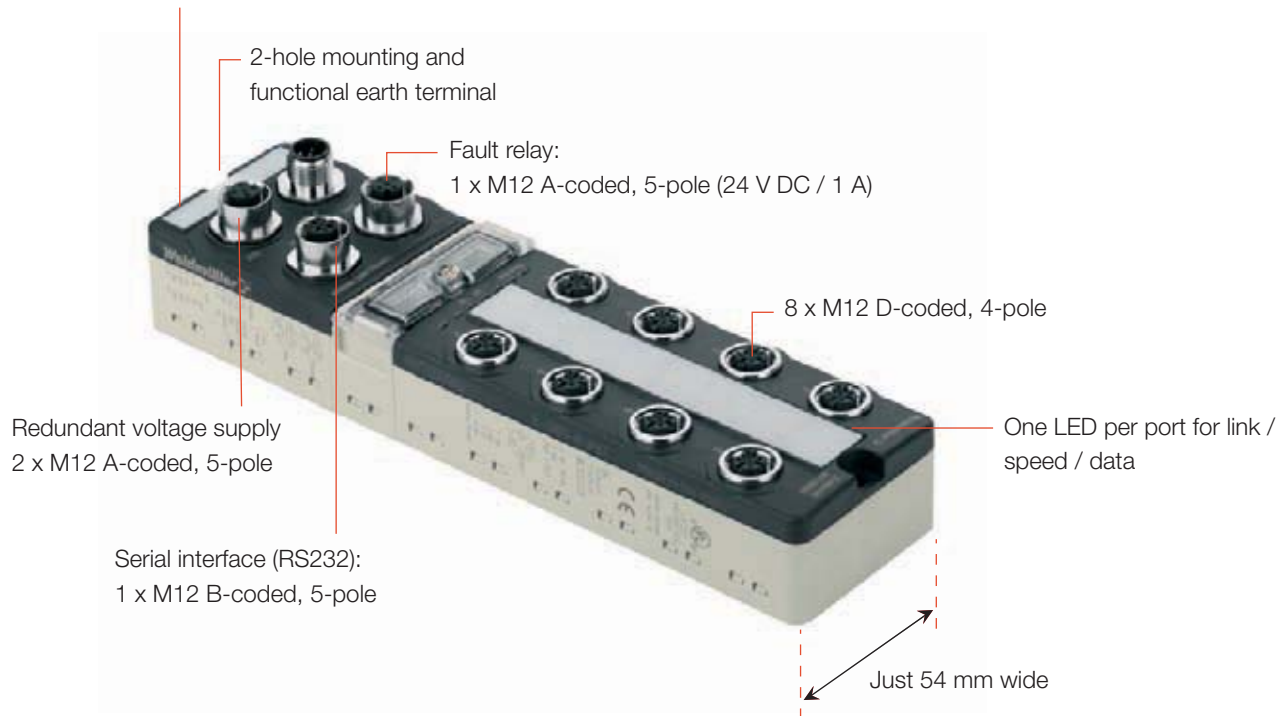


8-port switch in IP67

Two MultiCard markers or one long 40-mm marker for labelling the IP address

B



Switches are the central components of a network. They prevent data collision, allow rapid packet switching and enhance data throughput. Not only do Weidmüller switches meet the demands placed on the Fast Ethernet with its transmission rate of up to 100 Mbit/s, but they are also downward compatible with the older networks that have a transmission rate of 10 Mbit/s (IEEE 802.3). They recognise the speed automatically.

Weidmüller's unmanaged switches are Plug & Play devices for easy installation of Ethernet networks. They do not need to be either configured or parameterised.

Weidmüller's managed switches enable industry networks to be structured in order to optimise transport routes and times for network traffic. The various network components are cabled together hierarchically in a physical star. The main distributor in the field, in this case the Industrial Ethernet switch IE-SW-8-M-IP67, is the central switching point. All Weidmüller switches are protocol transparent. Each port forms both a network segment and a collision domain that are intrinsic to the port itself. The entire network bandwidth is available to each of these segments. This results in enhanced network performance not only over the network as a whole, but also in each individual segment. The switch examines each packet passing through for the MAC address of the target segment and is able to forward it directly there.

