

SIEMENS

低压控制产品与系统

Low-Voltage Controlgear, Switchgear and Systems

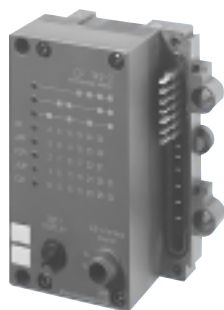
通讯控制装置产品目录 2002

SIRIUS NET Catalog 2002



创新科技的开关装置
INNOVATIVE SWITCHGEAR

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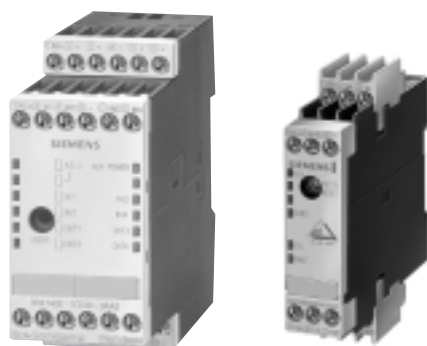
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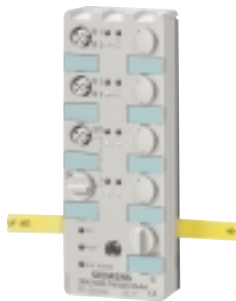
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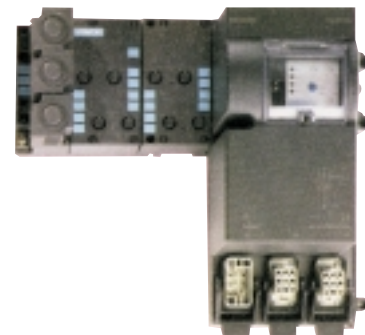
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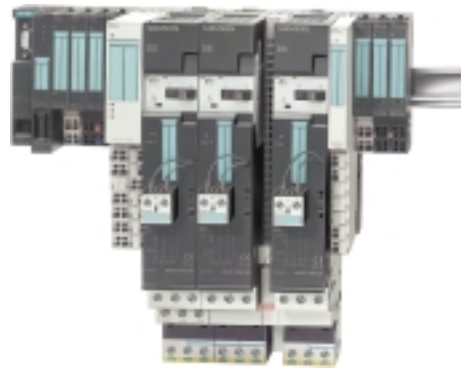
详情请参见 ST PI 样本
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ET200X-DESINA 分布式 I/O 设备
ET 200X-DESINA distributed I/O devices

详情请参见 ST PI 样本
see Catalogue ST PI



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详情请参见 ST PI 样本
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详情请参见 ST PI 样本
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Position switches, pushbuttons, indicator lights with integral AS-Interface

详情请参见 NS K2000 样本
see Catalogue NS K2000



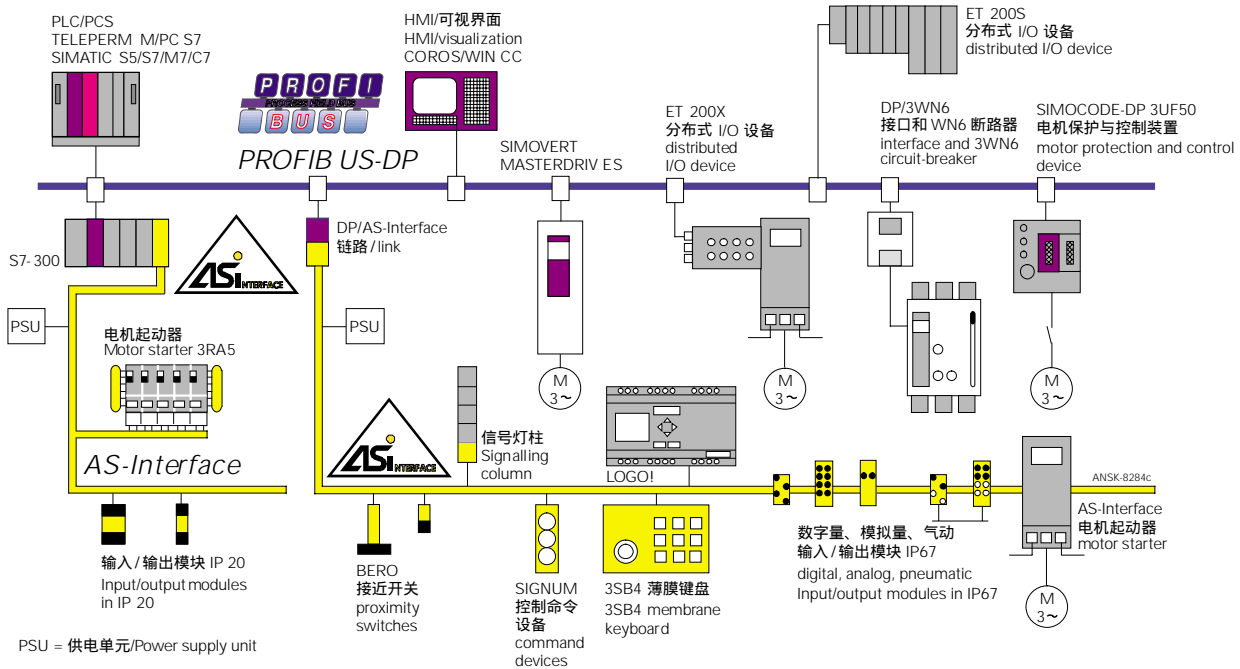
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详情请参见 NS K2000 样本
see Catalogue NS K2000

概述 / Overview

AS-Interface 和 PROFIBUS-DP 的典型应用 / Typical AS-Interface and PROFIBUS-DP application



SIRIUS NET

SIRIUS NET 使西门子公司低压开关设备实现了开放的通讯功能。通讯是通过执行器-传感器接口或 PROFIBUS 进行的。

AS-Interface

执行器-传感器接口 (AS-Interface) 是一个标准的网络系统 (EN50295)。来自不同厂家的数字型执行器和传感器都可以简单地连到该网络上。

借助不同的主站模块, 可以与 SIMATIC 家族的绝大部分自动化系统产品连到一起。通过 DP/AS-Interface 链路或接口单元也可以直接连到 PROFIBUS-DP。

PROFIBUS-DP

PROFIBUS 是一种不依赖制造厂家的开放式现场总线标准。(EN50170)。可以连接大多数著名厂家的可编程控制器。

PROFIBUS-DP 最适合用在有相对复杂通讯要求的控制装置, 例如, 具有快速响应时间的模拟量的传输。也可连接单个的 AS-Interface 网段。

出版资料

若想了解关于可通讯低压控制装置及系统部件和附件的进一步的信息, 请参阅下列产品目录:

- ST PI
PROFIBUS & AS-Interface 现场总线部件
订货号: E86060-K4660-A101-A3-7600
- ST 70
自动化系统 S7, M7 及 C7
订货号: E86060-K4670-A111-A4-7600
- IK10
工业通讯网络
订货号: E86060-K6710-A101-A8-7600
- NS PS
配电产品与系统
订货号: E20002-K1801-A101-A1-7600

SIRIUS NET

SIRIUS NET stands for open communication between low-voltage switching devices from Siemens. Communication takes place either via the actuator-sensor interface or on the PROFIBUS.

AS-Interface

The actuator-sensor-interface (AS-Interface) is a standardized networking system (EN 50 295) for simple, usually binary actuators and sensors from all manufacturers.

A link to the most common automation systems in the SIMATIC family is possible via various master modules. With the DP/AS-Interface link or interface unit, a direct connection to the PROFIBUS-DP network is also possible.

PROFIBUS-DP

The PROFIBUS is a standardized, non-proprietary fieldbus system (PROFIBUS Standard EN 50 170), which can be linked to most of the programmable controllers of leading manufacturers.

The PROFIBUS-DP is best used for controlgear with more complex communications requirements, e.g. transmission of analog values combined with very fast response times. It also connects individual AS-Interface segments.

Documentation

For further information about low-voltage controlgear with communication capability as well as system components and accessories, please refer to the following catalogs:

- ST PI
PROFIBUS & AS-Interface Fieldbus Components
Order No. E86060-K4660-A101-A3-7600
- ST 70
Automation Systems S7, M7 and C7
Order No. E86060-K4670-A111-A4-7600
- IK 10
Industrial Communication Networks
Order No. E86060-K6710-A101-A8-7600
- NS PS
Products and Systems for Power Distribution
Order No. E20002-K1801-A101-A1-7600

AS-Interface 说明

功能

AS-Interface 是一个标准的网络系统 (EN50295)。适用于不同厂家的底层现场执行器和传感器。

电缆装置的置换

产生于现场的信号通常是通过大量的平行布线和输入输出板传送到控制系统当中的。这样一来，现场的每个传感器和执行器都必须通过复杂的布线来连接到输入输出模板上。而 AS-Interface 却能使你仅用能为所有执行器和传感器共用且简单的两芯电缆简化原本繁琐的布线过程。

控制系统的软件是与布线方式没有关系的。无论传感器和执行器是通过平行布线连接到输入输出模块还是通过 AS-Interface，系统软件都不需要更改。因此传感器执行器接口可以安装到现有的系统当中而不需要更改软件和安装附加软件。对于 AS-Interface 的工作原理也不需要知道得太多。

数据和电源的共载于一根双芯电缆上

主站和从站之间是通过 AS-Interface 电缆进行通讯的，这根电缆还为电子元件和传感器提供电源 (24V DC)。AS-Interface 总线是通过一个带数据解耦电路的 AS-Interface 特殊电源装置供电的。

灵活设计网络结构

AS-Interface 电缆的安装与其它电缆一样，新增分支可以按照实际要求任意添加。这使得用户可以自由的建立网络拓扑结构 (如，树形，星形，或总线形)。

一个网络中允许的最大的总电缆长度在 100 米以内，如果使用中继器可以扩展到 300 米。

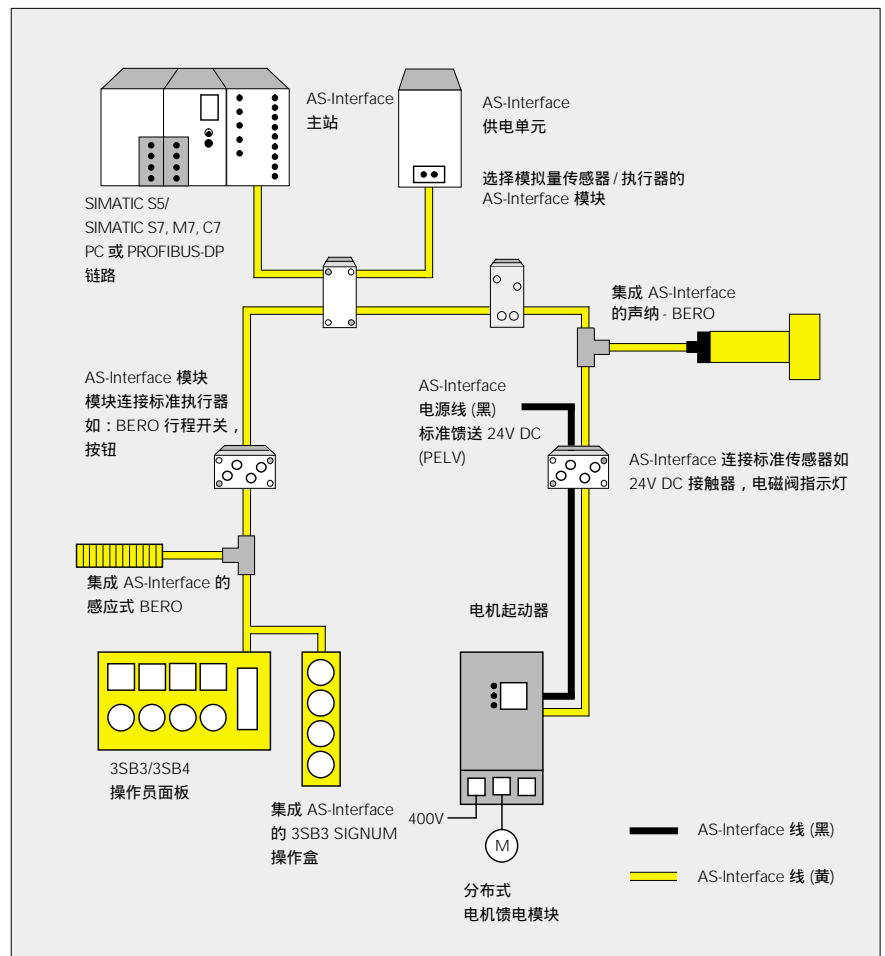
电缆无需屏蔽和连接终端电阻。接线可以根据用户的车间和设备的特殊的要求进行。

有关网络结构的组建和安装指导详情，请参照“AS-Interface 网络系统的安装”。

最大的系统扩展能力

最多可以有 31 个站点或从站连接到 AS-Interface 上。一个从站可以是，例如，一个 AS-Interface 应用模块 (数字量或模拟量)，或者是集成有 AS-Interface 芯片的 BERO 接近开关。

每个站点有四个位，例如四个开关输出。也就是说，一个模块上可以连接 4 个标准的数字型传感器和 / 或执行器。



这使得用户可以组态最多 124 个传感器和 124 个执行器。(31 个从站 x4 输入和 4 输出) 将来，AS-Interface 规范 2.1 将支持双倍的网络站点。即最多达到 62 个站点。参阅 1/9 页的“62 个从站 (A/B 技术)”了解更详细的内容。

IP 65/67 的保护等级

AS-Interface 是一个可以直接应用于车间的网络系统，AS-Interface 应用模块有 IP 67 的保护等级，可以直接安装到设备上不需要外加保护外壳。

IP20 保护等级

AS-Interface 部件另有 IP20 的保护等级的模块可供选择，非常适合安装在开关控制柜里或分布式的开关箱里。

AS-Interface description

Function

The AS-Interface is a standardized, non-proprietary networking system (EN 50 295) for sensors and actuators at the lowest field level.

Cable harness replacement

Signals originating in the process are normally transmitted to the control system over large numbers of parallel wires and input and output boards. Consequently, each individual sensor or actuator in the field is connected to the input and output boards over a dedicated wire or cable.

The AS-Interface enables you to replace this cable harness by a simple two-wire cable that can be used in common by all sensors and actuators.

As far as the control software is concerned, it is irrelevant whether the sensors and actuators are connected in parallel using input and output modules or via the AS-Interface. The actuator-sensor interface can therefore be fitted in existing installations without having to change the software or install additional software. Additional knowledge of how the AS-Interface works is not necessary.

Data and power together in one two-wire cable

The master communicates with the slaves over the AS-Interface cable. This cable also carries the power supply for the electronics and sensors (24 V DC).

This power is fed into the AS-Interface line from a special AS-Interface power pack with data decoupling circuit.

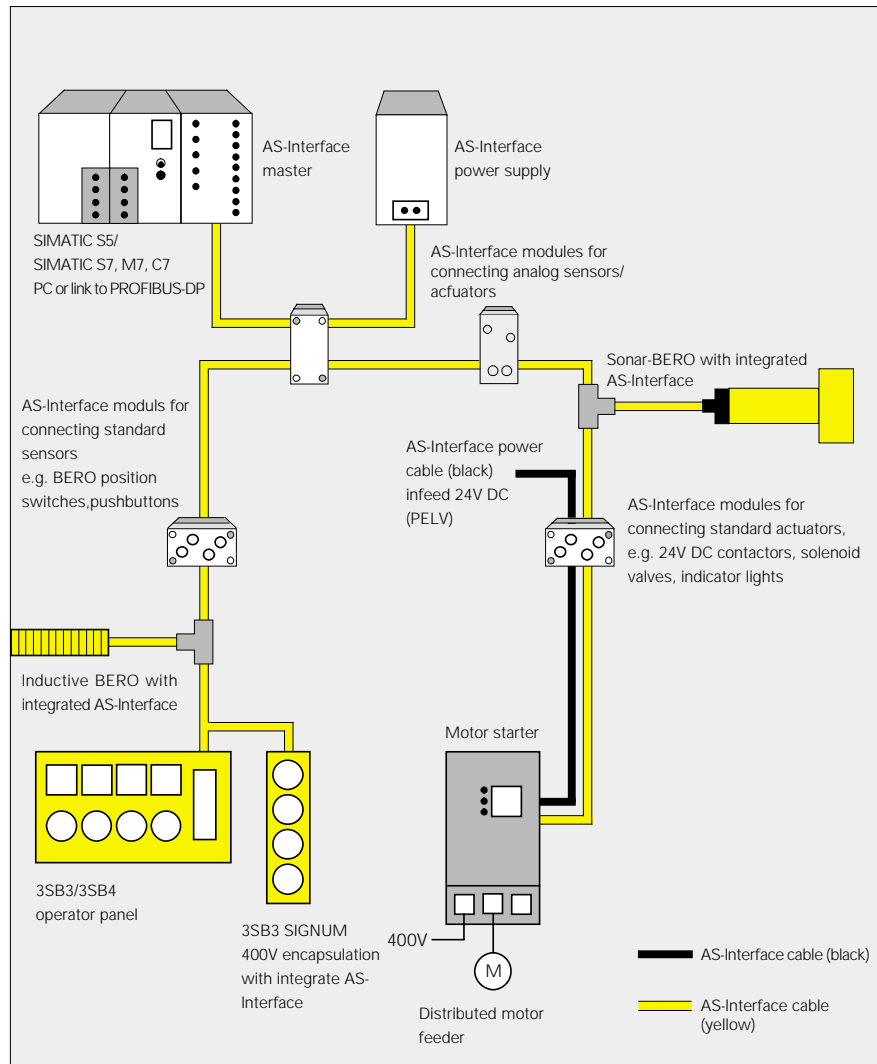
Random structures

The AS-Interface line is installed like any other cable. New branches can be added where they are required. This enables you to set up networks with random topologies (e.g. tree, star or bus configurations).

