SLIO

The smart control and I/O system

A brief overview

SLIO is a modular and extremely compact control and I/O system. It can be universally combined and deployed with each of our established systems and nearly all those of other producers.

System SLIO sets further milestones in the automation industry.

SLIO combines high performance and new functionalities with a clever mechanical concept in an extremely compact design. SLIO stands for slice input and output. SLIO is fully modular and is exactly adapted to the demands of the application slice by slice.

Many interface modules are available for use as an IO system like PROFI-NET, PROFIBUS, EtherCAT, CANopen, EtherNet/IP, MECHATROLINK III, as well as Modbus TCP are also available. Both the SLIO CPUs and all SLIO interface modules support up to 64 electronic modules on the SLIO backplane bus.

A module unit consists of terminal and electronic modules that are connected with a safe slide and lock mechanism. The terminal module combines clamps, intake for the electronic module, and the SLIO backplane bus connector. When servicing only the electronic module is exchanged by simply pulling it out from the terminal module. The wiring and mounting on the 35mm standard profile rail remain unchanged.

The electronic modules are supplied with voltage and separated – if required - in potential groups by the power modules.

The cage clamps on the terminal module, which are arranged in the shape of staircases with the proven and particularly tight-contacting cage clamp technology, enable a fast, clear and safe wiring.

With the integrated status LEDs and the user friendly front labeling strips of the electronic modules the channel accurate assignment and the readability of the channel status are clear and precise.

The new SLIO backplane bus concept with a speed of up to 48 Mbit/s ensures very short reaction times.

With the SLIO CPU, the I/O system becomes an advanced central control system With the introduction of the SetCards the customer can configure a suitable CPU within a short time. Besides expandable work memory you can also select between different field bus connections.

Flexibility capitalised

Modbus

EtherNet/IP

PROFI BUS

EtherCAT

CANopen

MECHATROLINK

PROFI NET

SLIO as decentralised periphery

High-performance backplane bus

Fast backplane bus concept with 48 MBit/s offers a fieldbus indepentend switching to exactly +/-1µs

Modular expandable

Up to 64 signal and function modules per interface module

Integrated power module

The bus interface and the connected periphery modules are supplied via the integrated power module for power supply

To get on worldwide!

Suppose a German mechanical engineer supplies his plant which is equipped with SLIO to a worldwide production company. In Europe his customer requires PROFINET as a communication basis. In the USA the type of controller has to be an American one which only communicates via EtherNet/IP. And in Asia for example everything works via EtherCAT. SLIO can be used easily for all: only the coupler needs to be exchanged.

# The facts

High-performance bus

- Transmission rates of up to 48 Mbit/s
- Very fast reaction time of up to 20µs
- One terminal module for all signal and function modules

Easy installation and servicing

- Easy mounting by safe slice mechanism
- Click connection for fast mounting and easy shielding
- Error protection due to coding
- Unique two stage concept consisting of terminal modules and electronic modules allowing simple and fast maintenance

