

KeConnect C5

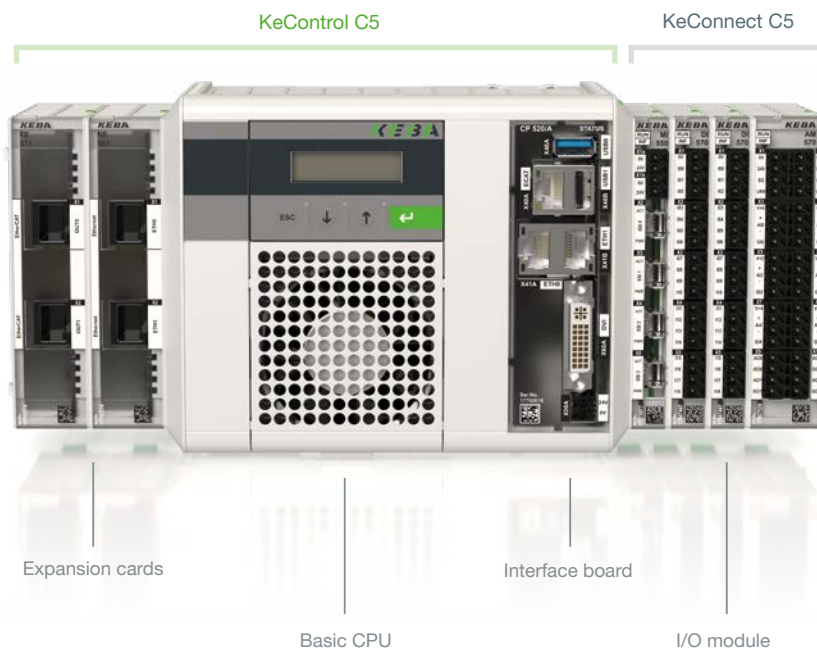
The ideal combination
of functionality and size



KEBA[®]

Automation by innovation.

KEBA controls – for all those who expect more from an automation system



KeControl C5 complements the KEBA control family with high-performance compact controls that stand out for their consistent modular design. The KeConnect C5 I/O modules that can be connected on the right and the KeConnect C5 expansion cards that can be plugged in on the left provide customers with maximum flexibility in the configuration of their individual automation systems.

KeConnect C5 I/O modules

The KeConnect C5 I/O modules boast the optimal combination of functionality and size, significantly reducing the required space in the control cabinet, and optimizing costs.

Our I/O modules come in two different sizes so that they can perfectly meet our customers' different requirements. The slim modules impress with their absolutely minimal need for space. Digital input model DI 570, for example, is only 13.8 mm wide and boasts 19 inputs.

The slightly wider modules bring greater functionality and more flexibility to the table, such as

- // up to 40 connection pins per module,
- // the option to use special components that due to their larger design would not fit into slimmer modules, and
- // improved module heat dissipation.

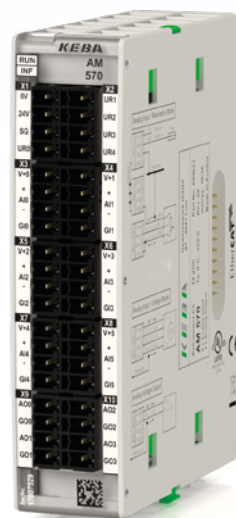
Slim modules

13.8 x 106 x 82.5 mm



Wide modules

26.5 x 106 x 82.5 mm



Maximum design flexibility

The KeConnect C5 I/O modules can be connected directly to a KeControl C5 control or run remotely via a bus coupler. In addition, the use of EtherCAT switch modules makes it possible to create star topologies. KEBA customers can thus enjoy maximum flexibility and creativity in the design of their individual controls.

Use with third-party systems via EtherCAT

The KeConnect C5 modules can do more than just expand KEBA's proprietary controls. The use of a bus coupler and the provided ESI files also make it very easy to connect to third-party controls through an EtherCAT master interface.

