

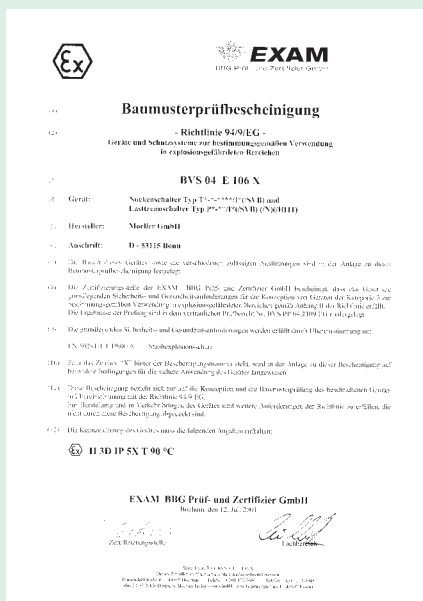


### Important general mounting and application note:

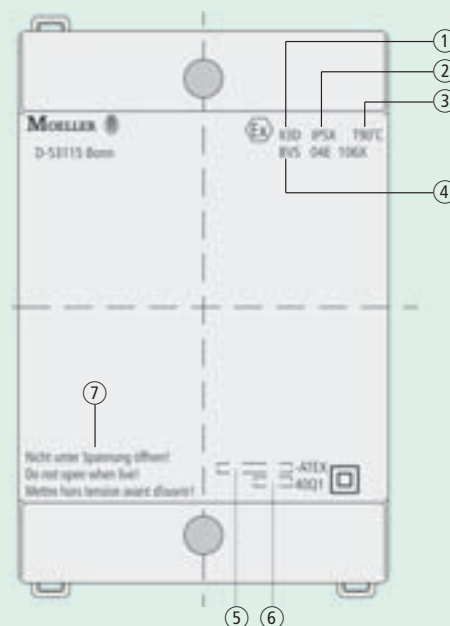
- only category 3D suitable cable glands can be used!
- only heat-resistant cables can be used (>90 °C)!
- the surface temperature is a maximum of 90 °C!
- only permissible with an ambient temperature from -20 °C to +40 °C!
- the technical data of the switch used must be observed!
- never open the device in the dust explosion hazardous area!
- the demands of the EN 50281-1-2 must be observed!
- the device must be checked for dust before assembly!

ATEX approved switches enhance the operational security in industrial manufacturing areas, production plants, during the storage of grains and their preparation and processing as well

as in agriculture. Grain storage silos are also subject to dust in outdoor areas, which requires the use of switches with ATEX approval.



Approval certificate for use of the Moeller rotary switch T and switch-disconnector P in surface mounting enclosure conform to ATEX guideline 94/9 EC.



1. categories
2. degree of protection
3. temperature class
4. test numbers
5. type
6. production code
7. warning text

The marking of the housing is conform to the ATEX guideline 94/9 EC.

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### **Xtra Combinations**

Xtra Combinations from Moeller offers a range of products and services, enabling the best possible combination options for switching, protection and control in power distribution and automation.

Using Xtra Combinations enables you to find more efficient solutions for your tasks while optimising the economic viability of your machines and systems.

It provides:

- flexibility and simplicity
- great system availability
- the highest level of safety

All the products can be easily combined with one another mechanically, electrically and digitally, enabling you to arrive at flexible and stylish solutions tailored to your application – quickly, efficiently and cost-effectively.

The products are proven and of such excellent quality that they ensure a high level of operational continuity, allowing you to achieve optimum safety for your personnel, machinery, installations and buildings.

Thanks to our state-of-the-art logistics operation, our comprehensive dealer network and our highly motivated service personnel in 80 countries around the world, you can count on Moeller and our products every time. Challenge us! We are looking forward to it!

# MOELLER



**Think future. Switch to green.**

# Safe Switching and Disconnecting up to 132 kW



## **xCommand**

Command and signalling – ergonomic shape, attractive design. Switching control circuit currents reliably and precisely.

Control circuit devices RMQ

Foot and palm switches FAK

Signal towers SL

Fingerprint system

Position switches LS-Titan

Rotary switches T/P

Timing relays ETR

Measuring relays EMR

Safety relays ESR

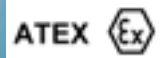
## Product Information Rotary Switches T Switch-Disconnectors P

# MOELLER



Think future. Switch to green.

