Keymodule M 8

Two basic Versions and a Host of Keycap Styles for Keyboard Design.

Actuator

Spring

Fixing pin

Housing
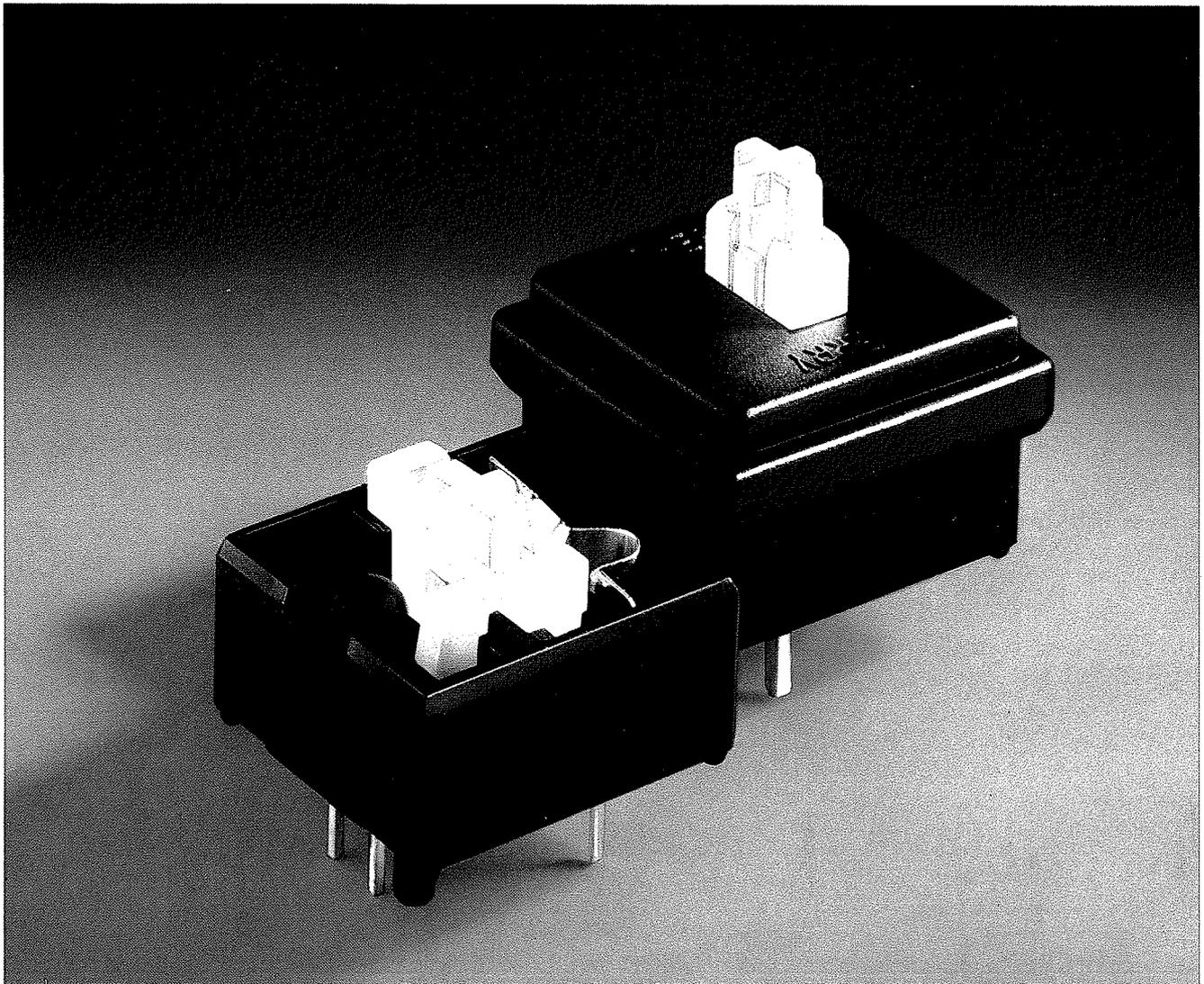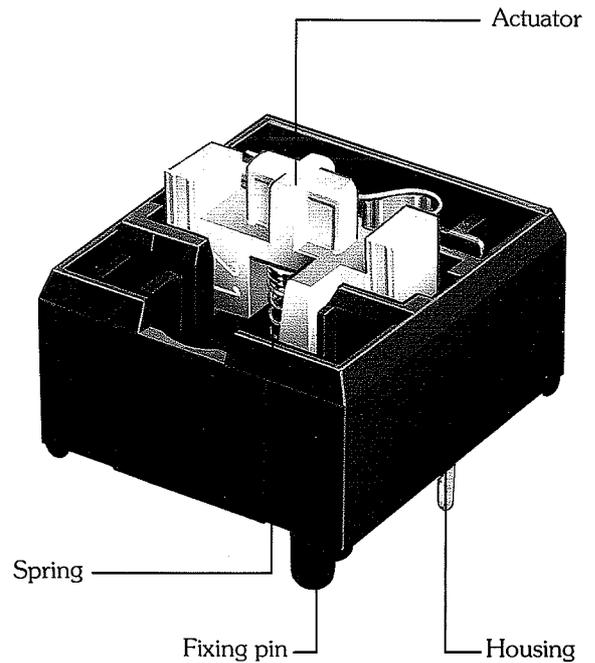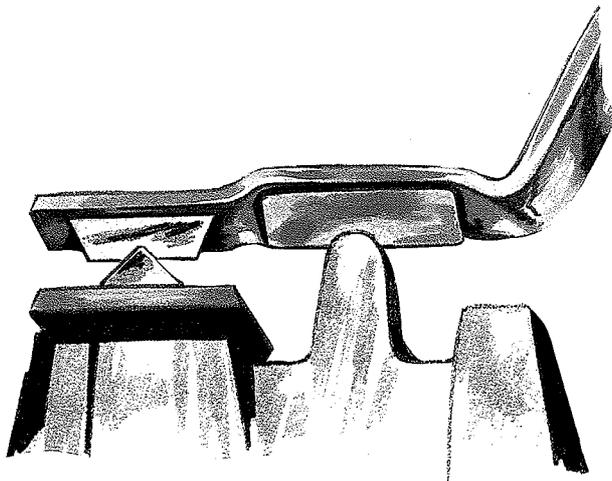
Main Advantages