High-performance bus connection ensures excellent control performance

The KeConnect I/O system relies on EtherCAT as module bus. This means there are no additional system delay times even with remote I/O modules via bus coupler. The module bus interface is designed for a cycle time of 62.5 μ s. In combination with the KeConnect C5 modules' support for the unique Fast Reaction Control, all the pieces are in place for an outstanding control performance of your application.

Highest flexibility and minimal time investment

Comprehensive diagnostics minimize service times

Depending on the module type, the I/O modules come with LEDs that indicate the module status, the signal status directly next to the respective I/O pins, as well as the interface status. The details on all module-specific diagnostics (e. g. sensor break detection) are made available to the higher-level control for further processing.

Customer-friendly handling shortens assembly time

The KeConnect C5 modules can be installed on a DIN rail without any tools. Push-in plugs can be used for quick wiring; even wires with 1.5mm² wire end ferrules can be used. Plug encoding is possible, if needed. To allow quick and efficient module wiring, additional pins for the sensor power supply are included so that these signals are distributed immediately and automatically.

Top machine availability thanks to simple servicing

Our I/O modules come with electronic type plates that provide for quick identification through the simple read-out of various details. If necessary, functionality enhancements and troubleshooting can be performed in the field through a simple update.

Module overview

KeConnect C5 I/O modules

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KeConnect C5 - DI 570

Digital input module

Product features

- // 19 digital inputs
- // Including 2 inputs with periodic-time measurement, e.g. for detection of speed or rotational speed
- // Individually configurable input filters



Brief description

The digital input module DI 570 provides 19 digital inputs. The inputs detect binary 24 V DC control signals and transmit them to the higher-level automation device.

The input filters can be individually configured for each input.

The first two inputs are additionally equipped with periodic-time detection which can be used, for example, for measuring the speed or rotational speed.

Technical specifications

Digital inputs	
Quantity / wiring	19 / sink
Input type	Type 1 (according to EN 61131-2)
Voltage range for "1"	$15\text{ V} \leq U_H \leq 30\text{ V}$
Voltage range for "0"	$-3\text{ V} \leq U_L \leq 5\text{ V}$
HW input filter	Cut-off frequency 500 Hz
Debouncing	Individually configurable for each input
Status indication	Green LED
Additional function	2 inputs with periodic time measurement (e. g. for detection of speed or rotational speed)

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	250 µs
Supply voltage	24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 0.4 W @ 24 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - DO 550

Digital output module

Product features

- // 16 digital outputs
- // Rated current 0.5 A @ 100 % simultaneity
- // Short-circuit and overload diagnostics for each output



Brief description

The digital output module DO 550 provides 16 digital outputs with a current rating of 0.5 A. The outputs are divided into two groups of 8 outputs each with their own group supply. The 24 V DC actuators connected to the outputs are controlled according to the binary control signals of the higher-level automation device.

The outputs are designed to be short-circuit-proof and overload-proof. If one of these conditions occurs, a corresponding diagnostic message is sent to the higher-level control module.

Technical specifications

Digital outputs	
Quantity / wiring	16 / source 2 groups with 8 outputs each and dedicated power supply
Type	Semiconductor output
Rated voltage	24 V DC
Rated current	0.5 A @ 100 % simultaneity 1 A @ 50 % simultaneity per group
Protection device	Short-circuit protection and overload protection
Max. inductive load	0.7 J @ max. 0.2 Hz (outputs with built-in free-wheeling diodes)
Status indication	Orange LED
Diagnostics	Short-circuit and overload detection for each channel

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	250 µs
Supply voltage	24 V DC (front for group supply) 24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - DO 570

Digital output module

Product features

- // 16 digital 2 A outputs with quick disconnect function for inductive loads
- // Galvanic isolation
- // Short-circuit and overload diagnostics



Brief description

The digital output module DO 570 provides 16 digital outputs with a current rating of 2 A. The outputs are divided into two groups of 8 outputs each with their own group supply.

The 24 V DC actuators connected to the outputs are controlled according to the binary control signals of the higher-level automation device.

The outputs are equipped with a quick disconnect function for inductive loads (e.g. hydraulic valves). This can accelerate machine operations and increase productivity.