The maximum permitted overall cable length within a network is 100 m. This can be up to 300 m if repeaters are used.

No shielding or terminating resistors are necessary. The wiring can be adapted to the individual requirements of your particular plant or machine.

Detailed structure and installation guidelines are given in the working guideline "Installation of the AS-Interface networking system".



Maximum system expansion

Up to 31 nodes or slaves can be connected to the AS-Interface.

A slave may be, for instance, an AS-Interface application module (digital or analog) or a BERO proximity switch with integral AS-Interface chip. Each node has four bits, e.g. four switch outputs, available to it. That is, up to four standard binary sensors and/or actuators can be connected to one AS-Interface module. This gives you a maximum configuration of 124 sensors and 124 actuators (31 slaves x 4 inputs and 4 outputs).

In future, the AS-Interface Version 2.1 will support doubling of the 31 network stations to a maximum of 62 stations. For further details refer to the section "Doubling the stations to 62 (A/ B technique!)" on page 1/9.

IP 65/67 degree of protection

AS-Interface is a networking system for direct application on the shop floor. The AS-Interface application modules have IP 67 degree of protection and can be mounted direct on the machine without the need for protective enclosures.

IP 20 degree of protection

AS-Interface components to the IP 20 degree of protection are ideally suited to installation in the switchgear cabinet or in distributed switch boxes.

简介 Introduction

AS-Interface 说明

编址

在 AS-Interface 网络运行之前, 必须为每个从站分配站地址(站地址在 1 到 31 之间) 以使其与主站进行通讯。专用的编址设备可供选择。

新的组装技术

所有的紧凑型模块都是直接安装在安装盘上的。模块直接从安装盘的上部插到活接槽内, 然后用一条螺钉固定即可。该螺钉同时保证了与 AS-Interface 电缆的连接。没有必要再剥掉电缆的绝缘层或用螺丝固定电缆。

组装后再编址

西门子的所有新模块都可通过地址编址插孔方便地编址。

可以在安装了模块之后再通过编址插孔设定地址。

该过程无需旋松模块。这样一来, 不懂 AS-Interface 知识的工作人员可先进行设备的安装, 而后再由设备调试人员编址。

IP 67 的保护等级, 适用于恶劣的环境下使用, 编址插孔前面板可防尘。

AS-Interface 组织的认证

AS-Interface 产品是根据有关的测试规定在专门的鉴定实验室里测试的, 获得了 AS-Interface 组织的认证。

只有经认证的 AS-Interface 部件才具有认证号和使用 AS-I 阴影标志。

西门子的新型 AS-Interface 芯片: SAP 4.1

新一代的 SAP 4.1 AS-Interface 芯片具有以下明显优点:

- SAP 4.1 支持 AS-Interface 规范 2.1 的全部功能:
 - A/B 技术 (见 1/9 页)
 - 增强的诊断功能
- 模块的直接诊断
- 由于芯片在印刷电路板上占用空间少, 可集成到小的设备上。

带新型 AS-Interface 芯片的模块已于 2000 年春季供货。届时 SAP 4.1 芯片将替代 SAP4 芯片。

AS-Interface description

Addressing

Before the AS-Interface network is put into operation, each slavemust be assigned an address (from 1 to 31) to enable it to communicate with the master.

Addressing devices are available for this purpose

New assembly technology

All compact modules are mounted on a mounting plate.

The modules are simply inserted into a hinge at the top of the mounting plate and fixed with a single screw. The screw simultaneously ensures contact with the AS-Interface cable. It is not necessary to strip the insulation off the cable or to screw the cable into place.

Addressing after assembly

The addressing socket is a further feature which makes all the new modules from Siemens even more convenient to use. It is possible via this socket to allocate an address to a module in the installed condition. It is not necessary to unscrew the module. The installation phase in the system can therefore be carried out by members of personnel with no knowledge of the AS-Interface. The modules can be easily addressed in the installed state by the person carrying out start-up. For the environmental conditions permissible for IP 67, front addressing is particularly insensitive to dirt.

Certificate of the AS-Interface association

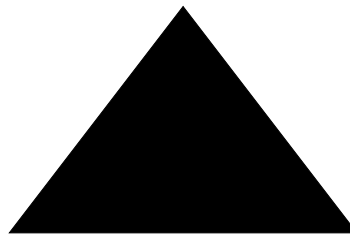
The AS-Interface products are tested in an accredited laboratory in accordance with the relevant testing regulations and are certified by the AS-Interface association. Only certified AS-Interface components carry the approval number and the AS-i logo complete with the shadow.

New AS-Interface chip from Siemens: SAP 4.1

The latest SAP 4.1 chip generation offers the AS-Interface user clear advantages:

- SAP 4.1 supports all functions of the new AS-Interface specification 2.1:
 - A/B technique (see page 1/9)
 - Enhanced diagnostics
- Diagnosis at a glance directly at the module
- Integration in small devices as the chip saves space on the printed circuit board.

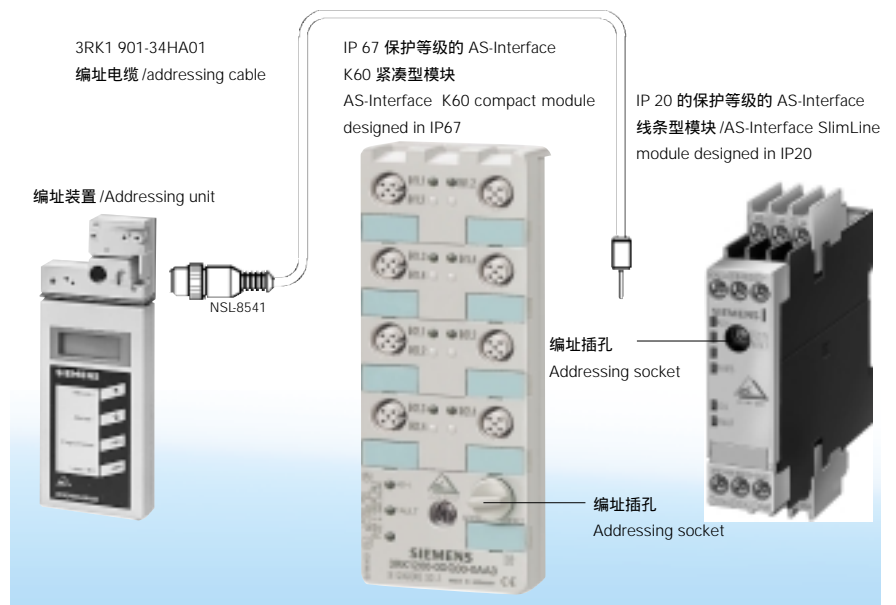
With the start of delivery of the new AS-Interface chip in the spring of the year 2000 the modules with SAP 4 will gradually be replaced with SAP 4.1.



已插入电缆的 K45 安装盘
K45 assembly plate with inserted cables

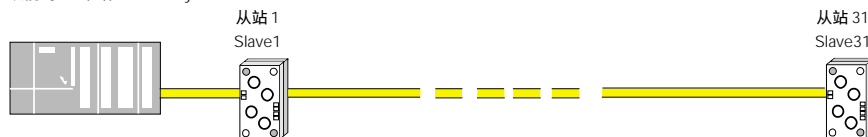


K45 紧凑型模块安装在安装盘上
K45 compact module mounted on assembly plate

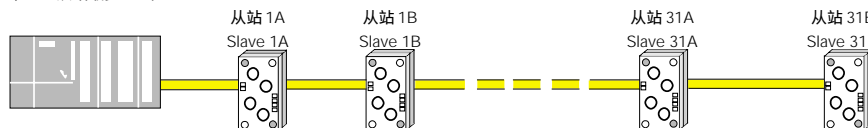


扩展站点至 62 (A/B 技术)/Doubling the stations to 62 (A/B technique)

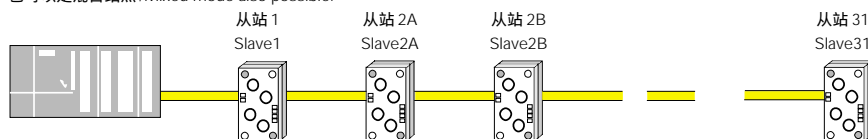
以前的 31 个站 /Previously 31 stations:



带 A/B 从站最多 62 个 /With A/B slaves max. 62 stations:



也可以是混合站点 /Mixed mode also possible:



A/B 技术原理

A/B 技术可用将来网络中的站点个数从 31 个扩展到 62 个。当前使用的 31 个站中，每一个都可以分成 2 个完全独立运行的子站。例如，站地址“1”变成从站“A”和子站“B”。如果 31 个站全部这样转换，一个 AS-Interface 网段上最多可以有 62 个从站。从站 A 和从站 B 的模块被称为 A/B 从站。在给模块分配站地址时，识别标识 A 或 B 也要定义。以前使用的站也可以作为一个单独的站与 A/B 从站一起构成同一个网络上的混合站点。

A/B 技术部件

目前 A/B 从站是 K45 紧凑型模块中的 2I/2O 模块。

SIMATIC S7 主站和集成 AS-Interface 规范 2.1 的 DP/AS-Interface 链路支持 A/B 技术。为了给这些模块分配地址，相似的编址装置已具备了相应的扩展功能。

通讯周期

在同一个网络中接 A, B 从站时，主站和从站之间的数据传输是在两个周期内完成的。在第一个周期，主站扫描所有的单个从站和所有的 A 从站，在第二个周期，主站扫描所有的单个从站和所有的 B 从站。当独立地使用 A 从站或单个从站时，最大的轮询时间是 5ms。最大扩展到 31A 和 31B 个从站时，轮询时间增至 10ms。对全部单个从站的最大轮询时间仍是 5ms。

优点

AS-Interface 扩展站点数的优点是明显的：

- 降低了主站和电源模块的成本
- 连接更多广泛分布的从站 增强了系统的分散性
- 现有的 AS-Interface 系统可以进一步扩展

A/B 部件¹⁾

- CP 243-2 用于 SIMATIC S7-200
- A/B 从站: K45 中的 2I/2O 模块
- 带 A/B 功能的编址装置
- CP 343-2 用于 SIMATIC S7-300
- DP/AS-Interface Link 20E

The principle of the A/B technique

The A/B technique can be used to double the number of stations on the network from 31 to 62. The 31 addresses used until now can each be subdivided into two subaddresses which can be used totally independently on the network. The address "1", for example, is transformed into the subaddresses "1A" and "1B". If this feature is utilized for all 31 address locations, a maximum of 62 stations can be implemented in one AS-Interface network. The modules at the subaddresses A and B are known as A/B slaves. The identifier A or B is designated when the addresses are assigned to the modules. The previous module types can also be used as single slaves in combination with the A/B slaves in mixed mode in the same network.

Components of the A/B technique

A/B slaves are 2I/2O modules in the format of the K45 compact module.

The A/B technique is supported by SIMATIC S7 masters and DP/AS-Interface links in which AS-Interface Version 2.1 is integrated. For the purpose of assigning addresses to these modules, the familiar addressing unit has also been subjected to functional expansion.

Communication cycle

When A and B slaves are implemented in the same network, data is transferred between the master and slaves in two cycles. In the first cycle, the master scans all single slaves and all A slaves and in the second cycle it scans all single slaves and all B slaves. The maximum cycle time is 5 ms when A slaves or single slaves are used exclusively. With the maximum extension with 31 A and 31 B slaves, the cycle time increases to up to 10 ms. The maximum cycle time for all single slaves is always 5 ms.

Advantages

The advantages of the capability for doubling the number of stations on each AS-Interface line are clear:

- Lower costs for masters and power supply units
- Enhanced decentralization in installations with numerous, widely distributed signals
- Existing AS-Interface systems can be expanded further

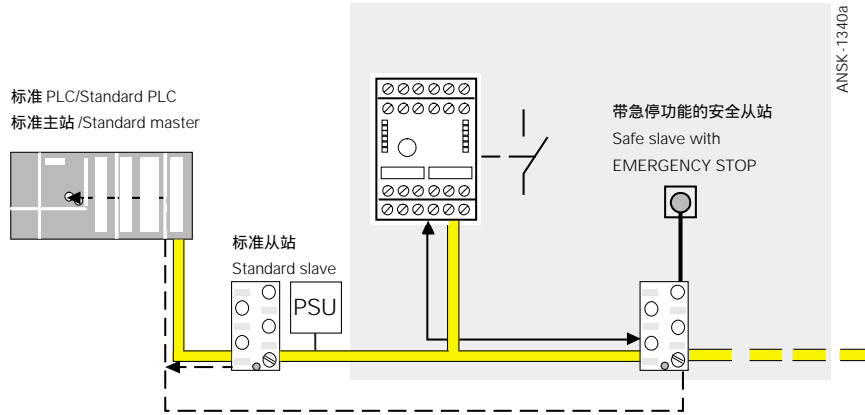
A/B components¹⁾

- CP 243-2 for SIMATIC S7-200
- A/B slaves 2I/2O K45 format
- Addressing unit with A/B functionality
- CP 343-2 for SIMATIC S7-300
- DP/AS-Interface Link 20E

1) 技术规范和详情请垂询/Technical specifications and prices on enquiry.

简介 Introduction

安全技术 “AS-Interface® - 安全工作” /Safety technology “AS-Interface®, -Safety at work”



PSU = 电源模块 /Power supply unit

—— 安全从站的评估信号 / 安全监视 /Signal evaluation of safe slave/safety monitor
- - - 站信息 (通过标准 I/O 传送)/Master information (via standard I/O transfer)

成功的概念

在 AS-Interface 总线上,“安全工作”的概念支持与安全有关的部件的直接集成,例如紧急制动开关,保护盖开关和安全光栅等,根据 EN 50 295 这些设备是与我们熟悉的 AS-Interface 部件 (如:主站,从站,电源模块,中继器等) 完全兼容的,可以在黄色 AS-i 电缆上协同工作。

从安全传感器送上的信号要经过安全监视器的测评。安全监视器不仅监视安全传感器的开关信号而且要连续的检查数据是否被正确的传送。安全监视器里有一个或两个安全开关输出可以用来使机器和装备处于安全状态。传感器和监视器可以连接到接口网络的任何一个地方,在同一个网络中也可以使用多个监视器。

实现以上功能,并不需要冗错控制器和特殊的主站。象操作其他从站一样,主站仅仅接收安全数据。因此这些安全模块可以用来扩展现有的 AS-Interface 网络。

安全模块的动作是很迅速的,例如在紧急制动信号被置位后 45 毫秒以内开关就可以关闭。

优点

- 在同一根电缆上象对其它 I/O 部件一样操作,节约了材料和安装成本。
- 对于主站和 PLC 而言,无需额外的投资和消耗时间。
- 标准化的 AS-Interface 技术,系统安装简单。
- 设备的诊断概念里集成了安全信号。
- 可对现有设备进行快速简单的扩展。

经过测试的安全性

系统经过 BIA (劳工安全贸易组织学会) 和德国技术检查部门 (TUV) 的测试和认证。与安全相关的信号传输技术满足 EN 954-1 标准中安全类别 4 所定义的应用场合的要求。

安全部件

- 安全监视器带一个开关量输出
- 安全监视器带两个开关量输出
- K45 紧凑型模块中的安全从站
- 相应的传感器 (见 NS K 样本第 8 部分)

A successful concept

The “safety at work” concept supports the direct integration of components with relevance for safety, such as emergency off switches, protective cover switches or safety light barriers, in the AS-Interface network. These are fully compatible with the familiar AS-Interface components (masters, slaves, power supply units, repeaters, etc.) in accordance with EN 50 295 and are operated in conjunction with them on the yellow AS-i cable.

The signals from the safety sensors are evaluated by a safety monitor. This not only monitors the switching signals of the safety sensors but also continuously checks that data is being transferred correctly. The safety monitor has one or two safety switching outputs which can be used to bring the machine or installation into a safe state. Sensors and monitors can be connected at any point on the AS-Interface network. It is also possible to use several monitors in the same network.

A failsafe controller or a special master is not necessary. The master handles safety slaves in the same manner as all other slaves and only receives the safety data for information purposes. They can therefore be used to expand any existing AS-Interface network.

Switch-off occurs 45 ms at the latest after the signal, e. g. EMERGENCY STOP, has been set.