● "Gold Crosspoint" contacts.
● High life expectation: $> 10 \times 10^6$ operations.
● Precise switching for high functional reliability.
● Fatigue-free operation with no risk of multiple actuation.
● Your choice of linear feel or tactile feedback at actuation.
● Low profile, 2.5 mm full-travel keyswitches.
● Keymodule body covered or uncovered.
● Optionally available with LEDs.
● 6-mm or 12-mm standard keycaps, as well as a large range of special versions.
● Cost-effective keyboard assembly: keymodules are mounted directly onto the P.C. board.
● All plastics used are UL-registered.
● Fast delivery and flexible disposition.
● Special-purpose versions are possible.

Important Features

● 2.5 mm full-travel keyswitches.
● 19.05 mm standard spacing, 16 mm on request.
● Different ways of operation:
  Linear, Tactile feedback, German Postal tactile feedback.
● Contact versions:
  Single pole, Double pole, Double pole with defined switching characteristic.
● Extremely low profile.
● Low initial contact resistance of 200 mΩ max.
  (typically 25 mΩ).
● Variety of contact materials for different electrical requirements.
● Direct mounting to P.C. board using fixing pins.
● Option of angled stems for "stepped" keyboard design.
● Optional LEDs for status indications.

Typical Applications

- Office machines
- Telephone keysets
- Portable computers

- Measurement and control equipment
- Medical equipment
- Musical instruments

Technical Specifications

		M 81	M 82	M 84
Materials:	Plastic parts		Thermoplastics, UL-registered	
	Contacts	AuAg26Ni3	AgPd30	AuAg10
	Springs		Stainless steel	
Storage temperatur range			$-40°$C to $+70°$C	
Operating temperature range			$-10°$C to $+70°$C	
Relative humidity			5% to 95%, noncondensing	
Solderability			Suitable for solder bath method in acc. with DIN IEC 68 Teil 2-20	

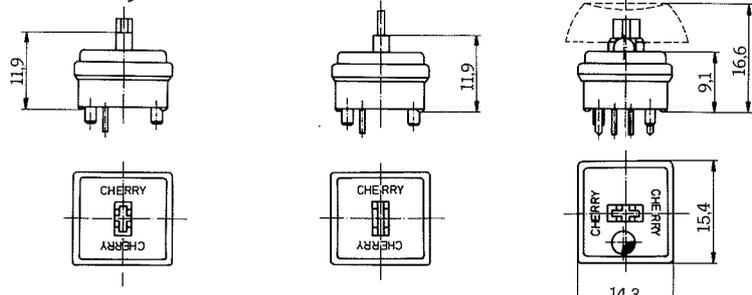## Dimensions

Uncovered keymodule   Covered keymodule
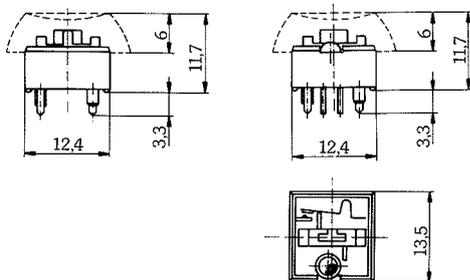
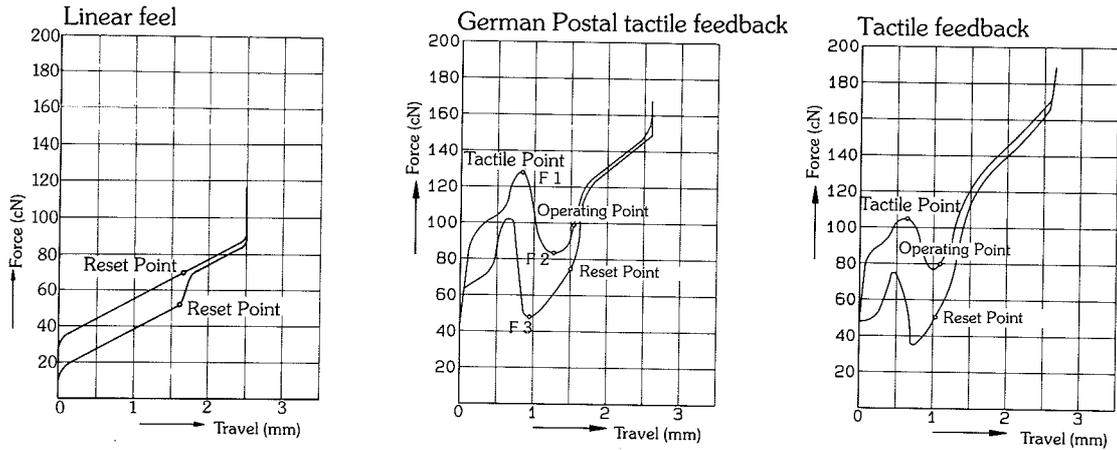Dimensions in mm   LED version   6 mm keycap   12 mm keycap   LED version 6 mm keycap

	Keyswitch with linear feel	Keyswitch with tactile feedback in compliance with German Postal Service specifications	Keyswitch with tactile feedback
Total travel	$2.5\,^{+0.2\,mm}_{-0.3\,mm}$	$2.5\,^{+0.2\,mm}_{-0.3\,mm}$	$2.5\,^{+0.2\,mm}_{-0.3\,mm}$
Pretravel	1.6 ± 0.6 mm	1.4 ± 0.6 mm	1.3 ± 0.6 mm
Operating force	70 ± 20 cN	95 ± 30 cN	100 ± 40 cN
Force required to overcome pressure point	–	max. 140 cN	105 ± 30 cN