Space saving connection technology

- Space saving staircase-shaped wiring with cage clamps
- Easy exchange of modules due to unique wiring concept
- High modularity due to 2, 4 and 8 channel modules
- 16-channel modules with push-in technology
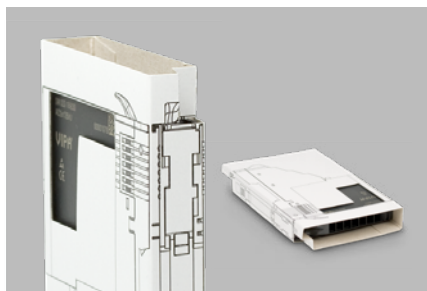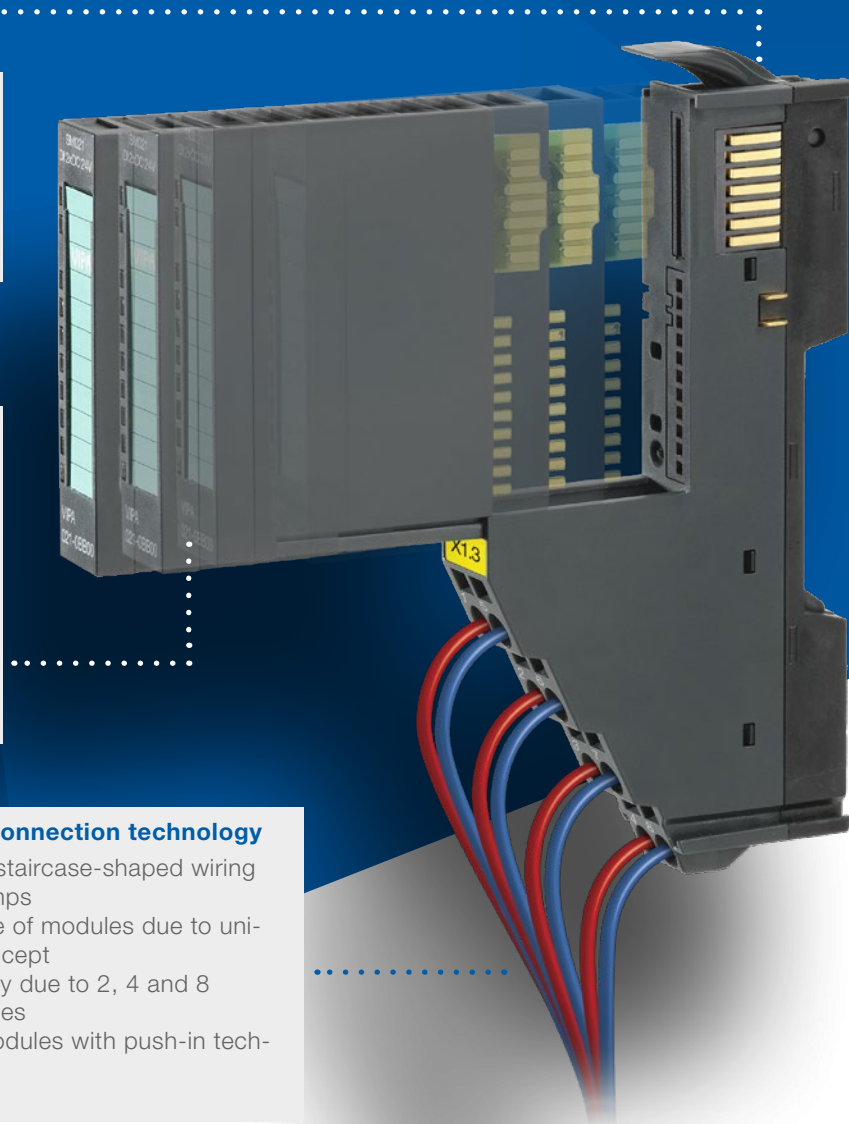
Significantly simplified ordering process

- With one order number you get the electronic module and the corresponding terminal module from us.
- The power module is included with the order
- SLIO does not need a terminal resistor (so there is nothing extra that you have to think about when ordering)

Clear status and diagnosis monitoring

- Monitoring of diagnosis and channel status via LEDs
- Clear allocation and readability of the channel status
- Detailed diagnosis of each electronic module in the system
- Provision of labeling templates

Clever, user friendly labeling

- Labeling strips for individual indication per channel
- Status LEDs with direct allocation on the labeling strip
- Terminal assignment and terminal graph on each module

New members of the SLIO family

Space-saving, inexpensive and easy to wire

The new, digital 16-way input and output modules now provide significantly more space in the control cabinet. Thanks to the innovative design with removable front connector, the wiring is particularly comfotable.
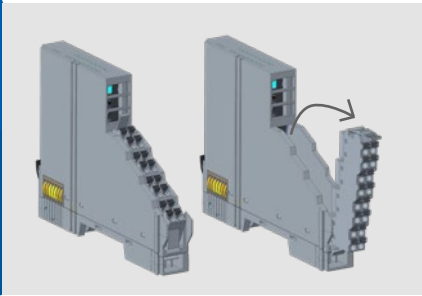