In addition, the output groups are electrically isolated from each other and from the control electronics, allowing them to be used in safety-relevant applications in accordance with BIA (*Berufsgenossenschaftliches Institut für Arbeitssicherheit*, German Institute for Occupational Safety) requirements.

The outputs are designed to be short-circuit-proof and overload-proof. If a short-circuit occurs, it is detected and a corresponding diagnostic message is sent to the higher-level control module.

Technical specifications

Digital outputs	
Quantity / wiring	16 / source 2 groups with 8 outputs each and dedicated power supply
Type	Semiconductor output
Rated voltage	24 V DC
Rated current	2 A @ 50 % simultaneity per group
Protection device	Short-circuit protection and overload protection
Max. inductive load	0.7 J @ max. 0.2 Hz
Status indication	Orange LED
Galvanic isolation	Yes, isolated from control electronics and isolation between the groups
Diagnostics	Short-circuit detection for each channel, overload detection for each group

Dimensions, weight

Height	106 mm
Width	26.5 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	87 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	250 µs
Supply voltage	24 V DC (front for group supply) 24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.8 W @ 5 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - DM 556

Digital hybrid module

Product features

- // Inverse wiring: input - source, output - sink (Asia)
- // 8 digital inputs with individually configurable input filters
- // 8 digital 0.5 A outputs, galvanically isolated from the control electronics
- // Short-circuit and overload diagnostics



Technical specifications

Digital inputs	
Quantity / wiring	8 / source
Input type	Type 1 (based on EN 61131-2-2007)
Voltage range for HIGH	Differential voltage 24V – Ix: ≥ 11 V
Voltage range for LOW	Differential voltage 24V – Ix: ≤ 9 V
HW input filter	Cut-off frequency 700 Hz
Debouncing	Configurable (via software)
Status indication	Green LED

Digital outputs	
Quantity / wiring	8 / sink 1 group with 8 outputs and dedicated power supply
Type	Semiconductor output
Rated voltage	24 V DC
Rated current	0.5 A @ 100 % simultaneity in the group
Protection device	Short-circuit protection and overload protection
Max. inductive load	0.1 J @ max. 0.2 Hz
Status indication	Orange LED
Galvanic isolation	Yes, isolated from control electronics
Diagnostics	Short-circuit detection for each channel, overload detection for each group

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	70 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	250 µs
Supply voltage	24 V DC (front for group supply)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 0.8 W @ 24 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - DM 570

Digital hybrid module

Product features

- // 8 digital inputs with individually configurable input filters
- // 8 digital 2 A outputs, galvanically isolated, with quick disconnect function for inductive loads
- // Short-circuit and overload diagnostics



Brief description

The digital hybrid module DM 570 provides 8 digital inputs and 8 digital outputs with a current rating of 2 A. The outputs are arranged in an output group with its own supply.

The inputs detect binary 24 V DC control signals and transmit them to the higher-level automation device. The input filters can be individually configured for each input.

The 24 V DC actuators connected to the outputs are controlled according to the binary control signals of the higher-level automation device.

The outputs are equipped with a quick disconnect function for inductive loads (e.g. hydraulic valves). This can accelerate machine operations and increase productivity

In addition, the output groups are electrically isolated from the control, allowing them to be used in safety-relevant applications in accordance with BIA (*Berufsgenossenschaftliches Institut für Arbeitssicherheit*, German Institute for Occupational Safety) requirements.

The outputs are designed to be short-circuit-proof and overload-proof. If a short-circuit occurs, it is detected and a corresponding diagnostic message is sent to the higher-level control module.