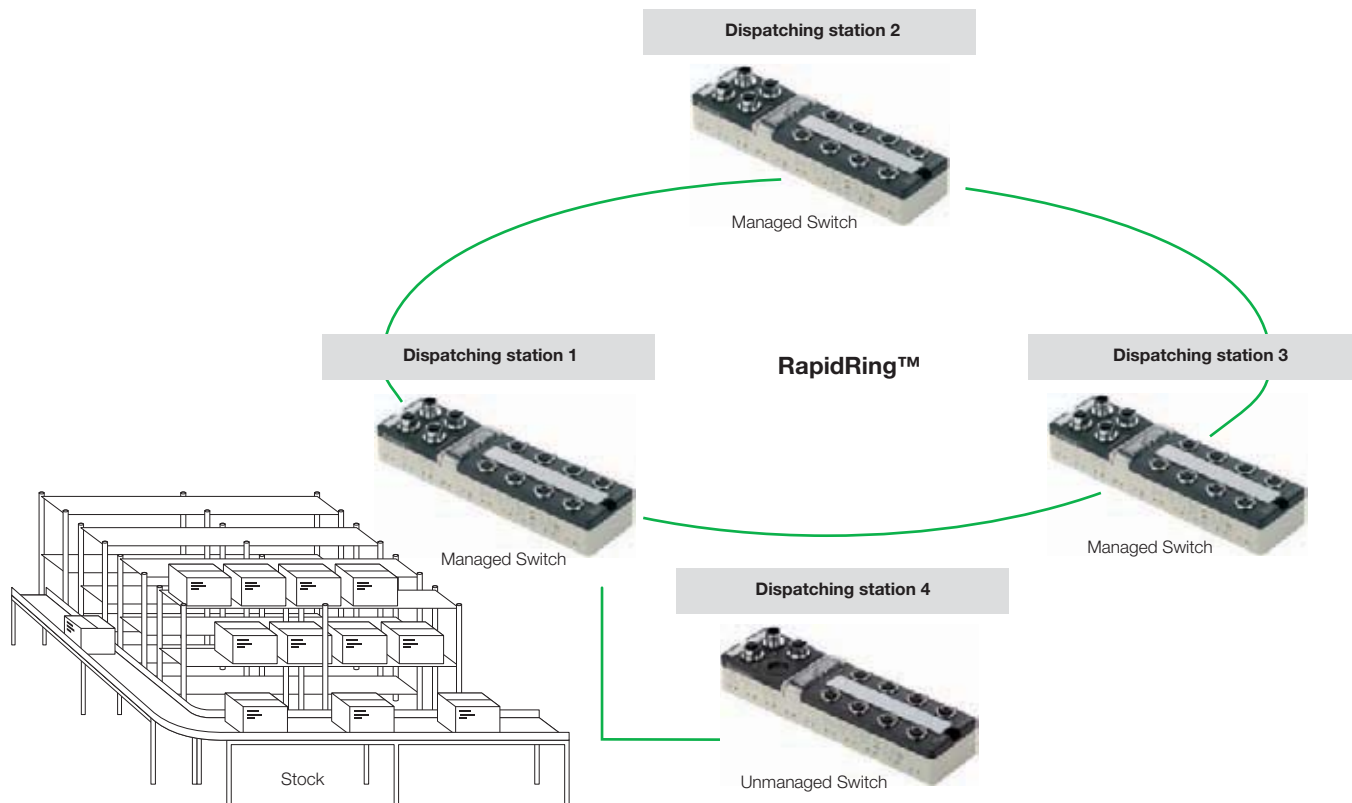
For direct connection to the network in the field, Weidmüller offers an IP 67 switch with eight Ethernet ports for use in tough environments.

- Robust plastic housing (IP67 ingress protection class) for use in the field, complying with UL94 flammability rating V0
- Strip markers – wide range of marking systems and products
- Eight Ethernet ports with M12-D-coded plug-in connectors
- Temperature range from -40 °C to +60 °C

The features of the managed IP67 switch from Weidmüller include the following:

- Port trunking
- Port mirroring
- VLAN IEEE 802.1Q
- Filtering and forwarding table with fixed entries
- Selective multicast control
- Quality of service
- Configurable relay functions
- Access to the address table
- Configuration via Web interface or terminal program
- SNMP V.1-capability
- RSTP and RapidRing™
- IGMP snooping with querier functions
- Auto-crossing, auto-negotiation, auto-polarity
- Broadcast limitation
- Flow control IEEE 802.3x
- DHCP
- RMON (statistics, history, alarms, occurrences)

