

# SK9+ Modern Multi-Aspect Red-Yellow-Green (Yellow) Signal self assembly kit

**CAUTION - ALWAYS SWITCH OFF POWER TO YOUR LAYOUT BEFORE CONNECTING OR DISCONNECTING ANY ACCESSORIES**

This Self assembly signal kit contains an plastic kit, post and LED Light circuit board with resistor to make a Colour Light signal designed for use on OO/HO gauge model railways - please read these instructions before assembly and connecting to power.

**1 Introduction**

**Contents**

- 1 Plastic Signal kit with 1 & 2 aspect options
- 1 Aluminium signal post
- 1 Signal LED light printed circuit board 'PCB'
- 4 1KΩ resistors (Colour:Black Brown Red Gold)
- 1 Instruction leaflet

**Recommended tools** (not included)

- Sharp craft knife or cutters
- Small needle file, tweezers or small pliers
- Adhesives to suit plastic/metal (see below)
- Magnifier
- Cutting mat

This kit is based on real modern multi-aspect signals where a red, yellow or green light shows in the bottom single 'aspect' (hole) in the front cover - the equivalent of a conventional 2 or 3 aspect red, yellow, green signal. The kit can also show a second yellow light in the top aspect to display a double yellow, equivalent to a conventional 4 aspect signal. This kit has red, green and both yellow LED lights fitted and is supplied with both single and double aspect covers, so you choose whether your signal is 2, 3 or 4 colour depending on which colours you wire up and control and which front head cover you fit.

You can either control this signal using conventional Lever frame or Toggle type switches or connect it to a DCC decoder to control it from a Digital controller or computer. (note that Train-Tech also offer this signal with a built-in DCC decoder which just plugs straight into the track - no wires or circuitry!)

**! Take extra care when using tools and adhesives.**

**2 Assembling the kit**

The exploded diagram below shows the various components which go to make up a complete signal, although you can fit as few or as many of the detailing parts as you wish for your model. We recommend you read the construction advice below on how to remove parts, adhesives etc.

**Suggested order of assembly:**

- Slide LED PCB through slot in head mount
- Push fit or glue head mount onto aluminium post
- Push fit post into main base plate and align
- Glue single or double aspect front cover to back
- Dry fit or glue ladder between head mount & base
- Glue base cover under base if desired
- Glue handrails, phone, location board if desired

Fit either the 1 or 2 Aspect front to the back cover (2 aspect can display 2 yellows)

Take care not to damage the white silicone diffusing and protecting the tiny LED lights

**3 Connecting the signal**

The LED lights are presoldered onto a PCB which has large contacts at the base to connect your wires to. You can either control it by conventional Lever or Toggle switches or alternatively a digital decoder (eg Train-Tech SC2) if you wish to control it using a DCC controller or computer - follow the connection instructions supplied with the decoder.

**NOTE: You MUST fit resistors as shown below and power from a DC supply or DCC decoder or you will cause permanent damage to the LEDs (Unless using with Train-Tech DCC Signal controllers which already incorporate resistors)**

**Switch wiring example**  
 SW 1: Red / Yellow / Green  
 SW 2: Yellow / R-G / 2 Yellow  
 NB If you fit the single aspect head then you can use a single pole switch to control Yellow 1

Not used Green +  
 Common Yellow 1 +  
 Yellow 2 +  
 Red +

4x 1kΩ resistors

Y1  
 RG  
 Y1+Y2

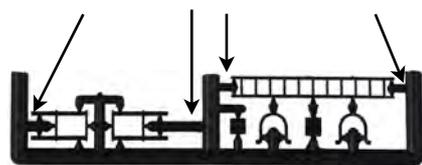
Single pole Centre off Toggle Switch  
 Double pole Centre off Toggle Sw

