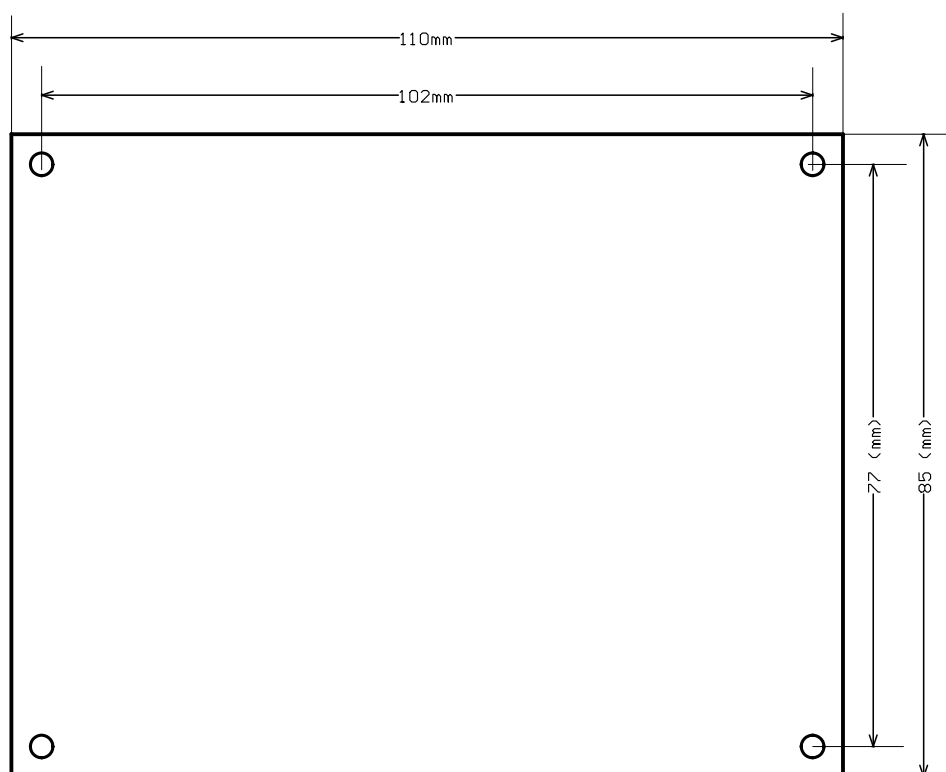


MAIN Section

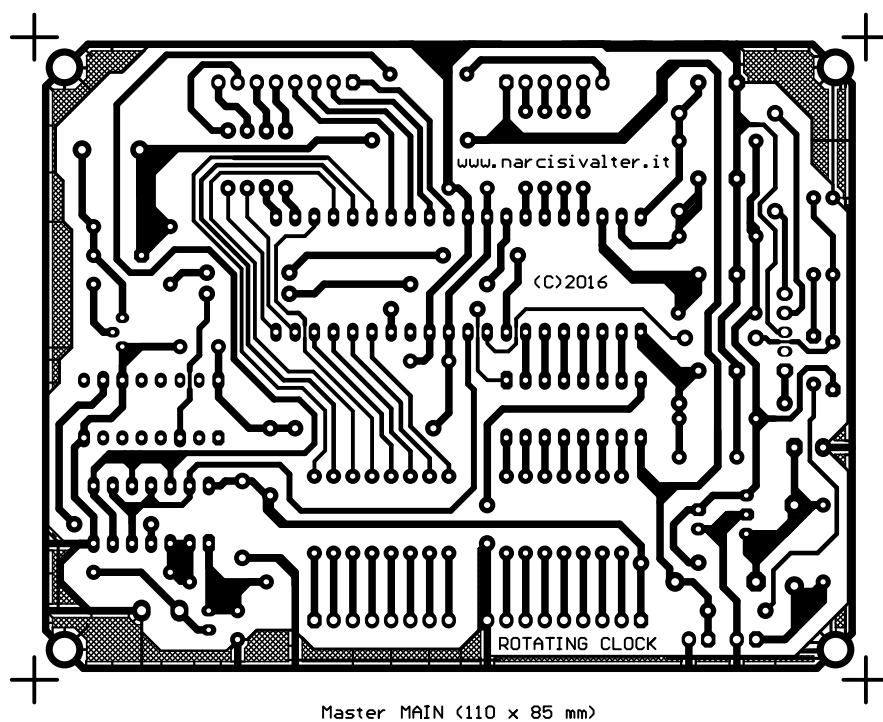


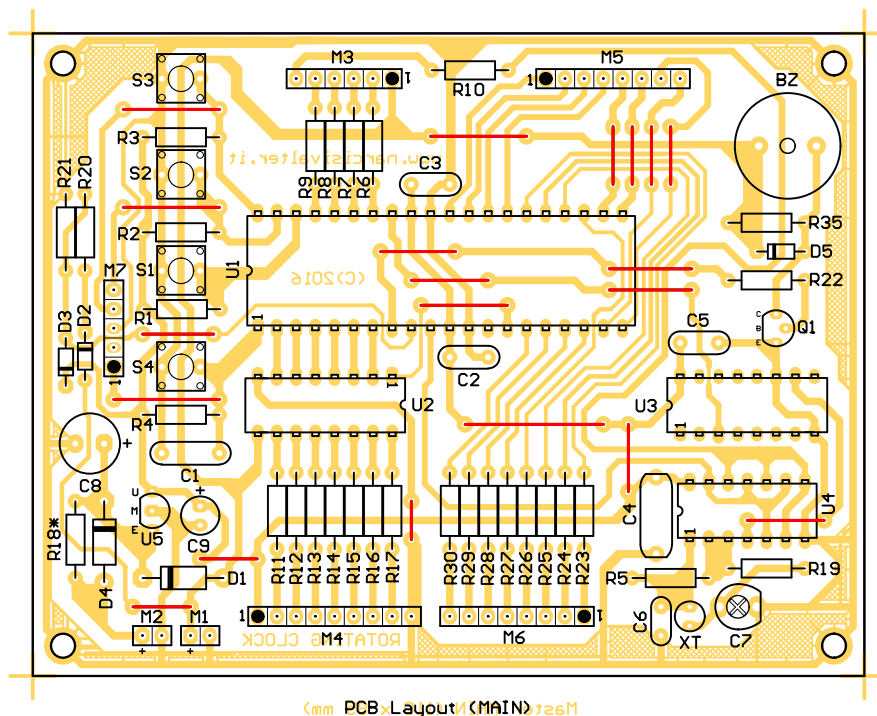


Author: Valter Narcisi - San Benedetto del Tronto (AP) - info@narcisivalter.it				
Project: Orologio Circolare (Main section)			Year: 2016	
Size: A4	DWG no. 1	Rev.: 1	Scale: 1:1	Sheet: 1 of 3
Note: http://www.narcisivalter.it/progetti/rotating-LED-clock.html ©All Right Reserved				