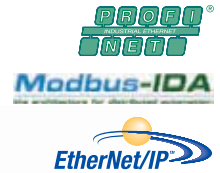
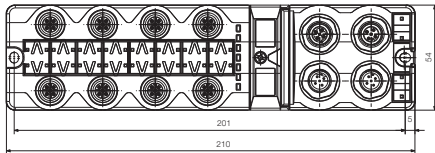
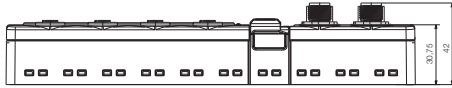
Stock control with the Weidmüller Industrial Ethernet Switches in IP67



IP 67 switches

IP 67 unmanaged switch

- IP 67 housing
- M12 D-coded plug-in connector



IP 67 unmanaged switch

Industrial Ethernet on the machine itself with simple and secure M12 plug-in connectors.

With their IP 67 class of protection and operating temperature range of -40°C to +60°C, these switches are ideal for use in the field.

In addition, the following functions are supported:

- Autonegotiation
- Redundant voltage supply
- Error relay PLC support

Ordering data

Number of ports	Type	Order No.
8 x M12	IE-SW8-IP67	8877190000

Accessories

	Type	Order No.
M12 protective cap	SAI-SK-M12-UNI	2330260000
Marker, transparent	ESG 8/13.5/43.3 SAI AU	1912130000

Note
Cables and connection elements are found starting at Chapter C.

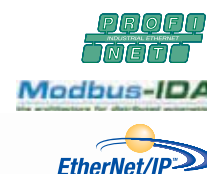
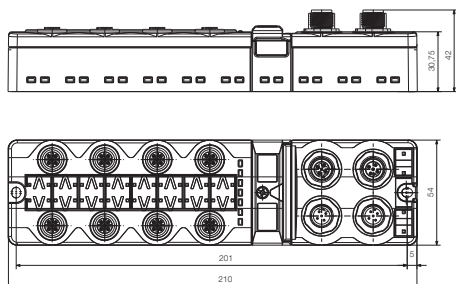
Technical data

Housing	Plastic
Length / Width / Height	210 mm / 54 mm / 31 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	max. 5 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-40 °C-60 °C
Storage temperature, min.-max.	-40 °C-85 °C
Installation	Wall
Protection class	IP 67
Standard	IEEE 802.3; 802.3u; 802.3x; Class I, Division 2
Data rate	10BASE-T/100BASE-TX
Segment length	Cooper 100 m
Functionality	„Auto-negotiation, redundant power supply, error relay for PLC support“
Flow control	half-duplex/full duplex
Status indication	Link, Power, Run, Status
Buffer memory	256 KByte per 8 ports
Address memory	4 K MAC addresses per 8 ports
Approvals	cULus, CE, EN55024, EN 55022, Gost R
Aging	300 s
Supported protocols	Profinet RT, Modbus TCP, TCP/IP, Ethernet/IP

Note:

IP 67 managed switch

- IP 67 housing
- M12 D-coded plug-in connector



IP 67 managed switch

Industrial Ethernet on the machine itself with simple and secure M12 plug-in connectors.

With their IP 67 class of protection and operating temperature range of -40°C to +60°C, these switches are ideal for use in the field.

The following features are supported:

- Autonegotiation
- Redundant voltage supply
- Error relay for PLC support
- SNMP V1
- Rapid Ring™
- RSTP 802.3w
- IGMP snooping
- Querier
- Port mirroring
- Port filtering
- Port setup functionality
- VLAN
- QoS
- TOS
- Diffserv
- MAC-based trunking
- Autocrossover
- Autopolarity
- Filtering and forwarding table
- DHCP-Client

Ordering data

Number of ports	Type	Order No.
8 x M12	IE-SW8-M-IP67	8877200000

Accessories

	Type	Order No.
M12 protective cap	SAI-SK-M12-UNI	2330260000
Communication cable	IE-C-RS232-M12	8874290000
Marker, transparent	ESG 8/13.5/43.3 SAI AU	1912130000

Note
Cables and connection elements are found starting at Chapter C.

