Introduction to Control and Signaling

Nov 2025

Life Is On Schneider Electric

Control & Signaling Product Range and Strategic Offer

Control

Pushbuttons / Switches / Pilot lights


XB5R / XB4R


XB5S / Ø22


XB4-XB5 / Ø22


XB7 / Ø22


XB6-XVL
Ø8, 12, 16


9001 / Ø30


XA2-XB2 / Ø22


K Cam

Control Station & Enclosures


XAC


XALD, XALK


XALE


XAP, XB2, SL


XALE


XAW ATEX D

Remote Control Station


eXLhoist

Safety Dialog


Foot Switches

Relays

Control Relays


RM17 / RM22 / RM35 / NFC Control

Timers


RE17 / RE22 / NFC Timing

Analog Converters


RMTJ/K/P

Electromechanical Relays


RSL / RXG / RSB / RXM / RUM / RPM / RPF / *Push-In Socket*

Solid State Relays


SSL / SSM1/2 / SSP1/3

Signaling

Tower Lights


XVB7 / XV6 / XV4

Beacons


XVR08 Ø 84 / XVR3 Ø 100 / XVR12 Ø 120 / XVR13 Ø 130

Sound


XVS10/14

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Control

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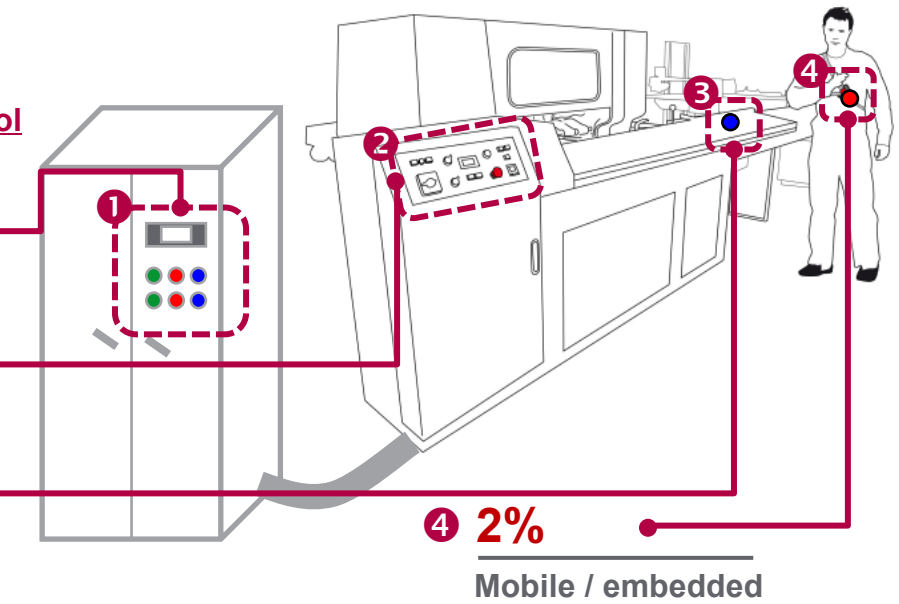
Harmony XB4/XB5 Push Buttons Application

Where to install?

Mainly integrated at the front of the panel (mounted into a hole most commonly 22mm) for the automation of a machine or system.

The 4 machines area for **control command push buttons.**



❶ **5%**
Electrical cabinet

❷ **80%**
Control panel

❸ **13%**
Stand alone

❹ **2%**
Mobile / embedded

Components / Sub-assembly / Complete XB4 & XB5

Products starting with Z

Products starting with X

Components

Sub-assemblies

Contact & LED blocks pre-mounted on the fixing collar

Complete products

Do you know how to assemble them?
It's easy I promise!

Differences Between Metal and Plastic (XB4 vs XB5)

	Plastic	Metal
Historical	✓	✓
Aesthetics (incl. with panel / chassis)	✓	✓
Perceived robustness		✓
Actual shock robustness		✓
Actual chemical robustness	✓	✓
Actual temperature resistance		✓
Vibration resistance		✓
Price	✓	

- Some are attached to their historical choice & refuse to change
- Material choice is often made based on background aesthetics
- Metal aspect is providing a robustness image to the machine
- Metal solutions are the only one resisting to extreme shock constraints
- Plastic & metal don't resist to the same chemicals
- Temperature variation is impacting fixation strength and extreme temperatures are impacting heads robustness: only metal solution
- Only metal fixation can provide enough resistance to extreme vibrations
- Plastic solutions are preferred by price-oriented customers

Industry leading design from the 22mm market leader

Harmony XB4/XB5 is the first to market with both stackable functions and compact design

Reduce installation cost by saving wiring time and maintenance cost by avoiding periodic re-tightening.