## Rotary switches T and switch-disconnectors P for safe and reliable switching, disconnection, control and operation



**xCommand**



The high-performance, robust and compact rotary switches T and switch-disconnectors P are used in industry, trade and building engineering applications. The IP65 degree of protection with the top mounting switches and the switch front enable use in harsh environments. Ten switch basic types and four different construction types, in a whole range of standard switches and across a wide performance range, are available. Customized circuits can also be implemented in addition to the standard configurations. The possibilities are almost unlimited. A comprehensive accessory range complements the switch range and round off the range of applications. The rotary switches T and the switch-disconnectors P are approved conform to the ATEX directive 94/9 EC for EX zone 22. The approval enables use in dust explosion hazardous areas.



### Main switch with Emergency-Stop function

Process and processing machines require a power disconnecting device conform to EN 60204-1. Furthermore, standstill in an emergency must also be assured. As shown in the above textile processing machine, both of these functions are assumed by a switch-disconnector P3. Standstill in an emergency requires:

- priority function and operation in all operating modes
- the power supply, which is connected to the machine, must switch off as quickly as possible.



### Maintenance and manual override switches

A whole range of electric motors are required to operate the conveyor belts in conveyor systems. In conditioning plants, warehouses, airports etc., the individual conveyor belts are combined to a unit. The safety and availability of these systems demands that each individual drive can be isolated from the power supply. The isolation is performed using a T and P manual override switch. The switch can be secured against reapplication of power using three padlocks in the off state. Maintenance and repair work can be completed in safety.



### Mini rotary switch TM

The mini rotary switch stands out particularly due to its small size and simple handling and mounting features. There are many construction types available for selection. The rating of the TM to AC23A is 3 kW at 400/415 V, 50-60 Hz. The rated uninterrupted current  $I_u$  is 10 A. The mini rotary switch TM is mainly used as an On-Off switch; changeover contact, step switch, control switch, coding switch and control circuit isolator. Customized circuits can be used.



### Rotary switch T

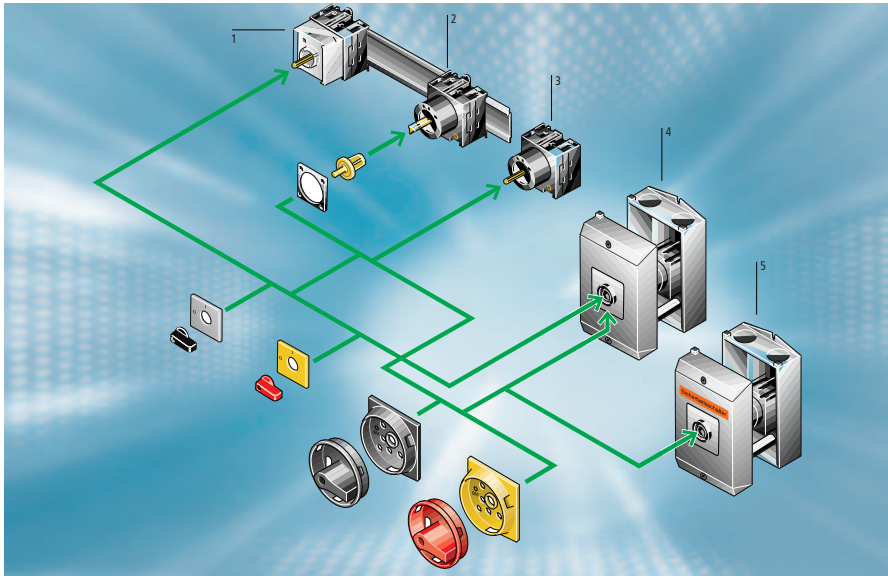
The rotary switch T represents a very flexible, compact and robust modular system. The T0, T3, T5B, T5, T6, T8 rating sizes are available in four different construction types. The rating of the T switch ranges from 6.5 kW to 132 kW with AC23A at 400/415 V, 50-60 Hz. The rated uninterrupted current  $I_u$  is between 20 A and 315 A. The rotary switch T has a widely varied range of application uses. Customized versions are available.



