

## MODULAR REMOTE CONTROL UNITS

Larsen \& Toubro Limited is India's leading engineering company. The Electrical Business Group offers the countries widest range of low tension switchgear. In addition to high quality products from it's own factories. L\&T seeks out the best in Power Control Technology and offers these products in the Indian Market. Push Button Actuators, Selector Actuators, LED Indication, Modular / Integral Indicators \& Push Button Stations from ESBEE are part of the world class products offered byLarsen \&Toubro Limited.

The Electrical Business Group of Larsen \& Toubro Limited manufactures and markets a wide range of L. T. Switchgear \& Accessories all over the country. L\&T's marketing efforts are complimented by a strong service capability that extends nationwide. A network of more than 450 stockists in addition to L\&T's own offices ensures that wherever you are in the country, ESBEE products are not far from you.


Esbee Industrial Combines, manufactures wide range of 22.5 mm Push Button Switches and Pilot Lights (RemoteControl Signaling Units) and Appliance Switches for which there is technical collaboration with EMB Corporation, USA.
The Company has ISO 9001: 2000 certified quality system.

A strong believer in Indian product quality, ESBEE exports to developed countries like USA, Canada, Germany etc.


ESBEE products have approvals from International testing agencies like VDE (Germany), UL (USA), CSA (Canada) etc.

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For Inside Maharashtra :

- Prices are F.O.R. Pune and are inclusive of excise duty, but exclusive of Tax, Freight, Octroi, Levies and Duties.

For Outside Maharashtra :

- Prices are F.O.R. Pune and are inclusive of excise duty, Central Sales Tax but exclusive of any other Taxes, Freight, Octroi

Features of Remote Control Units

- Actuators / Indicators with new design optimally meets end user requirement
- Can accommodate 1 NO Block OR 1 NC Block OR 1 Bulb Holder
- Designed for flexibility to change from 1 Block first row clip to 3 Block first row clip
- Screw less assembly
- Ease in mounting and wiring
- Good Aesthetics
- International approvals CE, CSA, UL, VDE, `S` MARK for contact blocks and CE, CSA, UL, VDE for bulb holders


## Features of LEDs

- New sleek and compact design
- Lug wiring possible
- Uniform bright illumination
- Wide voltage range
- Operating life more than $1,00,000$ hours,
- Can be assembled in push button stations
- IP30 protection with shroud


## Features of Modular block

- Snap fit for ease in assembly
- Finger proof shrouded terminals
- NO and NC block are colour coded for easy identification
- Captive screw and self lifting washer for easy insertion


## Technical Specifications of LED Indicators

| Type of LED | TT | TS |
| :---: | :---: | :---: |
| RATED Voltage | $6 \mathrm{VAC} / \mathrm{DC}, 12 \mathrm{VAC} / \mathrm{DC}, 24 \mathrm{~V}$ AC / DC, $48 \mathrm{~V} \mathrm{AC} / \mathrm{DC}$ 110 V AC, 110 V DC, 240 V AC, 220 V DC |  |
| OPERATING VOLTAGE | -20\% TO +10\% OF RATED VOLTAGE |  |
| POWER CONSUMPTION $-24 \mathrm{~V} / 110 \mathrm{~V} / 240 \mathrm{~V}$ | < 0.6W |  |
| INSULATION RESISTANCE | $\geq 100 \mathrm{M}$ Ù AT 500 V DC |  |
| DIELECTRIC STRENGTH | 1.5 KV AC |  |
| OPERATING TEMP. | $-10^{\circ} \mathrm{C}$ TO $55^{\circ} \mathrm{C}$ |  |
| STORAGE TEMP. | $-25^{\circ} \mathrm{C}$ TO $70^{\circ} \mathrm{C}$ |  |
| INDICATOR COLOURS | RED, GREEN, YELLOW, BLUE, ORANGE, WHITE |  |
| PANEL CUT-OUT REQUIRED | $\varnothing 22.5 \mathrm{~mm}, 30 \mathrm{~mm}$ with adapter ring |  |
| OVERALL DIMENSION | $\varnothing 29 \times 56 \mathrm{~mm}$ (Approximately) | Ø29 X 60 mm (Approximately) |
| WEIGHT | 25 Grams. |  |
| DEGREE OF PROTECTION | IP 30- (FOR TERMINALS) |  |
|  | IP 65 - (TOP SURFACE OF INDICATORS) |  |
| LIFE | 1,00,000 (BURNING HRS.) |  |