- Less manipulation compared to spring clamp

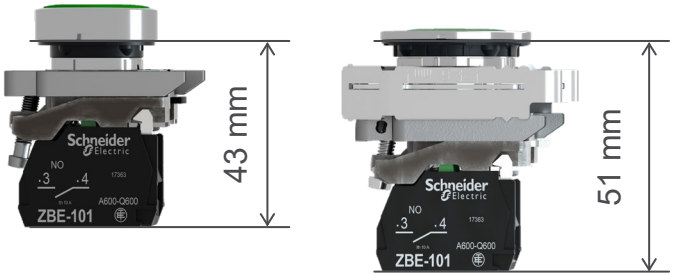
Improve aesthetic with slim panels thanks to compacity.

- Height decrease by 37%

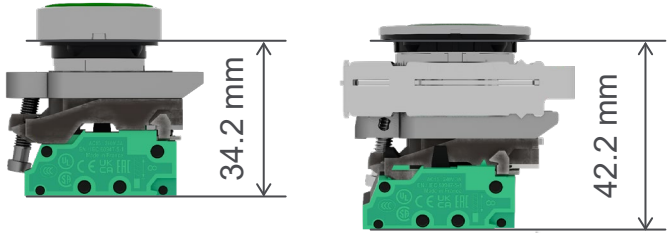
Extend applications scope with more possible configurations.

NEW in 2025

Standard offer



Compact offer



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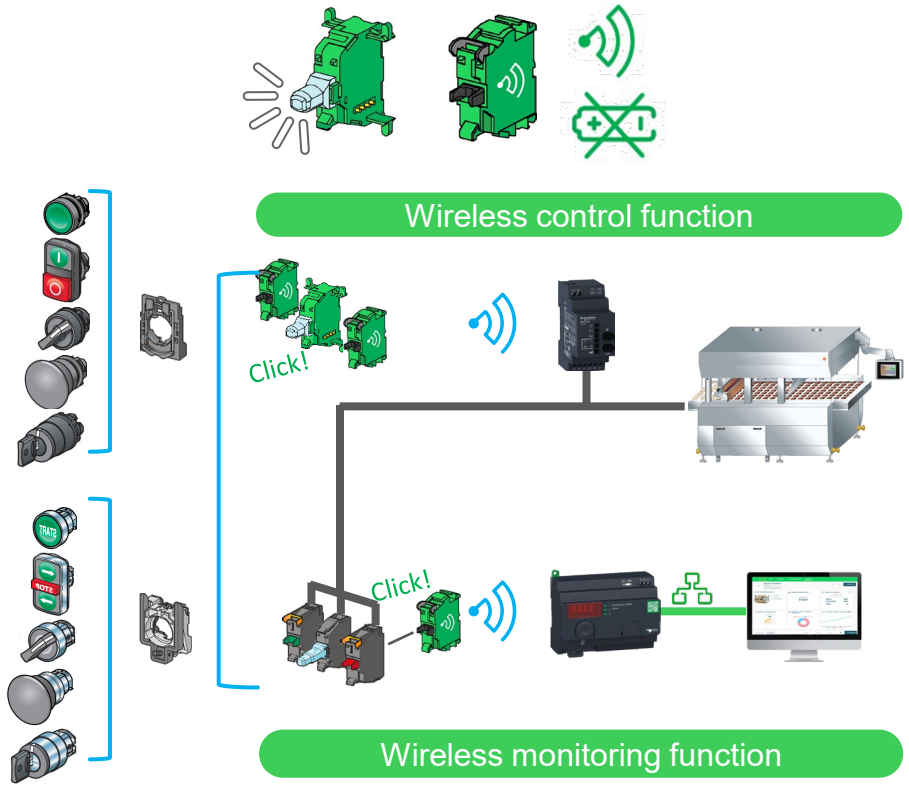
Wireless Pushbuttons XB5R/XB4R



- ✓ **Compatible** with existing XB4/XB5 Installations
- ✓ **Monitor** actuations with the harmony hub
- ✓ **Wireless**, battery-less, reliable

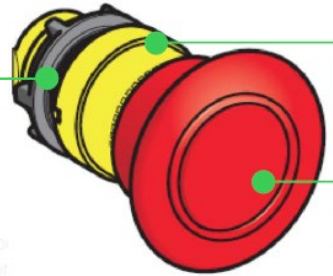
Emergency stop button

Bezel

- XB4 Metal range : chrome metal or black matte finishing
- XB5 Plastic range : Yellow finishing

Installation

- XB4 Metal range : metal fixing collar with 1 screw fixing
- XB5 Plastic range : tightening nut + plastic fixing collar with metal clip



Operator

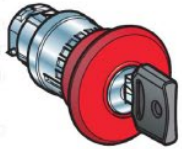
- Only red head
- Daimeter : 30mm, 40mm, 60mm
- Type : Turn to release, push-pull, key release

ZB5AS84W3

- Turn to release, ø60mm
- Illuminated bezel

ZB5AS964

- Key release, ø60mm
- Yellow plastic bezel



ZB4BS944

- Key release, ø40mm
- Standard metal bezel

ZB4BT84

- Push-pull, ø40mm
- Standard metal bezel

ZB4BS84

- Turn to release, ø40mm
- Standard metal bezel

Other Harmony Control Ranges

30mm 9001K (metal) & 9001SK (plastic)