Modular concept

- The new modular design consists of the base module and a removable connector
- The base module can be easily pulled out and exchanged in the installed state
- They have the same compact dimensions of the previous SLIO modules (13x100x76 mm) which means that twice the amount of IOs can be accommodated in the same space
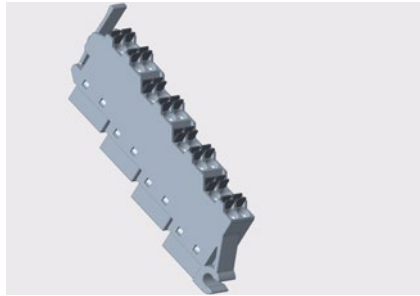
Removable connector

- The connector has a latch and can be removed from the base module via a swivel mechanism
- This allows pre-wiring of the connector and simplifies the wiring effort
- In the event of replacement, the wiring on the connector can remain in place and the connector can simply be plugged into the replacement module
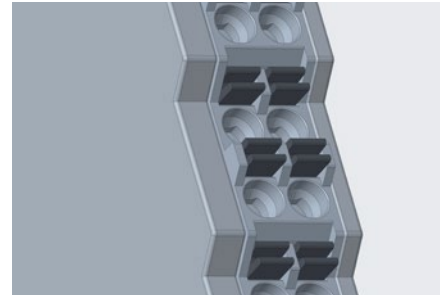
Push-in technology

- The terminals of the connector are designed in push-in technology this allows for easy wiring
- Wiring possible with and without wire end ferrules

The advantages

- 50% space saving in the system
- Switch cabinets or decentralicesed I/O distributors can become significantly smaller
- Innovative design allows easier wiring even in case of subsequent changes

All modules at a glance

Fieldbus coupler

053-1CA00	CAN coupler
053-1DP00	PROFIBUS coupler
053-1ML00	MECHATROLINK III coupler
053-1EC01	EtherCAT coupler
053-1IP01	EtherNet/IP coupler
053-1MT01	Modbus TCP coupler
053-1PN01	PROFINET coupler

Digital Input modules

021-1BB00	DI 2xDC 24V
021-1BB10	DI 2xDC 24V 2µs...4ms
021-1BD00	DI 4xDC 24V
021-1BD10	DI 4xDC 24V 2µs...4ms
021-1BD40	DI 4xDC 24V 3-wire
021-1BD50	DI 4xDC 24V NPN
021-1BD70	DI 4xDC 24V Time stamp
021-1BF00	DI 8xDC 24V
021-1BF01	DI 8xDC 24V 0.5ms
021-1BF50	DI 8xDC 24V NPN
021-1BH00	DI 16xDC 24V
021-1DF00	DI 8xDC 24V Diagnosis
021-1SD00	DI 4xDC 24V Safety / PROFIsafe
021-1SD10	DI 4xDC 24V Safety / FSoE

Power supply modules

007-1AB00	DC 24V 10A
007-1AB10	DC 24V 4A, 2.DC 24V +5V/2A
007-0AA00	DC 24V

Distribution modules

001-1BA00	Potential distribution module 8xDC 24V
001-1BA10	Potential distribution module 8xDC 0V
001-1BA20	Potential distribution module 4xDC 24V 4xDC 0V

Digital Output modules

022-1BB00	DO 2xDC 24V 0.5A
022-1BB90	DO 2xDC 24V 0.5A PWM
022-1BD00	DO 4xDC 24V 0.5A
022-1BD20	DO 4xDC 24V 2A
022-1BD50	DO 4xDC 24V 0.5A NPN
022-1BD70	DO 4xDC 24V 0.5A Time stamp
022-1BF00	DO 8xDC 24V 0.5A
022-1BF50	DO 8xDC 24V 0.5A NPN
022-1BH00	DO 16xDC 24V 0.5A
022-1DF00	DO 8xDC 24V 0.5A Diagnosis
022-1HB10	DO 2xRelais DC 30V / AC 230V/3A
022-1HD10	DO 4xRelais DC 30V / AC 230V/1.8A
022-1SD00	DO 4xDC 24V 0.5A Safety / PROFIsafe
022-1SD10	DO 4xDC 24V 0.5A Safety / FSoE