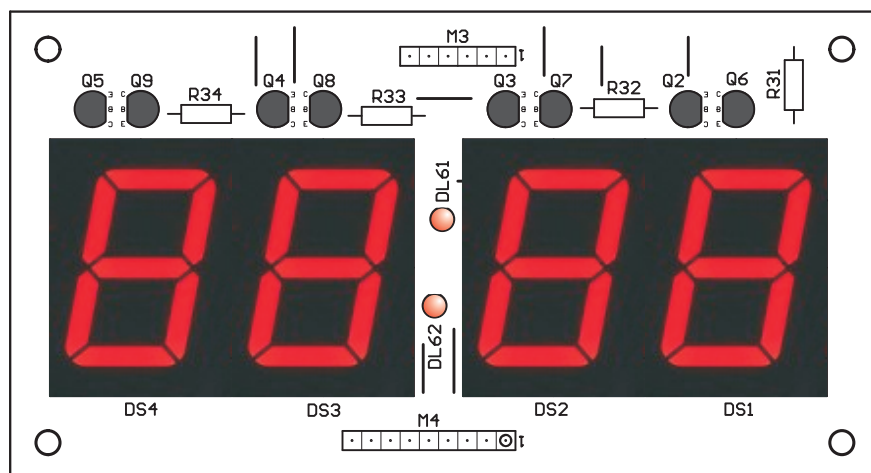


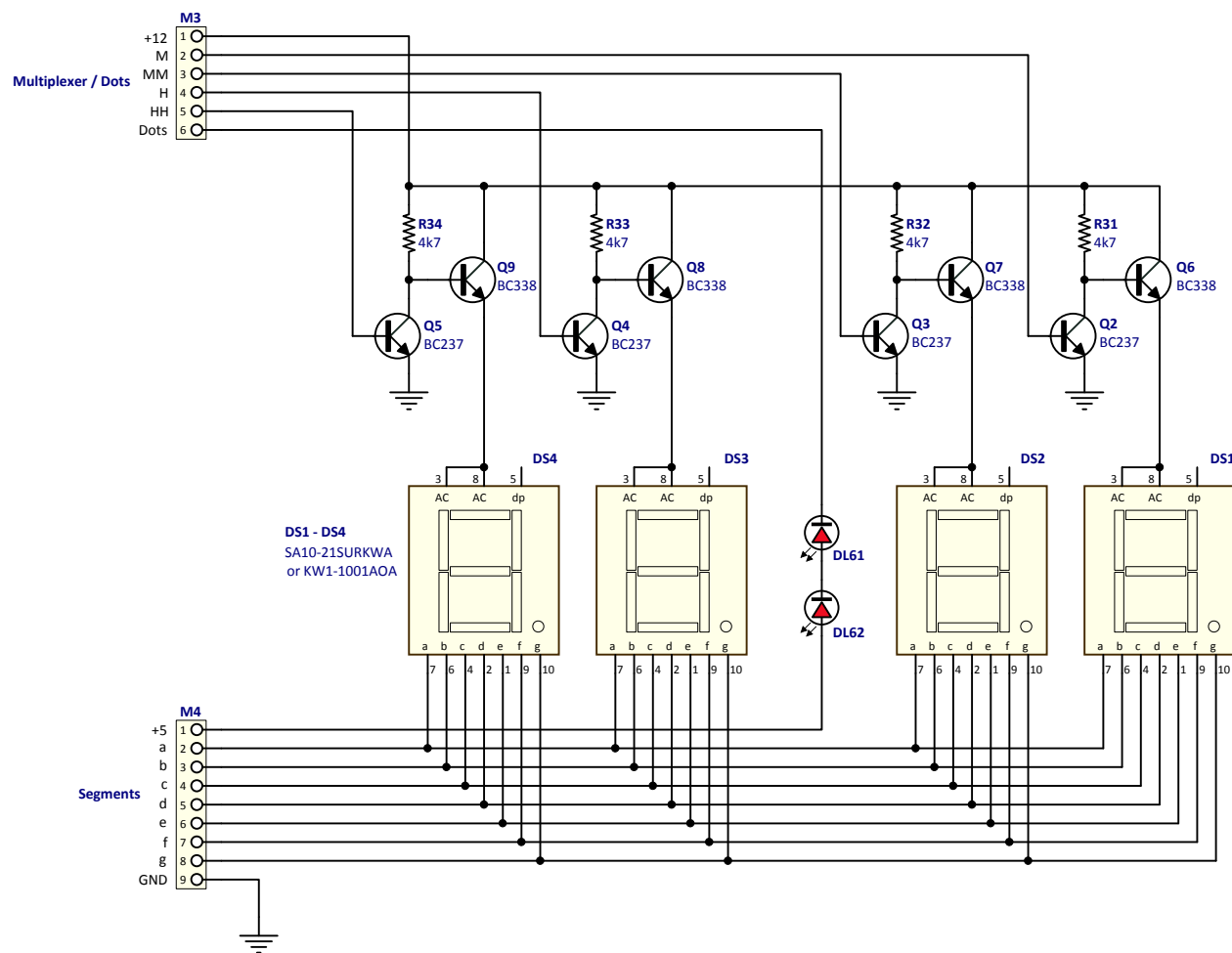
Scheda MAIN per Orologio a LED rotanti
Dimensioni: 110x85 mm.
Monofaccia con finitura
Vetronite FR4 - Spessore 1.6 mm.
N. 4 fori fissaggio da 3.1 mm.



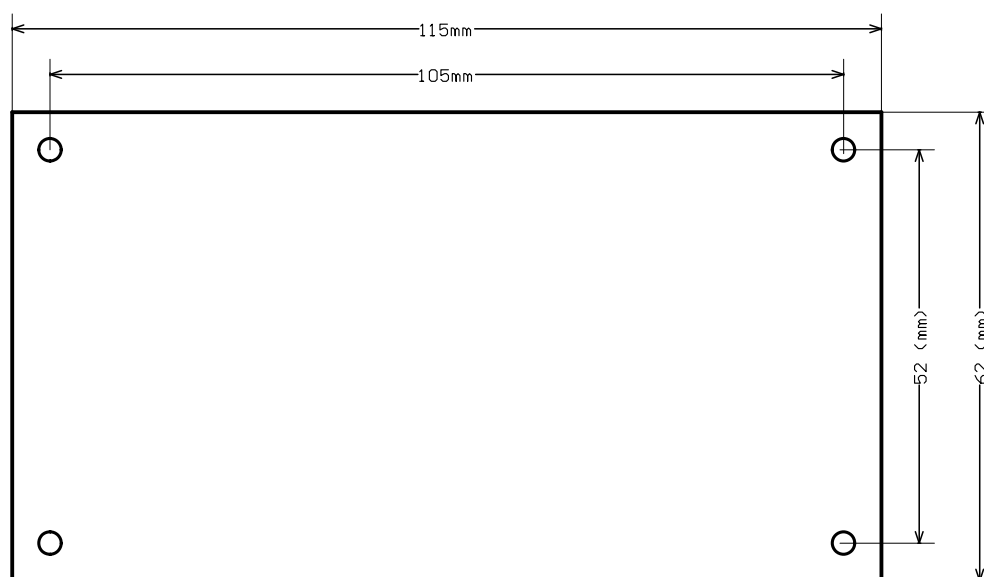


DISPLAY Section

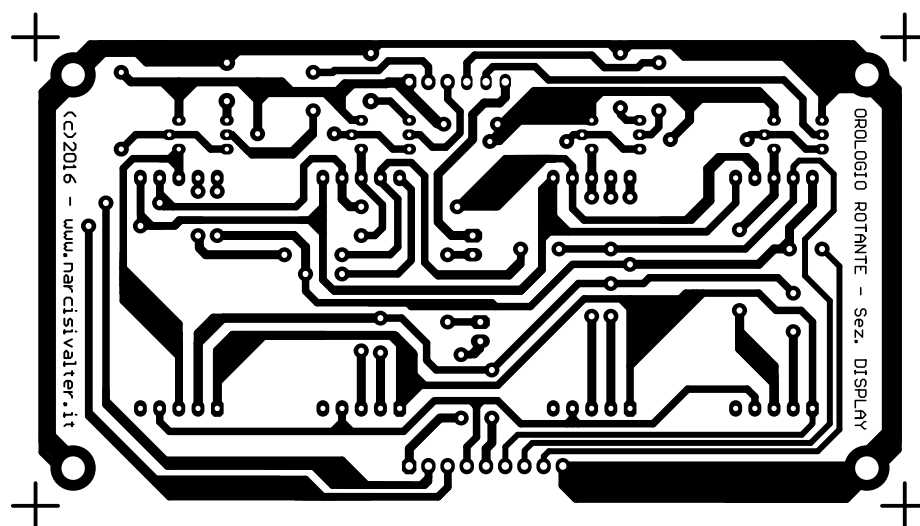




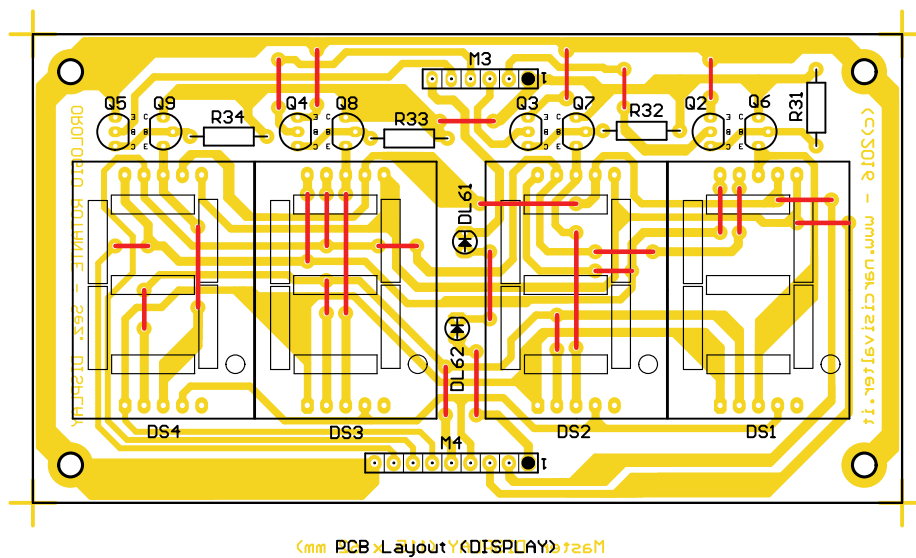
Author: Valter Narcisi - San Benedetto del Tronto (AP) - info@narcisivalter.it				
Project: Orologio Circolare (Display section)			Year: 2016	
Size: A4	DWG no. 1	Rev.: 1	Scale: 1:1	Sheet: 2 of 3
Note: http://www.narcisivalter.it/progetti/rotating-LED-clock.html ©All Right Reserved				



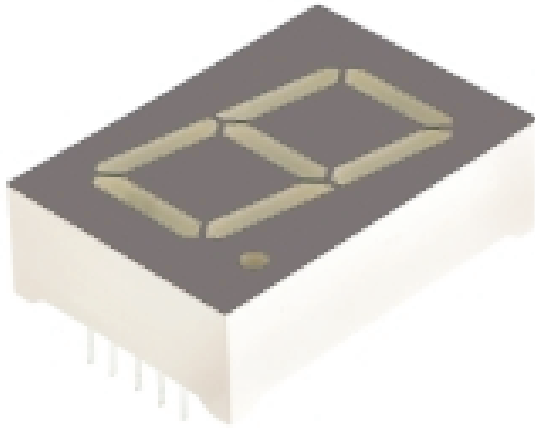
Scheda DISPLAY per Orologio a LED rotanti
Dimensioni: 115 x 62 mm.
Monofaccia con finitura
Vetronite FR4 - Spessore 1.6 mm.
N. 4 fori fissaggio da 3.1 mm.