Technical data

Housing	Plastic
Length / Width / Height	210 mm / 54 mm / 31 mm
AC input voltage, min.-max.	8-24 V AC
DC input voltage, min.-max.	10-36 V DC
Input power AC / DC	max. 5 W
Input frequency	47 - 63 Hz
Operating temperature, min.-max.	-40 °C-60 °C
Storage temperature, min.-max.	-40 °C-85 °C
Installation	Wall
Protection class	IP 67
Standard	IEEE 802.3; 802.3u; 802.3x; Class I, Division 2
Data rate	10BASE-T/100BASE-TX
Segment length	Cooper 100 m
Functionality	„Auto-negotiation, redundant power supply, ring topology; error relay for PLC support“
Flow control	half-duplex/full duplex
Status indication	Link, Power, Run, Status
Buffer memory	256 KByte per 8 ports
Address memory	4 K MAC adress
Approvals	cULus, CE, EN55024, EN 55022, Gost R
Aging	300 s
Supported protocols	Profinet RT, Modbus TCP, TCP/IP, EthernetIP

Note:

The EtherNet/IP system



Principle

EtherNet/IP (Ethernet Industrial Protocol) is an open standard that was developed by Rockwell Automation and the Open DeviceNet Vendor Association (ODVA) for industrial networks. EtherNet/IP is based on the Ethernet TCP/IP standards and the Common Industrial Protocol (CIP).

CIP an open standard that is implemented in ISO layer 7, and is also used for ControlNet™ and DeviceNet™ installations. This enables continuous communications between the field level and the Internet. The protocol includes a control component for cyclic, real-time-compatible I/O signal transmission (implicit messaging) and an information component for the configuration, diagnosis and management messages (explicit messaging).

The I/O data uses the User Datagram Protocol/Internet Protocol (UDP/IP) and the information data uses TCP/IP protocols.

The IEEE802.3 standard is incremented on layers 1 and 2 (physical media and data link respectively).

Addressing

The Dynamic Host Configuration Protocol (DHCP) is used to assign addresses to modules in EtherNet/IP networks.

Network structure

Like Standard Ethernet, EtherNet/IP installations are also wired with a star structure. The star structure is characterised by a central signal distributor (switch) with individual connections to all the network's terminals. A line or tree structure can be set up with the help of a 3-port switch in the device or in the proximity of each device.

Weidmüller can supply products for the network infrastructure – please refer to our Industrial Ethernet catalogue.

Transmission rate

The transmission rate is 10 or 100 Mbps. Weidmüller modules detect the transmission rate automatically and set themselves accordingly. The maximum length of the bus cable is the same for both transmission rates.

The following table can serve as a guide for bus installations complying with the standard:

Max. bus extension (m)	Data rate (Mbps)
100	10
100	100

EtherNet/IP Universal

SAI-AU

M8



SAI-AU

M12



Ordering data

IO variants
16 digital inputs
16 digital inputs / 8 digital outputs
4 analogue inputs / 2 analogue outputs / 4 digital inputs
Information

Type	Qty.	Order No.
SAI-AU M8 EIP 16DI	1	1906930000
SAI-AU M8 EIP 16DI/8DO	1	1906940000
Information		

Type	Qty.	Order No.
SAI-AU M12 EIP 16DI	1	1906900000
SAI-AU M12 EIP 16DI/8DO	1	1906910000
SAI-AU M12 EIP AI/AO/DI	1	1906920000
Information		

Technical data bus system

Bus sharing unit	Server
Transmission rate	10 / 100 Mbps
Diagnostic display	red
Fieldbus interface	IEEE 802.3
Electrical isolation available	yes
Station addresses	via DHCP
bps rate	automatic
Information	

Technical data

General data	
Insulation material of housing	PBT
Flammability class UL 94	V-0
Operation temperature	0 °C ... 55 °C
Storage temperature	-25 °C ... 70 °C
Ingress protection class	IP 67
Electrical data electronics-module	
Operating voltage	24,0 V DC (18...30 V)
Max. current carrying capacity per output signal	0,5, 2,0 A
Output levels	Short-circuit-protected
Total current. max.	8 A
Digital inputs	TYPE1 to EN61131-2
Analogue outputs	-10...+10 V, 0...+10 V, 0...20 mA, 4...20 mA
Analogue inputs	-10...+10 V, 0...+10 V, 0...20 mA, 4...20 mA
Resolution	12 Bit
Accuracy	< 0,2 %
UL certification in preparation	
Information	