Technical specifications

Digital inputs	
Quantity / wiring	8 / sink
Input type	Type 1 (according to EN 61131-2)
Voltage range for "1"	$15\text{ V} \leq U_H \leq 30\text{ V}$
Voltage range for "0"	$-3\text{ V} \leq U_L \leq 5\text{ V}$
HW input filter	Cut-off frequency 500 Hz
Debouncing	Individually configurable for each input
Status indication	Green LED

Digital outputs

Quantity / wiring	8 / source 1 group with 8 outputs and dedicated power supply
Type	Semiconductor output
Rated voltage	24 V DC
Rated current	2 A @ 50 % simultaneity in the group
Protection device	Short-circuit protection and overload protection
Max. inductive load	0.7 J @ max. 0.2 Hz
Status indication	Orange LED
Galvanic isolation	Yes, isolated from control electronics
Diagnostics	Short-circuit detection for each channel, overload detection for each group

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	250 µs
Supply voltage	24 V DC (front for group supply) 24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 0.3 W @ 24 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - AI 570, AI 571

Analog input modules

Product features

- // Up to 8 high-precision analog inputs with 16-bit resolution
- // Designed for voltage or ratiometric measurements
- // Inputs with sensor break detection
- // Connectors for sensor power supply built into module for convenient wiring
- // Cycle times up to 125 μ s



Brief description

The analog input modules AI 570 and AI 571 provide analog voltage inputs. They are suitable for voltage measurement as well as ratiometric measurement. The input range is from -10 to +10 V.

The input signals are digitized with a maximum resolution of 16 bits and can be made available to the higher-level automation device with a maximum cycle time of 125 μ s.

Configurable digital input filters can be used to adapt the analog inputs to the control cycle times used in order to achieve optimum control characteristics.

If a sensor break occurs, this is detected and the information is signaled to the higher-level control module.

For convenient wiring, each sensor input comes with connection pins for the sensor power supply. Thus, users do not have to worry about the distribution of the sensor power supply.

Technical specifications

Analog inputs		
	AI 570	AI 571
Quantity	8	4
Type	Voltage input	
Input type	Configurable for voltage or ratiometric measurement	
Signal range	Voltage mode: ± 10 V; ratiometric mode: 0 - Uref	
Resolution	16 bits (voltage mode); 15 bit (ratiometric mode)	
HW input filter	3rd order filter, crossover frequency 2500 Hz	
Digital filters	Configurable: no filter, 500 μ s, 1 ms, 5 ms	
Common mode range	± 13.5 V	
Common mode rejection	> 80 dB	
Precision	Max. error: ± 0.02 % of scale end value (at 25 °C)	
Diagnostics	Sensor break detection at inputs	

Dimensions, weight

	AI 570	AI 571
Height	106 mm	
Width	26.5 mm (when installed)	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)	
Weight	87 g	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	AI 570	AI 571
Minimum cycle time	125 µs	
Supply voltage	24 V DC (front for sensor supply) 24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	10 x 4-fold male header, 3.81 mm pitch	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 1.9 W @ 24 V	0.9 W @ 5 V 1.3 W @ 24 V
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - AI 575, AI 576

Analog input modules

Product features

- // Up to 8 high-precision analog current inputs with 16-bit resolution
- // Connectors for sensor power supply built into module for convenient wiring
- // Cycle times up to 125 μ s



Brief description

The analog input modules AI 575 and AI 576 provide analog current inputs. The following signal input ranges can be configured: ± 20 mA, 0 – 20 mA or 4 – 20 mA.

The input signals are digitized with a maximum resolution of 16 bits and can be made available to the higher-level automation device with a maximum cycle time of 125 μ s.

Configurable digital input filters can be used to adapt the analog inputs to the control cycle times used in order to achieve optimum control characteristics.

For convenient wiring, each sensor input comes with connection pins for the sensor power supply. Thus, users do not have to worry about the distribution of the sensor power supply.

Technical specifications

Analog inputs		
	AI 575	AI 576
Quantity	8	4
Type	Current input	
Signal range	Configurable: <ul style="list-style-type: none"> • ± 20 mA • 0 – 20 mA • 4 – 20 mA 	
Resolution	<ul style="list-style-type: none"> • 16 bits (at ± 20 mA) • 15 bits (at 0 – 20 mA and 4 – 20 mA) 	
HW input filter	3rd order filter, crossover frequency 2500 Hz	
Digital filters	Configurable: no filter, 500 μ s, 1 ms, 5 ms	
Common mode range	± 13.5 V	
Common mode rejection	> 80 dB	
Precision	Max. error: ± 0.02 % of scale end value (at 25 °C)	