Master DISPLAY (115 x 62 mm)

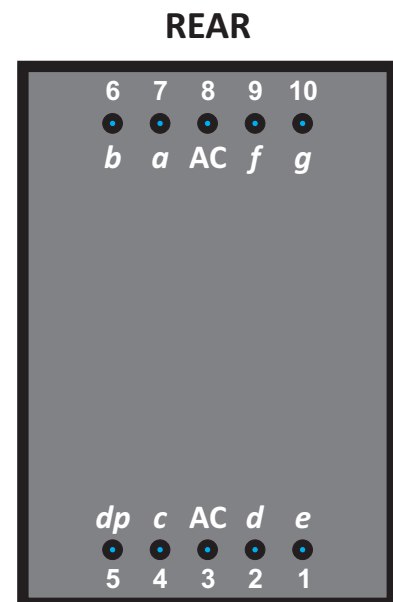
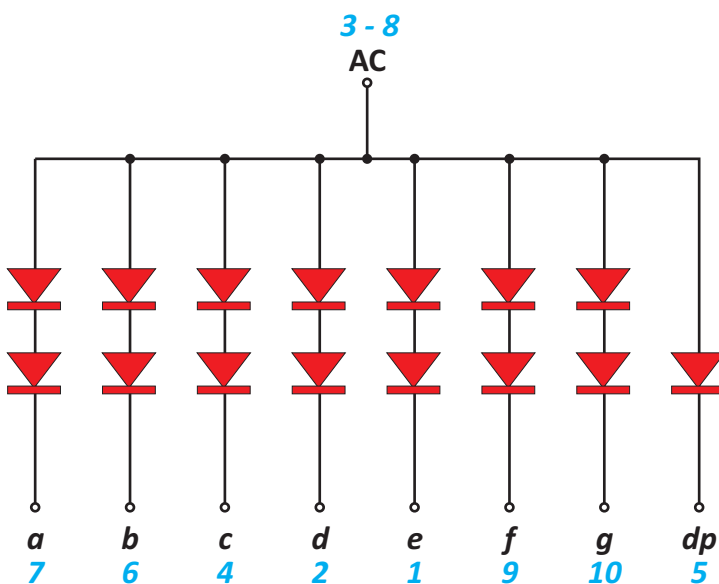
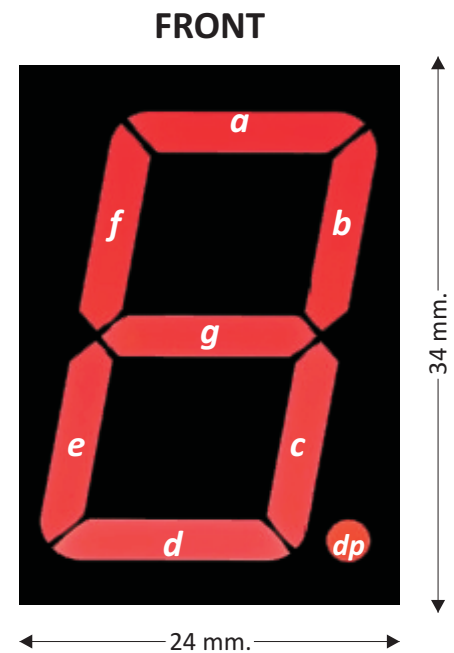


DISPLAY



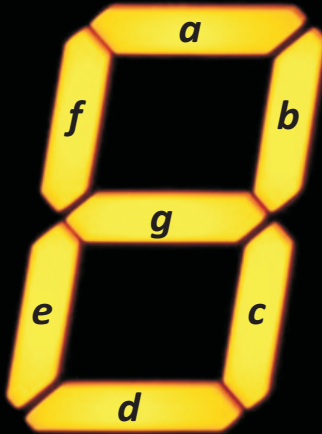
Display Common Anode
Dimensions: 34 x 24 mm.
 I_F segment = 20 mA
 V_F voltage = 4.2 - 4.8 V_{max}

for example:
KW-1001AOA
SA10-21XXX



Management Segments by Port A

A7	A6	A5	A4	A3	A2	A1	A0
NOT USED							

	Display No.	Port A pinout							Decimal value
		A6	A5	A4	A3	A2	A1	A0	
		<i>g</i>	<i>f</i>	<i>e</i>	<i>d</i>	<i>c</i>	<i>b</i>	<i>a</i>	
		0	1	1	1	1	1	1	63
		0	0	0	0	1	1	0	6
		1	0	1	1	0	1	1	91
		1	0	0	1	1	1	1	79
		1	1	0	0	1	1	0	102
		1	1	0	1	1	0	1	109
		1	1	1	1	1	0	1	125
		0	0	0	0	1	1	1	7
		1	1	1	1	1	1	1	127
		1	1	0	1	1	1	1	111