12-16 V DC

**Construction advice**

The plastic part of this kit is made of a blend of mostly ABS which is slightly more forgiving and less brittle than the polystyrene often used for plastic kits. However it can still be glued together using most general model kit adhesives such as Humbrol or Revell Liquid Poly or 'super glue' - be sure to follow instructions for application and safety supplied with the adhesive. Note that if fixing accessories to the aluminium post, such as the phone or sign, you will need to use a glue which is suitable for bonding plastic to metal. To remove parts from the sprue we suggest using either precision wire/model cutters (available from dcpexpress.com and model or tool suppliers) or a sharp knife working on a scrap of wood or cutting mat. Some fragile parts, such as the ladder, may be more easily prepared by first removing the part with its larger plastic moulding supports attached, then carefully removing the part from the supports. If you wish to paint any parts most model enamel paints should work fine but if unsure check on a small piece of scrap plastic first. Please note that we cannot help customers assemble kits, but if you have difficulties making kits we suggest you try contacting your local model club for assistance.

**We recommend** first cutting thicker supports to release main parts then trimming off the small supports using a sharp craft knife or cutters



**Mounting the signal on your baseboard**

You will need to drill a hole in your baseboard to clear the signal PCB - we recommend a 6-8mm hole so that the signal can be lifted with wires still fitted if required. The signal can be free standing or held by suitable glue or double sided sticky pad.

**Wiring advice**

Electrical connection to the signal is via metal 'pads' at the bottom of the LED light PCB. These pads are made from thin copper bonded to the fibreglass and then 'tinned' to ensure reliable and easy connection.

The best method of connection is by soldering wires onto these pads using a small tip soldering iron of 18-25 watts, taking care not to apply heat for too long. Note that by pre-tinning wires before soldering onto the pads you will find that the solder will flow much more easily to make a secure joint quickly.

If you prefer not to solder then you can wrap thin stranded wire around the pads by stripping off insulation, twisting strands tightly together and wrapping them round the signal base and tightly binding insulation tape around each joint. However soldering is the preferred and most reliable method.

Whichever method you use take care not to let the wires short circuit to each other and do not forget to fit resistors in series as shown before powering up your new signal!

**Location board labels**

These legends can be cut out and glued to the model Location board on the plastic detailing sprue. If using DCC we suggest you use the address you have programmed into your signal decoder which will make the signal easier to identify and operate.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
AD	CA	DA	ES	EN	GE	GY	MY	PN	NW
ABCDEF	GHIJKL	MNOPQR	STUV	WXYZ	ABCDEF	GHIJKL	MNOPQR	STUV	WXYZ

**Using LEDs with model railways**

The lights used in this signal kit are called LEDs. LEDs are really useful lights which, unlike their conventional filament predecessors, are robust, low power and if used correctly run cool and can effectively last forever.

But there are some important considerations when using LEDs. Firstly LED stands for Light Emitting Diode and a diode is an electronic component which only works in when power is applied in one specific direction, so they always need to be fitted the correct way round to work correctly.

Also most standard miniature LEDs a modeller will use only need very small amounts of power, so the current flowing through the LED must be limited and this is usually done by a resistor as supplied in this kit. On the usual 12-16 volts DC supply a railway modeller uses a 1kΩ (one thousand ohms) will limit the current to around 10-14mA (mA is thousandths of an amp) which is ideal for most LEDs.

Note you should only ever use LEDs on a DC (direct current) supply and never an AC (alternating current) supply because although the LED may appear to work properly constant reversal of voltage using AC will eventually damage or shorten its life.

Train-Tech offers packs of various LEDs for modellers and these come with both instructions and suitable resistors for using them on a standard Model Railway DC supply or non Train-Tech DCC controllers.

**Using Signals with Train-Tech DCC controllers**

Train Tech offer various LED controllers including the SC1 and SC2 DCC signal controllers which allow signals such as this to quickly and easily connect to DCC layouts for control by Digital controller or computer. They are quick to connect needing no resistors and set up in seconds with no programming of CV codes.

As well as Signal Controllers, Train-Tech also makes a range of LFX LED lighting controllers which work on both DC and DCC and offer effects to simulate level crossings, welding, traffic lights etc - again resistors are built into all of the LFX units and so LEDs connect directly to them.

See [www.train-tech.com](http://www.train-tech.com) for full details.