Dimensions, weight

	AI 575	AI 576
Height	106 mm	
Width	26.5 mm (when installed)	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)	
Weight	87 g	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	AI 575	AI 576
Minimum cycle time	125 µs	
Supply voltage	24 V DC (front for encoder supply) 24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	10 x 4-fold male header, 3.81 mm pitch	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 1.3 W @ 24 V	0.9 W @ 5 V 0.8 W @ 24 V
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - AO 570, AO 571

Analog output modules

Product features

- // 8 analog voltage outputs
- // 12-bit resolution
- // Cycle times up to 125 μ s



Brief description

The analog output modules AO 570 and AO 571 provide analog voltage outputs. The signal range is from -10 to +10 V. The output signals are generated with a resolution of 12 bits and can be sent from the higher-level automation device to the output module with a maximum cycle time of 125 μ s.

Technical specifications

Analog outputs		
	AO 570	AO 571
Quantity	8	4
Type	Voltage output	
Signal range	± 10 V	
Resolution	12 bits	
Load resistance	$\geq 1000 \Omega$	
Highest capacitive load	≤ 10 nF	
Precision	Max. error: ± 0.02 % of scale end value (at 25 °C)	
Protection device	Sustained short-circuit proof	

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	AO 570	AO 571
Minimum cycle time	125 µs	
Supply voltage	24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	5 x 4-fold male header, 3.81 mm pitch	3 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 2.3 W @ 24 V	0.9 W @ 5 V 1.3 W @ 24 V
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - AO 576

Analog output module

Product features

- // 4 analog current outputs
- // 12-bit resolution
- // Cycle times up to 125 μ s



Brief description

The analog output module AO 576 provides 4 analog current outputs. The following signal ranges can be configured: ± 10 mA, 0 – 20 mA or 4 – 20 mA.

The output signals are generated with a resolution of 12 bits and can be sent from the higher-level automation device to the output module with a maximum cycle time of 125 μ s.

Technical specifications

Analog outputs	
Quantity	4
Type	Current output
Signal range	Configurable: <ul style="list-style-type: none">• ± 10 mA• 0 – 20 mA• 4 – 20 mA
Resolution	12 bits
Load resistance	< 600 Ω
Precision	Max. error: ± 0.15 % of scale end value (at 25 $^{\circ}$ C)

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	125 µs
Supply voltage	24 V DC and 5 V DC (module bus)
Overtoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	3 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 2.1 W @ 24 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - AM 570, AM 571, AM 572

Analog hybrid modules

Product features

- // Up to 6 high-precision analog inputs with 16-bit resolution, voltage or ratiometric measurement
- // Inputs with sensor break detection
- // Connectors for sensor power supply
- // Up to 4 analog voltage outputs with 12-bit resolution
- // Cycle times up to 125 μ s



Brief description

The analog hybrid modules AM 570, AM 571 and AM 572 provide a combination of analog voltage inputs and outputs. The inputs are suitable for voltage measurement as well as ratiometric measurement. The input range and the output range is from -10 to +10 V.

The input signals are digitized with a maximum resolution of 16 bits, the outputs have a 12-bit resolution. Data can be exchanged with the higher-level automation device with a maximum cycle time of 125 μ s.

Configurable digital input filters can be used to adapt the analog inputs to the control cycle times used in order to achieve optimum control characteristics.

If a sensor break occurs, this is detected at the inputs and the information is signaled to the higher-level control module.

For convenient wiring, each sensor input comes with connection pins for the sensor power supply. Thus, users do not have to worry about the distribution of the sensor power supply.