MSB

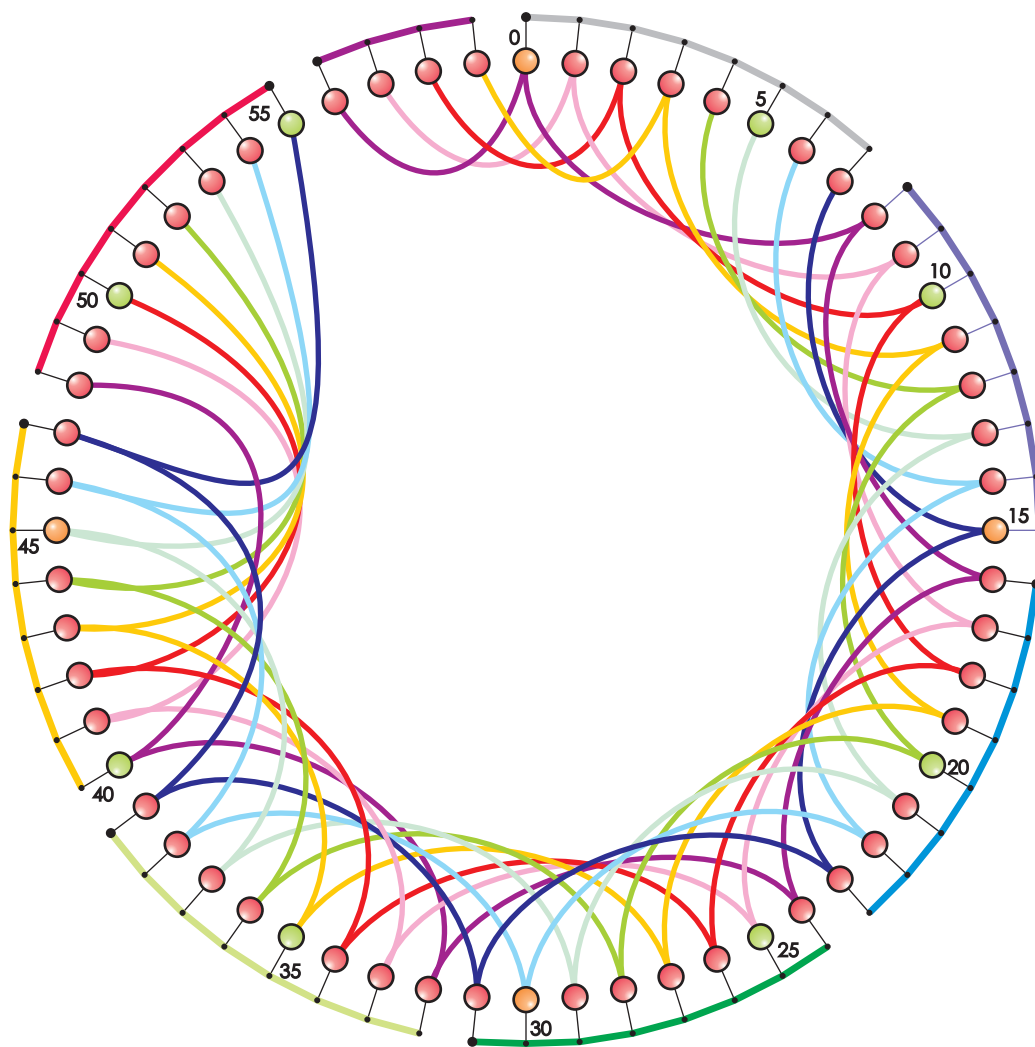
LSB

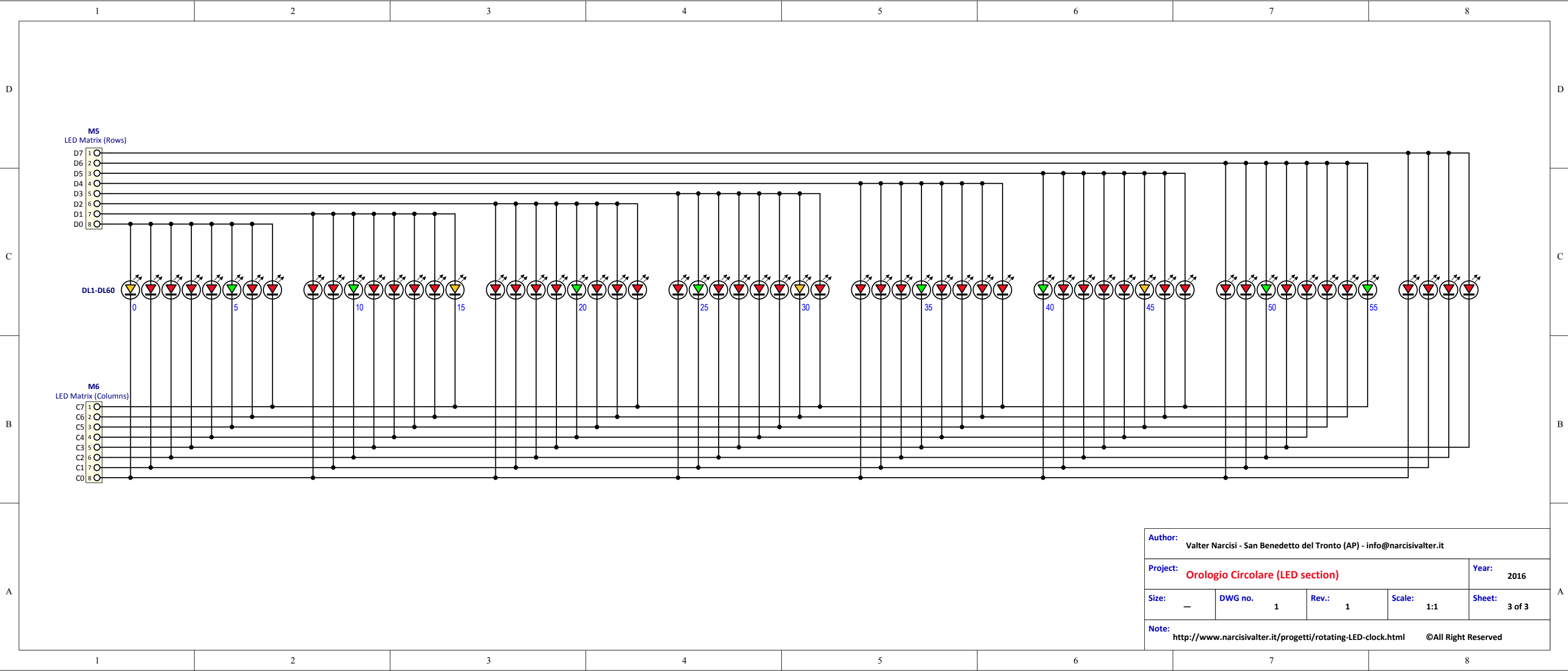
DISPLAY MULTIPLEXER

(Management by a part of Port B)

Display		Port B pinout				Decimal value
		<i>B4</i>	<i>B3</i>	<i>B2</i>	<i>B1</i>	
	Unitary MINUTES	0	0	0	1	2
	Decimal MINUTES	0	0	1	0	4
	Unitary HOUR	0	1	0	0	8
	Decimal HOURS	1	0	0	0	16
		MSB LSB				

LED Section





ELENCO COMPONENTI (Component List)

MAIN section

C1...C5	0.1
C6	22pF (see last page)
C7	6-30pF
C8	220uF/25v
C9	100uF/16v
R1 ... R4	10k
R5	4M7
R6 ... R9	4k7
R10	100 ohm (see last page)
R11 ... R17	330
R18*	3k3
R19	100k (see last page)
R20	33k
R21	22k
R22 - R36	4k7 (see last page)
R23 ... R30	150 ohm
R35	1k
D1	1N4001
D2 - D3	FDH999
D4	1N4001
D5	FDH999
Q1	BC337
Q2	BC237 (see last page)
U1	PIC16F887 (MicroChip)
U2	ULN2003
U3	CD4020
U4	CD4069 (see last page)
U5	78L05 (100 mA)
BZ	Buzzer piezo
M1	Strip 2 way - 2.54 (+12V)
M2	Strip 2 way - 2.54 (+Batt 9v)
M3	6 way - 2.54 (Multiplexer / Dots)
M4	9 way - 2.54 (Segments)
M5	8 way - 2.54 (LED Matrix - Rows)
M6	8 way - 2.54 (LED Matrix - Column)
M7	6 way - 2.54 (ICSP)
S1	Microswitch (Shift)
S2	Microswitch (Min.)
S3	Microswitch (Hour)
S4	Microswitch (Mode)
XT	32768 Hz (32.768 kHz)

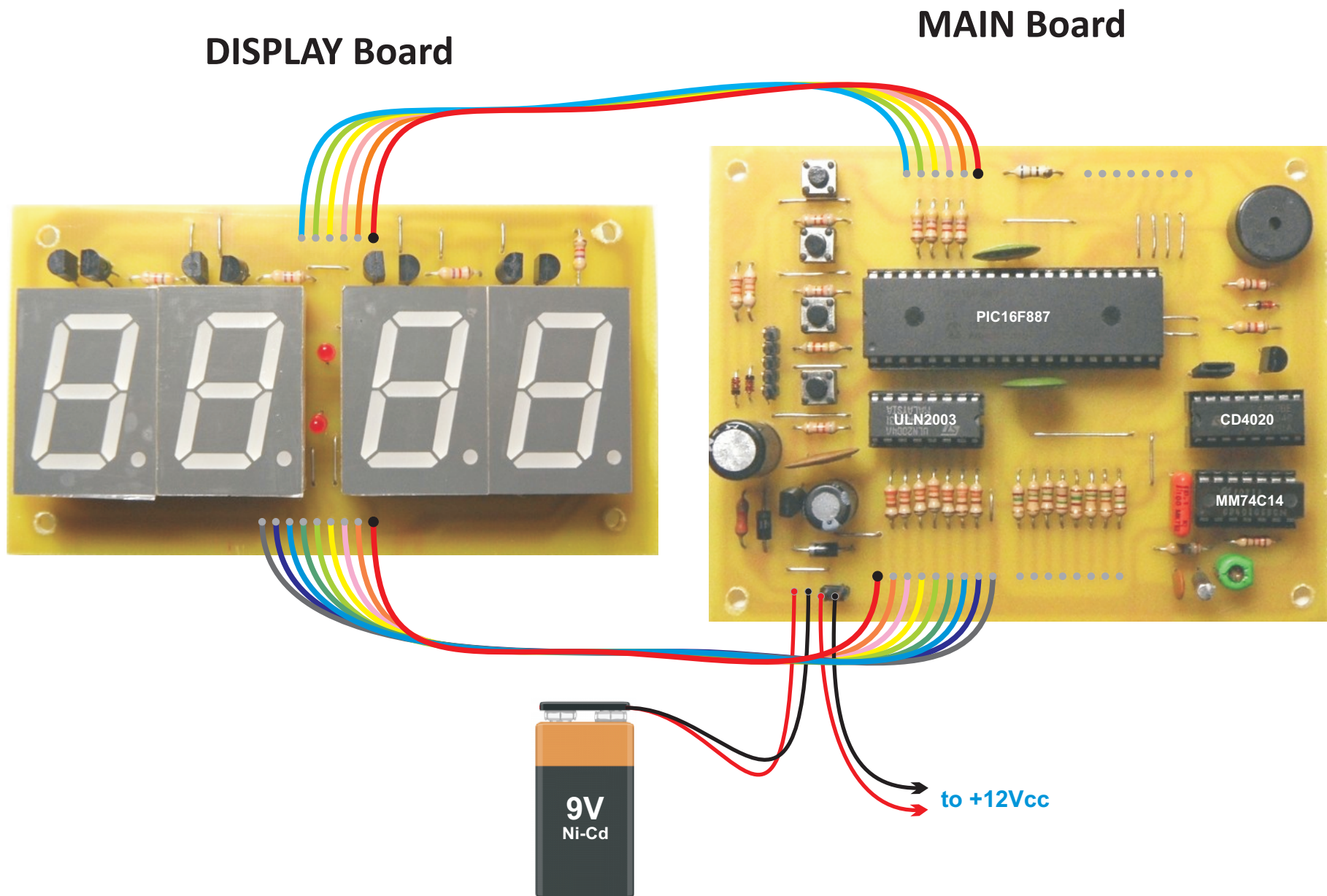
DISPLAY section

R31 ... R34	4k7
M3	6 way - 2.54 (Multiplexer / Dots)
M4	9 way - 2.54 (Segments)
DL61 - DL62	DIODI LED 5mm Red or other colors
DS1 ... DS4	Display tipo KW1-1001A0A
Q2 ... Q5	BC237
Q6 ... Q9	BC338