16mm XB6 (plastic)

Other Harmony Control Ranges Continued

22mm Monolithic XB7

Note: This is a single, integrated unit

Control Stations

Harmony XAPD – suited to 22mm or 30mm

- ✓ Zinc alloy or Aluminium
- ✓ Comes in yellow and grey
- ✓ 0 to 8 hole configurations
- ✓ Compatible with E-Stops
- ✓ Various legend plates available

Harmony XALD and XALK – suited to XB5

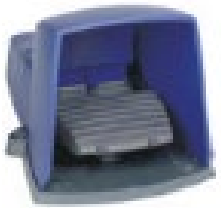
- ✓ Plastic
- ✓ Many preassembled enclosures
- ✓ XALK = yellow
- ✓ XALD = grey
- ✓ 1 to 5 hole configurations

Top Tip! Always keep the installation consistent.
Plastic push button → plastic enclosure
Metal push button → metal enclosure

Foot and Cam Switches

Harmony XPE Foot Switches

- ✓ Protective cover available in metal and plastic
- ✓ Used for start/stop
- ✓ 1 or 2 steps

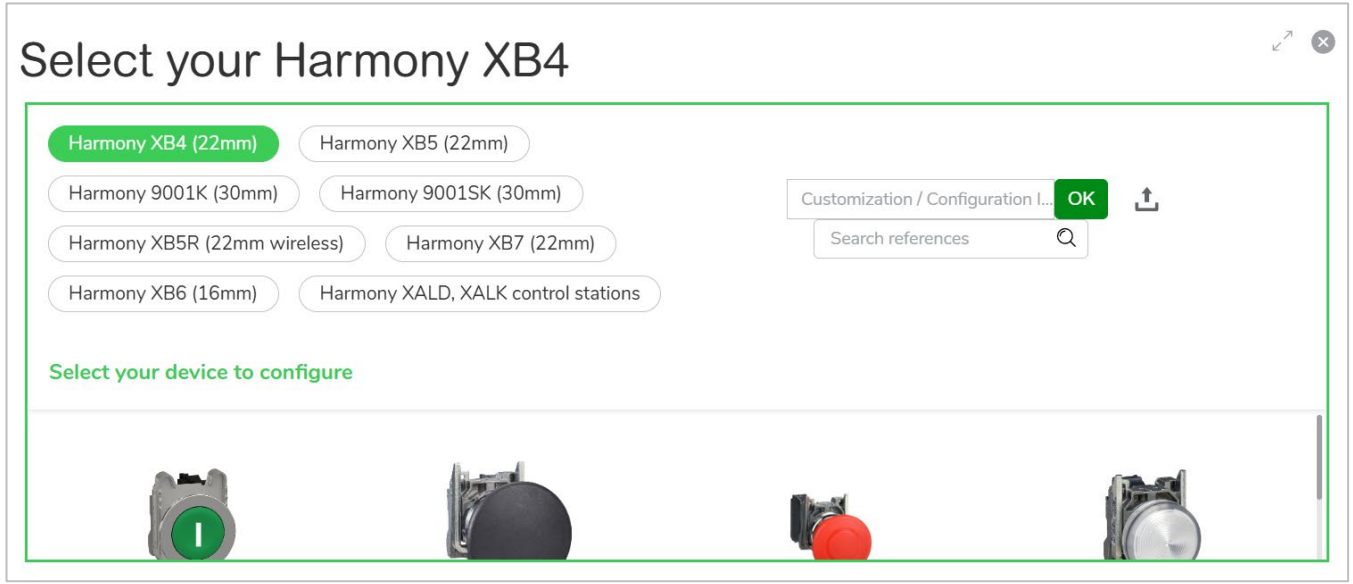


Harmony K 16-22mm Rotary Cam Switches

- ✓ Used for complex or sequential switching
- ✓ 10-150A
- ✓ Modular switches
- ✓ Metal and plastic options
- ✓ Compatible with 16mm and 22mm standard cutouts

Product Selector Tool

Easily discover what products you can recommend to your customer!



Product Selector Tool

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Signaling

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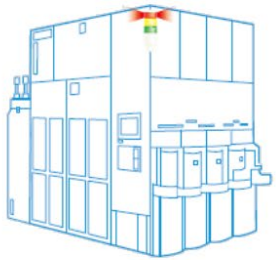
Tower Light typical applications

Some typical application of tower light industrial environments

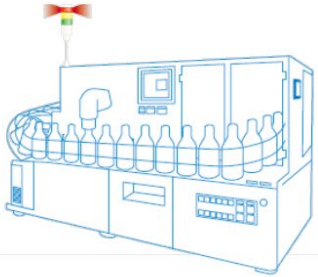
Machine Tools

Essential to indicate the Status of the machine especially when the machine is working and people could not approach it simply