### Switch-disconnector P

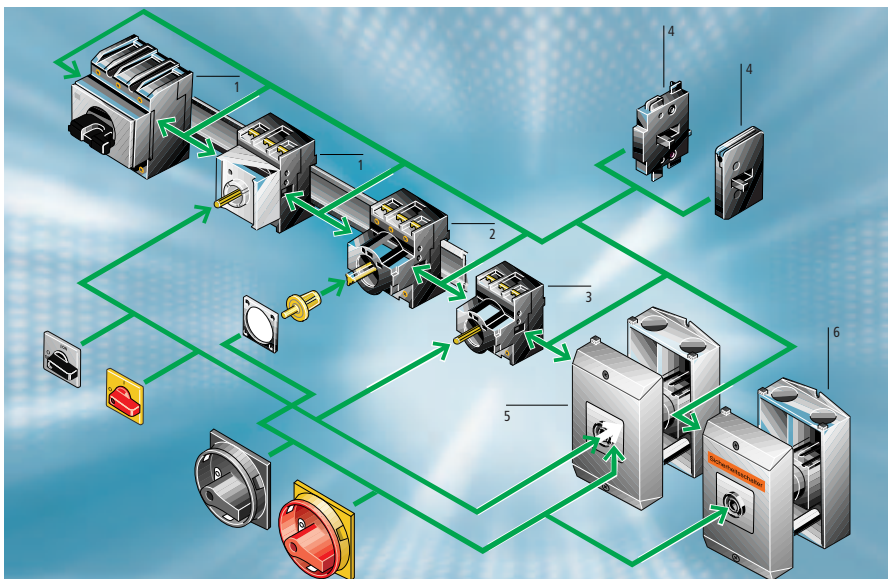
The switch-disconnectors P1 up to 32 A, P3 up to 100 A, P5 up to 315 A are compact and robust. The manual operator acts directly on the contacts. The contacts are positively opened on de-energization. In addition to their use as switch disconnectors with and without the Emergency-Stop function, switch-disconnectors P can be used as On-Off switches as well as maintenance, manual override or safety switches.

# Switching and control in practice



## Control switch T0

1. service distribution board mounting
2. rear mounting
3. flush mounting/centre mounting
4. surface mounting
5. surface mounting main switch



## On-Off switches P1, P3

1. service distribution board mounting
2. rear mounting
3. flush mounting
4. add-on modules
5. surface mounting
6. surface mounting main switch

### Auxiliary current control switch

Rotary switches T and TM for auxiliary current circuits simplify command functions at central points. This saves time and introduces clarity to the production process. Coding switches, step switches, sequence and manual/automatic switches are frequent applications for the auxiliary

current control switch. Particularly suitable are rotary switches T0 and mini rotary switches TM; they also feature space-saving installation. Rotary switches are suitable for switching electronic circuits conform to IEC/EN 61131-2, VDE 0411 part 500. The T0 can master a whole range of switching applications with up to 22 contacts and 12 switch positions. Rotary switches T0

with their large surfaces can also be operated when the operator is wearing gloves. The TM is ideal because of its small size and fits nicely with the command and signalling range RMQ. All contacts feature double breaking contacts.

### Switchover with rotary switch T

Further typical applications for the rotary switch T are for example:

- the star-delta starting circuit for three-phase motors, with and without change of direction as well as contactor interlocking circuits
- the speed changeover of three-phase motors for two, three, four speeds with and without direction of reversal rotation
- the mains switchover of the mains circuit and the back up generator supply on one or more loads
- the step circuit for any load with and without off position
- the ammeter switchover for direct measurement or via current transformer



### Screening connection to the switch enclosure!

The actuation of three-phase motors is implemented more and more frequently via electronic speed encoders. The motor cable is screened in order to comply with the EMC guidelines. We can provide a mounting plate screen for simple and fast application of the screen with a maintenance and manual override switch.



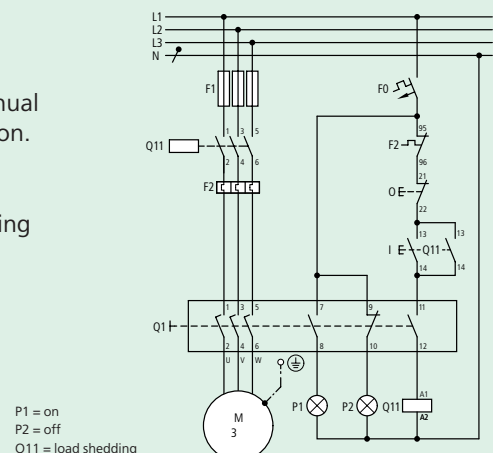
### CI-K the clever enclosure

The enclosure CI-K has a unique combination: plastic insulated housing with flexible push-through diaphragm for main and control cables. Enclosure sizes I1 and I2 provide faster connection from above, below or from the rear. The sizes I3 to I5 provide the push-through diaphragm for the control cables.