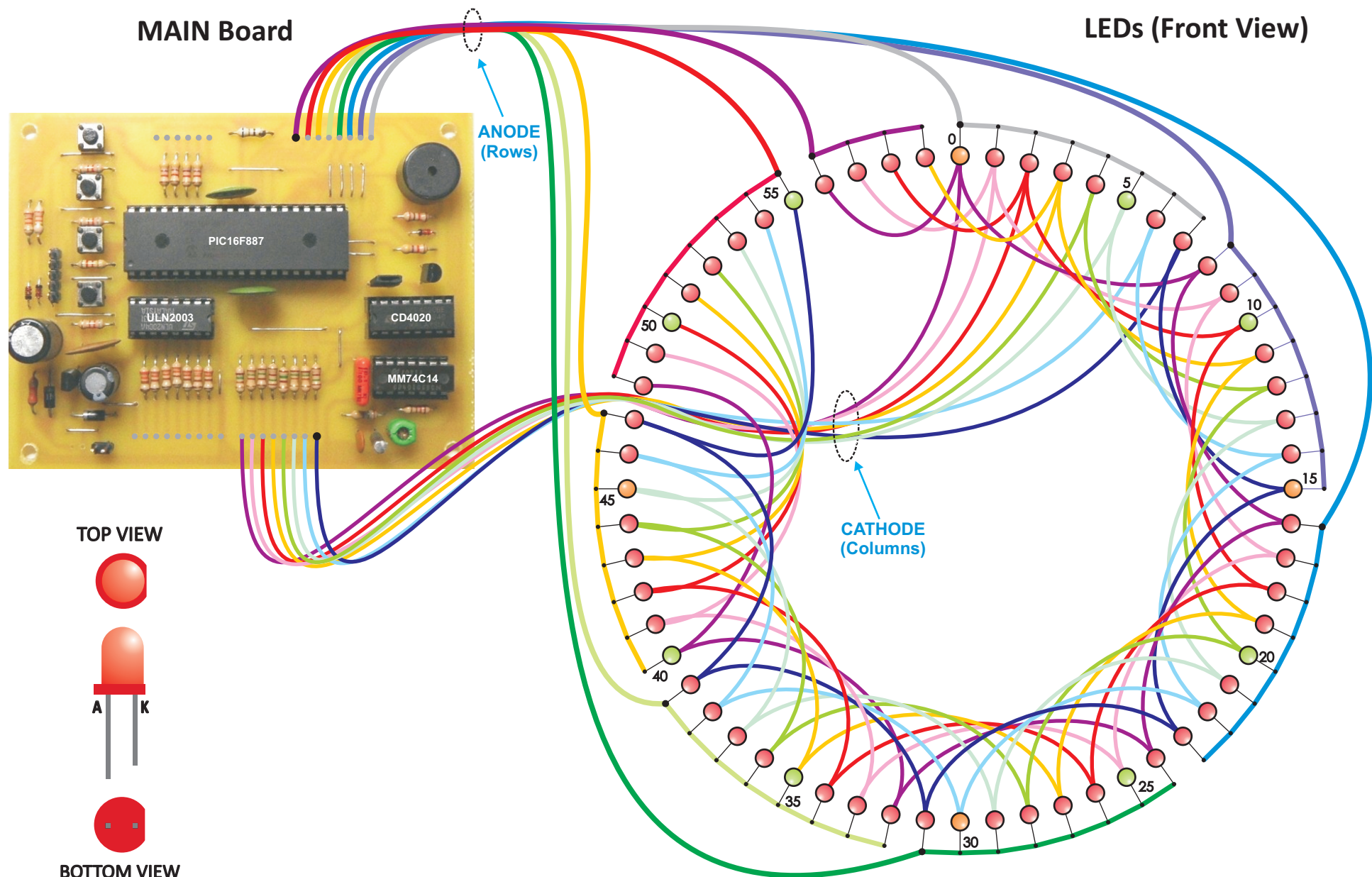
LED section

DL1 ... DL60	DIODI LED 5mm Red or other colors
M5	8 way - 2.54 (LED Matrix - Rows)
M6	8 way - 2.54 (LED Matrix - Column)