Analoge Eingabemodule

031-1BB10	AI 2x12Bit 0(4)...20mA ISO, 2-wire isolated
031-1BB30	AI 2x12Bit 0...10V
031-1BB40	AI 2x12Bit 0(4)...20mA
031-1BB60	AI 2x12Bit 0(4)...20mA 2-wire
031-1BB70	AI 2x12Bit +-10V
031-1BB90	AI 2x16Bit Thermocouple
031-1BD30	AI 4x12Bit 0...10V
031-1BD40	AI 4x12Bit 0(4)...20mA
031-1BD70	AI 4x12Bit +-10V
031-1BD80	AI 4x16Bit R RTD 2x3/4-wire
031-1BF60	AI 8x12Bit 0(4)...20mA
031-1BF74	AI 8x12Bit +-10V
031-1CA20	AI 1x16Bit DMS 1x4/6-wire
031-1CB30	AI 2x16Bit 0...10V
031-1CB40	AI 2x16Bit 0(4)...20mA
031-1CB70	AI 2x16Bit +-10V
031-1CD30	AI 4x16Bit 0...10V
031-1CD35	AI 4x16Bit 0...10V
031-1CD40	AI 4x16Bit 0(4)...20mA
031-1CD45	AI 4x16Bit 0(4)...20mA
031-1CD70	AI 4x16Bit +-10V
031-1LB90	AI 2x16Bit Thermocouple
031-1LD90	AI 4x16Bit R RTD 2x3/4-wire
031-1PA00	AI1x3Ph 230/400V 1A SLIO Energy measuring clamp
031-1PA10	AI1x3Ph 230/400V 1/5A SLIO Energy measuring clamp

Funktions- und Kommunikationsmodule

040-1BA00	RS232C, ASCII, STX/ETX, 3964R, Modbus, PtP
040-1CA00	RS422/485, ASCII, STX/ETX, 3964R, Modbus, PtP
050-1BA00	1x32Bit(AB) DC 24V, DO 1xDC 24V 0.5A
050-1BA10	1x32Bit(AB) DC 5V 2MHz
050-1BB00	2x32Bit(AB) DC 24V
050-1BB30	2x32Bit(AB) DC 24V ECO
050-1BB40	2x24Bit DC 24V 600kHz, Frequenzy measurement
050-1BS00	1xSSI, RS422, 8...32Bit, 1xDI, 1xCO, 1xCI
054-1BA00	1xStepper 24V 1.5A, 1CH (2DO), Feedback (2DI)
054-1CB00	1xDC Mot 24V 1.5A, 2CH (2DO), Feedback (2DI)
054-1DA00	1xPulseTrain RS422, 0-1000kHz, 24V DC, Feedback (2DI)
060-1AA00	Line Extension, Extention module Master
060-1BA00	Line Extension, Extention module Slave

Analoge Ausgabemodule

032-1BB30	AO 2x12Bit 0...10V
032-1BB40	AO 2x12Bit 0(4)...20mA
032-1BB70	AO 2x12Bit +-10V
032-1BD30	AO 4x12Bit 0...10V
032-1BD40	AO 4x12Bit 0(4)...20mA
032-1BD70	AO 2x12Bit +-10V
032-1CB30	AO 2x16Bit 0...10V
032-1CB40	AO 2x16Bit 0(4)...20mA
032-1CB70	AO 2x16Bit +-10V
032-1CD30	AO 4x16Bit 0...10V
032-1CD40	AO 4x16Bit 0(4)...20mA
032-1CD70	AO 4x16Bit +-10V

The new standard

Trimmed performance and compatibility

Equipped with the proven SPEED7 technology, which has has been further developed for many years, it is a challenge for many large competitors. We offer features that have still to be acquired by the competition or are not available at all. These include Integrated Ethernet interfaces, the high-performance backplane bus, or the expandable work memory that gives you the option of expanding your control technology together with your application.