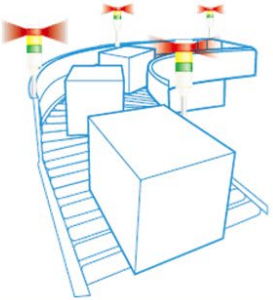
Semiconductor

For this type of minuteness work, people mostly are not intervening so it is important to know the status of the machine using tower light



Food and Beverage

Control of the process is very strict so a tower light with high degree of protection against dust and water is essential



Conveyor

Essential to communicate and control the process to avoid the collision of the transported goods

- ✓ Places with Human - Machine Communication
- ✓ Places visual device is needed for safety
- ✓ Places visual device is needed for warning & improve efficiency

Harmony Modular Signaling Family

Complete new lineup of modular tower lights

70 mm Harmony XVB7 exceptional functionality

Rich colours and light patterns for all applications

Rich colours and light patterns to fulfill multiple applications

- 6 colours
- 4 light patterns — Steady | Blinking | Flashing | Rotating
- Multi-function + Steady/blinking/2x flash/3x flash
- Beacon lens — Steady | Flashing

DC only lens to simplify stock

Easy to select, easy to order

Rationalized construction with **24 V** bases and voltage selection through base

24 V

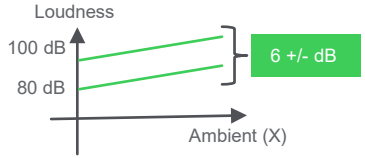
State of the art sounders

Wide line up of sounders selection, with greater loudness and high IP

- *2-tone and 8-tone buzzers* ***(IP66)***
- 3 mode of loudness adjustment (low, medium, high)
- Up to 102 dBA @ 1m

360° Omni sound

- *Self-adjust buzzer* ***(IP65)***
- Sound pressure adjust automatically based on ambient



- *Editable sounders* ***(IP65)***

- **Type C USB** for programming
- Max 50 tones (8MB memory)
- **4x digital input** to select **15 tones**
- Support customer own **MP3 files**

Harmony XVB7 features overview – with only 64 references

More base variety

More bases to select from with varied options to be connected

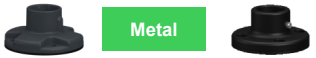
- 5 bases

- 3 voltage category: **24 VAC/DC** | **100–240 VAC** | **5V USB**
- 3 wiring types: **Push in terminal** | **M12** | **USB**
- 2 body colours: **Silver/Dark grey**
- 2 connections: **IO-Link** | **USB**

Universal accessories

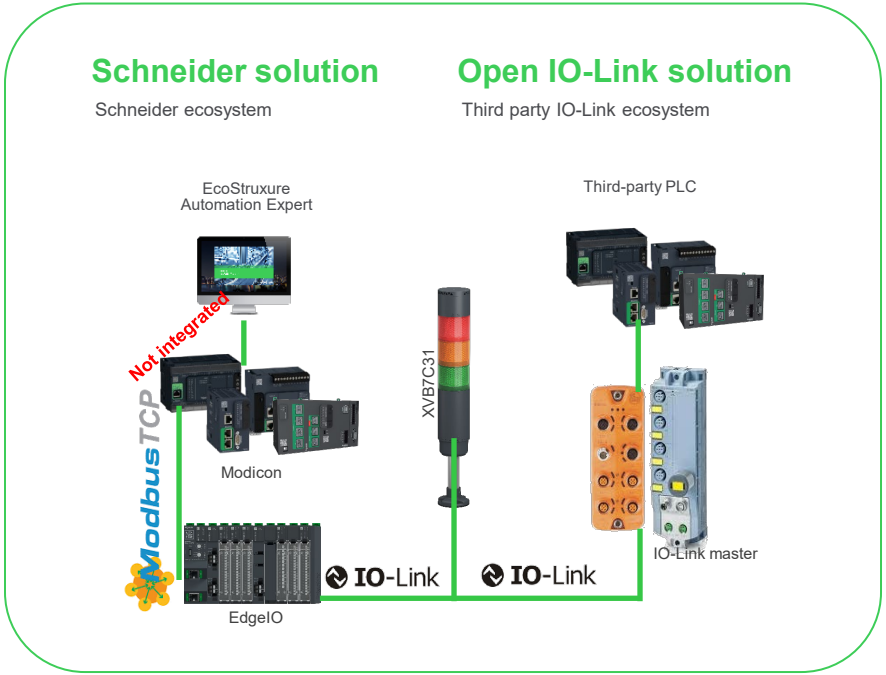
- Multiple mounting options

- 5 pole lengths: **Default** | **100 mm** | **250 mm** | **400 mm** | **800 mm**
- 2 body colours: **Dark grey/Silver**
- 2 body materials: **Plastic** | **Metal**



Harmony XVB7 IO-Link Base

Stay connected with our easy to integrate IO-Link base



3 easy integration steps

Easy to adapt IODD files with **3 easy steps:**

1. Download the IODD file and import to IO-Link controller/master.
2. Identify the pin number and its associated function via user guide.
3. Operate with 4 light function codes.