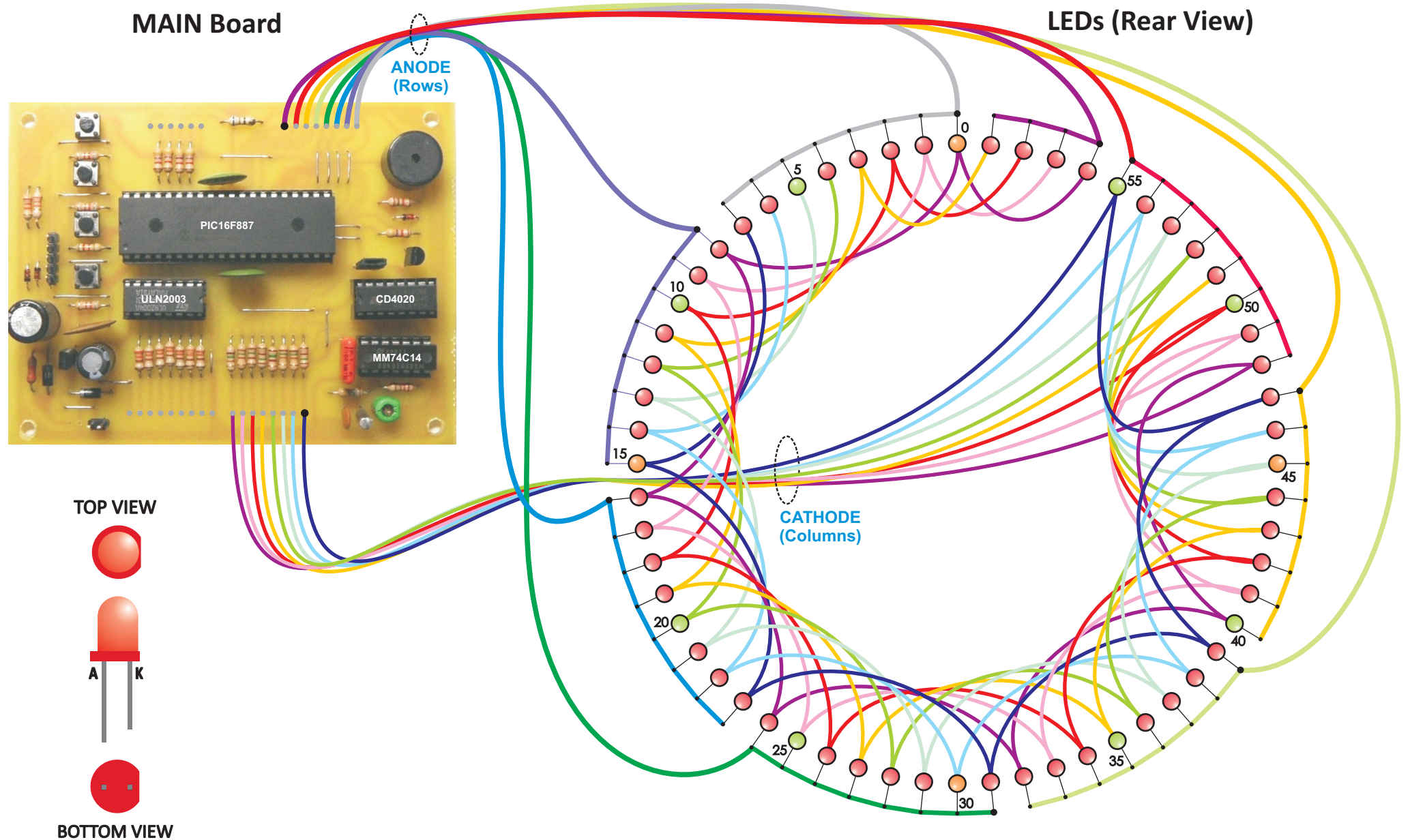
COLLEGAMENTI DISPLAY / DISPLAY WIRING



COLLEGAMENTI LED / LED WIRING



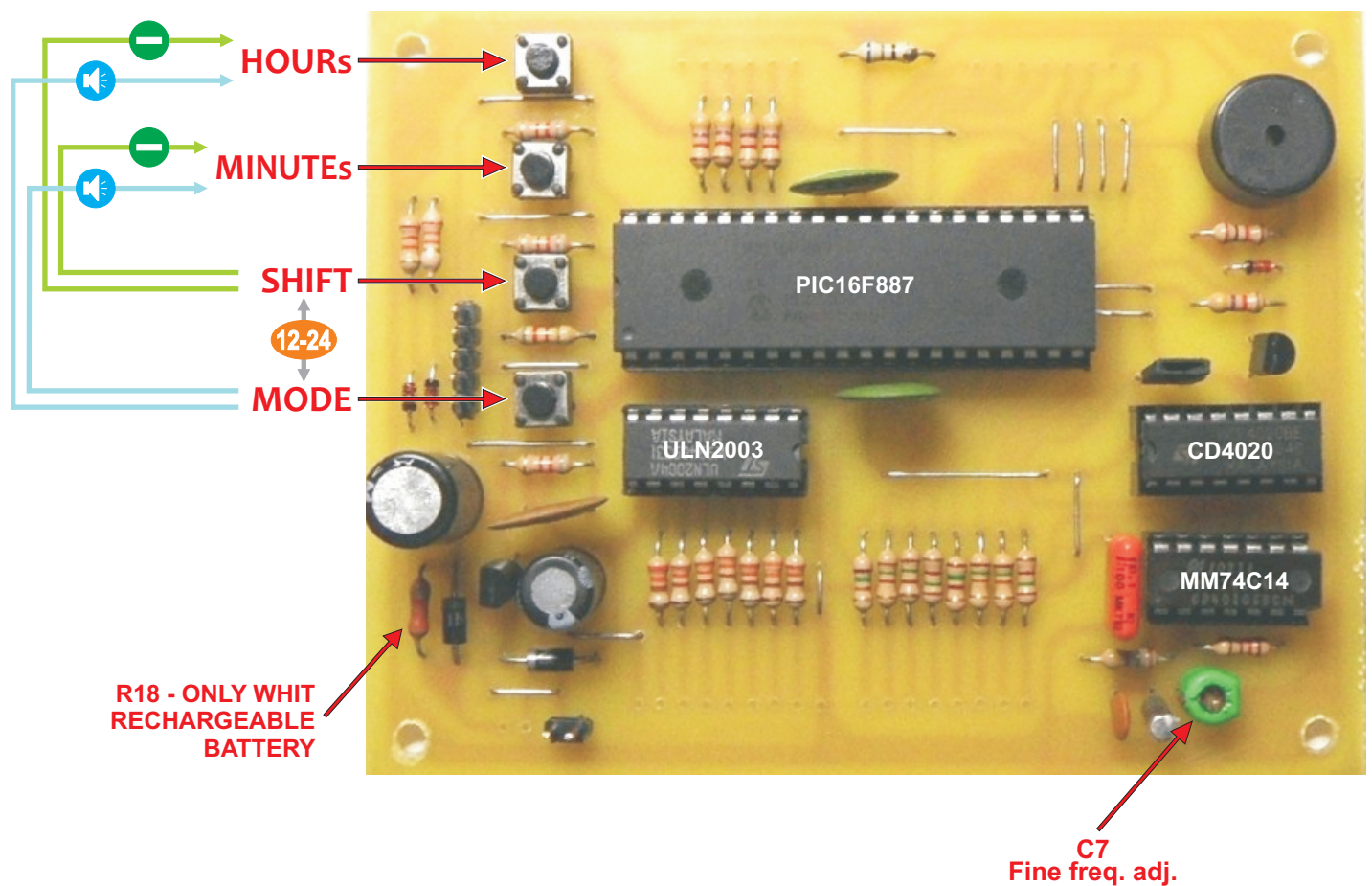
COLLEGAMENTI LED / LED WIRING



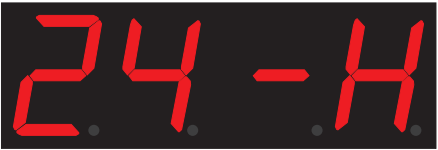
Particolare del montaggio dei LED (visti da dietro)