| Type | Description | Cat. No. | Colour (4 ${ }^{\text {th }}$ Digit) | Voltage ( $5^{\text {th }} \& 6^{\text {th }}$ Digit) |
| :---: | :---: | :---: | :---: | :---: |
|  | LED Indicator | TT0 $\square \square \square$ | $\begin{array}{r} 2 \\ \text { (1) } 4 \\ 6 \end{array}$ | X1-240V AC <br> X2-220V DC <br> W1-110V AC <br> W2-110V DC <br> Q1-63.5V AC / DC <br> V1-48V AC / DC <br> U1-24V AC / DC <br> T1-12V AC / DC <br> S1-6V AC / DC |
|  | LED Indicator | TS0 $\square \square \square$ |  |  |
|  | LED Indicator | TS0 $\square \square \square$ |  | Y1-415V AC |
|  | Compact Integral Indicator | TL0 $\square \square 1$ |  | W1-110V AC / DC <br> V1-48V AC / DC <br> U1-24V AC / DC <br> T1-12V AC / DC <br> S1-6V AC / DC |
|  | Compact <br> Integral Indicator with Resister \& Diode | TM0 $\square$ X1 |  | X1-240V AC |
|  | Indicator with Filament bulb | TB0 $\square \square 1$ |  | R1-6V-110V AC/DC X1-240V AC <br> W1-110V AC / DC <br> V1-48V AC / DC <br> U1-24 V AC / DC <br> T1-12 V AC / DC <br> S1-6VAC / DC |
|  | Universal Voltage LED Indicator | $\mathrm{TP} 0 \square \mathrm{Z1}$ TP0 $\square \mathrm{Z2}$ | $\begin{array}{rrr} \hline 1) & 4 \\ 6 & 7 \end{array}$ | Z1-40V to 240V AC/DC Z2-24V to 240V AC/DC |

Note : Colours available-1-Red, 2 - Green, 3 - Black, 4 - Yellow, 5 - White / Opal, 6 - Blue, 7 - Orange, 8 - Colourless

| Type | Description | Cat. No. | Colour (4 ${ }^{\text {th }}$ Digit) | Voltage ( $5^{\text {th }}$ Digit) |
| :---: | :---: | :---: | :---: | :---: |
|  | Flush head Push Button with 1 NC Block | TD11B2 | (1) |  |
|  | Flush head Push Button with 1 NO Block | TD1 $\square$ A2 |  |  |
|  | Projecting head Push Button with 1NC Block | TD41B2 | (1) |  |
|  | Projecting head Push Button with 1NO Block | TD4 $\square$ A2 |  |  |
|  | Symmetrical head 2 position selector switch (NSR ) with 1 NC Block | TK63B2 | $3$ |  |
|  | Symmetrical head 2 position selector switch (NSR ) with1 NO Block | TK63A2 | $3$ |  |
|  | Symmetrical head 2 position selector switch (SR) with1 NC Block | TI63B2 | (3) |  |
|  | Symmetrical head 2 position selector switch (SR) with1 NO Block | TI63A2 | (3) |  |
|  | Push Button Station with Push Pull Emergency Switch, Red with 1 NC | TJ51B2 | (1) |  |
|  | Mushrum Head Push Turn Actuator with 1 NO or NC Block | $\begin{aligned} & \text { TH5 } \square \mathrm{B} 2 \\ & \text { TH5 } \square \mathrm{A} 2 \end{aligned}$ |  | B2 for NC <br> A2 for NO |

[^0]|  | Description | Cat. No. | Cours Available $6^{\text {th }}$ Digit in Cat. No. |
| :---: | :---: | :---: | :---: |
|  | Flush Head Non Illuminated | HD15C $\square$ | (1) 34567 |
|  | Flush Head Illuminated | HD16C $\square$ | (1) 2 (5) 68 |
|  | Projecting Head 'Push Function' Non Illuminated | HD45C $\square$ | (1) 24567 |
|  | Illuminated <br> Projecting Head <br> 'Push Function | HD46C $\square$ | (1) 4 (5) 68 |
|  | Projecting Head 'Push -Push Function' Non (Illuminated) | HF45C $\square$ | (1) 24567 |
|  | Projecting Head <br> 'Push- Push Function' <br> Illuminated | HF46C $\square$ | (1) 4 (5) 78 |
|  | Mushroom Head <br> Ø 40 mm ‘Push Function’ <br> Non Illuminated | HD55C $\square$ | (1) 3 4 |
|  | Mushroom Head 'Push Turn' Non Illuminated | HH55C $\square$ | (1) 34 |
|  | Mushroom Head With Lock \& Key Non Illuminated | HQ55C $\square$ | (1) 3 4 |
|  | Mushroom Head 'Push Pull' Non Illuminated | HG55B $\square$ | (1) 34 |
|  | Twin Touch Non Illuminated | HD15GO |  |
|  | Twin Touch Non Illuminated | HD15G3 | (3) |
|  | Twin Touch With Pilot Lamp Illuminated | HD16G $\square$ | 478 (Colour of Center Indication Strip) |