The advantages

- Common operation on the same cable as the I/O components saves materials and installation costs.
- No time-consuming, expensive measures are required for the master and PLC.
- Standardized AS-Interface technology with easy system installation.
- Integration of the safety signals in the plant diagnostics concept.
- Existing systems can be expanded quickly and easily.

Tested safety

The system has been tested and approved by the BIA (the trade association institute for labor safety) and the German Technical Inspectorate (TUV).

The transmission technique for signals with relevance for safety is designed to allow applications to be implemented up to safety category 4 in accordance with EN 954-1.

The safe components

- Safety monitor with one switching output
- Safety monitor with two switching outputs
- Safe slaves in K45 compact module format
- Compatible sensors (see Part 8 of the catalog)

主站模块及 PROFIBUS -DP 网关

Master modules and gateways to PROFIBUS-DP

说明

AS-Interface 是根据主从通讯的原理工作的。中央控制器 (PLC 或 PC) 包括一个主站模块。传感器/执行器作为从站通过 AS-Interface 电缆接受主站的控制。每个标准从站可以连接四个开关量输入或输出。其最多可以扩展 31 个标准从站 这样可以对 248 个主站 (CP s) 从站之 PLC 与 AS-Interface 从站之间输入输出数据传送是完全透明的。对主站通常有以下几种操作模式:

实现主站调用 (如写参数)。其详细说明请参阅其他手册。

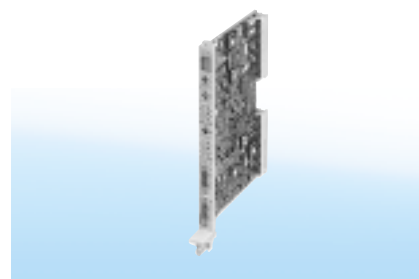
- 标准操作模式 (M0 主站行规)
在这种模式下,124 输入和输出点可以单独编址。

- 扩展操作模式 (M1 主站行规)
除了 M0 主站行规以外,AS-Interface 主站可以根据 AS-Interface 规范间可独立进行通讯。PLC 则完全独立于数据轮询过程之外。
- 扩展操作模式 (M2 主站行规)
除了 M0 主站行规以外,AS-Interface 主站根据 AS-Interface 规范至少可以实现主站调用“写参数”。

满足规范 2.0 的 AS-Interface 主站模块						
控制	ET200U S5-95U S5-100U	S5-115 到 S5-155U	S7-200	ET200M S7-300	ET200X	PC
CP	CP 2433	CP 2430	CP 242-2	CP 342-2	CP 142-2	CP 2413 CP 242-8
满足规范 2.1 的 AS-Interface 主站模块						
控制	S7-200	S7-300				
CP	CP 243-2	CP 343-2				
PROFIBUS-DP 网关						
网关	DP/AS-Interface Link 20 (AS-Interface 规范 2.0)	DP/AS-Interface Link (AS-Interface 规范 2.0)	DP/AS-Interface Links 20E (AS-Interface 规范 2.1)			
保护等级	IP20	IP65	IP20E			

选型与订货数据

SIMATIC S5 的 AS-Interface 主站模块



设计	用于 ET200U, SIMATIC S5-90U, S5-95U, S5-100U 的主站模块 CP 2433 6GK1 243-3SA00	用于 SIMATIC S5-115U 到 S5-155U 的主站模块 CP 2430 6GK1 243-0SA20
说明		
订货号	6GK1 243-3SA00	6GK1 243-0SA20
接口		
- 在 PLC 所占的 I/O 地址区字节	16	32, I/O 模式
- AS-Interface 连接	通过 S5 总线模块上的端子 7-8, 9-10	带终端的 2 x 4 针插头连接器
电压	V +9 DC, 背板总线	+5 DC, 背板总线
电流消耗		
- 通过背板总线	mA 典型值 200, 9V DC	典型值 700, 5V DC
- AS-Interface 规范电缆	mA 最大值: 100	最大值: 100, 每个 AS-Interface 网段
功耗	W 4.5	7.9
允许的环境条件		
- 操作温度	°C 0~+60	0~+60
- 运输与存储温度	°C -40~+70	-40~+70
- 相对湿度	% +25°C 时, 95	+25°C 时, 95
结构设计		
- 模块格式	S5-100U 系统	双欧式卡
- 外型尺寸	mm 90 x 134 x 85	160 x 233.4 x 20.32
- 重量	g 360	400
- 要求空间	2 槽位	1 槽位
手册		
- 内容	CP 2413/ CP 2430/ CP 2433 的说明, 介绍与基本内容, 包括软件 (FB60 + 应用例子)	CP 2413/ CP 2430/ CP 2433 的说明, 介绍与基本内容, 包括软件 (FB60 + 应用例子)
- 所用语言		
- 德语	6GK1971-2SA01-0AA0	6GK1971-2SA01-0AA0
- 英语	6GK1971-2SA01-0AA1	6GK1971-2SA01-0AA1
- 法语	6GK1971-2SA01-0AA2	6GK1971-2SA01-0AA2
- 意大利语	6GK1971-2SA01-0AA4	6GK1971-2SA01-0AA4

1) 31 x (4 输入 + 4 输出)

主站模块及 PROFIBUS -DP 网关 Master modules and gateways to PROFIBUS-DP

Description
The AS-Interface works according to the master-slave principle. Here, the central controller (e.g. PLC or PC) contains a master module. The sensors/ actuators connected via the AS-Interface line are controlled by the master as slaves. Each standard slave can address four binary elements either as input or output. Using the full expansion capability of 31 standard slaves, up to 248 binary elements can be addressed 1). Master modules (CP s) carry out communication with the AS-Interface slaves independently. Here, the PLC is off-loaded completely of the scanning process. Data transmission between the PLC and the AS-Interface slaves is completely transparent in regard to data input and data output for the application. Generally, the following operating modes are available to the master modules:

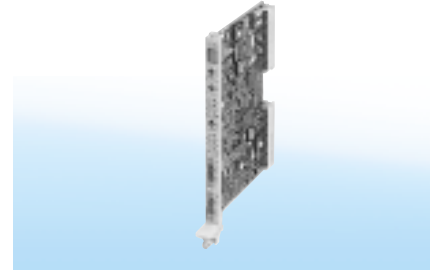
- **Standard operation (M0 master profile)**
In this operating mode, the 124 inputs and outputs of the slaves can be addressed exclusively.
- **Extended operation (M1 master profile)**
Here, in addition to the M0 master profile, the AS-Interface master offers access to the master calls in accordance with the AS-Interface specification (e.g. write parameters). You will find a description of the calls in the appropriate manuals.
- **Extended operation (M2 master profile)**
Here, in addition to the M0 master profile, the AS-Interface master offers at least access to the master call "Write parameters" in accordance with the AS-Interface specification.

AS-Interface master modules to AS-Interface specification 2.0						
Control	ET 200U S5-95U to S5-100U	S5-115 to S5-155U	S7-200	ET 200M S7-300	ET 200X	PC
CP	CP 2433	CP 2430	CP 242-2	CP 342-2	CP 142-2	CP 2413 CP 242-8

AS-Interface master modules to AS-Interface specification 2.1		
Control	S7-200	S7-300
CP	CP 243-2	CP 343-2

Gateways to PROFIBUS DP			
Gateway	DP/AS-Interface Link 20 (to AS-Interface specification 2.0)	DP/AS-Interface Link (to AS-Interface specification 2.0)	DP/AS-Interface Links 20E (to AS-Interface specification 2.1)
Protection	IP 20	IP 65	IP 20E

Selection and ordering data
AS-Interface master module for SIMATIC S5



Design	Master module for ET200U and SIMATIC S5-90U, S5-95U, S5-100U CP 2433	Master module for SIMATIC S5-115U, to S5-155U CP 2430
Order No.	6GK1 243-3SA00	6GK1 243-0SA20
Interfaces	16 bytes	32 in I/O mode
- I/O address area occupied in PLC		
- Connection of AS-Interface	via S5 bus module; terminals 7-8, 9-10	2 x 4-pin sockets for connectors with terminals
Supply voltage	V +9 DC via backplane bus	+5 DC via backplane bus
Current consumption		
- Via backplane bus	mA typ. 200 at 9 V DC	typ. 700 at 5 V DC
- From the AS-Interface shaped cable	mA max. 100	max. 100 per AS-i segment
Power loss	W 4.5	7.9
Permissible ambient conditions		
- Operating temperature	°C 0 to +60	0 to +60
- Transport and storage temperature	°C -40 to +70	-40 to +70
- Relative humidity	% 95 at +25 °C	95 at +25 °C
Constructional design		
- Module format	S5-100U packaging system	Double Eurocard
- Dimensions (W x H x D)	mm 90 x 134 x 85	160 x 233.4 x 20.32
- Weight	g 360	400
- Space requirement	2 slots	1 slot
Manuals	Description of CP 2413 / CP 2430 / CP 2433, introduction and fundamentals, including software (FB60 + examples)	Description of CP 2413 / CP 2430 / CP 2433, introduction and fundamentals, including software (FB60 + examples)
- Contents		
- Available languages		
- German	6GK1971-2SA01-0AA0	6GK1971-2SA01-0AA0
- English	6GK1971-2SA01-0AA1	6GK1971-2SA01-0AA1
- French	6GK1971-2SA01-0AA2	6GK1971-2SA01-0AA2
- Italian	6GK1971-2SA01-0AA4	6GK1971-2SA01-0AA4

1) 31 x (4 inputs + 4 outputs).

选型与订货数据

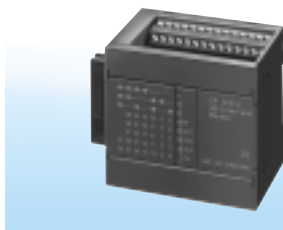
用于 SIMATIC S7-200 的 AS-Interface 接口主站模块



设计	用于 S7-200 的主站模块	用于 S7-200 带 PROFIBUS-DP 接口的主站模块
说明	CP 242-2	CP 242-8
订货号	▶ 6GK7 242-2AX00-0XA0	6GK7 242-8DP00-0XA0
AS-Interface 主站行规	M0/M1	
总线轮询时间	31 个从站 5 毫秒	31 个从站 5 毫秒
PROFIBUS 传输速率	Mbit/s	12
接口		
- PLC 上占用的 I/O 地址区	对应于 2 个 I/O 模块 (8DI/8DO 和 8AI/8AO)	对应于 2 个 I/O 模块 (8DI/8DO 和 8AI/8AO)
- AS-Interface 与外部 24V DC 的连接	接线端子连接	7 针端子块
- PROFIBUS 连接		9 针 Sub-D 插头
电压		
- 通过背板总线	V	+5 DC
- 外部电源	V	+24 DC
- 从 AS-Interface 电缆		符合 AS-Interface 规范
电流消耗		
- 通过背板总线	mA	最大: 340
- 外部电源	mA	最大: 60
- 从 AS-Interface 规范电缆	mA	100
功耗	W	3.7
Profibus 连接时 5V DC 额定负载	mA	最大 90 毫安
允许的环境条件		
- 操作温度	°C	0~+60
- 运输与存储温度	°C	-40~+70
- 相对适度	%	+25 °C 时, 95
结构设计		
- 模块格式		S7-200 扩展模块
- 外型尺寸 (W x H x D)	mm	90 x 80 x 60
- 重量	g	200
- 要求空间		1 槽位
总线连接器	6ES7 290-2AX00-8AA0	包含在订货范围之内
手册		
- 德语	6GK7 242-2AX00-8AA0	6GK7 242-8DP00-8AA0
- 英语	6GK7 242-2AX00-8BA0	6GK7 242-8DP00-8BA0
- 法语	6GK7 242-2AX00-8CA0	6GK7 242-8DP00-8CA0
- 意大利语	6GK7 242-2AX00-8EA0	包含 S7-200 程序示例
	类型和 GSD 文件	6GK7 242-8DP00-8EA0
	包含 S7-200 程序示例	类型和 GSD 文件

▶ 首选型号

Selection and ordering data
AS-Interface master modules for SIMATIC S7-200



Design	Master module for S7-200	Master module for S7-200 with Profibus-DP interface
Description	CP 242-2	CP 242-8
Order No.	▶ 6GK7 242-2AX00-0XA0	6GK7 242-8DP00-0XA0
AS-Interface master profiles	M0/M1	
Bus cycle time	5 with 31 slaves	5 with 31 slaves
Profibus transmission rate	Mbit/s	12
Interfaces		
- I/O address area occupied in PLC	Corresponds to two I/O modules (8DI/8DO and 8AI/8AO) with terminal connection	Corresponds to two I/O modules (8DI/8DO and 8AI/8AO) 7-pole terminal block
- Connection of AS-Interface and external supply 24 V DC		
- Profibus connection		9-pin sub-D socket
Supply voltage		
- Via backplane bus	V +5 DC	+5 DC
- External power supply	V	+24 DC
- Via the AS-Interface cable		in accordance with AS-i specification
Current consumption		
- Via Backplane bus	mA 200	max. 340
- External power supply	mA	max. 60
- From the AS-Interface shaped cable	mA max. 100	100
Power loss	W 2	3.7
Load rating 5 V DC at Profibus connection	mA	max. 90
Permissible ambient conditions		
- Operating temperature	°C 0~+60	0~+60
- Transport and storage temperature	°C -40~+70	-40~+70
- Relative humidity	% 95 at +25 °C	95 at +25 °C
Constructional design		
- Module format	S7-200 expansion module	S7-200 expansion module
- Dimensions (W x H x D)	mm 90 x 80 x 60	90 x 80 x 60
- Weight	g 200	200
- Space requirement	1 slot	1 slot
Bus connector	6ES7 290-2AX00-8AA0	included in scope of delivery
Manuals		
- German	6GK7 242-2AX00-8AA0	6GK7 242-8DP00-8AA0
- English	6GK7 242-2AX00-8BA0	6GK7 242-8DP00-8BA0
- French	6GK7 242-2AX00-8CA0	6GK7 242-8DP00-8CA0
- Italian	6GK7 242-2AX00-8EA0	6GK7 242-8DP00-8EA0
	including S7-200 program examples, Type and GSD files	including S7-200 program examples, Type and GSD files

▶ Preferred type

选型与订货数据

用于 SIMATIC S7-300 的 AS-Interface 主站模块

用于 SIMATIC C7 的 AS-Interface 主站模块



设计

主站模块可用于 S7-300:
- CPU 312 IFM 5.0 或更高版本
- CPU 313, 3.0 或更高版本
- CPU 314, 6.0 或更高版本
- CPU 314 IFM 1.0 或更高版本
- CPU 315, 3.0 或更高版本
- CPU 315-2DP, 3.0 或更高版本
- CPU 316
- CPU 318
- ET200M
- SINUMERIK 840D
CP 342-2
▶ 6GK7 342-2AH01-0XA0

设计

集成 AS-Interface 主站模块的 C7 (CP 342-2)

C7-621 AS-i
▶ 6ES7 621-6BD01-0AE3

说明

订货号

说明

订货号

总线轮询时间 ms 31 个从站时为 5 mA

手册

接口
- 在 PLC 所占的模拟量地址区 16 个字节 I/O 及 P- 总线 S7-300
- AS-Interface 连接 通过 S7-300 前连接器与端子连接

- 德语
- 英语
- 法语
- 西班牙语
- 意大利语

- 6GS7 621-1AD00-8AA0
- 6GS7 621-1AD00-8BA0
- 6GS7 621-1AD00-8CA0
- 6GS7 621-1AD00-8DA0
- 6GS7 621-1AD00-8EA0

电压 V +5 DC, 背板总线

电流消耗
- 通过背板总线 mA 典型值: 200, 5V DC
- 从 AS-Interface 电缆 mA 最大: 100

C7-621 ASi 上已集成 AS-Interface 的接口。这个通讯接口在功能和性能上与 CP 342-2 相同。此外, C7 还具有对 AS-Interface 的寻址诊断功能, 如对 AS-Interface 从站的编址、其操作状态的显示等。

这些功能可以通过其集成的 OP (操作面板) 上的菜单控制。

功耗 W 2
允许的环境条件
- 操作温度 °C 0~+60
- 运输与存储温度 °C -40~+70
- 相对湿度 % 25°C 时, 95

结构设计
- 模块格式 S7-300 系统
- 外型尺寸 mm 40 x 125 x 120
- 重量 g 190
- 要求空间 1 槽位

前连接器 6ES7 392-1AJ00-0AA00

手册
- 德语 6GK7 342-2AH00-8AA0
- 英语 6GK7 342-2AH00-8BA0
- 法语 6GK7 342-2AH00-8CA0
- 意大利语 6GK7 342-2AH00-8EA0

▶ 首选型号

主站模块及 PROFIBUS -DP 网关 Master modules and gateways to PROFIBUS-DP

Selection and ordering data
AS-Interface master module for SIMATIC S7-300

SIMATIC C7 with incorporated AS-Interface master module



Design

Master modules for S7-300:
 - CPU 312 IFM from version 5 or higher
 - CPU 313 from version 3 or higher
 - CPU 314 from version 6 or higher
 - CPU 314 IFM from version 1 or higher
 - CPU 315 from version 3 or higher
 - CPU 315-2DP from version 3 or higher
 - CPU 314 from version 6 or higher
 - CPU 316
 - CPU 318
 - ET 200M
 - SINUMERIK 840D
 CP 342-2
 ▶ **6GK7 342-2AH01-0XA0**

Design

C7 with incorporated AS-Interface master module (CP 342-2)
 C7-621 AS-i
 ▶ **6ES7-621-6BD01-0AE3**

Description

Order No.