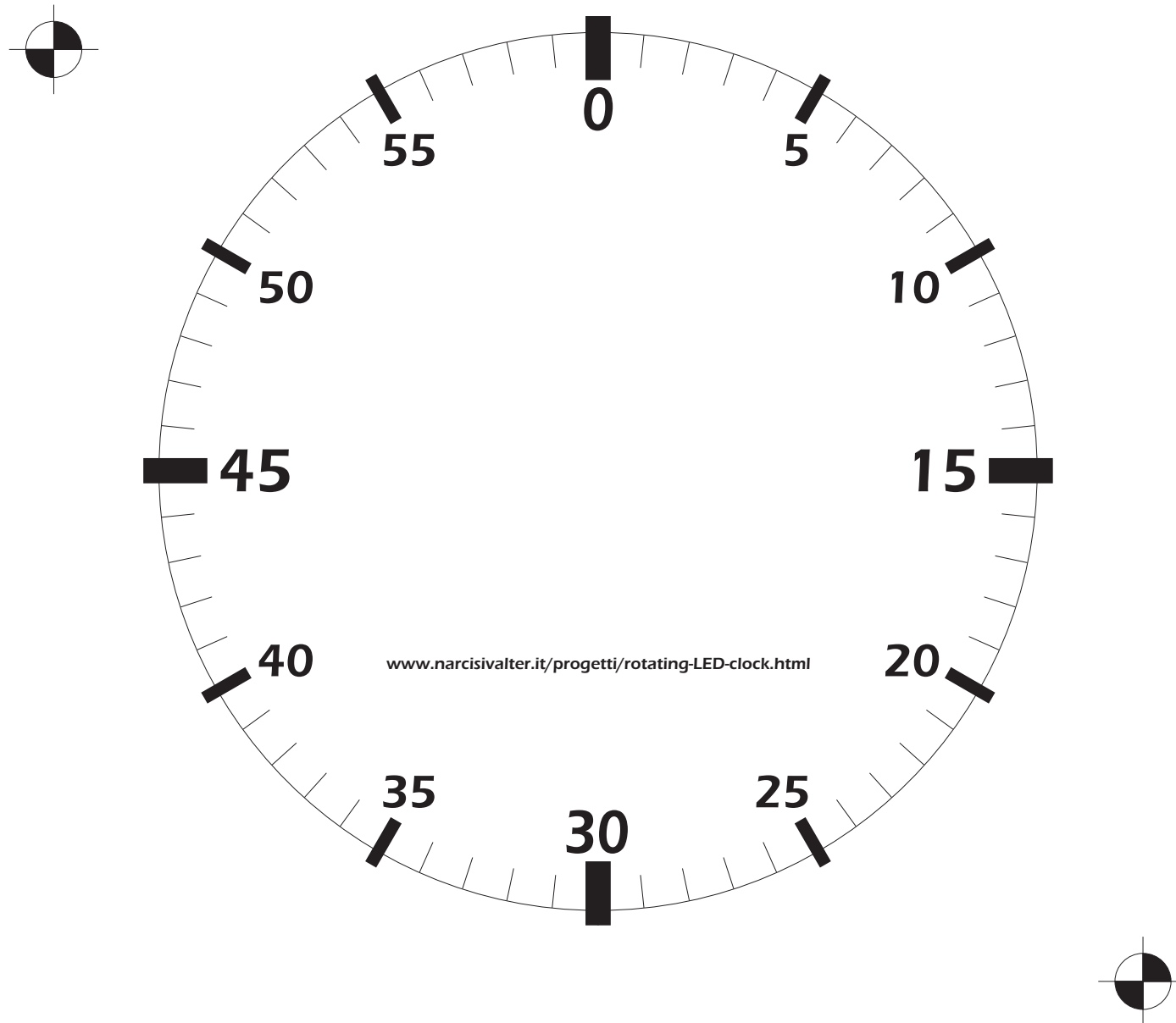
COMANDI / COMMANDS



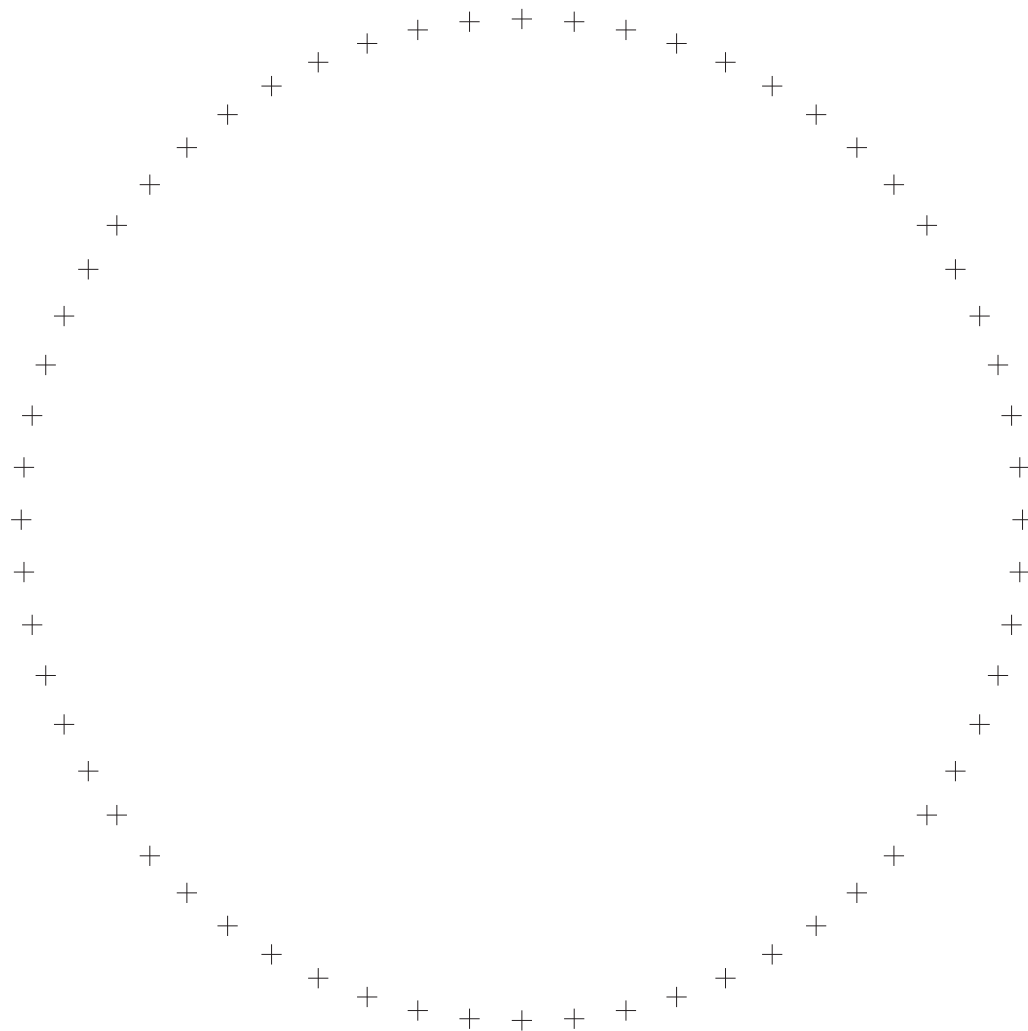
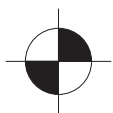
MESSAGGI DISPLAY / MESSAGES

	Modalità orario a 12 ORE	12H system
	Modalità orario a 24 ORE (ISO 8601)	24H system
	Scansione audio secondi ABILITATA	Seconds beep ENABLED
	Scansione audio secondi DISABILITATA	Seconds beep DISABLED
	Scansione audio ore ABILITATA	Hours beep ENABLED
	Scansione audio ore DISABILITATA	Hours beep DISABLED