Technical specifications

Analog inputs			
	AM 570	AM 571	AM 572
Quantity	6	4	3
Type	Voltage input		
Input type	Configurable for voltage or ratiometric measurement		
Signal range	Voltage mode: ± 10 V; ratiometric mode: 0 - Uref		
Resolution	16 bits (voltage mode); 15 bit (ratiometric mode)		
HW input filter	3rd order filter, crossover frequency 2500 Hz		
Digital filters	Configurable: no filter, 500 μ s, 1 ms, 5 ms		
Common mode range	± 13.5 V		
Common mode rejection	> 80 dB		
Precision	Max. error: ± 0.02 % of scale end value (at 25 °C)		
Diagnostics	Sensor break detection at inputs		

Analog outputs

	AM 570	AM 571	AM 572
Quantity	4	4	2
Type	Voltage input		
Signal range	± 10 V		
Resolution	12 bits		
Load resistance	≥ 1000 Ω		
Highest capacitive load	≤ 10 nF		
Precision	Max. error: ± 0.15 % of scale end value (at 25 °C)		
Protection device	Sustained short-circuit proof		

Dimensions, weight

	AM 570	AM 571	AM 572
Height	106 mm		
Width	26.5 mm (when installed)		13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)		
Weight	87 g		71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	AM 570	AM 571	AM 572
Minimum cycle time	125 µs		
Supply voltage	24 V DC (front for sensor supply) 24 V DC and 5 V DC (module bus)		
Overvoltage category	II		
Protection class	III according to EN 61010-2-201		
Addressing on module bus	Automatic		
Type of terminals	10 x 4-fold male header, 3.81 mm pitch	8 x 4-fold male header, 3.81 mm pitch	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 3.3 W @ 24 V		0.9 W @ 5 V 2.8 W @ 24 V
Status indication	LEDs for module status and EtherCAT status		

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - AM 575, AM 577

Analog hybrid modules

Product features

- // Up to 6 high-precision analog current inputs with 16-bit resolution
- // Connectors for sensor power supply built into module for convenient wiring
- // Up to 4 analog current outputs with 12-bit resolution
- // Cycle times up to 125 μ s



Brief description

The analog hybrid modules AM 575 and AM 577 provide a combination of analog current inputs and outputs. The following signal ranges can be configured: ± 20 mA, 0 – 20 mA or 4 – 20 mA for the inputs and ± 10 mA, 0 – 20 mA or 4 – 20 mA for the outputs.

The input signals are digitized with a maximum resolution of 16 bits, the outputs have a 12-bit resolution. Data can be exchanged with the higher-level automation device with a maximum cycle time of 125 μ s.

Configurable digital input filters can be used to adapt the analog inputs to the control cycle times used in order to achieve optimum control characteristics.

For convenient wiring, each sensor input comes with connection pins for the sensor power supply. Thus, users do not have to worry about the distribution of the sensor power supply.

Technical specifications

Analog inputs		
	AM 575	AM 577
Quantity	6	3
Type	Current input	
Signal range	Configurable: <ul style="list-style-type: none"> • ± 20 mA • 0 – 20 mA • 4 – 20 mA 	
Resolution	<ul style="list-style-type: none"> • 16 bits (at ± 20 mA) • 15 bits (at 0 – 20 mA and 4 – 20 mA) 	
HW input filter	3rd order filter, crossover frequency 2500 Hz	
Digital filters	Configurable: no filter, 500 μ s, 1 ms, 5 ms	
Common mode range	± 13.5 V	
Common mode rejection	> 80 dB	
Precision	Max. error: ± 0.02 % of scale end value (at 25 °C)	

Analog outputs

	AM 575	AM 577
Quantity	4	2
Type	Current output	
Signal range	Configurable: <ul style="list-style-type: none"> • ± 10 mA • 0 – 20 mA • 4 – 10 mA 	
Resolution	• 12 bits	
Load resistance	< 600 Ω	
Precision	Max. error: ± 0.15 % of scale end value (at 25 °C)	

Dimensions, weight

	AM 575	AM 577
Height	106 mm	
Width	26.5 mm (when installed)	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)	
Weight	87 g	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	AM 575	AM 577
Minimum cycle time	125 μ s	
Supply voltage	24 V DC (front for sensor supply) 24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	10 x 4-fold male header, 3.81 mm pitch	5 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	0.9 W @ 5 V 3.3 W @ 24 V	0.9 W @ 5 V 2.8 W @ 24 V
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - TI 550

Temperature measurement module

Product features

- // 8 sensor inputs for 2-wire system or
4 sensor inputs for 3-wire system
- // Supported types: PT 100, PT 1000, Ni 100, Ni 1000,
KTY, NTC
- // Resistance measurement



Brief description

The temperature measurement module TI 550 provides measuring inputs for resistance temperature detectors (RTDs). Depending on the measurement equipment used, either 8 sensors (for 2-wire systems) or 4 sensors (for 3-wire systems) can be connected.