Electrical Specifications

	M 81	M 82	M 84
Voltage min./max.	28 V AC/DC	60 V AC/DC	12 V AC/DC max.
Current min./max.	100 mA max.	100 mA max.	10 mA max.
Dielectric strength		500 V/50 Hz/1 min.	
Life expectancy w/o electrical load	$\geqq$	10×10^6 operations	
Life expectancy at load of 1.5 V, 1 mA	$\geqq$	10×10^6 operations	
Initial contact resistance		$\leqq 200$ m Ω max. (25 m Ω typ.)	
Insulation resistance at 100 V		When new and after rated life expectancy: 100 M Ω	
Capacitance at 1 kHz		< 1 pF	
Bounce time at operating speed of 0.4 m/sec.		$\leqq 5$ ms	

Force/Travel Diagram

Linear feel

German Postal tactile feedback

Tactile feedback

P.C.B. Bore Hole Layout

Single-pole keymodule

Double-pole keymodule

Single-pole keymodule with LED

ϕ 1,7-0,05

ϕ 1,2+0,15

ϕ 0,9+0,1

Dimensions in mm

Keyboard Mounting

Sealed in compliance with IP 54.
(Covered 12-mm keycap only)

Spacebar Mechanism

Housing

Support

P.C.B.

Wire

6-mm keycap

Oval-head screw
(4 mm, M 2 thread as per DIN 7985-4.8)

ϕ 3,05+0,1

Center of module

ϕ 4 ± 0,05

"A" 0,1
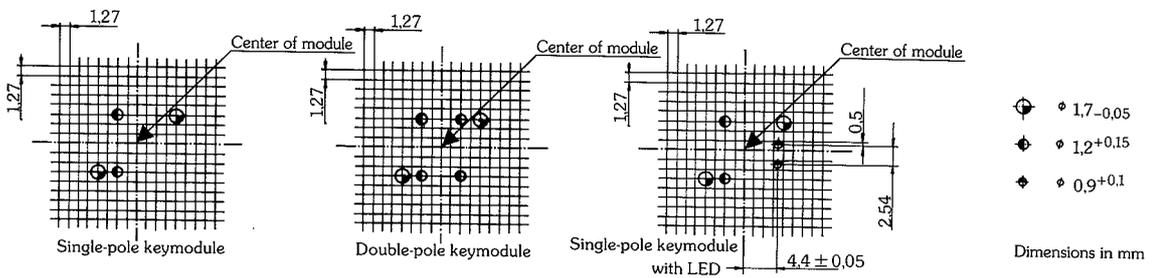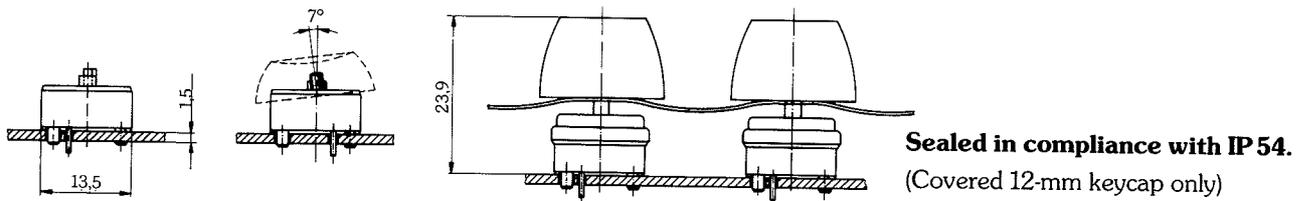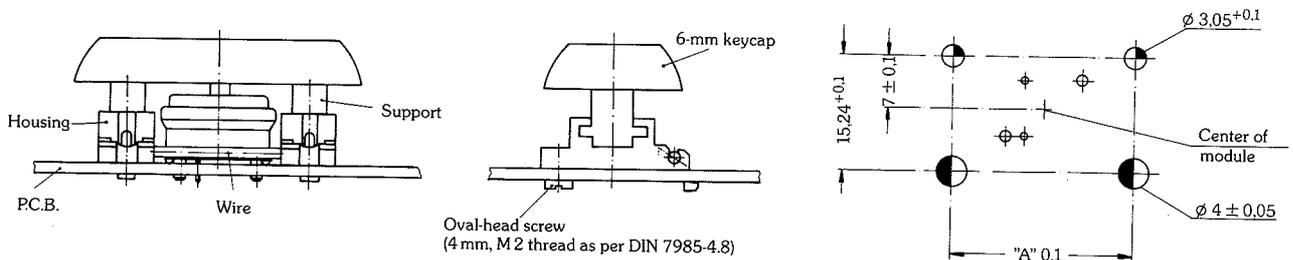
Keycap format	1 x 2	1 x 2	1 x 3	1 x 3	1 x 8	1 x 8
Keycap height	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm
Keymodule type	uncovered	covered	uncovered	covered	uncovered	covered
"A" (mm)	23.8	23.8	38.1	38.1	114.3	114.3
Part no.	G 99-0186	G 99-0189	G 99-0187	G 99-0190	G 99-0188	G 99-0191