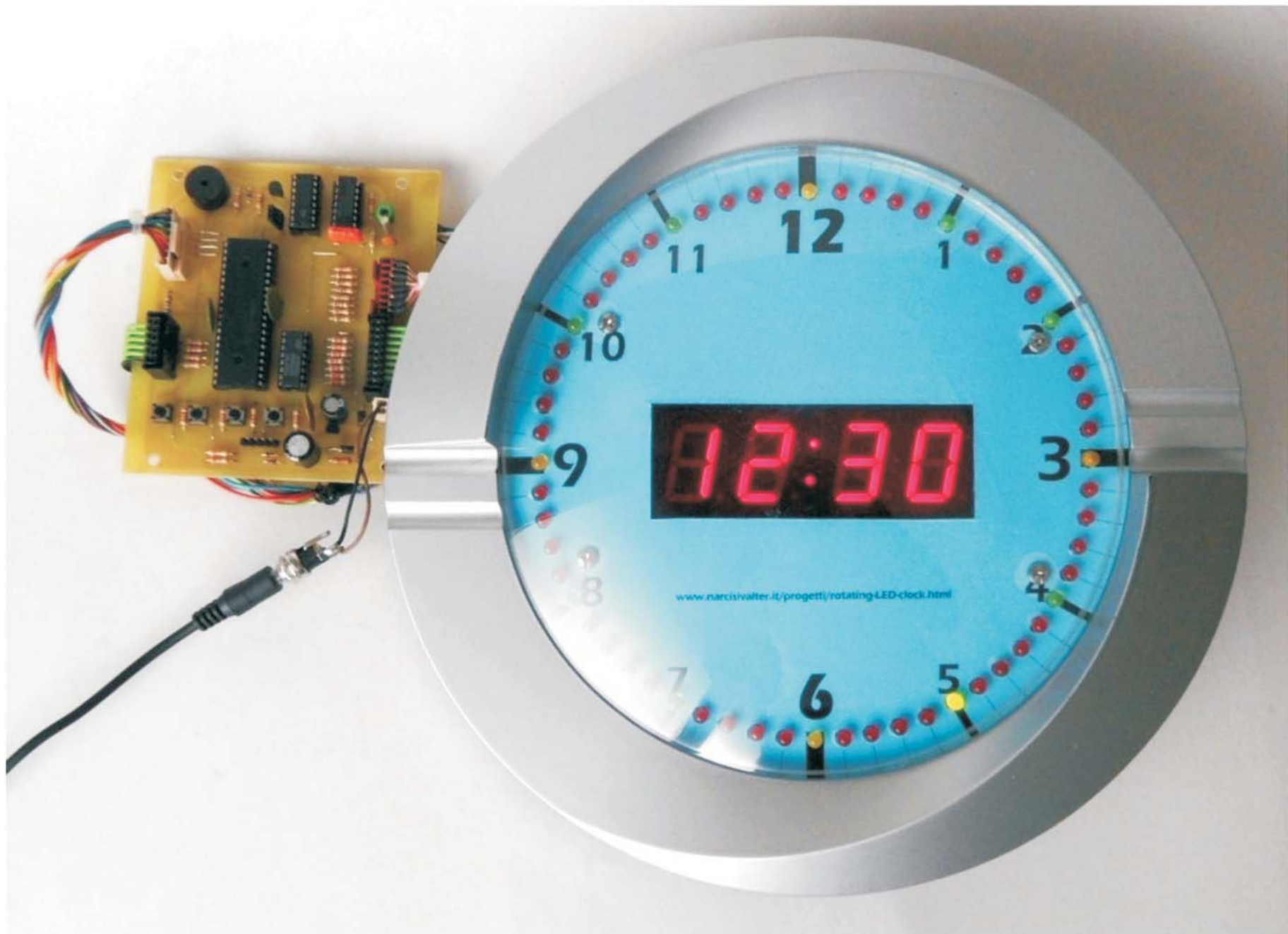
ESEMPIO DI SERIGRAFIA



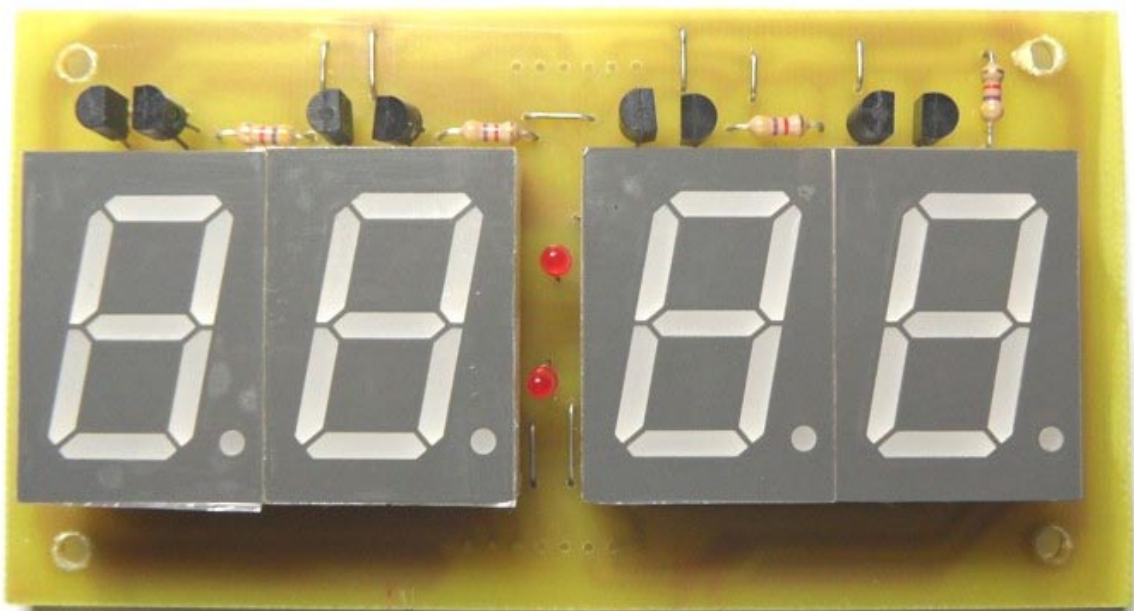
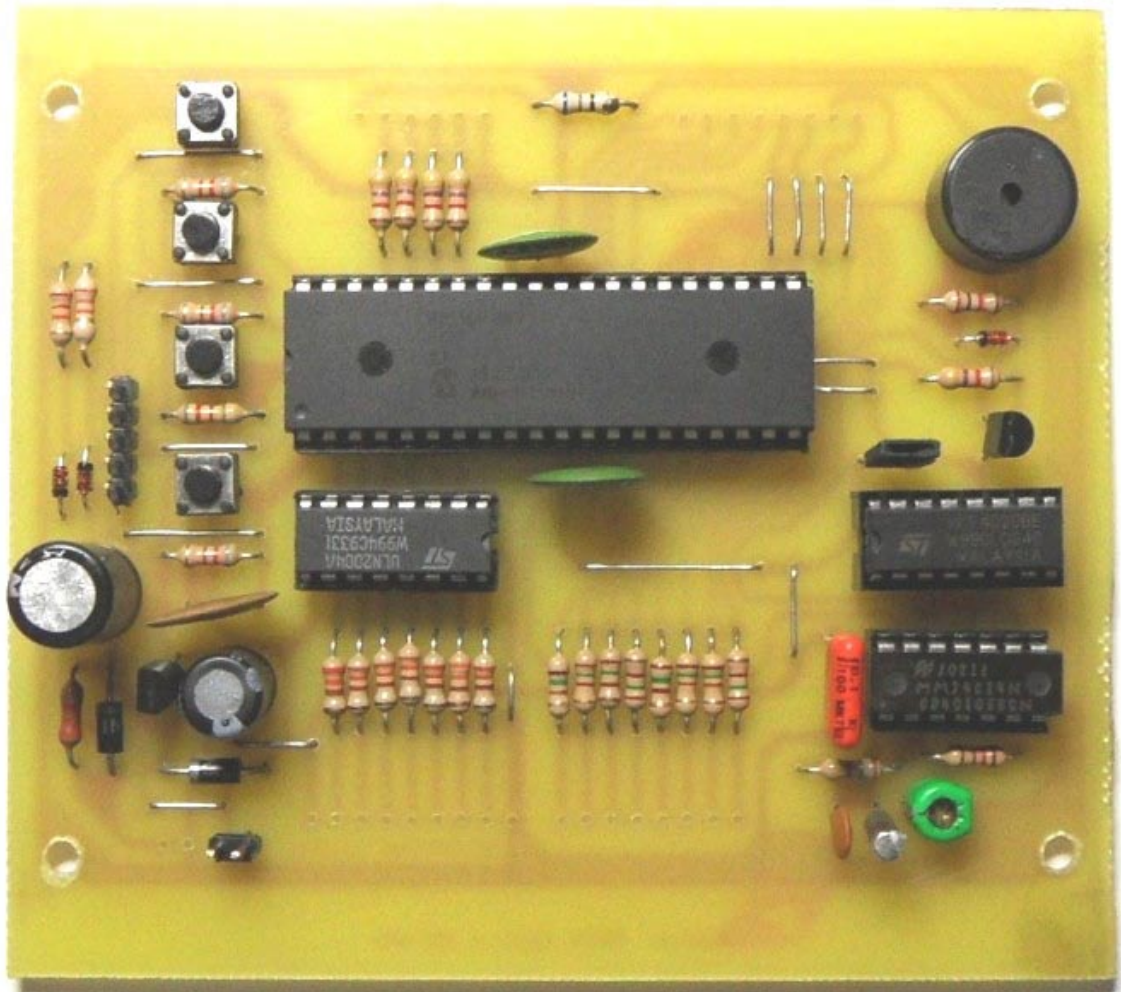
PIANO DI FORATURA



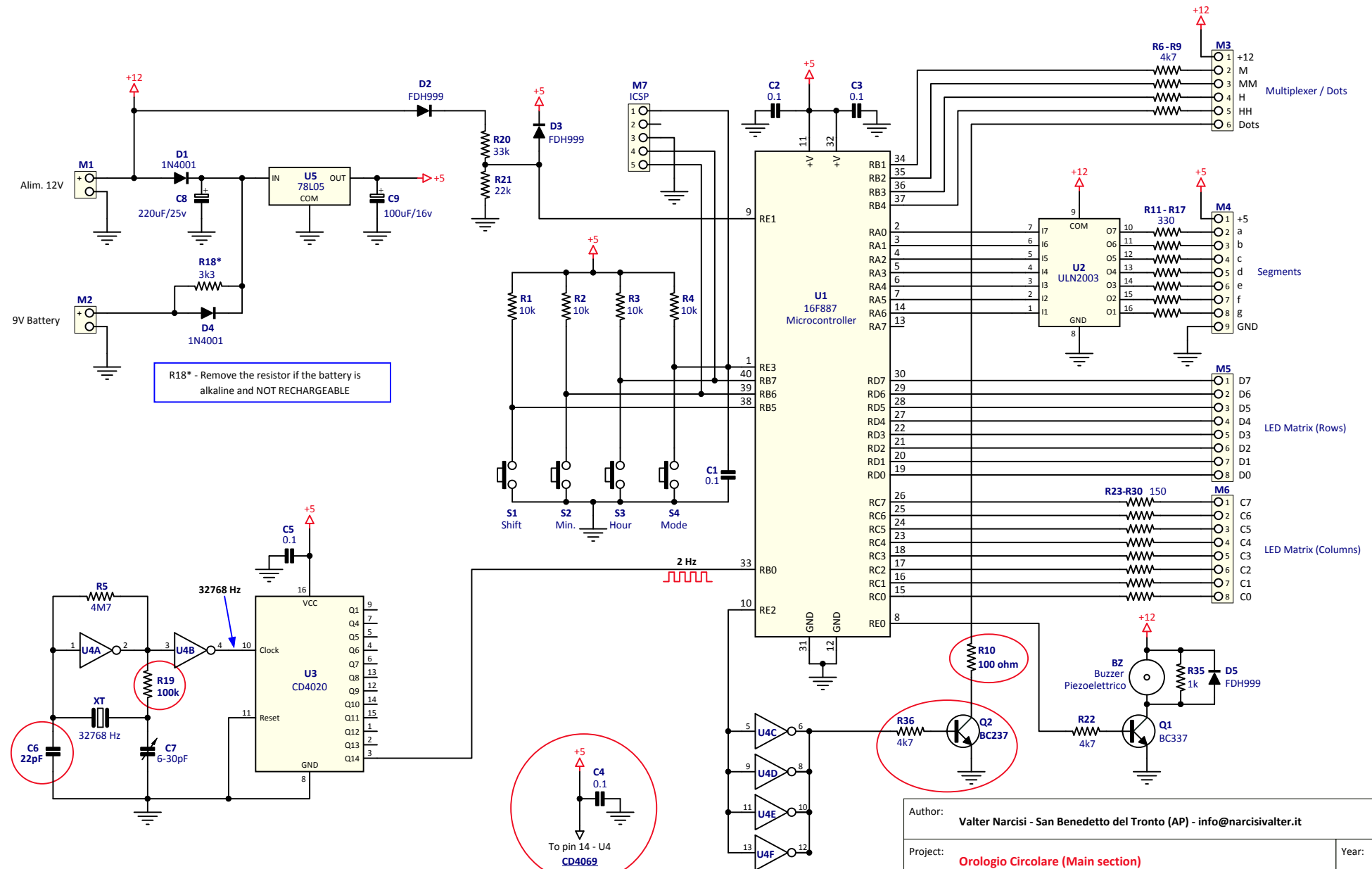
IL PROTOTIPO FINALE



Le schede realizzate dall'autore.



ERRATA CORRIGE & UPDATE



New values for C6, R10, U4 and R19
Add. Q2 and R36

Author: Valter Narcisi - San Benedetto del Tronto (AP) - info@narcisivalter.it				
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