Accessories

Plug
Metal plug Ethernet, pin M12, D-coded, straight
Metal plug Ethernet, socket M12, D-coded, straight
Miscellaneous accessories
Marker, transparent
M8 protective cap
M12 protective cap
Information

Type	Qty.	Order No.
SAISM-4/8S-M12-4P D-COD	1	1892120000
SAIBM-4/8S-M12-4P D-COD	1	1892130000
Information		
ESG 8/13.5/43.3 SAI AU	5	1912130000
SAI-SK M8	50	1802760000
SAI-SK-M12-UNI	20	2330260000
Voltage supply with standard M12 plug-in connectors (see catalogue)		
Information		

Modbus TCP



Principle

Modbus TCP is a fieldbus system for automation technology based on Ethernet TCP/IP. It has been accepted by the Internet Engineering Task Force (IETF) as a draft RFC standard and has been made available for all to use by Schneider Automation. Modbus TCP is based on Modbus, a well established industrial application protocol. The Modbus object models remain unchanged.

A connection is set up via TCP/IP by the server (e.g. I/O device) being addressed via port number 502. Commands are initiated by the client (Master) and executed by the server (slave). The length of a Modbus telegram is max. 256 bytes.

Network structure

Like Standard Ethernet, Modbus TCP installations are also wired with a star structure. The star structure is characterized by a central signal distributor (switch) with individual connections to all the network's terminals. A line or tree structure can be set up with the help of a 3-port switch in the device or in the proximity of each device.

Weidmüller can supply products for the network infrastructure – please refer to our Industrial Ethernet catalogue.

Addressing

The addressing is carried out via a BOOTP (Internet Bootstrap Protocol) inquiry via the client, using the Dynamic Host Configuration Protocol (DHCP), or the user can set the IP address with a software tool.

Bus extension/transmission rate

The transmission rate is 10 or 100 Mbps. Weidmüller modules detect the transmission rate automatically and set themselves accordingly. The maximum length of the bus cable is the same for both transmission rates.

The following table can serve as a guide for bus installations complying with the standard:

Max. bus extension (m)	Data rate (Mbps)
100	10
100	100

Modbus TCP Universal

SAI-AU

M8



SAI-AU

M12



Ordering data

IO variants	
	16 digital inputs
	16 digital inputs / 8 digital outputs
	4 analogue inputs / 2 analogue outputs / 4 digital inputs
Information	

Type	Qty.	Order No.
SAI-AU M8 IE 16DI	1	1906880000
SAI-AU M8 IE 16DI/8DO	1	1906890000
Information		

Type	Qty.	Order No.
SAI-AU M12 IE 16DI	1	1906850000
SAI-AU M12 IE 16DI/8DO	1	1906860000
SAI-AU M12 IE AI/AO/DI	1	1906870000
Information		

Technical data bus system

Bus sharing unit	Server
Transmission rate	10 / 100 Mbps
Diagnostic display	red
Fieldbus interface	IEEE 802.3
Electrical isolation available	yes
Station addresses	via DHCP
bps rate	automatic
Information	

Technical data

General data	
Insulation material of housing	PBT
Flammability class UL 94	V-0
Operation temperature	0 °C ... 55 °C
Storage temperature	-25 °C ... 70 °C
Ingress protection class	IP 67
Electrical data electronics-module	
Operating voltage	24,0 V DC (18...30 V)
Max. current carrying capacity per output signal	0,5, 2,0 A
Output levels	Short-circuit-protected
Total current. max.	8 A
Digital inputs	TYPE1 to EN61131-2
Analogue outputs	-10...+10 V, 0...+10 V, 0...20 mA, 4...20 mA
Analogue inputs	-10...+10 V, 0...+10 V, 0...20 mA, 4...20 mA
Resolution	12 Bit
Accuracy	< 0,2 %
UL certification in preparation	

Accessories

Plug	
	Metal plug Ethernet, pin M12, D-coded, straight
	Metal plug Ethernet, socket M12, D-coded, straight
Miscellaneous accessories	
	Marker, transparent
	M8 protective cap
	M12 protective cap
Information	