There is direct support for PT 100, PT 1000, NI 100, NI 1000, KTY, and NTC sensors. A general resistance measurement mode can be used to connect additional types.

Technical specifications

RTD inputs	
Quantity / wiring	8 / 2-wire system or 4 / 3-wire system
Sensor types	PT 100, PT 1000, Ni 100, Ni 1000, KTY 1k, KTY 2k, NTC 5k, NTC 10k, NTC 50k resistance measurement
Measuring range	PT 100, PT 1000: -200 °C to +850 °C Ni 100, Ni 1000: -60 °C to +250 °C KTY 1k, KTY 2k: -55 °C to +150 °C NTC 5k, NTC 10k, NTC 50k: -15 °C to + 150 °C Resistance range: 0 to 500 Ω, 0 to 5000 Ω, 0 to 500 kΩ
Resolution of measurement method	16 bits
Precision	± 0.5 °C for a measuring range up to 100 °C (for PT sensors), otherwise ≤ 0.1 % or the max. measuring range

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	1 ms
Supply voltage	24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61131-2
Addressing on module bus	Automatic
Type of terminals	4 x 4-fold male header, 3.81 mm pitch
Max. power consumption over module bus	1.0 W @ 5 V 3.5 W @ 24 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - TI 570, TI 571

Temperature measurement modules

Product features

- // Up to 8 inputs for thermocouples
- // Supported types J, K, L, N
- // μV mode for integration of additional types
- // Galvanic isolation of all inputs



Brief description

The temperature measurement modules TI 570 and TI 571 provide measuring inputs for thermocouples. There is direct support for thermocouple types J, K, L, N. Microvolt mode can be used to connect additional thermocouple types.

Terminal temperature compensation can be performed internally or externally via any temperature input in the automation system.

Because of the galvanic isolation of each input, both insulated and non-insulated thermocouples can be used without any modification of the wiring and without any effect on noise immunity. This is extremely useful for applications where different types must be incorporated in the control, for example during the mold exchange in injection molding machines where some molds use insulated thermocouples and other molds use non-insulated thermocouples.

Technical specifications

Thermocouple inputs		
	TI 570	TI 571
Quantity	8	4
Galvanic isolation	Yes, isolated from electronic system and between each other	
Thermocouple types	J, K, L, N	
Measuring range	Type J (Fe-CuNi): -100 °C to +700 °C Type K (NiCr-Ni): -100 °C to +1000 °C Type L (FeCu-Ni): -100 °C to +700 °C Type N (NiCrSi-NiSi): -100 °C to +1000 °C μ V mode: : -6 mV to +43 mV	
Measuring principle	Integrating	
Measuring interval	Configurable: 20 / 40 / 100 ms	
Power frequency	Configurable: 50 / 60 Hz (for noise suppression)	
Input resistance	10 M Ω	
Max. resistance of thermocouple	50 Ω	
Resolution of measurement method	For measuring intervals \geq 40 ms: 16 bits At 20 ms measuring interval: 15 bits	
Intrinsic deviation	\pm 1 % of measured value or \pm 2.5 °C absolute (whichever value is higher)	
Terminal temperature compensation	<ul style="list-style-type: none"> • Internal • External via any temperature input in the control 	