Our own field busses such as PROFINET, EtherCAT and PROFIBUS are the standards with which we communicate and so can cover an additional field of applications. Whether for smaller applications, where a CPU with integrated input/output channels is sufficient, or whether it should be a CPU that can cover larger applications - with the SLIO CPUs you are always on the right track

The highlights of all SLIO CPUs
- programmable with SPEED7 Studio, Simens TIA, Siemens Simatic Manager
- extremely fast cycle times
- Individually expandable with up to 64 I/O modules per line
- proven SPEED7 technology
- deployable without memory card
- expandable memory
- High-perfomance backplane bus

A unique concept

+64 +128 +256 +512

WORK MEMORY

+1,024 +1,536

PB MASTER

FIELD BUS

PB SLAVE

A configuration concept that has yet to be matched

With the SLIO CPUs we have been taking completely new paths from the very beginning. And we have shown that it works.

You configure exactly the CPU that fits to your application. No more and no less. And as in a good relationship adjustments always have to be made. This is easy with the SLIO CPU. Upgrades can be undertaken at anytime. Simply decrease your storage costs by reducing the number of basic CPUs in stock. Just activate the CPU you need via the SLIO configuration concept. As of now: easy ordering, optimal logistics, and very flexible configuration.

Choose from over 100 different combination options. And the list of new technology functions and features is growing and growing.

What do you have to do? Simply insert the SetCard which is provided by us into your SLIO CPU and activate the features in your CPU and you have the matching CPU for your installation. Activation takes a maximum of 10 seconds. The fastest users can do it in 5!

The highlights of the configuration concept

- considerable reduction of storage costs
- flexible reacting by splitt second configuration
- always well prepared in case of error

„Now you decide what is inside your CPU and no one else!"

The intelligent modular ones

48 Mbit/s
up to 64 modules

2 to 4 port Ethernet switch

Always integrated. This allows easy programming and flexible communication with a touch panel or with Panel PCs.

PROFINET / EtherCAT controller

With our SLIO 015 / 017 / 019 PN you get a high-performance and flexibly applicable PN controller for the connection of up to 128 PN devices. With the SLIO 015N as EtherCAT controller, up to 128 EC devices are also possible.

Active Ethernet- / PROFINET interface

The SLIO 015 CPUs as well as the SLIO 017 and 019 CPUs have an additional interface. This is used for PROFINET communication.

OPC UA Server

Each of our SLIO CPUs has the OPC UA Server already integrated. For example, for flexible connection to a higher-level application or a panel.

Multi-programmable

You are not tied to one system. Use the engineering tool you are most familiar with: SPEED7 Studio, Siemens SIMATIC Manager, or Siemens TIA Portal. We are open - we stay open!

Full-fledged serial interface

Also a standard of all our SLIO CPUs: ASCII, STX/ETX, USS, 3964(R), MPI and Modbus RTU master/slave.

MPI

Of course, you can expand this interface with a PROFIBUS SLAVE or a MASTER. Exactly upon your wish.

Web interface / web server

Each of our SLIO CPUs has a web interface. With this you can read out dialog information and the status of your modules. Remote access to this page is of course possible. A simple connection to your network and you have access to your web interface.

Exchangeable power module

We provide you with the power module directly to your CPU. In the event of a fault we simply change the electronic module and you can continue working. We have obvioulsy thought of you here.

SD card and SD card locking

Higher performance and security through the use of SD cards including an SD card lock.

Highspeed backplane bus

Our high-speed backplane bus with 48 Mbit/s allows you to achieve extremely fast reaction times of up to 20µs. Use the full capacity of all modules from the SLIO IO system. You can connect up to 64 modules in series.

Work memory expandable

Known from the globally unique SPEED7 technology, we have of course also made sure that you can expand the work memory. Your CPU simply grows with your application.