Keycaps

Type 1, 12 mm		12	□ 18,2		23,9
Type 2, 6 mm		6	□ 18,2	11,7	16,6
Type 3, 15.2 x 15.2 mm		6,8	□ 15,2		17,2
Type 4, 8 x 13 mm		5,5	13 / 8		17,4
Type 5, for insertable legend		6	□ 15,5	11,7	16,6

Ordering Information

$$\underset{\text{Keymodule}}{\text{M}}\,\underset{\text{Super Low-profile Series}}{81}\,\text{A}\text{-}0100$$

	Contact	Rating Material		Normally open	Normally closed	Uncovered	Covered	Momentary contact switch	Tactile feedback	For spacebar	Operating force/ pressure point force cN		Switching Characteristic		Stem Type		LED		Keycap 1x1, blank	
1	△	100 mA/28V AuAg 26 Ni 3	A	1		X			X		70 ± 20 105 ± 30		0	Linear feel	1	Standard short; keycap types: 2,5	O	Without LED	O	w/o keycap
2	△	100 mA/60V AgPd 30	B*	1	X	X					85 ± 20	Uncovered	1	Tactile feedback	3	Standard short; keycap types: 2,5	R	Red LED	R	Red
4	O	10 mA max./12V max. AuAg 10	C	2		X			X		95 ± 35 90 ± 35		4	Tactile feedback in compl. w. W. German Postal Serv. specs.	5	Covered short; keycap types: 2, 3, 4, 5	G	Green LED	G	Green
			D*	1	1	X			X		85 ± 35				6	Covered long; keycap type: 1	Y	Yellow LED	Y	Yellow
			E	1			X		X		70 ± 20 105 ± 30				7	Short, angled 7°; keycap type: 2	S	Red LED super bright	B	Blue
			F	2			X		X		95 ± 35 90 ± 35	Covered							U	Grey
			G	1	X	X		X	X		95 ± 35								W	White
			H	1		X		X	X		95 ± 35								S	Black
			I		2	X		X												

* Versions B and D only available with No. 3 key stems.

Keymodule M85

Main Advantages

- "Gold Crosspoint" contacts, a configuration that has proven itself in practice millions of times over.
- Fatigue-free operation with no risk of multiple actuation.
- Cost-effective keyboard assembly: keymodules are mounted directly onto the P.C. board.
- Fast delivery and flexible disposition.
- Available through our worldwide network of agents and distributors
- The Cherry M 85. A new generation keymodule
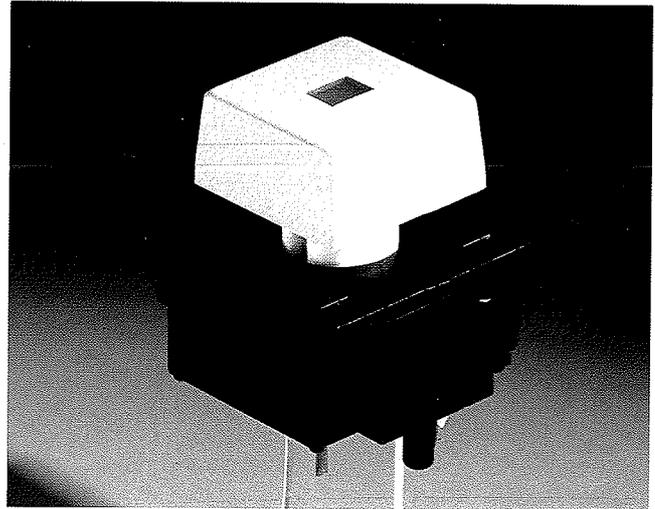
Important Features

- 2.5 mm full-travel keyswitches.
- Low profile.
- Integrated LED with enhanced brightness.
- Direct mounting to P.C. board using fixing pins.