Price for 1 unit

Bus cycle time ms

5 with 31 slaves

Interfaces

- Analog address area occupied in PLC
 - Connection of AS-Interface

16 bytes I/O and P-bus S7-300
 S7-300 front connector with terminal connection
 +5 DC via backplane bus

Supply voltage V

Current consumption

- Via backplane bus mA
 - From the AS-Interface cable mA

typ. 200 at 5 V DC
 max. 100

Power loss W

2

Permissible ambient conditions

- Operating temperature °C
 - Transport and storage temperature °C
 - Relative humidity %

0 to +60
 -40 to +70
 95 at +25 °C

Constructional design

- Module format
 - Dimensions (W x H x D) mm
 - Weight g
 - Space requirement

S7-300 packaging system
 40 x 125 x 120
 190
 1 slot

Front connector

6ES7-392-1AJ00-0AA00

Manuals

- German
 - English
 - French
 - Italian

6GK7-342-2AH00-8AA0
6GK7-342-2AH00-8BA0
6GK7-342-2AH00-8CA0
6GK7-342-2AH00-8EA0

Description

Order No.

Price for 1 unit

Manuals

- German
 - English
 - French
 - Spanish
 - Italian

The AS-Interface connection is already integrated in the C7-621 ASi. This communications interface corresponds to a CP 342-2 in regard to functionality and performance. In addition, this C7 has addressing and diagnostics functions on the AS-Interface, such as address

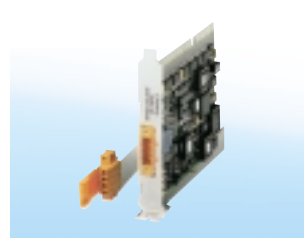
6ES7-621-1AD00-8AA0
6ES7-621-1AD00-8BA0
6ES7-621-1AD00-8CA0
6ES7-621-1AD00-8DA0
6ES7-621-1AD00-8EA0
 programming of the AS-Interface slaves or status display for operating states. These functions can be controlled via the menu of the integrated OP.

▶ Preferred type

选型与订货数据

用于 ET200X 的 AS-Interface 主站模块

用于 PC 机的主站模块



设计		用于 ET200X 的 AS-Interface 主站模块
说明		CP 142-2
订货号		6GK7 142-2AH00-0XA0
总线轮询时间	ms	31 个从站时为 5ms
组态		通过前面板按钮
- AS-Interface		在 ET 200X 总线组态过程中, CP 142-2 被组态为 ET 200X 的 16 字节输入和 16 字节输出的模块
- PROFIBUS		
支持的 AS-Interface 主站行规		M0 (I/O 传输)
- 使用 BM141/ BM12		M0/M1
- 使用 BM147		通过前面板的 M12 连接器
与 AS-Interface 的连接地址范围		16 个输入字节 16 个输入字节
电压		
- 通过背板总线	V	24 DC
- 从 AS-Interface 电缆		符合 AS-Interface 有关规范
功耗	W	2
电流消耗		
- 通过背板总线	mA	50, 24V DC
- 从 AS-Interface 电缆	mA	最大: 100
允许的环境条件		
- 操作温度	°C	0~+55
- 运输与存储温度	°C	-40~+70
- 相对适度	%	+25°C 时, 95
结构设计		ET 200X 系统
- 模块格式		扩展模块
- 外型尺寸	mm	87 x 11 x 63
- 重量	g	310
- 要求空间		1 槽位
保护等级		IP 66/67
手册		
- 德语		6GK7 142-2AH00-8AA0
- 英语		6GK7 142-2AH00-8BA0
- 法语		6GK7 142-2AH00-8CA0
- 意大利语		6GK7 342-2AH00-8EA0

设计		安装在 PC 机上的 AS-Interface 主站模块
说明		CP 2413
订货号		6GS1 241-3SA00
总线轮询时间	ms	31 个从站时为 5ms
接口		通过连接器用端子连接到 AS-Interface 的规范电缆
- AS-Interface 连接		
电压	V	+5 DC, 背板总线
电流消耗		
- 通过背板总线	mA	720
- 从 AS-Interface 电缆	mA	100
功耗	W	5.8
允许的环境条件		
- 操作温度	°C	0~+60
- 运输与存储温度	°C	-40~+70
- 相对适度	%	25°C 时, 95
结构设计		
- 模块格式		短 AT 格式
- 外型尺寸 (W x H)	mm	107 x 152
- 重量	g	110
- 要求空间		1 x ISA 槽位
AS-Interface -2413 / MS-DOS / Windows, 软件运行在 MS-DOS / Windows 3.1 版本 1) (驱动程序, 数据库, 示例在软盘上)		6GK1 702-2SA00-0EA0
手册		
- 德语		6GK1 971-2SA01-0AA0
- 英语		6GK1 971-2SA01-0AA1
- 法语		6GK1 971-2SA01-0AA2
- 意大利语		6GK1 971-2SA01-0AA4

1) 该模块在 Windows 95 或 Windows NT 操作系统下使用, 注意事项请垂询:

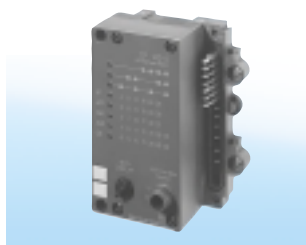
Tribing & Himstedt GmbH & Co. KG

Hagenower Str. 73, 19061 Schwerin, Germany

Mr. Christian Martin, Tel.: +49-3 85-63 44-1 27, Fax: +49-3 85-63 44-1 32, Internet: www.t-h.de, E-mail: info@t-h.de

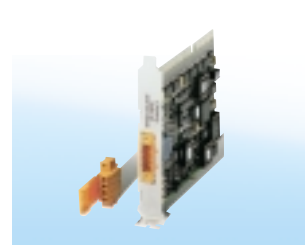
Selection and ordering data

AS-Interface master module for ET 200X



Design		Master module for connection of the AS-Interface to the ET 200X CP 142-2
Description		6GK7 142-2AH00-0XA0
Order No.		6GK7 142-2AH00-0XA0
Bus cycle time	ms	5 with 31 slaves
Configuration		Via button on front panel In the Profibus configuration of the ET 200X, the CP 142-2 is configured as 16 byte input and 16 byte output modules of the ET 200X.
- AS-Interface		M0 (I/O transmission)
- Profibus		M0/M1
Supported AS-Interface master profiles		via M 12 connector at the front plate
- With BM 141/BM 12		
- With BM 147		
Connection to AS-Interface cable		16 input bytes
Address scope		16 input bytes
Supply voltage		
- Via backplane bus	V	24 DC
- From the AS-Interface cable		in accordance with the AS-i specification
Power loss	W	2
Current consumption		
- Via backplane bus	mA	50 at 24 V DC
- From the AS-Interface cable	mA	100
Permissible ambient conditions		
- Operating temperature	°C	0 to +55
- Transport and storage temperature	°C	-40 to +70
- Relative humidity	%	95 at +25 °C
Constructional design		ET 200X packaging system
- Module format		Expansion module
- Dimensions (W x H x D)	mm	87 x 110 x 63
- Weight	g	310
- Space requirement		1 slot
Degree of protection		IP 66/67
Manuals		
- German		6GK7-142-2AH00-8AA0
- English		6GK7-142-2AH00-8BA0
- French		6GK7-142-2AH00-8CA0
- Italian		6GK7-142-2AH00-8EA0

AS-Interface master module for PC



Design		AS-Interface master module for installation in a PC CP 2413
Description		6GK1 241-3SA00
Order No.		6GK1 241-3SA00
Bus cycle time	ms	5 with 31 slaves
Interfaces		Via connector with terminal connection to AS-Interface shaped cable
- Connection of AS-Interface		5 DC via backplane bus
Supply voltage	V	
Current consumption		
- Via backplane bus	mA	720
- From the AS-Interface cable	mA	100
Power loss	W	5.8
Permissible ambient conditions		
- Operating temperature	°C	0 to +60
- Transport and storage temperature	°C	-40 to +70
- Relative humidity	%	95 at +25 °C
Constructional design		
- Module format		Short AT format
- Dimensions (W x H)	mm	107 x 152
- Weight	g	110
- Space requirement		1 x ISA slot
AS-Interface-2413/MS-DOS/Windows software, runs under MS-DOS and Windows 3.1 ¹⁾ (drivers, library, examples on 3 1/2" diskette		
Manuals		
- German		6GK1-702-2SA00-0EAO
- English		6GK1-971-2SA01-0AA0
- French		6GK1-971-2SA01-0AA1
- Italian		6GK1-971-2SA01-0AA2
		6GK1-971-2SA01-0AA4

1) If the module is to be with Windows 95 or Windows NT, please contact:

Tribing & Himstedt GmbH & Co. KG

Hagenower Str. 73, 19061 Schwerin, Germany

Mr. Christian Martin, Tel.: +49-3 85-63 44-1 27, Fax: +49-3 85-63 44-1 32, Internet: www.t-h.de, E-mail: info@t-h.de

选型与订货数据
PROFIBUS-DP 网关



设计		DP/AS-Interface 链路模块 IP 20 用于连接 - PROFIBUS-DP - 采用 DP- 主站功能的非西门子系统 ▶ 6GK1 415-2AA00	DP/AS-Interface 链路模块 IP 65 用于连接 - PROFIBUS-DP - 采用 DP- 主站功能的非西门子系统 ▶ 6ES7 156-0AA01-0XA0
订货号			
总线轮询时间	ms	31 个从站时 5 ms	31 个从站时 5 ms
PROFIBUS 传输速率	Mbit/s	最大: 12	最大: 12
AS-Interface 组态		通过前面板按键	-
接口			
- 与 AS-Interface 连接		端子连接	1 x 4 针嵌入式连接器
- 与 PROFIBUS 连接		9 针 Sub-D 插头	2 x 12 针组合连接器
AS-Interface 电缆的电压		符合 AS-Interface 规范	24 V 电源
电流消耗			
- 从 AS-Interface 规范电缆	mA	最大: 200	70
- 24 V DC 电源	mA	-	100
Profibus 连接时 +5 DC 额定负载	mA	最大 90 mA	最大 50 mA
功耗	W	3.7	3.7
安装		标准安装道轨或直接安装	直接安装
允许的环境条件			
- 操作温度	°C	-	-25~+60
- 水平安装	°C	0~+60	-
- 竖直安装	°C	0~+45	-
- 运输与存储温度	°C	-40~+70	-40~+70
- 相对湿度	%	+25°C 时, 95	+25°C 时, 95
结构设计			
- 外型尺寸 (W x H x D)	mm	90 x 80 x 60	205 x 80 x 57
- 重量	g	约 200	800
保护等级		IP 20	IP 66/67
支持的 AS-Interface 行规		M2	M2
手册			
- 德语		6GK1 971-2DS00-8AA0	6ES7 156-0AA00-8AA0
- 英语		6GK1 971-2DS00-8AA1	6ES7 156-0AA00-8BA0
- 法语		6GK1 971-2DS00-8AA2	6ES7 156-0AA00-8CA0
- 意大利语		6GK1 971-2DS00-8AA4	6ES7 156-0AA00-8EA0
- 西班牙语		-	6ES7 156-0AA00-8DA0

▶ 首选型号

Selection and ordering data
Gateways to PROFIBUS-DP



Design		DP/AS-Interface link module 20 System connection for - PROFIBUS-DP master - Non-Siemens systems with DP- master functionality	DP/AS-Interface link module in IP 65 System connection for - PROFIBUS-DP master - Non-Siemens systems with DP- master functionality
Order No.		▶ 6GK1 415-2AA00	6ES7 156-0AA01-0XA0
Bus cycle time	ms	5 with 31 slaves	5 with 31 slaves
Profibus baud rate	Mbit/s	max. 12	max. 12
Configuration of the AS-Interface		Via button at the front plate	-
Interfaces			
- Connection to the AS-Interface		Terminal connection	1 x 4-pole built-in connector
- Connection to PROFIBUS		9-pin sub-D socket	2 x 12-pole unit connector, 24 V supply
Supply voltage from the AS-Interface cable		in accordance with the AS-Interface specification	-
Current consumption			
- From the AS-Interface cable	mA	max. 200	70
- 24 V DC	mA	-	100
Load rating 5 V DC at the PROFIBUS connection	mA	max. 90	max. 50
Power loss	W	3.7	3.7
Mounting		Standard mounting rail or direct mounting	Direct mounting
Permissible ambient conditions			
- Operating temperature	°C	-	-25 to +60
- Horizontal mounting	°C	0 to +60	-
- Vertical mounting	°C	0 to +45	-
- Transport and storage temperature	°C	-40 to +70	-40 to +70
- Relative humidity	%	95 at +25°C	95 at +25 °C
Constructional design			
- Dimensions (W x H x D)	mm	90 x 80 x 60	205 x 80 x 57
- Weight	g	approx. 200	800
Degree of protection		IP 20	IP 66/67
Supported AS-Interface master profiles		M2	M2
Manuals			
- German		6GK1-971-2DS00-0AA0	6ES7-156-0AA00-8AA0
- English		6GK1-971-2DS00-0AA1	6ES7-156-0AA00-8BA0
- French		6GK1-971-2DS00-0AA2	6ES7-156-0AA00-8CA0
- Italian		6GK1-971-2DS00-0AA4	6ES7-156-0AA00-8EA0
- Spanish		-	6ES7-156-0AA00-8DA0

▶ Preferred type

选型与订货数据 /Selection and ordering data

用于 SIMATIC S7 及 PROFIBUS-DP 网关的 AS-Interface 主站模块

AS-Interface master module for SIMATIC S7 and gateway to PROFIBUS-DP

	 NEW	 NEW	 NEW
设计 /Design	<p>用于 S7-200 的主站 Master for S7-200 CP 243-2 是 SIMATIC S7- 200 升级产品(CPU22X) 的 AS-Interface 主站 The CP 243-2 is the AS-Interface master for the innovative SIMATIC S7-200 (CPU 22X) generation CP 243-2</p>	<p>用于 S7-300 的主站 Master for S7-300 CP 343-2 是 CP 342-2 的长期替代产品 The CP 343-2 is the long-term replacement product for the CP 342-2</p>	<p>DP/AS-Interface Link 20E DP/AS-Interface Link 20E DP/AS-Interface Link 20E 是 DP/AS-Interface Link 20 的长期替代产品 The DP/AS-Interface Link 20E is the long-term replacement product for the DP/AS-Interface Link 20.</p>
说明 /Description	CP 243-2	CP 343-2	-
订货号 / Order No.	6GK7 243-2AX00-0XA0	6GK7 343-2AH00-0XA0	6GK1 415-2AA01
功能 /Function	<ul style="list-style-type: none"> - 根据 AS-Interface 扩展规范 V2.1 使其最多连接 62 个从站。 - 集成有模拟量传输功能 (根据从站行规 7.3/ 7.4) 使之可以将 AS-Interface 上采集到的模拟值向 SIMATIC S7-200 传送。 - 支持主站功能和主站调用: AS-Interface 规范中的 V2.1 主站行规 M0 ,M0e 及 M1e。 - 结构紧凑,且可方便地安装在新一代 SIMATIC S7-200 上 - 通过前面板的 LED 显示所连接的从站的操作状态和准备情况。 - 无需组态工具。 	<ul style="list-style-type: none"> - 根据 AS-Interface 扩展规范 V2.1 使其最多连接 62 个从站。 - 集成有模拟量传输功能 (根据从站行规 7.3/7.4) 使之可以将 AS-Interface 上采集到的模拟值向 SIMATIC S7-300 传送 - 支持主站功能和主站调用: AS-Interface 规范中的 V2.1 主站行规 M0 ,M0e 及 M1e。 - 通过前面板的 LED 显示所连接的从站的操作状态和准备情况。 - 无需组态工具 - 可以在 SIMATIC S7-300 和 ET 200M 上 	<ul style="list-style-type: none"> - 根据 AS-Interface 扩展规范 V2.1 最多可以连接 62 个从站。 - 集成有模拟量传输功能 (根据从站行规 7.3/7.4) 使之可以将 AS-Interface 上采集到的模拟值向 PROFIBUS 传送 - AS-Interface 网段不需要组态工具并且在没有操作 PROFIBUS 情况下启动 - 无需附加电源因为电源已经由 AS-Interface 电缆提供。 - 通过前面板的 LED 显示所连接的从站的操作状态和准备情况。 - PROFIBUS-DP 地址通过设备上的按键设定,并由 LED 显示。 - DP/AS-Interface Link 20E 也可以与其它厂家经过认证的 DP 主站上操作。 - 支持主站功能和主站调用: AS-Interface 规范中的 V2.1 主站行规 M0, M0e 及 M1e。
	<ul style="list-style-type: none"> - 62 slaves can be connected (acc. to the extended AS-Interface specification V2.1) - Integrated analog value transmission (acc. to slave profile 7.3/7.4) making AS-Interface analog values available to SIMATIC S7-200 - Supports the AS-Interface master functions and calls: Master profiles M0, M0e and M1e to the extended AS-Interface specification V2.1 - Compact housing in the design of the innovative SIMATIC S7-200 generation - Indication of operating states and readiness of the connected slaves via LEDs in the front plate - No configuration tool required 	<ul style="list-style-type: none"> - 62 slaves can be connected (acc. to the extended AS-Interface specification V2.1) - Integrated analog value transmission (acc. to slave profile 7.3/7.4) making AS-Interface analog values available to SIMATIC S7-300 - Supports the AS-Interface master functions and calls: Master profiles M0, M0e and M1e to the extended AS-Interface specification - Indication of operating states and readiness of the connected slaves via LEDs in the front plate - No configuration tool required - Can be used in SIMATIC S7-300 and ET 200M 	<ul style="list-style-type: none"> - Up to 62 slaves can be connected (acc. to the extended AS-Interface specification V2.1) - Integrated analog value transmission (acc. to slave profile 7.3/7.4) making AS-Interface analog values available to PROFIBUS via Link - The AS-Interface section does not require a configuration tool and can be started up without an operational PROFIBUS - An additional power supply is not required, because power is supplied from the AS-Interface cable - Indication of operating states and readiness of the connected slaves via LEDs in the front plate - The PROFIBUS-DP address is set using a button on the device and indicated via LEDs - The DP/AS-Interface Link 20E can also be operated on certified DP masters of other manufacturers - Supports the AS-Interface master functions and calls: Master profiles M0, M0e and M1e to the extended AS-Interface specification V2.1