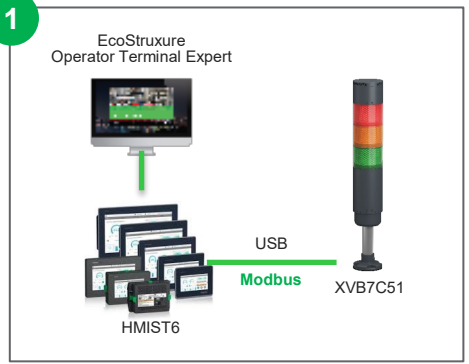
Light pattern	value
OFF	0b0000 0000 (0x00)
ON	0b0000 0001 (0x01)
BLINK ON	0b0000 0011 (0x03)
FLASH ON	0b0000 0101 (0x05)

Click here for the I/O Link User Guide.

Harmony XVB7 USB Base

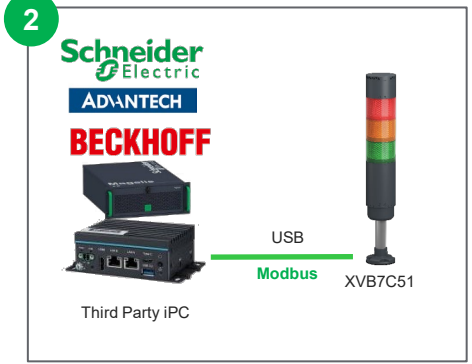
Direct plug-and-play with Schneider HMI

1



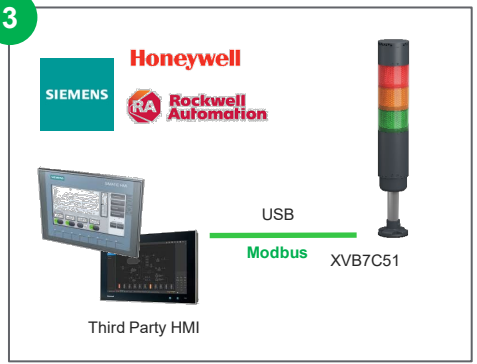
Integrated solution supports direct plug and play

2



Easy integration using Modbus over USB protocol

3



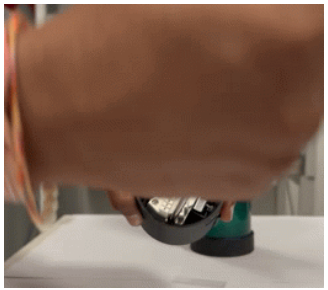
HMI USB must support Modbus protocol

Harmony XVB7 Installation Efficiency

Operation efficiency at its finest

Operation efficiency is a core consideration of industrial machine builders, and with our new wiring features, it can greatly improve **installation efficiency** and reduce installation time by **up to 90%.**

No more screwing

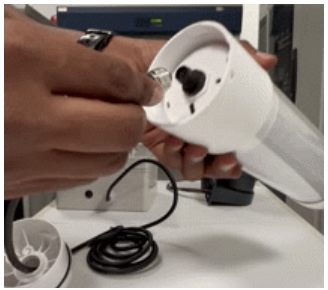


Up to 2 min. and more

Push-in terminal

30 sec. or **70% reduction**

M12 connector



10 sec. or **90% reduction**

How to Choose

4 simple step to complete your tower light

1. Base selection

- The base determines the voltage level
- Look outt for your preference connection type

2. Lens selection

- Maximum of 5 layers, including the top unit
- All lenses are 24V in new offer
- Choose from 6 colors, 4 light patterns

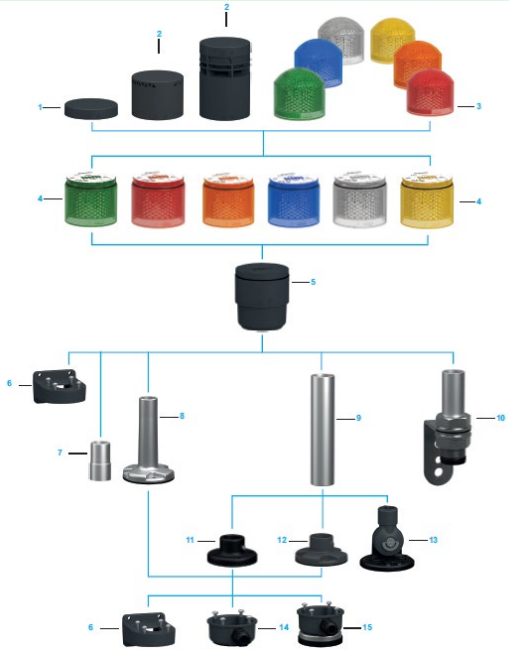
3. Top unit selection

- Top unit can be either a sounder, beacon, or top cover
- All sounders and beacons are now 24V

