

# Power dissipation of DIN rail KNX devices

## Application note

Support for design of a distribution panel

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# Important Safety Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

## **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

## **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

## **CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

## **NOTICE**

NOTICE is used to address practices not related to physical injury.

# Table of Contents

1	Introduction	8
2	Conditions of given power dissipation values	9
3	Power dissipation values	10



## Please note

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A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

## Safety Precautions

### **WARNING**

#### **HAZARD OF INCORRECT INFORMATION**

- Do not incorrectly configure the software, as this can lead to incorrect reports and/or data results.
- Do not base your maintenance or service actions solely on messages and information displayed by the software.
- Do not rely solely on software messages and reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Consider the implications of unanticipated transmission delays or failures of communications links.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**



**Attention** - the information provided must be complied with, otherwise program or data errors may occur.



**Note** - You will find additional information here to make your work easier.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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# 1 Introduction

This application note serves Planning Engineers who specify distribution boxes in buildings and infrastructure facilities, with focus on temperature conditions inside the box.

All devices powered by electricity generate heat in service. Assuming the heat dissipation capability of the device inside the distribution box, when operating on full load, exceeds the total heat produced, then thermal equilibrium will be established; temperature will stabilize at a temperature rise above the ambient temperature surrounding the device. Target is to keep the operating temperature of each device inside the distribution box within specified range given by device manufacturer.

Exceeding of the specified operating temperature may result in:

- a/ significant deterioration or ageing of the device,
- b/ excessive heat being transferred to another device that can be impaired,
- c/ people, operators or animals near the device being burned in normal operating circumstances.

See **EN 61439-1**: Low voltage switchgear and control gear.



## 2 Conditions of given power dissipation values

Please be aware that operating conditions in each installation may differ and must be taken in consideration in calculation of real power dissipation, below nominal operating load current.

**Please recalculate and decrease power dissipation values if the device is not operated at nominal load.**

General condition:	KNX bus voltage 30 V DC, nominal power supply
System components	nominal output current
Energy measurement	nominal output current
Interfaces/gateways	
Binary inputs	
Other sensors	nominal load from auxiliary power supply
Switch actuators	nominal output current
Blind/Switch actuators	value given for switching mode only. Blind mode dissipates only half values and for very limited blind's operation time
Dimming actuators/Control units	resistive nominal load, dimming duty 50:50
DALI	64 devices connected in a standard operation mode (for each line)
Other actuators	nominal output current
Room temperature control units	nominal output current
Accessories	nominal output current

### 3 Power dissipation values

Ref. No.	Product name	Nominal power Dissipation per product [W]
<i>System components</i>		
MTN684016	KNX power supply REG-K/160 mA	3,4
MTN684032	KNX power supply REG-K/320 mA	3,4
MTN684064	KNX power supply REG-K/640 mA	6,0
MTN683816	KNX power supply REG-K/160 mA with emergency power input	3,4
MTN683832	KNX power supply REG-K/320 mA with emergency power input	3,4
MTN683890	KNX power supply REG-K/640 mA with emergency power input	6,0
MTN683901	REG-K emergency power supply	6,0
MTN680204	Coupler REG-K	0,4
MTN680329	KNX/IP router REG-K	0,8
MTN676090	KNX Logic module Basic REG-K	0,5
<i>Energy measurements</i>		
MTN6600-0603	KNX Energy Meter, REG-K/3x230/16	3,5
MTN6503-0201	KNX Metering Gateway Modbus REG-K	0,6
<i>Interfaces/Gateways</i>		
LSS100100	Wiser for KNX	2,4
LSS100200	spaceLYnk	2,4
MTN6501-0001	U.motion KNX Server	3,4
MTN6501-0002	U.motion KNX Server Plus	3,4
MTN6500-0113	KNX InSideControl IP-Gateway	0,8
<i>Binary inputs</i>		
MTN644492	Binary input REG-K/4x10	1
MTN644592	Binary input REG-K/8x10	1,2
MTN644892	Binary input REG-K/4x24	1,3
MTN644792	Binary input REG-K/8x24	2,5
MTN644992	Binary input REG-K/4x230	1,5
MTN644692	Binary input REG-K/8x230	2,7