Note : 1. Actuators \& Selector Actuators with black ABS collar are offered as Standard Eg. : HD15 C]1
2. Actuators (except Mushroom Head Push - Pull \& all types of twin touch Actuators) are also available with chrome plated ABS \& Brass collar

- For Chrome plated ABS Collar replace 5 th digit C by A Eg. : HD15A1
- For Brass Chrome plated ABS Collar replace C by B Eg. : HD15B1

3. For Non-Illuminated Actuator / Selector Actuator at least 1 NO or NC Block required to make a complete Assembly eg. HD15C1 + HC61A2 makes complete assembly of flush head actuator with 1 NO Block
4. For Illuminated Actuator / Selector Actuator at least 1 Bulb Holder required to make a complete Assembly NO or NC Blocks can be added as per the scheme required.
5. Colours available-1-Red, 2 - Green, 3 - Black, 4 - Yellow, 5 - White/Opal, 6 - Blue, 7 - Orange, 8 - Colourless

| Type | Description | Cat. No. | Colour ( $6^{\text {th }}$ Digit) | Voltage ( $7^{\text {th }} \& 8^{\text {th }}$ Digit) |
| :---: | :---: | :---: | :---: | :---: |
|  | Flush Head | HD19C $\square \square \square$ | (1) 47 | T1-12 VAC / DC U1-24 VAC / DC <br> V1-48 VAC / DC <br> W1-110 VAC <br> X1-240 VAC |
|  | Projecting Head <br> (Push Function) | HD49C $\square \square \square$ | (1) 27 | T1-12 VAC / DC U1-24 VAC / DC <br> V1-48 VAC / DC <br> W1-110 VAC <br> X1-240 VAC |
|  | Projecting Head <br> (Push - Push <br> Function) | HF49C $\square \square \square$ | (1) 47 | T1-12 VAC / DC U1-24 VAC / DC <br> V1-48 VAC / DC <br> W1-110 VAC <br> X1-240 VAC |
|  | Twin Touch | HD19G $\square \square \square$ | 47 | T1-12 VAC / DC U1-24VAC / DC <br> V1-48 VAC / DC <br> W1-110 VAC <br> X1-240 VAC |

## EB3

SELECTOR ACTUATOR WITH LED

|  | Voltage ( $7^{\text {th }} \& 8^{\text {th }}$ Digit) |  | T1, U1, V1, W1, X1 | Colour (6 ${ }^{\text {th }}$ Digit) 1 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2 POSITION |  | 3 POSITION |  |  |  |
|  | Non Spring Return | Spring Return | Non Spring Return | Spring Return | Spring Return From L. H. | Spring Return from R.H. |
|  | 「 | $\dagger$ | $\downarrow$ | $\langle 1\rangle$ | ¿ $\downarrow$ | $\downarrow$ |
|  | HK69CD $\square \square$ | HI69C $\square \square \square$ | HL69C $\square \square \square$ | HJ69C $\square \square \square$ | HM69CD $\square \square$ | HN69C $\square \square$ |

Note * - In 2 position selector actuator, for operating style ${ }^{\circ}$ replace 2 nd digit from K to R and for operating style $L^{0}$, replace 2 nd digit from K to T


Note * - In 2 position selector actuator, for operating style ${ }^{\circ}$ replace 2nd digit from K to R and for operating style $\square^{0}$, replace 2nd digit from K to T