4. Mounting accessories

Common accessories for all diameter modular tower light

Construction Diagram



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The Modular Offer Feature Differences

	 XVB7 Premium offer! 70 mm	 XV6 60 mm	 XV4 40 mm
Diameter			
Construction	Modular common construction	Modular common construction	Modular common construction
Aesthetic	Premium outlook and diffusion	Outstanding outlook and diffusion	Outstanding outlook and diffusion
Body colour	Dark grey/silver	Dark grey/white	White
IP rating	IP66	IP65	IP65
Certification	CE, cULus, CCC, RCM, UKCA	CE, cULus, CCC, RCM, UKCA	CE, cULus, CCC, RCM, UKCA
Power supply	24 VAC/DC, 100–240VAC, 120 VDC	5VDC,24VAC/DC,100～240VAC	24VAC/DC,100～240VAC
Connectivity	IO-Link, USB	USB	-
Light pattern	Steady, blink, flashing, rotating	Steady, blink, flashing	Steady, blink
Lens type	Color lens, beacon	Color lens, clear lens	Color lens, clear lens

Common accessories with same selection method for all ranges

XVR3 Rotating Beacon

- ✓ High Protection IP65 Motor-less LED
- ✓ 10 modes in one adjusted with an easy dial
- ✓ 360 degrees of light with an internal parabola mirror

Mode 0	Rotating	Rotating 100 min $^{-1}$
Mode 1		Rotating 140 min $^{-1}$
Mode 2		Rotating 200 min $^{-1}$
Mode 3	Blinking	Blinking 60 min $^{-1}$
Mode 4		Blinking 130 min $^{-1}$
Mode 5	Flashing	Flashing 3 times consecutively
Mode 6		Flashing 5 times consecutively
Mode 7		Flashing 8 times consecutively
Mode 8		Flashing 11 times consecutively
Mode 9		Flashing continuously

XVS Sirens and Alarms

- ✓ Customisable voice messages
- ✓ Compact and flexible with panel and wall mounting
- ✓ Available in voltages 12 – 230V

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Relays

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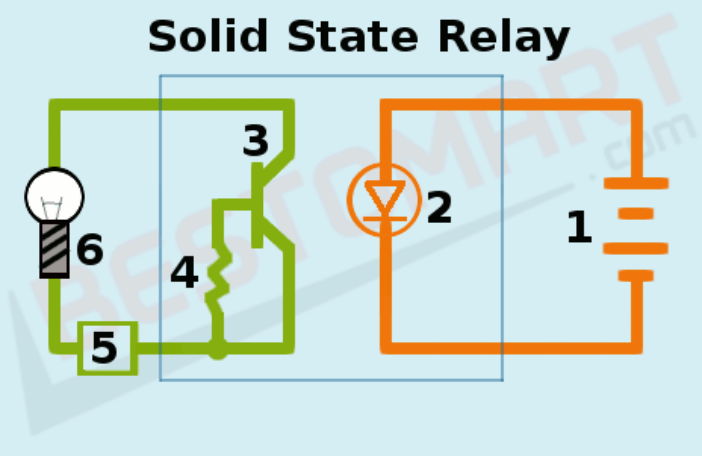
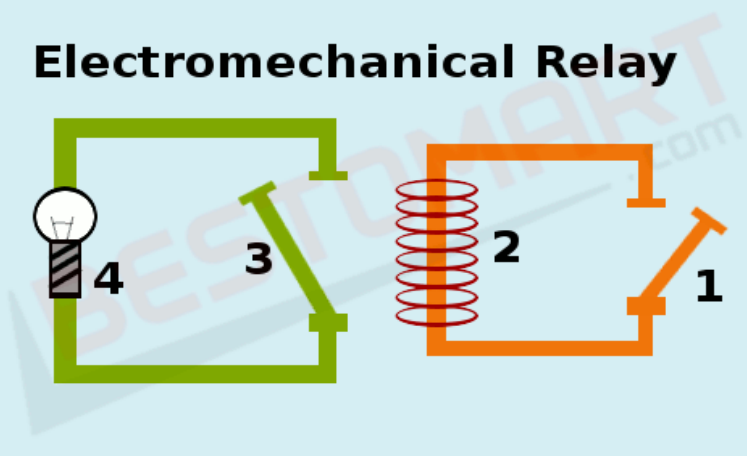
What does a relay do?