Smart and compact

48 Mbit/s
up to 64 modules

Features of the SLIO CPUs

- High clock rates by the proven SPEED7 technology and fast backplane bus with 48Mbit/s transmission rate

- Expansion options for up to 64 modules, all module types of the SLIO system deployable

- CPU configuration via VSC for memory sizes and optional PROFIBUS master or slave interface

- PROFINET controller & I-Device

- Webserver/WebVisu for secure access to user specific websites (incl. user- and access management)

- 2 to max. 4 port Ethernet switch for active Ethernet and S7 communication, PROFINET

- Serial interface for MPI communication, switchable for PtP communication and optional via VSC activation as PB-DP master or PB-DP slave interface

- OPC UA Server

SPEED7 Performance as compact as ever before

In one casing, the compact CPU 013C combines a programmable logic controller with integrated SPEED7 technology, and digital and analog input and output channels as well as specific channels with special technological functions.

Integrated I/O channels save money and space

New in the SLIO class is the design of the SLIO compact CPU with integrated input/output channels which for example allows a particularly space saving setup within the serial mechanical engineering installations. The attractive price of the new compact CPU reduces the initial costs and also permits considerable space saving.

Die Highlights der SLIO Kompakt-CPU

- Integrated I/O channels: 16 x DI, 12 x DO, 2 x AI
- 6 channels for technology functions:
  4 counter/frequency measurement, 2 PWM/PTO
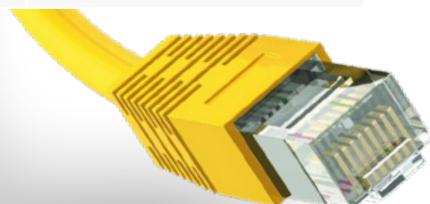
All CPUs at a glance

Technical Data

	013C	014	015N
Load memory [kB]	128	256	512
Work memory [kB]	64-128	128-256	256-512
Ethernet fieldbus	Modbus TCP / PROFINET	Modbus TCP / PROFINET	Modbus TCP / EtherCAT
Serial fieldbus	MPI / PROFIBUS	MPI / PROFIBUS	MPI / PROFIBUS
ASCII, STX/ETX, 3964(R), USS master, Modbus-master/-slave	yes	yes	yes
Digital inputs	16	-	-
Digital Outputs	12	-	-
Counters	4	-	-
Analog inputs	2	-	-
RJ45 interface	2	2	4
Max. Number of the expansion modules	64	64	64
Web server	yes	yes	yes
OPC UA server	yes	yes	yes
Engineering Tool	SPEED7 Studio Siemens SIMATIC Manager Siemens TIA Portal	SPEED7 Studio Siemens SIMATIC Manager Siemens TIA Portal	SPEED7 Studio Siemens SIMATIC Manager Siemens TIA Portal

PROFI BUS® PROFI NET® EtherCAT® Modbus

	015PN	017PN	019PN
Load memory [kB]	512	2048	6144
Work memory [kB]	256-512	512-2048	6144
Ethernet fieldbus	Modbus TCP / PROFINET	Modbus TCP / PROFINET	Modbus TCP / PROFINET
Serial fieldbus	MPI / PROFIBUS	MPI / PROFIBUS	MPI / PROFIBUS
ASCII, STX/ETX, 3964(R), USS master, Modbus-master/-slave	yes	yes	yes
Digital inputs	-	-	-
Digital Outputs	-	-	-
Counters	-	-	-
Analog inputs	-	-	-
RJ45 interface	4	4	
Max. Number of the expansion modules	64	64	64
Web server	yes	yes	yes
OPC UA server	yes	yes	yes
Engineering Tool	SPEED7 Studio Siemens SIMATIC Manager Siemens TIA Portal	SPEED7 Studio Siemens SIMATIC Manager Siemens TIA Portal	SPEED7 Studio Siemens SIMATIC Manager Siemens TIA Portal

YASKAWA