## EB5 ACCESSORIES FOR ACTUATORS \& SELECTOR ACTUATORS

| MODULAR CONTACT BLOCK |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Description | Cat. No. |  | Description | Cat. No. |
|  | 'NO' BLOCK | HC61A2 |  | BULB HOLDER WITH BUILT IN |  |
|  | 'NC' BLOCK | HC61B2 |  | RESISTOR \& DIODE $(240 \mathrm{~V}$ AC) | HC61X1 |
| Note : For Non-Illuminated Actuators / Selector Actuators at least 1 NO or NC Block is required for electrical connection. For Illuminated Actuators / Selector Actuators at least 1 Bulb Holder is required for electrical connection. |  |  |  |  |  |
| CLIPS FOR MODULAR BLOCKS |  |  |  |  |  |
| Second Row Clip (For Vertical Cascading) | HC122030 |  | HC929002 |  | HC922002 |


| MODULAR INDICATORS |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Description | Cat. No. | Colours Available $6^{\text {th }}$ Digit in Cat. No. |
|  | Ribbed Lens (Without Trim Collar) (Standard) | HB07F $\square$ | $\longrightarrow$ |
|  | Ribbed Lens (With Trim Collar) | HB07E $\square$ |  |

EC

## SPARES

| SPARE LENS FOR MODULAR/ INTEGRAL INDICATORS (RIBBED LENS) |  |  |  |
| :---: | :---: | :---: | :---: |
| Ribbed Lens | C | WITHOUT TRIM COLLAR | WITH TRIM COLLAR |
|  | Colour | Cat. No. | Cat. No. |
|  | Red | HE103108 | HE903108 |
|  | Green | HE104109 | HE904109 |
|  | Yellow | HE105110 | HE905110 |
|  | Opal | HE101111 | HE901111 |
|  | Blue | HE107112 | HE907112 |
|  | Orange | HE108113 | HE908113 |
|  | Colourless | HE100101 | HE900101 |


| MODULAR BLOCKS (BULB HOLDERS WITH SERIES RESISTOR) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Bulb Rating | 6V,2W | 12V,2W | 24V,2W | 48V,2W | $130 \mathrm{~V}, 20 \mathrm{~mA}$ |
|  | Supply Voltage | 6V AC/DC | 12V AC/DC | 24V AC/DC | 48V AC/DC | 110V AC/DC |
|  | Cat. No. | HC61S1 | HC61T1 | HC61U1 | HC61V1 | HC61W1 |
| BULB HOLDER WITH BUILT IN RESISTOR \& DIODE |  |  | BULB HOLDER WITHOUT RESISTOR / DIODE |  |  |  |
| Bulb Rating | $130 \mathrm{~V}, 20 \mathrm{~mA} \mathrm{BULB}$ |  | Supply Voltage |  | $\begin{array}{c\|c}  & 6 \mathrm{~V} / 12 \mathrm{~V} / 24 \mathrm{~V} / 48 \mathrm{~V} \\ \mathrm{~g}) & 110 \mathrm{~V} \text { AC / DC } \end{array}$ |  |
| Supply Voltage | 240 V AC SUPPLY |  | (Please specify while ordering) |  |  |  |
| Cat. No. | HC61X1 |  | Cat. No. |  | HC61R1 |  |



| EC7 | SHROUD FOR ACTUATOR |  |
| :--- | :--- | :--- |
|  | Colour | Cat. No. |
|  | Red | HH 152002 |
|  | Green | HH 153003 |
|  | Black | HH 154004 |
|  | Yellow | HH 155005 |
|  | Colourless | HH 150100 |


| EC8 | COLLAR (For Flush/Projecting Head) |  |  |
| :---: | :---: | :---: | :---: |
|  | Colour | Cat. No. |  |
|  | Black <br> Chrome <br> Plated | HB192000 |  |
|  | - 'ABS' | HB196000 |  |
|  | - 'BRASS' | HB326000 |  |


| EC9 | ADAPTOR RING (For 30 to 22mm in Panel Cutout conversion) |  |
| :--- | :--- | :--- |
|  | Colour | Cat. No. |
|  | Gray | HH 180000 |
|  | Black Chrome Plated: | HH 182004 |
|  | - 'ABS' | HH 196006 |


| EC10 | BLANKING PLUGS |  |
| :--- | :--- | :--- |
|  | Colour | Cat. No. |
|  | Gray | HH180002 |
|  | Black | HH182009 |
|  | Chrome Plated 'ABS' | HH196010 |


| EC11 | CENTER INDICATION STRIP | (for Twin Touch Actuator) |
| :--- | :--- | :--- |
|  | Colour | Cat. No. |
|  | Black | HB102058 |
|  | Yellow | HB105163 |
|  | Orange | HB108169 |
|  | Colourless | HB100161 |



| Type | Description | Cat. No.l Price |
| :---: | :---: | :---: |
|  | All Gray Without hole | HF999000 |
|  |  <br> 1 hole of $\varnothing 22.5$ | HF999001 |
|  |  <br> 2 holes of $\varnothing 22.5$ | HF999002 |


| Type | Description | Cat. No.l Price |
| :---: | :---: | :---: |
|  | All Gray single hole | HF999004 |
|  | All Gray \& 2 hole of $\varnothing 22.5$ | HF999005 |
|  | All Gray \& 3 holes of $\varnothing 22.5$ | HF999003 |
|  | Single hole yellow cover \& Gray Base | HF995001 |