Ref. No.	Product name	Nominal power Dissipation per product [W]
<i>Other sensors</i>		
MTN682991	Weather station REG-K/4-gang	6,2
MTN682191	Analogue input REG-K 4-gang	6,2
MTN682192	Analogue input module REG-K 4-gang	4,3
MTN6606-0008	KNX Year Time Switch REG-K/8/800	1,4
MTN677290	KNX timer REG-K	0,3
<i>Switch actuators</i>		
MTN649202	Switch actuator REG-K/2x230/10 with manual mode	3,4
MTN6700-0002	Switch actuator Basic REG-K/2x230/16 with manual mode	2,5
MTN647393	Switch actuator REG-K/2x230/16 with manual mode	2,5
MTN647395	Switch actuator REG-K/2x230/16 with m.m. and current detection	2,6
MTN649204	Switch actuator REG-K/4x230/10 with manual mode	6,2
MTN6700-0004	Switch Actuator Basic REG-K/4x230/16 with manual mode	4,6
MTN647593	Switch actuator REG-K/4x230/16 with manual mode	4,6
MTN647595	Switch actuator REG-K/4x230/16 with m.m. and current detection	4,7
MTN646808	Switch actuator REG-K/8x230/6	5,9
MTN649208	Switch actuator REG-K/8x230/10 with manual mode	11,9
MTN6700-0008	Switch Actuator Basic REG-K/8x230/16 with manual mode	8,7
MTN647893	Switch actuator REG-K/8x230/16 with manual mode	8,8
MTN647895	Switch actuator REG-K/8x230/16 with m.m. and current detection	8,8
MTN649212	Switch actuator REG-K/12x230/10 with manual mode	17,7
MTN6700-0012	Switch Actuator Basic REG-K/12x230/16 with manual mode	12,9
MTN648493	Switch actuator REG-K/12x230/16 with manual mode	12,9
MTN648495	Switch actuator REG-K/12x230/16 with m.m. and current detection	13,0

Ref. No.	Product name	Nominal power Dissipation per product [W]
<i>Blind/switch actuators</i>		
MTN649908	Blind/switch actuator REG-K/8x/16x/10 with manual mode	23,3
MTN649912	Blind / switch actuator REG-K/12x/24x/10 with manual mode	34,8
MTN649802	Blind actuator REG-K/2x/10 with manual mode	3,4
MTN648704	Blind actuator REG-K/4x/6 with manual mode	3,3
MTN646704	Blind actuator REG-K/4x/6	3,2
MTN649704	Roller shutter actuator REG-K/4x/10 with manual mode	6,1
MTN649804	Blind actuator REG-K/4x/10 with manual mode	6,2
MTN649808	Blind actuator REG-K/8x/10 with manual mode	11,9
<i>Dimming actuators/Controls units</i>		
MTN6710-0002	Universal dimming actuator LL REG-K/2x230/300 W	5,7
MTN6710-0004	Universal dimming actuator LL REG-K/4x230/250 W	8,3
MTN649315	Universal dimming actuator REG-K/4x230/150 W	6,5
MTN649350	Universal dimming actuator REG-K/230/500 W	4,3
MTN649310	Universal dimming actuator REG-K/230/1000 W	7,8
MTN646630	Dimming actuator REG-K/2x230/300 W	5,7
MTN647091	Control unit 0-10 V REG-K/1-gang with manual mode	1,3
MTN646991	Control unit 0-10 V REG-K/3-gang with manual mode	2,9
<i>DALI</i>		
MTN6725-0001	KNX DALI gateway REG-K/1/16(64)/64/IP1	10,0
MTN6725-0003	KNX DALI-Gateway Basic REG-K/1/16/64	7,0/9,0 (*)
MTN6725-0004	KNX DALI-Gateway Basic REG-K/2/16/64	9,0/18,0 (*)
<i>Other actuators</i>		
MTN682291	Analogue actuator REG-K/4-gang	7,6
MTN682292	Analogue actuator module REG/4-gang	3,6

Ref. No.	Product name	Nominal power Dissipation per product [W]
<i>Room temperature control units</i>		
MTN645094	Fan coil actuator REG-K	3,4
MTN6730-0001	Heating actuator REG-K/6x24/230/0.16A	1,3
<i>Accessories</i>		
MTN693003	Power supply REG, 24 V DC / 0.4 A	2,0
MTN663529	Power supply REG, AC 24 V/ 1 A	4,0

Table 1: Power dissipation of DIN rail KNX products.

(\*) MEG & MTN6725-0003 and MEG & MTN6725-0004. They consume from the KNX bus 24 V 5 mA. Additionally they consume via the mains connector 230 V:

MTN6725-0003	MTN6725-0004	Condition
7 W	9 W	with ca. 55 ballast per line connected and no short circuit on the DALI lines
9 W	18 W	with 64 ballasts per line or short even short circuits

Table 2: Consumption.

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