### Safety switch with load shedding and signalling

The safety switches P and T are functionally designed as maintenance and manual override switches. Safe isolation of a load from the mains is the primary function. The switch can be loaded with rated uninterrupted current  $I_u$  due to the load shedding circuit. The switch switches without a load! The additional signalling contacts can be used for indicating the switch position. The respective processing and use in the application program of the system enhances safety.



# Rotary switch T and Switch-disconnector P with ATEX approval

ATEX



The surface mounting switches in our main catalogue and the basic types mentioned can be ordered with the approval to ATEX guideline 94/9 EC. The listed circuits are complemented by special circuits.

## ATEX rotary switches T

- **T3-.../I2** up to 32 A
- **T5B-.../I4** up to 63 A
- **T5-.../I5** up to 100 A

## ATEX switch-disconnector P

- **P1-25/I2** up to 25 A
- **P1-32/I2** up to 32 A
- **P3-63/I4** up to 63 A
- **P3-100/I5** up to 100 A

**ATEX = Atmospheres Explosibles =**  
explosive atmospheres

Moeller now offers the following in conformity with the manufacturers guidelines: ATEX guideline 94/9 EC (mandatory from 06/2003) rotary switches T from 32 A to 100 A and switch-disconnectors P from 25 A to 100 A. The switches are approved for device group II, with area of application "all except mining" as well as for category 3. The approval has the test number BVS 04 E 106 X. The devices are marked with equipment designation EX II3D IP5X T90°C. According to the guideline for operators: ATEX guideline 1999/92/EC (mandatory from 06/2006) all the approved rotary switches and switch-disconnectors with test number BVS 04 E 106 X can be used in dust areas, zone 22, category 3.

The rotary switches and switch-disconnectors in surface mounting enclosures with the ATEX approval are used in dust hazard areas, for example in mills, metal grinding plants, wood processing and wood process areas, cement factories, the aluminium industry, the foodstuffs industry, grain storage and processing facilities, agriculture, pharmaceutical industry, etc.

All top mounting switches from main switches, maintenance and manual override switches up to changeover switches can be ordered.



[www.moeller.net/atex](http://www.moeller.net/atex)