概述 / Overview



K60 紧凑型模块, 数字量
K60 compact module, digital
页码 / Page 1/28



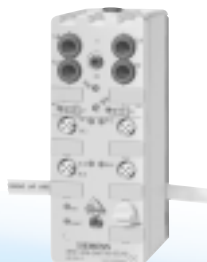
K45 紧凑型模块, 数字量
K45 compact module, digital
页码 / Page 1/35



K60 紧凑型模块, 模拟量
K60 compact module, analog
页码 / Page 1/57



应用模块, 数字量
Application module, digital
页码 / Page 1/42



K60 紧凑型模块, 气动
K60 compact module, pneumatic
页码 / Page 1/64



应用模块, 气动
Application module, pneumatic
页码 / Page 1/70

紧凑型模块 / Compact modules



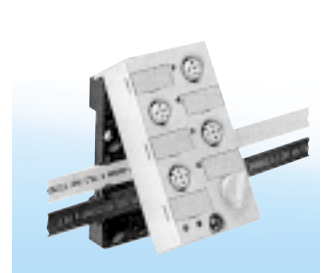
K60



K60



K45



K45

说明

AS-Interface 紧凑型模块是具有较高保护等级的新一代 AS-Interface 模块。有数字量，模拟量和气动紧凑型模块三种。

模块由上部的模块主体和底部的安装盘构成。上部主体由电子装置，与传感器和执行器的连接接口以及编址插孔和状态 / 诊断 LED 构成。安装盘用来连接 AS-Interface 电缆和用来将模块安装在墙上或安装在标准导轨上 (通过一个适配器) 紧凑型模块有 2 个系列:

- K60 系列
- K45 系列

装配

K60 系列和 K45 系列的紧凑型模块是固定在安装盘上的。对于 K60 系列的模块有一种安装盘可以用于各种型号的模块及其在墙上安装。如果安装到标准导轨上必须作为附件订购一种适配器。对于 K45 系列的模块有两种安装盘，二者只是在固定方法上有所不同。有一种安装盘适合墙面安装。安装孔是与 K60 用的安装盘兼容的。

也提供一种带集成的标准导轨适配器的安装盘。安装是与其耦合模块 (应用模块) 匹配的。现有装备上的 AS-Interface 模块可以被 K45 模块替代，不会有任何问题。

编址

西门子的所有紧凑型模块的地址都可以通过集成的编址插孔方便地编址。模块安装之后可以通过编址插孔设定地址。

由于编址插孔有一个槽盖可以将其封住，这确保了具有 IP67 的保护等级。

在使用编址单元 (3RK 9400 - 0AA00) 对模块分配地址时，必须使用一根编址电缆 (3RK 1901 - 3HA01)。

所有集成编址插孔的 AS-Interface 模块都可通过该附件编址。

Description

The AS-Interface compact modules belong to a new generation of AS-Interface modules to a high degree of protection.

Digital, analog and pneumatic compact modules are available. They comprise a top section which is the actual module and a base section which is the mounting plate. The top section contains all the electronics, connections for sensors and actuators, an addressing socket and status/diagnostics LEDs. The mounting plate accepts the AS-Interface flat cables and allows the module to be wall mounted or snapped onto a standard rail (with an adapter).

Two series of compact modules are available:

- Series K60
- Series K45

Assembly

Compact modules of Series K60 and K45 are placed on a mounting plate. A mounting plate is for Series K60 which can be used for all types and which supports wall mounting.

For mounting on a standard rail, an adapter must be ordered as an accessory. Two mounting plates are available for Series K45 which only differ with respect to their fixing possibilities.

One mounting plate is designed for wall mounting. The pattern of drilled holes is compatible with those of the mounting plate for K60.

A mounting plate with an integral standard rail adapter is also available. The drilled hole pattern of this mounting plate is compatible with that of the coupling module (application module). AS-Interface application modules in existing installations can be replaced with K45 compact modules without any problems.

Addressing

One feature that is common to all compact modules from Siemens is the integrated addressing socket. This socket can be used to assign an address to a module in the installed state.

The IP 67 degree of protection is assured due to the ability to seal the socket with a covering cap. An addressing cable (3RK1901-3HA00) is required for addressing the compact modules using the addressing unit (3RX9400-0AA00). All AS-Interface modules with integrated addressing sockets can be addressed using this accessory.

应用于现场的 I/O 模块 I/O modules for field application

紧凑型模块

LED 诊断显示

新一代的 AS-Interface 模块 (紧凑型模块, 线型模块) 具有诊断显示特性。模块状态通过两个 LED 或一个双色 LED 连续或闪烁显示。AS-Interface 芯片 SAP4, SAP4.1 支持这种诊断功能。

插入这些新芯片的模块以下标识指示:

- ◆
- ◆

标有“SAP4”的 K45 系列紧凑型模块具有两个 LED 用于诊断指示。

标有“SAP4.1”的 K45 系列紧凑型模块具有一个单色和一个双色 LED 用于诊断指示。

Compact modules

LED diagnostic indication

The new generation of AS-Interface modules (compact modules, SlimLine modules) features comprehensive diagnostic indication. This supports diagnosis at a glance.

The status of a module is either displayed via two LEDs or one dual LED with continuous or flashing light. The AS-Interface chips SAP4 and SAP4.1 currently support diagnosis.

Modules that are already fitted with one of these new chips will be marked with the appropriate logo:

- ◆
- ◆

Compact modules of Series K45 that are labeled “SAP4” have two LEDs for diagnostic indication. Compact modules of Series K45 that are labeled “SAP4.1” have one single and one dual LED (two-colour LED) for status and diagnostic indication.

连接器引脚分配 / Connector pin assignment

K60 系列, 数字式模块 / K60 series, digital

输入, pnp, 标准接口 (M12 插座) / Input, pnp, standard (M12 socket)
标准分配 / Standard assignment



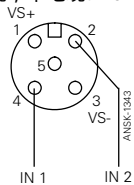
- 1: '+' 电源 (VS+) / supply (VS+)
- 2: 信号输入 (=4)(In)/Signal input (=4)(IN)
- 3: '-' 电源 (VS-) / Supply (VS-)
- 4: 信号输入 (=2) / Signal input (= 2)

引脚 2 和 引脚 4 内部桥接
Pin 2 and Pin 4 are bridged internally

Y 分配 / Y assignment

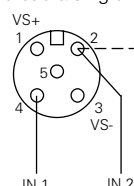
输入通道 / Input channels

Y 形电缆, 单电缆 / Y-shaped cable, single cable



Y-II 分配 / Y-II assignment

Y 形电缆 / 单电缆
Y-shaped cable / single cable



左列 (平面视图)

Left column (plan view)

右列 (平面视图)

Right column (plan view)

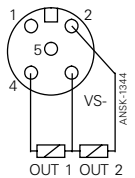
输出, pnp, 标准接口 (M12 插座) 24VDC / Output, pnp, standard (M12 socket) 24VDC
标准分配 / Standard assignment



- 1: 未用 / Not available
- 2: 未用 / Not available
- 3: '-' 电源 (VS-) / Supply (VS-)
- 4: 开关输出 / Switching output

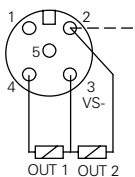
Y 分配 / Y assignment

输出通道 / Output channels



Y-II 分配 / Y-II assignment

单电缆 / Single cable



左列 (平面视图)

Left column (plan view)

右列 (平面视图)

Right column (plan view)

1) 状态描述对 SAP4 和 SAP4.1 紧凑型模块是相同的。

1) The status descriptions of the SAP4 and SAP4.1 compact modules are identical.

SAP4 紧凑型模块的显示特性 / Display characteristics of the SAP4 compact modules

LED	状态 / States						状态说明 ¹⁾ / Status description ¹⁾
辅助电源 AUX PWR	On	Off	Off				
AS-Interface	On	On	Off	On	闪烁 Flashing	On	
故障 / FAULT	Off	Off	Off	On	On	闪烁 Flashing	

从站复位传感器过载
Sensor overload with RESET of slaves
从站站地址 = 0 / Slave has address = 0
未建立通讯 / No communication
- 主站处于停机模式 / Master in Stop mode
- 从站未进入 LPS / Slave not entered in the LPS
- 从站 IO/ID 代码有误
- Slave has wrong IO/ID code
- 从站处于复位状态 / Slave in RESET state
模块未上电 / Module completely without voltage
U_{aux} 故障 / failure
操作正常且 U_{aux} 正常
Normal operation and U_{aux} applied

SAP4.1 紧凑型模块的显示特性 / Display characteristics of the SAP4.1 compact modules

LED	状态 / States						状态说明 ¹⁾ / Status description ¹⁾
AUX PWR	On	Off	Off				
DUAL LED	On	On	Off	On	闪烁 / 闪烁 Flashing / Flashing	闪烁 Flashing	

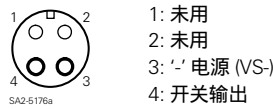
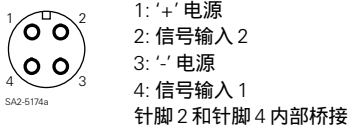
从站复位传感器过载
Sensor overload with RESET of slaves
从站站地址 = 0 / Slave has address = 0
未建立通讯 / No communication
- 主站处于停机模式 / Master in Stop mode
- 从站未进入 LPS / Slave not entered in the LPS
- 从站 IO/ID 代码有误
- Slave has wrong IO/ID code
- 从站处于复位状态 / Slave in RESET state
模块未上电 / Module completely without voltage
U_{aux} 故障 / failure
操作正常且 U_{aux} 正常
Normal operation and U_{aux} applied

紧凑型模块
连接器引脚分配
K60 系列, 数字量模块
识别拼接环 (HARAX 接线方式)



K45 系列, 数字量模块
输入, pnp, 标准 (M12 槽)

输出, pnp, 标准 (12 槽) 24 V DC



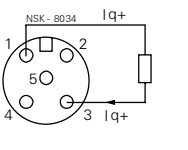
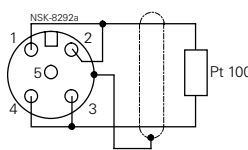
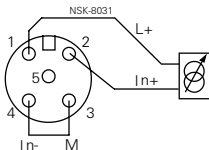
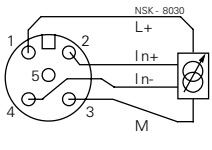
K60 系列, 模拟量模块
输入模块

3RK1 207-1BQ0-0AA3
电流输入为 4 线传感器

3RK1 207-1BQ0-0AA3
电流输入为 2 线传感器

3RK1 207-3BQ0-0AA3
热敏电阻 2 线传感器

输出模块
3RK1 207-1BQ0-0AA3
电流输出

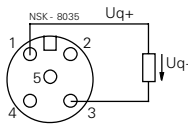
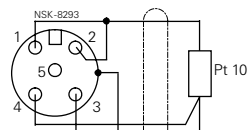
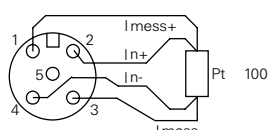
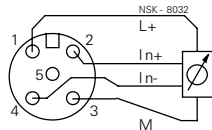


3RK1 207-2BQ0-0AA3
电压输入 4 线传感器

3RK1 207-3BQ0-0AA3
热敏电阻输入为 4 线传感器

3RK1 207-2BQ0-0AA3
热敏电阻 3 线传感器

3RK1 207-3BQ0-0AA3
电压输出



针脚 1 为传感器 24V DC 电源
针脚 3 为传感器 24V DC 电源接地端
每个通道最大 50 毫安

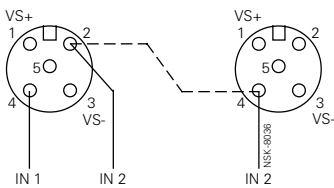
针脚 5 为电缆屏蔽线
针脚 1 Imeas+
针脚 2 为传感器电源
针脚 3 Imeas-
针脚 4 为传感器电源接地端
针脚 5 为电缆屏蔽线

针脚 5 为电缆屏蔽线
全部引脚分配没有外部传感器电源

K60 系列, 气动模块

输入
Y 形电缆 / 单电缆

输出
• 气动输出
• 通过标准 8 毫米插入式连接器连接



左列 (平面视图)

右列 (平面视图)

应用于现场的 I/O 模块 I/O modules for field application

Compact modules

Connector pin assignment

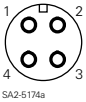
K60 series, digital

Identification splice ring (HARAX connection)



K45 series, digital

Input, pnp, standard (M 12 socket)



1: '+ ' Supply
2: Signal input 2
3: '- ' Supply
4: Signal input 1
Pin 2 and Pin 4 are bridged internally



Output, pnp, standard (M12 socket) DC 24 V

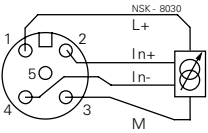
1: Not available
2: Not available
3: '- ' Supply (VS-)
4: Switching output

K60 series, analog

Input modules

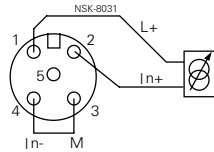
3RK1 207-1BQ0-0AA3

Current input 4-wire sensor



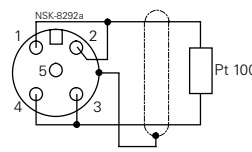
3RK1 207-1BQ0-0AA3

Current input 2-wire sensor



3RK1 207-3BQ0-0AA3

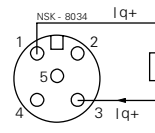
Thermo-resistor 2-wire sensor



Output modules

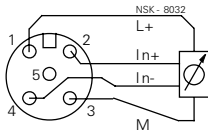
3RK1 207-1BQ0-0AA3

Current output



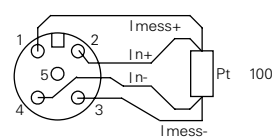
3RK1 207-2BQ0-0AA3

Voltage input 4-wire sensor



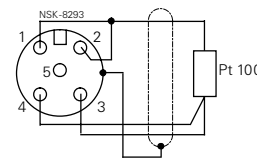
3RK1 207-3BQ0-0AA3

Thermo-resistor 4-wire sensor



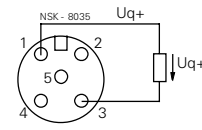
3RK1 207-2BQ0-0AA3

Thermo-resistor 3-wire sensor



3RK1 207-3BQ0-0AA3

Voltage output



Pin 1 is for 24 V DC sensor supply
Pin 3 is the for 24 V DC sensor supply ground (analog ground)
max. 50 mA for both channels

Pin 5 is for the cable shield
All pin assignments without external sensor supply

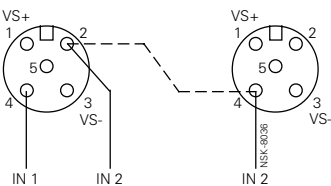
Pin 5 is for the cable shield
Pin 1 is Imeas+
Pin 2 is the sensor supply
Pin 3 is Imeas-
Pin 4 is the sensor supply ground
Pin 5 is for the cable shield

K60 series, pneumatic

Input

Y-shaped cable/single cable

Single cable



Left column (plan view)

Right column (plan view)

Output

- Pneumatic outputs
- Connection via standard 8 mm hose plug-in connector

**K60 数字式紧凑型模块
说明**

K60 系列数字量 AS-Interface 紧凑型模块与应用型模块相比具有优化的处理特性和友好的用户操作交互性。减少了约 40% 的用户安装和启动时间。

K60 系列的紧凑型接口模块由两部分构成:

- 安装盘
- 紧凑型模块

AS-Interface 异形电缆和紧凑型 AS-Interface 模块是连接到安装盘上的。这种连接的一个突出特点是具有接地保护导体。

可以在安装了模块之后再通过紧凑型模块上集成的编址插孔地址。

**带 4 个数字量输入
和输出的 K60 紧凑型模块**

这些紧凑型模块有通讯电子装置和连接输入和输出的标准 M12 插头。通过 M12 插头可以简单可靠地最多连接 4 个传感器和 4 个执行器。

模块和安装盘通过一根螺钉连接起来,采用绝缘穿刺技术,该螺钉同时保证了 AS-Interface 电缆的连接。

**带 8 个数字量输入的
K60 紧凑型模块**

这种模块有 8 个数字量的输入,通过 M12 插头可以进行连接。M12 插座内部接线使得 2 个传感器,通过 Y 电缆可以连接到一个输入端。

模块需要两个 AS-Interface 地址用于全部 8 个输入。其地址的分配与紧凑型模块一样可通过编址插孔完成。

组装

按照以下两步骤,紧凑型模块可以即安装到安装盘上:

- 将 AS-Interface 电缆卡入安装盘,
- 对位安装模块并用一条螺钉将其固定。

当旋紧螺钉后,AS-Interface 电缆已经可靠地连接于集成在模块上部的插针上了。

**K60 digital compact modules
Description**

The digital AS-Interface compact modules of Series K60, are characterized by optimized handling characteristics and greater user friendliness as compared with the application modules. They enable the user to reduce the installation and start-up times for AS-Interface by up to 40%.