- ✓ No moving parts
- ✓ Transistor actuates to close a circuit



- ✓ Moving metal armature



A relay is an **electrically operated switch**. It makes use of low currents to activate circuits with high currents

Electromechanical Relays

Key Benefits:

- ✓ Simple two-piece plug and socket (preassembled or separate parts)
- ✓ Wide range of coil voltages and CO
- ✓ LED indication light
- ✓ Debugging test button

Selecting an Electromechanical Relay

Relay selection:

1. Control voltage
2. Load current (Amp rating)
3. No. of contacts
   - 1C/O – SPDT
   - 2C/O – DPDT
   - 3C/O – 3PDT
   - 4C/O – 4PDT

1CO 2CO

Interface relays for customer assembly

Standard cover relays with lockable test button and LED

Control circuit voltage V	Sold in lots of	Number and type of contacts - Thermal current (Ith) 1 CO - 10 A Unit reference	2 CO - 5 A Unit reference	Weight kg/*lb*
6 ⎓	10	RXG12RD	–	0.020/*0.044*
12 ⎓	10	RXG12JD	RXG22JD	0.020/*0.044*
24 ⎓	10	RXG12BD	RXG22BD	0.020/*0.044*
48 ⎓	10	RXG12ED	RXG22ED	0.020/*0.044*
110 ⎓	10	RXG12FD	RXG22FD	0.020/*0.044*
24 ∿	10	RXG12B7	RXG22B7	0.020/*0.044*
48 ∿	10	RXG12E7	RXG22E7	0.020/*0.044*
120 ∿	10	RXG12F7	RXG22F7	0.020/*0.044*
220 ∿	10	–	RXG22M7	0.020/*0.044*
230 ∿	10	RXG12P7	RXG22P7	0.020/*0.044*

RXG relay selection

This is all available in the catalogue!

Electromechanical Relay Selection

RXG 2 2 BD

Number of contacts:
1 C/O
2 C/O

Step 2

Cover feature
1 – with lockable test button, without LED
2 – with lockable test button, with LED
3 – without lockable test button, with LED
5 – Clear cover

Step 3

Coil Voltage:		RD	6VDC
B7	24VAC	JD	12VDC
E7	48VAC	BD	24VDC
F7	120VAC	ED	48VDC
M7	220VAC	ND	60VDC
P7	230VAC	FD	110VDC

What does a control relay do?

Input Signal → **Monitoring** → **Alarm Signal Output**

Monitoring Parameters

- Voltage
- Current
- Phase Loss
- Phase Sequence
- Speed
- Temperature
- Frequency
- Liquid Level

Set conditions for monitoring and level to trigger alarm signal

Deactivate machinery before damage

Output to devices for warning alert

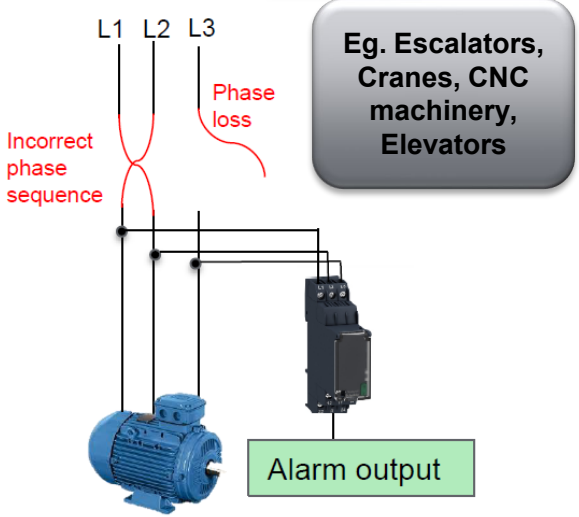
Typical Applications of Control Relays

Motor Protection

RM17TG00
RM17TG20

RM22TG0

RMNF22TB30



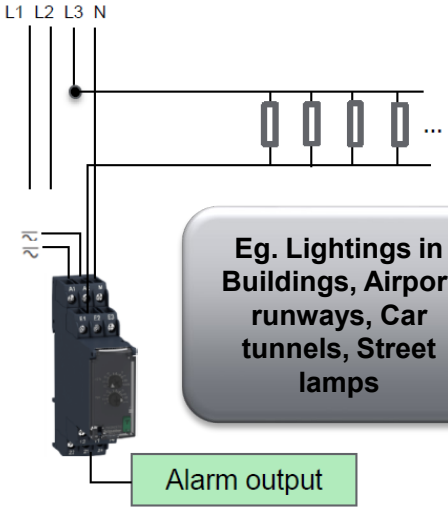
Eg. Escalators, Cranes, CNC machinery, Elevators

Current Monitoring

RM17JC000MW (with built in CT transformer)

RM22JA*

RM35JA*



Eg. Lightings in Buildings, Airport runways, Car tunnels, Street lamps

Liquid Level Monitoring

RM22L*

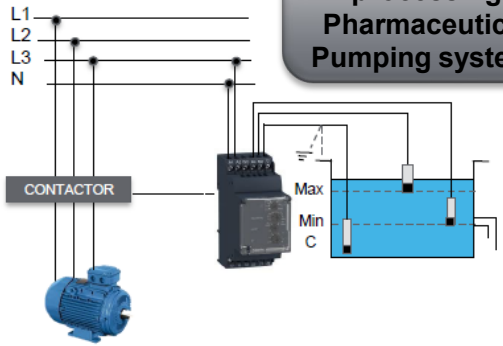
RM35LM*

RM35LV*

Detection by resistive probes

Detection by discrete sensors

Eg. Water processing, Food processing, Pharmaceutical, Pumping systems



Motor failure is one of the costly factor within industrial processes

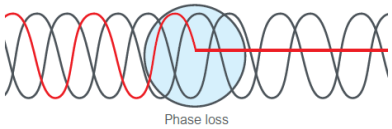
Control monitoring relays is a complimentary and additional protection for motor