# Overview of the rotary switch and switch-disconnector

|                                                                                     | Basic switch type                                                                            | TM     | T0     | T3    | T5B   | T5                  | T6    | T8                  |  |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------|--------|-------|-------|---------------------|-------|---------------------|--|
|                                                                                     | Max. motor rating at AC-23A, 400/415 V, 50-60 Hz                                             | 3.0 kW | 6.5 kW | 13 kW | 22 kW | 30 kW               | 55 kW | 132 kW              |  |
|                                                                                     | Max. rated uninterrupted current $I_u$                                                       | 10 A   | 20 A   | 32 A  | 63 A  | 100 A <sup>1)</sup> | 160 A | 315 A <sup>2)</sup> |  |
|                                                                                     | Main switch                                                                                  | -      | ●      | ●     | ●     | ●                   | ●     | ●                   |  |
|                                                                                     | Main switch with Emergency-Stop function                                                     | -      | ●      | ●     | ●     | ●                   | ●     | ●                   |  |
|                                                                                     | Maintenance/manual override switch                                                           | -      | ●      | ●     | ●     | ●                   | ●     | ●                   |  |
|                                                                                     | On-Off switch                                                                                | ●      | ●      | ●     | ●     | ●                   | -     | -                   |  |
|                                                                                     | On-Off switch with Emergency-Stop function                                                   | -      | ●      | ●     | ●     | ●                   | -     | -                   |  |
|                                                                                     | Safety switches                                                                              | -      | -      | -     | ●     | ●                   | -     | -                   |  |
|                                                                                     | Changeover switch                                                                            | ●      | ●      | ●     | ●     | ●                   | ●     | ●                   |  |
|                                                                                     | Reversing switch, multi-speed switch, star-delta starter                                     | ●      | ●      | ●     | ●     | -                   | -     | -                   |  |
|                                                                                     | Step switch, control switch, coding switch, measurement switch                               | ●      | ●      | ●     | -     | -                   | -     | -                   |  |
|                                                                                     | Control circuit isolator                                                                     | ●      | -      | -     | -     | -                   | -     | -                   |  |
|                                                                                     | Customized non-standard switch                                                               | ●      | ●      | ●     | ●     | ●                   | -     | -                   |  |
|  | Top mount<br>.../I...; .../I45/...; .../I48...; degree of protection IP65/64                 | -      | O      | O     | O     | O                   | ●     | ●                   |  |
|  | Top mounting main switch<br>.../I.../SVB...; degree of protection IP65                       | -      | ●      | ●     | ●     | ●                   | ●     | ●                   |  |
|  | Flush mounting<br>.../E...; degree of protection front IP65                                  | ●      | ●      | ●     | ●     | ●                   | -     | -                   |  |
|  | Flush mounting main switch<br>.../EA/SVB...; TM.../E/SVB...; degree of protection front IP65 | -      | O      | O     | O     | O                   | -     | -                   |  |
|  | Centre mounting<br>.../EZ...; TM.../EZ; degree of protection front IP65                      | ●      | ●      | ●     | -     | -                   | -     | -                   |  |
|  | Rear mounting<br>.../Z...; degree of protection front IP65                                   | -      | ●      | ●     | ●     | ●                   | -     | -                   |  |
|  | Rear mounting main switch<br>.../V/SVB...; degree of protection front IP65                   | -      | ●      | ●     | ●     | ●                   | ●     | ●                   |  |
|  | Service distribution board mounting<br>.../IVS...; degree of protection front IP30           | O      | ●      | -     | -     | -                   | -     | -                   |  |
|  | Top-mount switch conform to ATEX guideline 94/9 EC for use in EX zone 22                     | -      | -      | O     | O     | O                   | -     | -                   |  |

|  | P1-25 | P1-32 | P3-63 | P3-100 | P5-125 | P5-160 | P5-250 | P5-315 |
|--|-------|-------|-------|--------|--------|--------|--------|--------|
|  | 13 kW | 15 kW | 37 kW | 50 kW  | 45 kW  | 55 kW  | 90 kW  | 110 kW |
|  | 25 A  | 32 A  | 63 A  | 100 A  | 125 A  | 160 A  | 250 A  | 315 A  |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | -      | -      | -      | -      |
|  | ●     | ●     | ●     | ●      | -      | -      | -      | -      |
|  | -     | -     | -     | -      | -      | -      | -      | -      |
|  | -     | -     | -     | -      | -      | -      | -      | -      |
|  | -     | -     | -     | -      | -      | -      | -      | -      |
|  | -     | -     | -     | -      | -      | -      | -      | -      |
|  | -     | -     | -     | -      | -      | -      | -      | -      |
|  | ●     | ●     | ●     | ●      | -      | -      | -      | -      |
|  | ●     | ●     | ●     | ●      | -      | -      | -      | -      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | -     | -      | -      | -      | -      | -      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | ●      | ●      | ●      | ●      |
|  | ●     | ●     | ●     | ●      | -      | -      | -      | -      |
|  | ●     | ●     | ●     | ●      | -      | -      | -      | -      |

|                                     | TM | T0 | T3 | T5B | T5 |
|-------------------------------------|----|----|----|-----|----|
| Max. contact units                  | 8  | 11 | 11 | 10  | 10 |
| Max. contacts                       | 16 | 22 | 22 | 20  | 20 |
| Max. height units with top mounting | -  | 4  | 5  | 4   | 4  |

The defined motor rating relates to use according to AC23A "switching of motors and other highly inductive loads".

On star-delta circuits the motor rating stated in the table increases by factor 1.73. The rated current is distributed onto six contacts here. A selection of the switch according to the rated uninterrupted current I<sub>u</sub> is only possible if the switch is switched without a load.

o = dependent on the number of height units or on the type

<sup>1)</sup> value not for enclosed version

<sup>2)</sup> in enclosed version (surface mounting)  
max. 275 A