AS-Interface modules of the K60 compact series comprise two sections:

- the mounting plate and
- the compact module.

The AS-Interface shaped cables and the compact module are to the mounting plate. AS-Interface modules of the compact series feature a connection for protective earth conductors. Addressing can also be performed in the installed state via an addressing socket integrated in the compact module.

**K60 compact modules with up to
four digital inputs and outputs**

These compact modules contain the communications electronics and the standard M12 connections for inputs and outputs.

Up to four sensors and four actuators can be connected to the compact module easily and reliably via standard M12 plugs. The mounting plate and compact module are connected together with a single screw which simultaneously causes contact to be made with the AS-Interface

cable using the insulation penetration technique.

**K60 compact modules with up to
eight digital inputs**

This module has eight digital inputs which can be connected via M12 plugs.

The M12 sockets are wired such that up to two sensors can be connected to one input via a Y cable.

The module requires two AS-Interface addresses for processing all eight inputs. The addresses can be assigned here in the same manner as for a compact module via an addressing socket.

Assembly

The compact modules are mounted on the mounting plate in just two work stages:

- The flat AS-Interface cable is laid on the mounting plate,
- The module is located and fixed with a screw.

Contact is made with the AS-Interface cable by the blade terminals integrated into the top section when the screw is screwed down.



传感器 / 执行器的 HARAX 接线技术

带 HARAX 接口的紧凑型模块

近来开发出的 HARAX 接线技术可以快速简单地将传感器和执行器连接到 AS-Interface 紧凑型模块上。

连接器特点

插入式连接器有 2 部分构成: HARAX 插头和 HARAX 插孔。插头与标准圆形电缆的连接,不需要剥掉绝缘层或以螺丝固定电缆。HARAX 插孔是紧凑型模块的一部分。

连接非常简单, HARAX 插头插入模块,象 M12 的连接一样旋转拧紧即可。松开连接也一样简单。

快速组装

插入式连接器的一个优点是不象 M12 连接器一样花很多的时间, HARAX 快速连接技术减少了 50% 的组装时间。采用 HARAX 不需要特殊的工具。

绝缘穿刺技术实现可靠的连接

连接技术基于绝缘穿刺技术,芯线截面直径在 0.25mm 和 0.5mm 之间,三芯。可以使用 HARAX 连接。其紧凑型设计意味着 HARAX 连接体积不会大于 M12 连接。

HARAX connection technique for sensors and actuators

Compact modules with HARAX connection

The newly developed HARAX connection technique allows sensors and actuators to be connected to the AS-Interface compact module quickly and easily.

Connector features

The plug-in connector comprises 2 parts, the HARAX plug and the HARAX socket. The plug is connected to a standard round cable without the need to strip the insulation or screw down the individual cores. The HARAX socket is a component part of the compact module. The connection is made simply by inserting the HARAX plug into the module and rotating it in the same manner as an M12 plug. Disconnection is just as easy. A

module can therefore be replaced just as easily as disconnecting and connecting an M12 plug.

Rapid assembly

The advantages of plug-in connectors can still be enjoyed without the time-consuming task of assembling M12 connectors. The HARAX rapid connection technique reduces assembly time by 50%. With HARAX, special tools are not necessary.

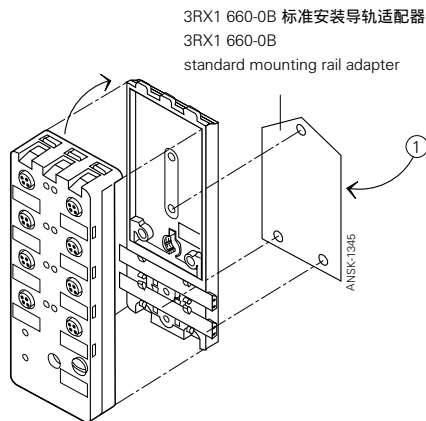
**Reliable connection thanks to the
insulation-piercing method**

The connection technique is based on the insulation-piercing method. Three cores with cross-sectional diameters of between 0.25 mm and 0.5 mm can be connected using HARAX and its compact design means that a HARAX connection is no larger than an M12 connection.

K60 数字式紧凑型模块 /K60 digital compact modules

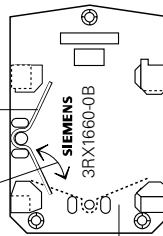
组装 /Assembly

安装在标准导轨上 /Mounting onto standard mounting rail



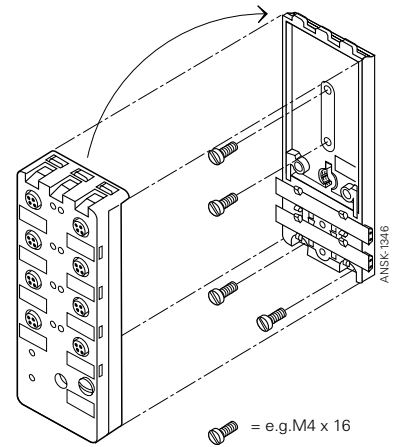
①
水平安装在标准导轨适配器上
for horizontal mounting onto standard mounting rail
可调整夹片
Clip adjustable

标准安装导轨适配器后侧
Rear side of standard mounting rail adapter



垂直安装在标准导轨适配器上
for vertical mounting onto standard mounting rail

用螺丝固定安装 /Screw-on mounting



编址

通过集成的编址插孔和编址电缆 3RK1 901-3HA01 给模块编址。为了保证必要的保护等级，不使用的 M12 插座必须用 3RK1 901-1KA00 密封盖封住。8 输入紧凑型数字量模块需要 2 个 AS-Interface 地址。使用集成在模块里的双地址槽为其分配地址。

Addressing

The addresses are assigned via the integrated addressing socket and the addressing cable 3RK1 901-3HA01. M12 sockets that are not required must be sealed with 3RK1 901-1KA00 blank plugs in order to guarantee the specified degree of protection.

The compact module with eight digital inputs requires two AS-Interface addresses. The addresses are assigned using a double addressing socket integrated into the module.

模块的选型与订货数据

Selection and ordering data of the modules



设计 /Design

采用 HARAX 接线技术
4 输入 / 4 输出
4 inputs/4 outputs
with HARAX connection

HARAX 连接器
用于紧凑型模块与标准传感器
执行器的连接
HARAX connector for connecting
standard sensors/actuators with
the compact

说明 /Description

标准分配 /Standard assignment

如左侧说明/module described at the left side

订货号 /Order No.

技术参数 /Technical data

4I/4O

3RK1 400-1CS00-0AA3

3RK1 901-3KA00

同 3RK1 400-1DQ00-0AA3¹⁾
as for 3RK1 400-1DQ00-0AA3¹⁾

1) 见 1/30 页 /See page 1/30.

K60 数字式紧凑型模块
模块的选型与订货数据



设计	4 输入 /4 输出 PNP 晶体管 Y-II 分配 4I/4O	4 输入 /4 输出 PNP 晶体管 Y-II 分配 4I/4O	4 输入 /4 输出 PNP 晶体管 标准分配 4I/4O	2 × 2 输入 / 2 × 2 输出 PNP 晶体管 Y 分配 4I/4O
订货号	▶ 3RK1 400-1DQ00-0AA3	3RK1 400-1DQ01-0AA3	3RK1400-1DQ03-0AA3	3RK1400-1DQ02-0AA3
AS-Interface 芯片				
工作电压	V 26.5~31.5	V 26.5~31.5	V 26.5~31.5	V 26.5~31.5
(满足 AS-Interface 规范要求)				
总电流输入	mA ≤270	mA ≤270	mA ≤270	mA ≤270
输入连接	PNP	PNP	PNP	PNP
输入				
- 传感器经 AS-Interface 供电	短路和过载保护	短路和过载保护	短路和过载保护	短路和过载保护
- 传感器类型	2-线和 3-线	2-线和 3-线	2-线和 3-线	2-线和 3-线
- 电压范围	V 20~30	V 20~30	V 20~30	V 20~30
- 所有输入的电流载流量 mA (T _u ≤40°C)	200	200	200	200
- 高切换电平	V ≥10	V ≥10	V ≥10	V ≥10
- 低 / 高输入电流	mA ≤1.5 / ≥6V	mA ≤1.5 / ≥6V	mA ≤1.5 / ≥6V	mA ≤1.5 / ≥6V
输入端引脚分配	PIN 分配 1 传感器电源 L+ 2 数据输入 II 3 传感器电源 L- 4 数据输入 I 5 接地	PIN 分配 1 传感器电源 L+ 2 数据输入 II 3 传感器电源 L- 4 数据输入 I 5 接地	PIN 分配 1 传感器电源 L+ 2,4 数据输入 I 3 传感器电源 L- 5 接地	PIN 分配 1 传感器电源 L+ 2 数据输入 II 3 传感器电源 L- 4 数据输入 I 5 接地
输出				
- 输出类型	电子	电子	电子	电子
- 载流能力 DC 12/13 A 典型值 (每个模块最大 4A)	2	1	1	1
- 输出引脚分配	3= “-” 2/4= 输出 5= 接地	3= “-” 2/4= 输出 5= 接地	3= “-” 4= 输出 5= 接地	3= “-” 2/4= 输出 5= 接地
- 短路保护	集成	集成	集成	集成
- 感应保护	集成	集成	集成	集成
- 外部 24 DC V 电源	通过黑电缆	通过黑电缆	通过黑电缆	通过黑电缆
- 监控	集成	集成	集成	集成
I/O 配置	7	7	7	7
ID 代码	F	F	0	F
数据位分配				
- 插座 1 (数据位 D0)	PIN4=IN1 (D0)	PIN4=IN1 (D0)	PIN2/4=IN1 (D0)	PIN4=IN1 (D0)
- 插座 2 (数据位 D1)	PIN2=IN2 (D1)	PIN2=IN2 (D1)	PIN2/ 4=IN2 (D1)	PIN2=IN2 (D1)
- 插座 3 (数据位 D2)	PIN4=IN2 (D1)	PIN4=IN2 (D1)	PIN2/ 4=IN3 (D2)	未用 (封闭)
- 插座 4 (数据位 D3)	PIN4=IN3 (D2)	PIN4=IN3 (D2)	PIN2=IN4 (D3)	PIN4=IN3 (D2)
- 插座 5 (数据位 D0)	PIN2=IN4 (D3)	PIN2=IN4 (D3)	PIN2=IN4 (D3)	PIN2=IN4 (D3)
- 插座 6 (数据位 D1)	PIN4=IN4 (D3)	PIN4=IN4 (D3)	PIN2/ 4=IN4 (D3)	未用 (封闭)
- 插座 7 (数据位 D2)	PIN4=OUT1 (D0)	PIN4=OUT1 (D0)	PIN4=OUT1 (D0)	PIN4=OUT1 (D0)
- 插座 8 (数据位 D3)	PIN2=OUT2 (D1)	PIN2=OUT2 (D1)	PIN4=OUT2 (D1)	PIN2=OUT2 (D1)
AS-Interface 认证	有	有	有	有
认证标准	UL, CSA, 船级社认证	UL, CSA, 船级社认证	UL, CSA, 船级社认证	UL, CSA, 船级社认证
保护等级	IP 67	IP 67	IP 67	IP 67
接地	每个 M12 插座经 PIN5 接地			
环境温度	°C -25~+85	°C -25~+85	°C -25~+85	°C -25~+85
存储温度	°C -40~+85	°C -40~+85	°C -40~+85	°C -40~+85
I/O 插座数目	8	8	8	4
状态指示	黄色 LED	黄色 LED	黄色 LED	黄色 LED
- I/O 显示	绿色 LED	绿色 LED	绿色 LED	绿色 LED
- U _{aux} 显示	绿色 / 红色 LED	绿色 / 红色 LED	绿色 / 红色 LED	绿色 / 红色 LED
- AS-Interface / 诊断显示				
连接	K60 紧凑型模块安装盘	K60 紧凑型模块安装盘	K60 紧凑型模块安装盘	K60 紧凑型模块安装盘
编址	经过 15 次分配地址后模块保留最后的地址	经过 15 次分配地址后模块保留最后的地址	经过 15 次分配地址后模块保留最后的地址	经过 15 次分配地址后模块保留最后的地址