Motor failure can be caused by

- Internal faults: Motor bearing damage or insulation wear out due to long time of use
- External faults: Over-load, Underload (motor dry run), Under or Over voltage, incoming power failure

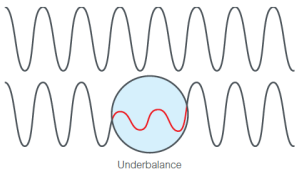
Motor behaviour during faults

Phase loss



Vibration, parts damage

Phase unbalanced (aka Asymmetry)

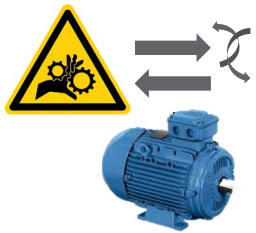


Overheat, premature failure

OV/UV

Overheat, insulation damage

Phase reversal



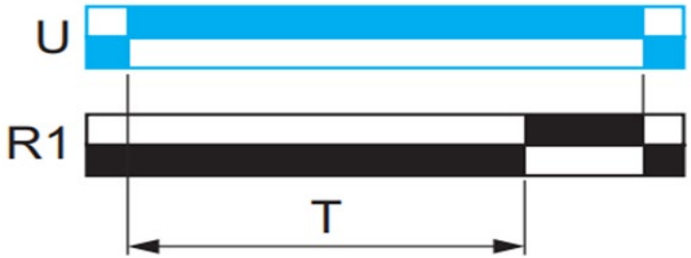
Wrong direction, safety concern

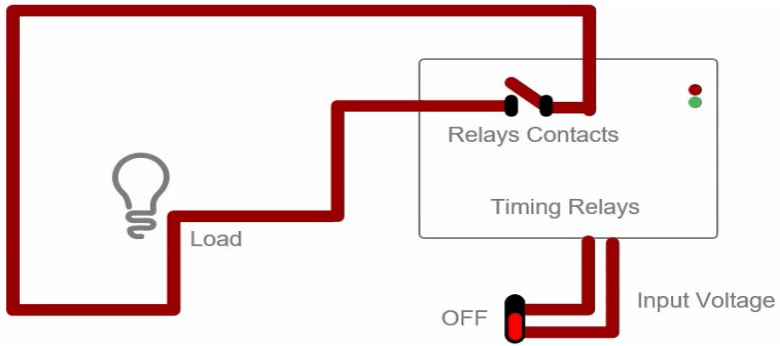
Advantages of using control relays

- ✓ Simple wiring and easily setup with din rail mounting
- ✓ Monitoring parameters can be setup directly without any use of complicated software
- ✓ Easily replaceable if product fails (Plug and Play)
- ✓ Simple, cost-effective measuring and monitoring device to protect machinery/motor without high investment
- ✓ Self-powered models available

What does a Timer Relay do?

- ✓ A type of relay where the contacts close or open based on a specific timing function.
- ✓ For example, closing or opening the contacts after a period of time has passed even when input signal is triggered.
- ✓ ON delay timing function.





Typical Applications of Timer Relays

On Delay

RE17RAMU REXL*

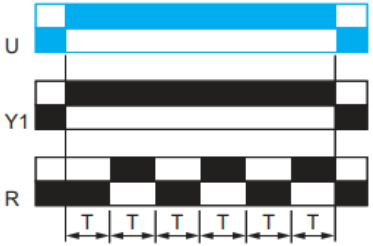
A pedestrian pushes the button for ‘Green Man’ to cross, the signal light changes from ‘Red Man’ to ‘Green Man’ after a delay.

Off Delay

RE17RCMU

The elevator door does not close immediately after the ‘Close’ button is pressed. Off delay timing function is used to preset the time allowed before the elevator door closes.

Symmetrical Flashing



RE17RMMW RENF22*

The lightings and water spraying is repeated and stopped at intervals for a preset amount of time.

NFC Timer and Control Relays

Key Benefits:

- ✓ Single product with many functions
- ✓ Wide range of coil voltages and CO
- ✓ Digitisation removing the need for tools
- ✓ Time saving with cloning
- ✓ Easy to monitor, test and configure settings in app
- ✓ Password protected

RMNF22TB30 RENF22R2MMW

Basic understanding of why and where relays are used

1.Electromechanical Relay

Hardwired **direct control or Interface** between control unit → field devices

2. Solid State Relay

Contactless, fast switching, zero voltage crossing (HVAC)

3. Monitoring & Control Relay

Monitoring & control, e.g. voltage, current, liquid level

4. Timer Relay

Simple machine **time logic control**, e.g. on or off delay

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