## ED4

SPARE CONTACT BLOCK (for Push Button Stations)


ED5
METAL PLATES - SPARE

|  | Description | Cat. No. |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Small | Large | Square |
|  | OFF - ON | HH242001 | HH242016 | HH242031 |
|  | FORW. - OFF-REV. | HH242002 | HH242017 | HH242032 |
|  | HAND - OFF - AUTO | HH242003 | HH242018 | HH242033 |
|  | STOP - START | HH242004 | HH242019 | HH242034 |
|  | FAST - OFF - SLOW | HH242005 | HH242020 | HH242035 |
| Square | O-I | HH242006 | HH242021 | HH242036 |
|  | I-O-II | HH242007 | HH242022 | HH242037 |



## Degree of Protection :

Ingress Protection IP65 for Push Button Station with Indicators / Non Illuminated Push Function Actuators \& all Purpose Enclosure Safety:
Fully insulated to house electrical and electronic equipment with respect to protection against electrical shock

Materials :

Base : Tough, impact resistant, ABS
Cover : Tough, impact resistant, ABS
Cover Screws : Slotted head, metal screws for Push Button Stations and tough, low friction PA6 captive cross slot head screws for all purpose enclosures
Gasket : Oil and acid resistant nitrile rubber

## Terminal Capacity :

1 to 2.5 mm square flexible wire

## Mounting :

Directly through base, in cover screw cavity, outside gasketted area with No. 4 size, sheet metal screws

## Machining :

Machining is easy with normal tools. Enclosures can be drilled, sawed, filed, punched etc. They can be welded with ultrasonic equipment

## Dimensions:

|  | 1 <br> Station | 2 <br> Station | 3 <br> Station | All Purpose <br> Enclosure |
| :--- | :---: | :---: | :---: | :---: |
| Base size mm | $74 \times 70$ | $107 \times 70$ | $140 \times 70$ | $110 \times 80$ |
| Cover Depth mm | 16.50 | 16.50 | 16.50 | 20.00 |
| Base Depth mm | 32.00 | 30.00 | 32.00 | 45.00 |

## Maintenance :

Do not need any particular maintenance. If necessary, soap and water can be used for cleaning. If detergent is used, enclosure should be rinsed well with clean water. Do not use any solvents to clean the enclosures

## Chemical resistance :

ABS products are almost completely resistant to aqueous acids, alkalis and salts. Concentrated phosphoric and hydrochloric acids have little effect. Low KB solvents, alcohols and animal / vegetable / mineral oils produce insignificant changes. Aromatic or chlorinated hydrocarbons and high KB solvents cause marked swelling. Esters Ketones and Unsaturated alkalis are solvents for ABS and should not be used.

## Chemical resistance :

Long term exposure to temperatures above $70^{\circ} \mathrm{C}$ should be avoided. No significant change in impact strength is noticed up to $-20^{\circ} \mathrm{C}$.

## ACTUATOR, INDICATORS, MODULAR \& FRONT CONNECTION BLOCKS

| VDE, CE Electrical Ratings (IEC 947-3, 947-5-1, VDE 0660 Part 200, EN 60947-3, EN 60947-5-1) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Alternating Current | Rated Operational Voltage ( $50-60 \mathrm{~Hz}$ ) |  | V | 110 | 230 | 440 | 500 |
|  | Rated Operational Current (IEC 947-3) | AC21 | Amp | 16 | 14.0 | 11.0 | 10.0 |
|  | Rated Operational Current (IEC 947-5-1) | AC15 | Amp | 8 | 6.0 | 3.0 | 2.0 |
| Direct Current | Rated Operational Voltage |  | V | 24 | 48 | 110 | 220 |
|  | Rated Operational Current (IEC 947-5-1) | DC13 | Amp | 1.5 | 1.0 | 0.3 | 0.2 |




[^0]:    Note : Colours available-1-Red, 2 - Green, 3 - Black, 4 - Yellow, 5 - White / Opal, 6 - Blue, 7 - Orange, 8 - Colourless