▶ 首选型号

应用于现场的 I/O 模块 I/O modules for field application

K60 digital compact modules
Selection and ordering data of the modules



Design	4 inputs/4 outputs PNP transistor Y-II assignment 4I/4O	4 inputs/4 outputs PNP transistor Y-II assignment 4I/4O	4 inputs/4 outputs PNP transistor Standard assignment 4I/4O	2 x 2 inputs/2 x 2 outputs PNP transistor Y assignment 4I/4O
Order No.	3RK1 400-1DQ00-0AA3	3RK1 400-1DQ01-0AA3	3RK1 400-1DQ03-0AA3	3RK1 400-1DQ02-0AA3
AS-Interface chip				
Operational voltage in acc. with AS-Interface specification	V 26.5 to 31.5	26.5 to 31.5	26.5 to 31.5	26.5 to 31.5
Total current input	mA ≤270	≤270	≤270	≤270
Input connection				
Inputs				
- Sensor supply via AS-Interface	Short-circuit and overload-proof	Short-circuit and overload-proof	Short-circuit and overload-proof	Short-circuit and overload-proof
- Sensors	2 -and 3-wire	2 -and 3-wire	2 -and 3-wire	2 -and 3-wire
- Voltage range	V 20 to 30	20 to 30	20 to 30	20 to 30
- Current carrying capacity for all inputs (T _a ≤40°C)	mA 200	200	200	200
- Switching level High	V ≥10	≥10	≥10	≥10
- Input current Low/High	mA ≤1.5 / ≥6V	≤1.5 / ≥6V	≤1.5 / ≥6V	≤1.5 / ≥6V
- Pin assignment inputs	PIN Assignment	PIN Assignment	PIN Assignment	PIN Assignment
	1 Sensor supply L+	1 Sensor supply L+	1 Sensor supply L+	1 Sensor supply L+
	2 Data input II	2 Data input II	2,4 Data input I	2 Data input II
	3 Sensor supply L-	3 Sensor supply L-	3 Sensor supply L-	3 Sensor supply L-
	4 Data input I	4 Data input I	5 Ground connection	4 Data input I
	5 Ground connection	5 Ground connection		5 Ground connection
Outputs				
- Type of output	Electronics	Electronics	Electronics	Electronics
- Current carrying capacity DC 2/13 typical (max. 4 A per module)	A 2	1	1	1
- Pin assignment outputs	3="-" 2/4 = Output 5 = Ground connection	3="-" 2/4 = Output 5 = Ground connection	3="-" 2/4 = Output 5 = Ground connection	3="-" 2/4 = Output 5 = Ground connection
- Short-circuit protection	built-in	built-in	built-in	built-in
- Inductive interference protection	built-in	built-in	built-in	built-in
- External power supply	via black	via black	via black	via black
- Watchdog	AS-Interface flat cable	AS-Interface flat cable	AS-Interface flat cable	AS-Interface flat cable
I/O configuration	built-in	built-in	built-in	built-in
ID code	7	7	7	7
Assignment of data bits	F	F	F	F
- Socket 1 (data bit D0)	PIN4=IN1 (D0)	PIN4=IN1 (D0)	PIN2/4=IN1 (D0)	PIN4=IN1 (D0)
	PIN2=IN2 (D1)	PIN2=IN2 (D1)		PIN2=IN2 (D1)
- Socket 2 (data bit D1)	PIN4=IN2 (D1)	PIN4=IN2 (D1)	PIN2/ 4=IN2 (D1)	Unused (blocked)
- Socket 3 (data bit D2)	PIN4=IN3 (D2)	PIN4=IN3 (D2)	PIN2/ 4=IN3 (D2)	PIN4=IN3 (D2)
	PIN2=IN4 (D3)	PIN2=IN4 (D3)		PIN2=IN4 (D3)
- Socket 4 (data bit D3)	PIN4=IN4 (D3)	PIN4=IN4 (D3)	PIN2/ 4=IN4 (D3)	Unused (blocked)
- Socket 5 (data bit D0)	PIN4=OUT1 (D0)	PIN4=OUT1 (D0)	PIN4=OUT1 (D0)	PIN4=OUT1 (D0)
	PIN2=OUT2 (D1)	PIN2=OUT2 (D1)		PIN2=OUT2 (D1)
- Socket 6 (data bit D1)	PIN4=OUT2 (D1)	PIN4=OUT2 (D1)	PIN4=OUT2 (D1)	Unused (blocked)
- Socket 7 (data bit D2)	PIN4=OUT3 (D2)	PIN4=OUT3 (D2)	PIN4=OUT3 (D2)	PIN4=OUT3 (D2)
	PIN2=OUT4 (D3)	PIN2=OUT4 (D3)		PIN2=OUT4 (D3)
- Socket 8 (data bit D3)	PIN4=OUT4 (D3)	PIN4=OUT4 (D3)	PIN4=OUT4 (D3)	Unused (blocked)
AS-Interface certificate	yes	yes	yes	yes
Approvals	UL, CSA, ship building	UL, CSA, ship building	UL, CSA, ship building	UL, CSA, ship building
Degree of protection	IP 67	IP 67	IP 67	IP 67
Ground connection	PIN5 of each M12 socket is connected to the grounding plate in the mounting plate via a pin.			
Ambient temperature	°C -25 to +85	-25 to +85	-25 to +85	-25 to +85
Storage temperature	°C -40 to +85	-40 to +85	-40 to +85	-40 to +85
Number of I/O sockets	8	8	8	8
Status indication	yellow LED	yellow LED	yellow LED	yellow LED
- I/O display	green LED	green LED	green LED	green LED
- U _{bus} display	green/red LED	green/red LED	green/red LED	green/red LED
- AS-Interface/diagnostics display				
Connection	Mounting plate for K60 compact module	Mounting plate for K60 compact module	Mounting plate for K60 compact module	Mounting plate for K60 compact module
Addressing	After the 15th addressing, the module keeps the last	After the 15th addressing, the module keeps the last	After the 15th addressing, the module keeps the last	After the 15th addressing, the module keeps the last

▶ Preferred type

K60 数字式紧凑型模块
模块的选型与订货数据



设计		4 输入 / 2 输出 PNP 晶体管 Y-II 分配 4I/2O	4 输入 PNP 晶体管 Y-II 分配 4I	8 输入 PNP 晶体管 标准分配 8I																																				
订货号		3RK1 400-1MQ00-0AA3	3RK1 200-0CQ00-0AA3	3RK1 200-0DQ00-0AA3																																				
AS-Interface 芯片																																								
工作电压 (满足 AS-Interface 规范要求)	V	26.5~31.5	26.5~31.5	26.5~31.5																																				
总电流输入	mA	≤270	≤270	≤270																																				
输入连接		PNP	PNP	PNP																																				
输入																																								
- 传感器经 AS-Interface 供电		短路和过载保护	短路和过载保护	短路和过载保护																																				
- 传感器类型		2-线和 3-线	2-线和 3-线	2-线和 3-线																																				
- 电压范围	V	20-30V	20-30V	20-30V																																				
- 所有输入的电流载流量 ($T_u \leq 40^\circ\text{C}$)	mA	200	200	200																																				
- 高切换电平	V	≥10	≥10	≥10																																				
- 低 / 高输入电流	mA	≤1.5 / ≥6V	≤1.5 / ≥6V	≤1.5 / ≥6V																																				
- 针脚分配		<table border="1"> <tr><th>PIN</th><th>分配</th></tr> <tr><td>1</td><td>传感器电源 L+</td></tr> <tr><td>2</td><td>数据输入 II</td></tr> <tr><td>3</td><td>传感器电源 L-</td></tr> <tr><td>4</td><td>数据输入 I</td></tr> <tr><td>5</td><td>接地</td></tr> </table>	PIN	分配	1	传感器电源 L+	2	数据输入 II	3	传感器电源 L-	4	数据输入 I	5	接地	<table border="1"> <tr><th>PIN</th><th>分配</th></tr> <tr><td>1</td><td>传感器电源 L+</td></tr> <tr><td>2</td><td>数据输入 II</td></tr> <tr><td>3</td><td>传感器电源 L-</td></tr> <tr><td>4</td><td>数据输入 I</td></tr> <tr><td>5</td><td>接地</td></tr> </table>	PIN	分配	1	传感器电源 L+	2	数据输入 II	3	传感器电源 L-	4	数据输入 I	5	接地	<table border="1"> <tr><th>PIN</th><th>分配</th></tr> <tr><td>1</td><td>传感器电源 L+</td></tr> <tr><td>2</td><td>数据输入 II</td></tr> <tr><td>3</td><td>传感器电源 L-</td></tr> <tr><td>4</td><td>数据输入 I</td></tr> <tr><td>5</td><td>接地</td></tr> </table>	PIN	分配	1	传感器电源 L+	2	数据输入 II	3	传感器电源 L-	4	数据输入 I	5	接地
PIN	分配																																							
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5	接地																																							
输出																																								
- 输出类型		电子	-	-																																				
- 载流能力 DC12/ 13 典型值 (每个模块最大 4 A)	A	2	-	-																																				
- 输出针脚分配		3= “-” 2/4= 输出 5= 接地	-	-																																				
- 短路保护		集成	-	-																																				
- 感应保护		集成	-	-																																				
- 外部 24 DC V 电源		通过黑电缆	-	-																																				
- 监控		集成	-	-																																				
I/O 配置		7	0	0																																				
ID 代码		F	1	1																																				
数据位分配																																								
- 插槽 1 (数据位 D0)		PIN4=IN1 (D0) / PIN2=IN2 (D1)	PIN4=IN1 (D0) / PIN2=IN2 (D1)	PIN4=IN1 (D0) / PIN2=IN2 (D1)																																				
- 插槽 2 (数据位 D1)		PIN4=IN2 (D1)	PIN4=IN2 (D1)	PIN4=IN2 (D1)																																				
- 插槽 3 (数据位 D2)		PIN4=IN3 (D2) / PIN2=IN4 (D3)	PIN4=IN2 (D2) / PIN2=IN4 (D3)	PIN4=IN3 (D2) / PIN2=IN4 (D3)																																				
- 插槽 4 (数据位 D3)		PIN4=IN4 (D3)	PIN4=IN4 (D3)	PIN4=IN4 (D3)																																				
- 插槽 5 (数据位 D0)		PIN4=OUT1 (D0) / PIN2=OUT2 (D1)	未用 (封闭)	PIN4=IN1 (D0) / PIN2=IN2 (D1)																																				
- 插槽 6 (数据位 D1)		PIN4=OUT2 (D1)	未用 (封闭)	PIN4=IN2 (D1)																																				
- 插槽 7 (数据位 D2)		未用 (封闭)	未用 (封闭)	PIN4=IN3 (D2) / PIN2=IN4 (D3)																																				
- 插槽 8 (数据位 D3)		未用 (封闭)	未用 (封闭)	PIN4=IN4 (D3)																																				
AS-Interface 认证		有	有	有																																				
认证标准		UL, CSA, 船级社认证	UL, CSA, 船级社认证	UL, CSA, 船级社认证																																				
保护等级		IP 67	IP 67	IP 67																																				
接地		每个 M12 插座经 PIN5 接地																																						
环境温度	°C	-25~+85	-25~+85	-25~+85																																				
存储温度	°C	-40~+85	-40~+85	-40~+85																																				
I/O 插座数目		6	4	8																																				
状态指示																																								
- I/O 显示		黄色 LED	黄色 LED	黄色 LED																																				
- U_{aux} 显示		绿色 LED	绿色 LED	绿色 LED																																				
- AS-Interface / 诊断显示		绿色 / 红色 LED	绿色 / 红色 LED	绿色 / 红色 LED																																				
连接		连接到安装盘	连接到安装盘	连接到安装盘																																				
编址		经过 15 次分配地址后, 模块保留最后的地址	经过 15 次分配地址后, 模块保留最后的地址	经过 15 次分配地址后, 模块保留最后的地址																																				

▶ 首选型号

应用于现场的 I/O 模块 I/O modules for field application

K60 digital compact modules
Selection and ordering data of the modules



Design	4 inputs/2 outputs PNP transistor Y-II assignment 4I/4O	4 inputs PNP transistor Y-II assignment 4I	8 inputs PNP transistor Y-II assignment 8I
Order No.	3RK1 400-1MQ00-0AA3	▶ 3RK1 200-0CQ00-0AA3	▶ 3RK1 200-0DQ00-0AA3
AS-Interface chip			
Operational voltage in acc. with AS-Interface specification	V 26.5 to 31.5	V 26.5 to 31.5	V 26.5 to 31.5
Total current input	mA ≤270	mA ≤270	mA ≤270
Input connection	PNP	PNP	PNP
Inputs			
- Sensor supply via AS-Interface	Short-circuit and overload-proof	Short-circuit and overload-proof	Short-circuit and overload-proof
- Sensors	2- and 3-wire	2- and 3-wire	2- and 3-wire
- Voltage range	V 20 to 30	V 20 to 30	V 20 to 30
- Current carrying capacity for all inputs ($T_a \leq 40^\circ\text{C}$)	mA 200	mA 200	mA 200
- Switching level High	V ≥10	V ≥10	V ≥10
- Input current Low/High	mA ≤1.5 / ≥6V	mA ≤1.5 / ≥6V	mA ≤1.5 / ≥6V
- Pin assignment (input)			
	<u>PIN Assignment</u>	<u>PIN Assignment</u>	<u>PIN Assignment</u>
	1 Sensor supply L+	1 Sensor supply L+	1 Sensor supply L+
	2 Data input II	2 Data input II	2 Data input II
	3 Sensor supply L-	3 Sensor supply L-	3 Sensor supply L-
	4 Data input I	4 Data input I	4 Data input I
	5 Ground connection	5 Ground connection	5 Ground connection
Outputs			
- Type of output	Electronics	-	-
- Current carrying capac. DC12/13 typical (max. 4 A per module)	A 2	-	-
- Pin assignment (output)	3="-" 2/4= Output 5=Ground connection	-	-
- Short-circuit protection	built-in	-	-
- Inductive interference protection	built-in	-	-
- External power supply 24 V DC	via black AS-Interface flat cable	-	-
- Watchdog	built-in	-	-
I/O configuration	7	0	0
ID code	F	1	1
Assignment of data bits			
- Socket 1 (data bit D0)	PIN4 = IN1(D0) / PIN2 = IN2(D1)	PIN4 = IN1(D0) / PIN2 = IN2(D1)	PIN4 = IN1(D0) / PIN2=IN2(D1)
- Socket 2 (data bit D1)	PIN4 = IN2(D1)	PIN4 = IN2(D1)	PIN4 = IN2(D1)
- Socket 3 (data bit D2)	PIN4 = IN3(D2) / PIN2 = IN4(D3)	PIN4 = IN3(D2) /PIN2 = IN4(D3)	PIN4 = IN3(D2) / PIN2=IN4(D3)
- Socket 4 (data bit D3)	PIN4 = IN4(D3)	PIN4 = IN4(D3)	PIN4 = IN4(D3)
- Socket 5 (data bit D0)	PIN4=OUT1(D0)/PIN2=OUT2(D1)	Unused (blocked)	PIN4 = IN1(D0) / PIN2=IN2(D1)
- Socket 6 (data bit D1)	PIN4 = OUT2(D1)	Unused (blocked)	PIN4 = IN2(D1)
- Socket 7 (data bit D2)	Unused (blocked)	Unused (blocked)	PIN4 = IN3(D2) / PIN2=IN4(D3)
- Socket 8 (data bit D3)	Unused (blocked)	Unused (blocked)	PIN4 = IN4(D3)
AS-Interface certificate	yes	yes	yes
Approvals	UL, CSA, ship building	UL, CSA, ship building	UL, CSA, ship building
Ground connection	PIN5 of each M12 socket is connected to the grounding plate in the mounting plate via a pin.		
Degree of protection	IP 67	IP 67	IP 67
Ambient temperature	°C -25~+85	°C -25~+85	°C -25~+85
Storage temperature	°C -40~+85	°C -40~+85	°C -40~+85
Number of I/O sockets	6	4	8
I/O display	yellow LED	yellow LED	yellow LED
U_{aux} display	green LED	green LED	green LED
AS-Interface/diagnostics display	green/red LED	green/red LED	green/red LED
Connection	Mounting plate	Mounting plate	Mounting plate
Addressing	After the 15th addressing, the module keeps the last address.	After the 15th addressing, the module keeps the last address.	After the 15th addressing, the module keeps the last address.

▶ Preferred type

应用于现场的 I/O 模块

I/O modules for field application

K60 数字式紧凑型模块 /K60 digital compact modules
附件的选型与订货数据 /Selection and ordering data of the accessories



设计 /Design

订货号 /Order No.

环境温度

Ambient temperature

保护等级 /Degree of protection

连接方法 /Connection method

安装方法 /Connection method

注意事项 /Note

K60 安装板 /K60 mounting plate
适用于所有 K60 紧凑型模块
Suitable for all K60 compact modules
▶ 3RK1 901-0CA00

环境温度 °C -40~+85

采用螺丝固定 K60 模块可达到 IP 67
IP 67 if the K60 compact module is screwed on

对于异型 AS-Interface 电缆, 通过模块上的插针接触

For shaped AS-Interface cable Contact is made via blade terminals integrated in the compact module

采用 3RX1 660-0B 适配器安装到墙上或安装在标准安装导轨上

Wall mounting or mounting onto standard mounting rail with 3RX1 660-0B adapter

扁平电缆终止于模块内时, 使用附加密封件

Additional seals are only necessary if the flat cables end inside the module.



设计

Design

订货号 /Order No.

包装 /Packing

K60 安装板

K60 安装板用于数字、模拟和气动型 K60 紧凑模块, 有黄色和黑色 AS-Interface 扁平电缆的电缆识别标志。

如果黄色和黑色扁平电缆贯穿模块, 是不需要附加密封件的。

只有在电缆的两头或一头截止于模块内部时才使用附加密封件。这时附加密封件 (平直的和异型的) 必须插到安装板上。密封件不包括在主设备定货范围之内, 必须单独定货。(见 K60 模块的附件表)

M 12 密封盖

M 12 blank plugs

3RK1 901-1KA00

一个包装 = 10 个

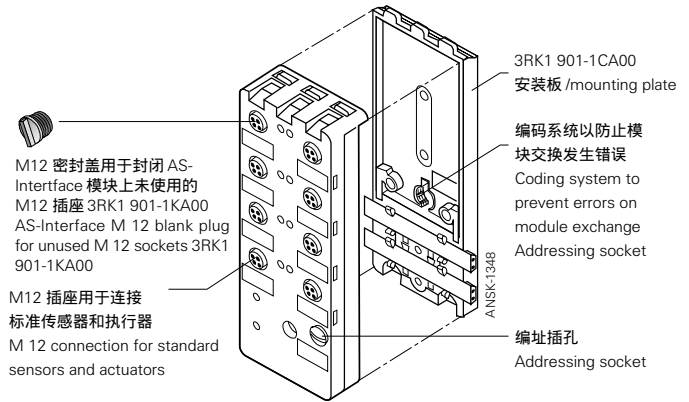
1 packing = 10 units

K60 安装是按板墙面安装设计的, 如果要固定在标准导轨上必须选用附加适配器。(见 K60 模块的附件表)

K60 mounting plate

The K60 mounting plate is used for digital, analog and pneumatic K60 compact modules. It has cable guides for the yellow and black AS-Interface flat cable.