Typical Applications

- Measurement and control equipment
- Medical equipment
- Automatic teller machines
- Musical instruments
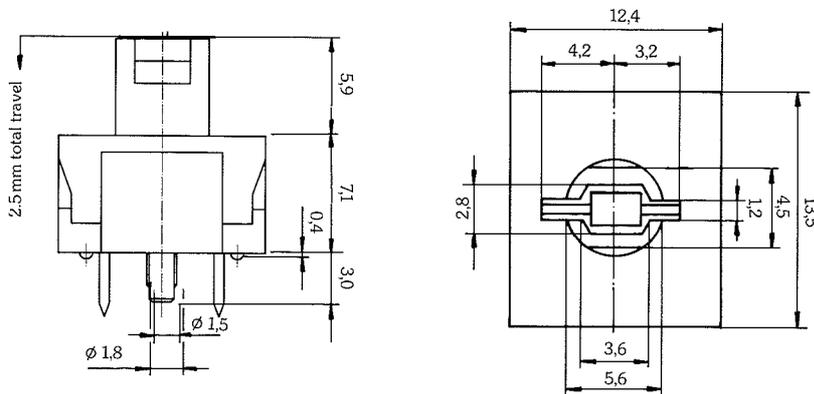
Technical Specifications

Materials:
- Plastic parts _____ Thermoplastics, UL-registered
- Contacts _____ High-quality gold alloy
- Springs _____ Stainless steel

Storage temperature range _____ − 20° C to + 80° C

Operating temperatur range _____ − 10° C to + 70° C
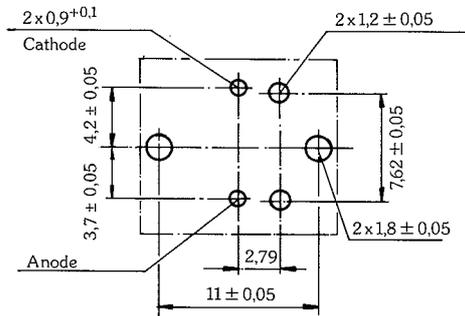
Dimensions

Mechanical Specifications

● Total travel   2.5 ± 0.2 mm
● Petravel   1.5 ± 0.5 mm
● Operating force   80 ± 20 cN

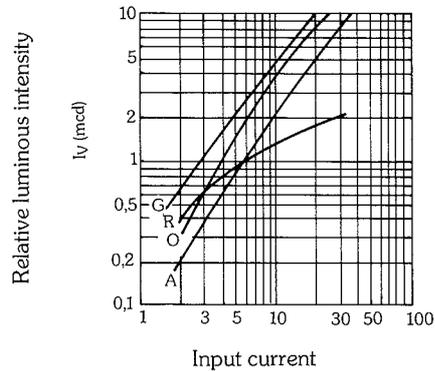## Electrical Specifications

● Voltage   12 V DC max.
● Current   10 mA max.
● Life expectancy w/o electrical load 10×10^6 operations
● Life expectancy at load of 5 V, 1mA > 500,000 operations
● Initial contact resistance   200 m Ω max.
● Bounce time   5ms max.

P.C.B. Bore Hole Layout

2 x 0,9$^{+0,1}$
Cathode
2 x 1,2 ± 0,05
4,2 ± 0,05
3,7 ± 0,05
7,62 ± 0,05
Anode
2 x 1,8 ± 0,05
2,79
11 ± 0,05

LED Brightness

Relative luminous intensity Iv (mcd)

Input current

Keyswitch Stem

0,3
2,8
4,5$_{-0,1}$
2,8
1,2
3,6
5,6$_{-0,1}$

0,2 x 45°
1,3$_{-0,1}$
2,8

Ordering Information

M 8 5 A – O N R U

LED		Keycaps	
O	w/o LED	O	w/o keycap
R	Red	U	Grey (standard)
G	Green	N	w/o LED
A	Yellow		
Y	Orange		