Type	Qty.	Order No.
SAISM-4/8S-M12-4P D-COD	1	1892120000
SAIBM-4/8S-M12-4P D-COD	1	1892130000
Information		
ESG 8/13.5/43.3 SAI AU	5	1912130000
SAI-SK M8	50	1802760000
SAI-SK-M12-UNI	20	2330260000
Voltage supply with standard M12 plug-in connectors (see catalogue)		

PROFINET system description



Principal function

PROFINET is the open Industrial Ethernet standard for automation from PROFIBUS & PROFINET International (PI). Profinet implements TCP/IP and IT standards. It is capable of real-time Ethernet and can integrate fieldbus systems. The Profinet design is distinguished mainly by the type of data exchange used to meet the speed requirements.

There are two Profinet perspectives – Profinet-CBA and Profinet-IO:

- Profinet-CBA (component-based automation) is suitable for component-based communications via TCP/IP and real-time communications for the real-time demands of modular systems engineering. Both communication channels can be used in parallel.
- Profinet-IO was created for real-time (RT) communication and synchronous communication (IRT: isynchronous real-time) with decentralized peripheral devices. The designations RT and IRT only describe the real-time characteristics of the communication within the Profinet-IO.

Process data and alarms within the Profinet-IO are always transmitted in real time (RT). Profinet „real time“ is based on the definition from the IEEE and IEC. This specifies that only a limited time is allowed within a bus cycle for the execution of real-time services.

This RT communication is the basis for Profinet-IO data exchange. Real-time data is handled with a higher priority than TCP(UDP)/IP data packets. RT is the foundation for real-time communications in the decentralized peripheral zone. Bus cycle times in the 2–6 ms range are possible with this data exchange mechanism.

Addressing

Module addresses for the Profinet-IO are assigned automatically using DCP (the discovery configuration protocol).

Network structure

With the integration of a managed, two-port switch in all Profinet modules, it is then possible to implement linear, star or tree network topologies.

Transmission rate

The transmission rate is 100 Mbit/s. The maximum segment length is 100 m.

PROFINET Universal

SAI-AU

M8



SAI-AU

M12



Ordering data

IO variants	
	16 digital inputs
	16 digital inputs / 8 digital outputs
	4 analogue inputs / 2 analogue outputs / 4 digital inputs
Information	

Type	Qty.	Order No.
SAI-AU M8 PN 16DIM	1	1019310000
SAI-AU M8 PN 16DI/8DOM	1	1019320000
Information		

Type	Qty.	Order No.
SAI-AU M12 PN 16DIM	1	1019270000
SAI-AU M12 PN 16DI/8DOM	1	1019280000
SAI-AU M12PN4/2AIO4DIOM	1	1019290000
Information		

Technical data bus system

Bus sharing unit	Server
Transmission rate	100 Mbps
Diagnostic display	red
Fieldbus interface	IEEE 802.3
Electrical isolation available	yes
Station addresses	via DHCP
bps rate	automatic
Information	

Technical data

General data	
Insulation material of housing	PBT
Flammability class UL 94	V-0
Operation temperature	0 °C ... 55 °C
Storage temperature	-25 °C ... 70 °C
Ingress protection class	IP 67
Electrical data electronics-module	
Operating voltage	24,0 V DC (18...30 V)
Max. current carrying capacity per output signal	2,0 A
Output levels	Short-circuit-protected
Total current. max.	8 A
Digital inputs	TYPE1 to EN61131-2
Analogue outputs	-10...+10 V, 0...+10 V, 0...20 mA, 4...20 mA
Analogue inputs	-10...+10 V, 0...+10 V, 0...20 mA, 4...20 mA
Resolution	12 Bit
Accuracy	< 0,2 %
Information	

Accessories

Plug	
	Metal plug Ethernet, pin M12, D-coded, straight
	Metal plug Ethernet, socket M12, D-coded, straight
Miscellaneous accessories	
	Marker, transparent
	M8 protective cap
	M12 protective cap
Information	

Type	Qty.	Order No.	
SAISM-4/8S-M12-4P D-COD	1	1892120000	
SAIBM-4/8S-M12-4P D-COD	1	1892130000	
Information			
	ESG 8/13.5/43.3 SAI AU	5	1912130000
	SAI-SK M8	50	1802760000
	SAI-SK-M12-UNI	20	2330260000
Information			