If the yellow and black AS-Inter-



M12 密封盖用于封闭 AS-Interface 模块上未使用的 M12 插座 3RK1 901-1KA00
AS-Interface M 12 blank plug for unused M 12 sockets 3RK1 901-1KA00

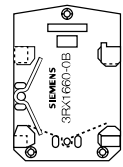
M12 插座用于连接标准传感器和执行器
M 12 connection for standard sensors and actuators

3RK1 901-1CA00 安装板 /mounting plate

编码系统以防止模块交换发生错误
Coding system to prevent errors on module exchange

编址插孔

编址插孔



标准安装导轨适配器

Standard mounting rail adapter

3RX1 660-0B

一个包装 = 10 个

1 unit

face flat cables are routed right through the module, no additional seals are necessary. Additional seals are only necessary when both leads or only one lead ends inside the module. In such cases, additional seals (straight and profiled) must be inserted in the mounting plate. The seals are not included in the scope of supply and must be ordered separately (see Table

安装板密封件

Sealing kit for mounting plate

3RK1 902-0AR00

一个包装 = 10 个¹⁾

1 packing = 10 units¹⁾

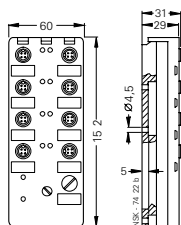
with Accessories for K60 compact modules). The K60 mounting plates are designed for wall mounting. An additional adapter is required for fixing onto a standard rail (see Table Accessories for K60 compact modules).

外形尺寸图

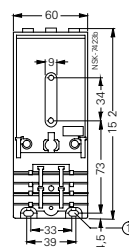
Dimension Drawing

K60 数字式紧凑型模块 /K60 digital compact modules

3RK1 901-0CA00 安装板 /3RK1 901-0CA00 mounting plate



3RK1 901-0CA00 安装盘侧视图
Side view with 3RK1 901-0CA00 mounting plate



1) 5 平直, 5 异型密封件 /5 straight and 5 profiled seals.

▶ 首选类型 /Preferred type

仅成包供货 /Only supplied in packs

K45 数字式紧凑型模块 / K45 digital compact modules

说明

广泛应用于工业领域中的 K60 紧凑型模块的补充新系列 K45 紧凑型模块已经问世。

作为一种底层产品，为将来开发小型紧凑型模块打下了基础。

K45 模块具有与现有 K60 模块几乎相同的优势，与应用模块具有相同的应用领域，而安装时深度只有其 2/3，因此能够与紧凑型模块家族的产品匹配。

除了外型尺寸小之外，所有模块都有加工精细的安装板并集成有编址插孔。

对于 K45 模块有两种安装板：

- 第一种安装板与 K60 紧凑型模块具有相同的安装孔。这使得 K60 模块可以与 K45 模块平齐安装。扁平电缆可以通过安装板上的凹槽穿出，不会遇到障碍。
- 第二种安装板具有安装孔和标准导轨安装适配器。

组装

AS-Interface 的黄色或黑色扁平电缆可以从任何方向嵌入安装板标识的卡槽内。

扁平电缆的安装变得非常简单，黄色和黑色的 AS-Interface® 电缆可以根据编码凸起的位置从左侧或右侧插入安装板上，操作电压的极性不会接反。

作为第一个开发阶段开发出来的产品，有三种模块可供选择：带 M12 插座的 4I、4O 及 2I/2O 模块。所有模块都是完全电子化的。采用现有模块，绝大部分的应用问题都可以解决。

Description

The large K60 compact modules, well-proven in industry, are now complemented by the new K45 compact module series. They round off the existing product spectrum at the lower end and form the backbone of a future generation of small compact modules.

The recognized advantages of the existing K60 compact modules are entirely mirrored in the considerably smaller K45 modules. They have the same base area as the application modules, but the installed depth is only 2/3 of that of the application modules and therefore matches the compact module family.

Despite these small dimensions, all modules feature large engraving plates and the integrated addressing socket. Two mounting plates are offered for the K45 compact modules:

- The first mounting plate has the same drilled hole pattern as the K60 compact modules. This allows K60 compact modules to be mounted flush with K45 modules. The flat cables are laid without obstructions in the

special depressions in the mounting plates.

- The second mounting plate has the drilled holes and the standard rail mounting adapter of the application modules.

Installation of the flat cables has been simplified. The yellow and black AS-Interface® flat cable can be inserted in the mounting plates from the left or right depending on the position of the coding lug. The polarity of the applied voltages cannot be reversed.

In the first development stage, the three module variants 4I, 4O and 2I/2O are offered with M12 connectors. All modules are entirely electronic. With the existing variants, almost all applications can be solved that used to be the domain of the application modules.

模块的顶部组件安装在安装板上。

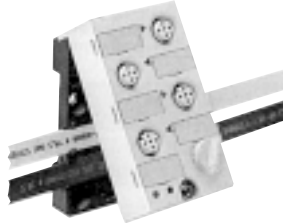
以一条螺钉将顶部组件固定在安装板上。

Assembly

The yellow or black and yellow AS-Interface flat cables are laid in the appropriate cable guides of the mounting plate. They can

be inserted in any direction.

The top of the module is located onto the mounting plate. The top section is fixed to the mounting plate with just one screw.



安装的方式

使用安装板 3RK 1 901-2DA00 安装在标准轨道导轨上。

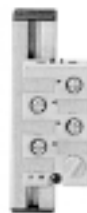
使用安装板 3RK 1 901-2EA00 安装在墙上。

使用安装板 3RK 1 901-2DA00 或 3RK 1 901-2EA00 均可以螺丝（最大 M5）和滑块²⁾安装¹⁾在如右下图适宜的型材上。

Mounting possibilities

Standard rail mounting with mounting plate 3RK1 901-2DA00. Wall mounting with mounting plate 3RK1 901-2EA00.

Mounting¹⁾ on generally available shaped rails with screw-on slides²⁾ (max. M5) on mounting plate 3RK1 901-2EA00 or 3RK1 901-2DA00.



编址

通过集成的编址插孔和编址电缆 3RK1 901-3HA01 分配地址

为了保证一致的保护等级，没有使用的 M12 插座必须用密封盖 3RK1 901-1KA00 将其密封。

Addressing

Addresses are assigned via the integrated addressing socket and addressing cable 3RK1 901-3HA01.

Unused M12 sockets must be sealed with 3RK1 901-1KA00 blank plugs to safeguard the specified degree of protection.

1) 可以水平或垂直安装 / Horizontal or vertical fixing is possible.

2) 滑块不在供货范围内 / The screw-on slides are not included in the scope of supply.

K45 数字式紧凑型模块
模块的选型与订货数据



设计	4 输入 PNP 晶体管 标准分配 4I	2 输入 / 2 输出 PNP 晶体管 标准分配 2I/2O	4 输出 PNP 晶体管 标准分配 4O
订货号	▶ 3RK1 200-0CQ20-0AA3	▶ 3RK1 400-1BQ20-0AA3	▶ 3RK1 100-1CQ20-0AA3
AS-Interface 芯片			
工作电压 (满足 AS-Interface 规范要求)	V 26.5~31.5	26.5~31.5	26.5~31.5
总电流输入	mA ≤270	≤270	≤45
反向电压保护 $U_{AS-Interface}$	集成	集成	集成
反向电压保护 U_{aux}	-	编码	编码
输入连接	PNP	PNP	PNP
输入			
- 传感器经 AS-Interface 供电	短路和过载保护	短路和过载保护	-
- 传感器类型	2- 线和 3- 线	2- 线和 3- 线	-
- 电压范围	V 20~30	20~30	-
- 所有输入的电流载流量 ($T_{\leq 40^{\circ}C}$)	mA 200	200	-
- 高切换电平	V ≥10	≥10	-
- 低 / 高输入电流	mA ≤1.5 / ≥5V	≤1.5 / ≥5V	-
引脚分配	PIN 分配	PIN 分配	-
	1 传感器电源 L+	1 传感器电源 L+	
	3 传感器电源 L-	3 传感器电源 L-	
	4+2 数据输入 I	4+2 数据输入 I	
	5 接地	5 接地	
输出			
- 输出类型	-	电子 (PNP)	电子 (PNP)
- 载流能力 DC12/ 13 典型值 (每个模块最大 3 A)	A -	1.5	1
- 短路保护	-	集成	集成
- 感应保护	-	集成	集成
- 外部 24 V DC 电源	不需要	通过黑色的 AS-Interface 电缆	通过黑色的 AS-Interface 电缆
- 监控	-	集成	集成
I/O 配置	0	3	8
ID 代码	0	0	0
数据位分配			
- 插槽 1 (数据位 D0)	输入 1=PIN4 和 2	输入 1=PIN4 和 2	输出 1=PIN4
- 插槽 2 (数据位 D1)	输入 2=PIN4 和 2	输入 2=PIN4 和 2	输出 2=PIN4
- 插槽 3 (数据位 D2)	输入 3=PIN4 和 2	输入 3=PIN4 和 2	输出 3=PIN4
- 插槽 4 (数据位 D3)	输入 4=PIN4 和 2	输入 4=PIN4 和 2	输出 4=PIN4
AS-Interface 认证	是	是	是
认证标准	UL, CSA, 船级社认证 (准备中)	UL, CSA, 船级社认证 (准备中)	UL, CSA, 船级社认证 (准备中)
保护等级	IP 67	IP 67	IP 67
接地	每个 M12 槽 PIN5 接地		
环境温度	°C -25~+85	-25~+85	-25~+85
存储温度	°C -40~+85	-40~+85	-40~+85
I/O 插座数目	4	4	4
- I/O 显示	黄色 LED	黄色 LED	黄色 LED
- U_{aux} 显示	-	绿色 LED	绿色 LED
- AS-Interface / 诊断显示	LED“ AS-I ” 状态	LED“ AS-I ” 状态	LED“ AS-I ” 状态
	绿色 正常	绿色 正常	绿色 正常
	红色 无数据通讯	红色 无数据通讯	红色 无数据通讯
	红 / 黄闪烁 0 地址	红 / 黄闪烁 0 地址	红 / 黄闪烁 0 地址
	红色闪烁 过载	红色闪烁 过载	
连接	连接到 K45 安装盘上	连接到 K45 安装盘上	连接到 K45 安装盘上
编址	经过 15 次分配地址后模块保留最后的地址	经过 15 次分配地址后模块保留最后的地址	经过 15 次分配地址后模块保留最后的地址
接地	通过 M12 插座上的 PIN5 和 2.8 mm 宽的扁平引出线	通过 M12 插座上的 PIN5 和 2.8 mm 宽的扁平引出线	通过 M12 插座上的 PIN5 和 2.8 mm 宽的扁平引出线

▶ 推荐型号

1) 每个 K45 模块中均集成了新型的 SAP4.1 芯片。

应用于现场的 I/O 模块 I/O modules for field application

K45 digital compact modules
Selection and ordering data of the modules



Design	4 inputs PNP transistor Standard assignment 4I	2 inputs/2 outputs PNP transistor Standard assignment 2I/2O	4 outputs PNP transistor Standard assignment 4O
Order No.	▶ 3RK1 200-0CQ20-0AA3	▶ 3RK1 400-1BQ20-0AA3	▶ 3RK1 100-1CQ20-0AA3
AS-Interface chip			
Operational voltage in acc. with AS-Interface specification	V 26.5 to 31.5	26.5 to 31.5	26.5 to 31.5
Total current input	mA ≤270	≤270	≤45
Reverse voltage protection $U_{AS-Interface}$	built-in	built-in	built-in
Reverse voltage protection U_{aux}	-	encoded	encoded
Input connection	PNP	PNP	-
Inputs			
- Sensor supply via AS-Interface	Short-circuit and overload-proof	Short-circuit and overload-proof	-
- Sensors	2- and 3-wire	2- and 3-wire	-
- Voltage range	V 20 to 30	20 to 30	-
- Current carrying capacity for all inputs ($T_a \leq 40^\circ\text{C}$)	mA 200	200	-
- Switching level High	V ≥10	≥10	-
- Input current Low/High	mA ≤1.5 / ≥5V	≤1.5 / ≥5V	-
- Pin assignment inputs	PIN 1 = Sensor supply L+ PIN 3 = Sensor supply L- PIN 4 + 2 = Data input I PIN 5 = Ground connection	PIN 1 = Sensor supply L+ PIN 3 = Sensor supply L- PIN 4 + 2 = Data input I PIN 5 = Ground connection	-
Outputs			
- Type of output	-	Electronics (PNP)	Electronics (PNP)
- Current carrying capac. DC12/13 A typical (max. 3 A per module)	-	1.5 built-in	1 built-in
- Short-circuit protection	-	built-in	built-in
- Inductive interference protection	not required	via black AS-Interface flat cable	via black AS-Interface flat cable
- External power supply 24 V DC	-	built-in	built-in
- Watchdog			
I/O configuration	0	3	8
ID code			
Assignment of data bits	0	0	0
- Socket 1 (data bit D0)	Input 1 = PIN4 and 2		
- Socket 2 (data bit D1)	Input 2 = PIN4 and 2		
- Socket 3 (data bit D2)	Input 3 = PIN4 and 2		
- Socket 4 (data bit D3)	Input 4 = PIN4 and 2		
AS-Interface certificate	yes	yes	yes
Approvals	UL, CSA, ship building in preparation	UL, CSA, ship building in preparation	UL, CSA, ship building in preparation
Degree of protection	IP 67	IP 67	IP 67
Ambient temperature	°C -25 to +85	-25 to +85	-25 to +85
Storage temperature	°C -40 to +85	-40 to +85	-40 to +85
Number of I/O sockets	4	4	4
I/O display	Yellow	Yellow	Yellow
U_{aux} display	-	Green	Green
AS-Interface/diagnostics display	LED "AS-i" Status Green o.k. Red No data traffic Red/yellow flash Zero address Red flashlight Overload	LED "AS-i" Status Green o.k. Red No data traffic Red/yellow flash Zero address Red flashlight Overload	LED "AS-i" Status Green o.k. Red No data traffic Red/yellow flash Zero address Red flashlight Overload
Connection	above the mounting plate for K45	above the mounting plate for K45	above the mounting plate for K45
Addressing	After the 15th addressing, the module keeps the last address.	After the 15th addressing, the module keeps the last address.	After the 15th addressing, the module keeps the last address.
Ground connection	Via PIN5 of the M12 connector and outlet via a 2.8 mm flat connector	Via PIN5 of the M12 connector and outlet via a 2.8 mm flat connector	Via PIN5 of the M12 connector and outlet via a 2.8 mm flat connector

▶ Preferred type

1) With the start of delivery of the new AS-Interface chip SAP 4.1 all K45 modules are equipped with this chip.

应用于现场的 I/O 模块

I/O modules for field application

K45 数字式紧凑型模块
附件的选型与订货数据
K45 digital compact modules
Selection and ordering data
of the accessories



设计 /Design

K45 安装板 用于墙面安装 K45 mounting plate for wall mounting	K45 安装板 用于在标准导轨上安装 K45 mounting plate for mounting onto standard rails
--	---

订货号 /Order No.

▶ 3RK1 901-2EA00	▶ 3RK1 901-2DA00
------------------	------------------

环境温度

°C

-40~85	-40~85
--------	--------

Ambient temperature

保护等级 /Degree of protection

采用螺丝固定可达到 IP 67 IP 67 with screwed on K45 compact module	采用螺丝固定可达到 IP 67 IP 67 with screwed on K45 compact module
--	--

连接方法 /Connection method

对于异型 AS-Interface 电缆， 通过模块上的插针连接 For shaped AS-Interface cable Contact is made via blade terminals integrated in the compact module	对于异型 AS-Interface 电缆， 通过模块上的插针连接 For shaped AS-Interface cable Contact is made via blade terminals integrated in the compact module
--	--

- | | |
|---|---|
| <ul style="list-style-type: none"> • 安装到墙上 • 安装孔与 K60 安装板上的匹配 • 安装在型材上 (需合适滑块) • Wall mounting • On profile system (appropriate sliding blocks are required for this) • Drilled holes are compatible with those on the K60 mounting plate | <ul style="list-style-type: none"> • 安装在型材上 (需合适滑块) • 安装在标准安装导轨上 • 安装孔与 FK/FK-E 耦合模块匹配 (应用模块) • Mounting onto standard mounting rail • On profile system (appropriate sliding blocks are required for this) • Drilled holes are compatible with those of the FK/FK-E coupling module (application module) |
|---|---|

注意事项 /Note

黄色和黑色的 AS-Interface 电缆可以任何方向插入
The yellow and black AS-Interface cable can be inserted from any direction.



设计 /Design

M 12 密封盖 /M 12 blank plugs

订货号 /Order No.

3RK1 901-1KA00

Price for 1 packing

包装 /Packing

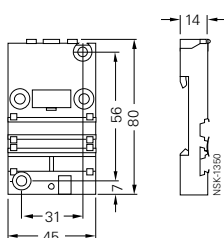
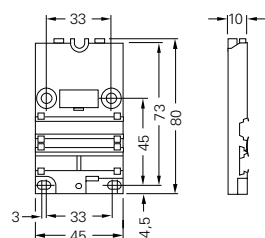
一个包装盒 = 10 个 /1 packing = 10 units

外形尺寸图

Dimension Drawing

3RK1 901-2EA00¹⁾

3RK1 901-2DA00²⁾



▶ 首选型号 /Preferred type

- 1) 安装孔和安装方法同紧凑型模块 /Drilled holes and mounting possibilities as for the compact module.
- 2) 安装孔和安装方法同应用型模块 /Drilled holes and mounting possibilities as for the application module.