Dimensions, weight	
Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

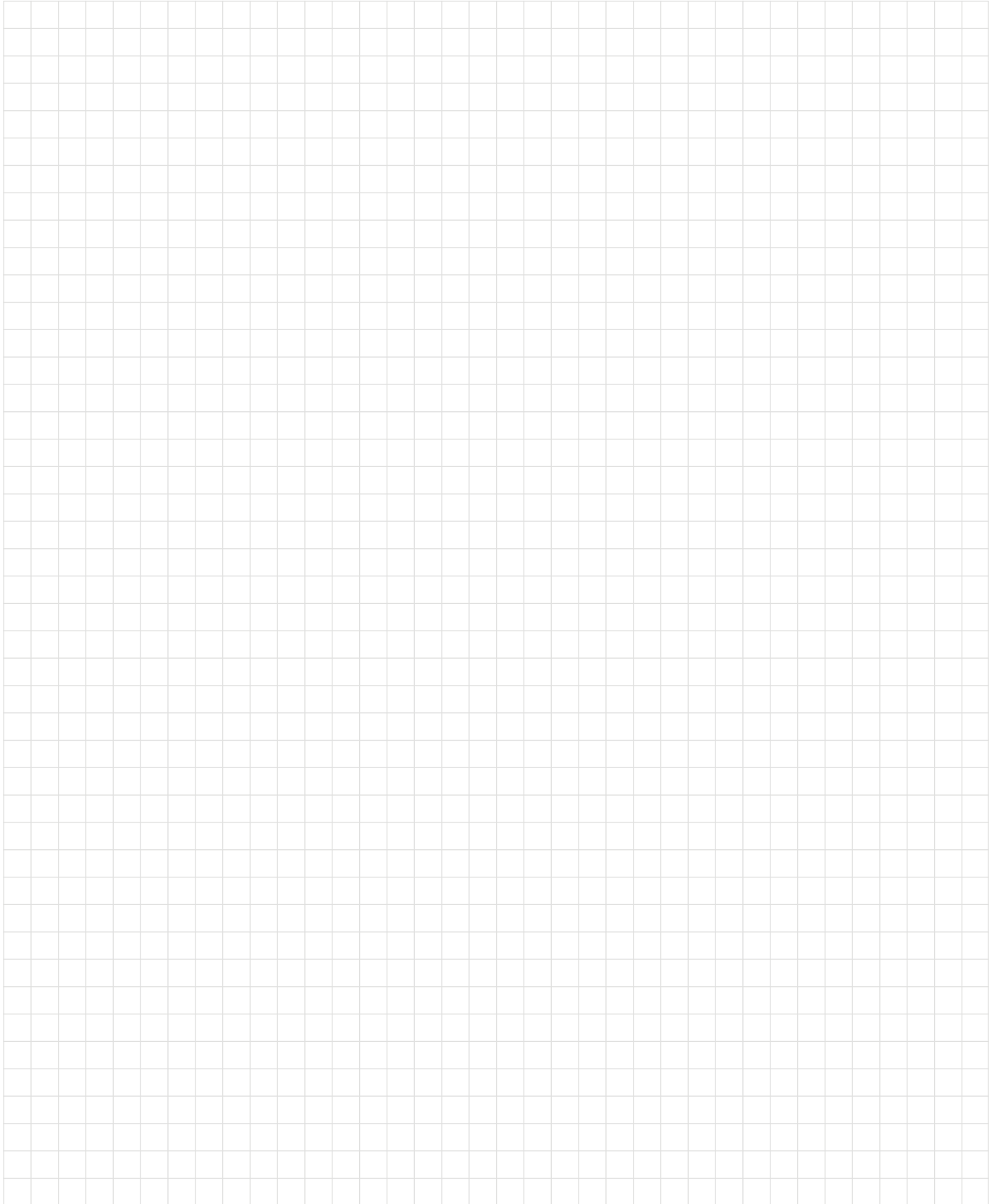
Environmental conditions	
Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

KeConnect C5 - TI 570, TI 571

Temperature measurement modules

General data		
	TI 570	TI 571
Minimum cycle time	1 ms	
Supply voltage	24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	4 x 4-fold male header, 3.81 mm pitch, gold-plated	2 x 4-fold male header, 3.81 mm pitch, gold-plated
Max. power consumption over module bus	0.9 W @ 5 V 1 W @ 24 V	
Status indication	LEDs for module status and EtherCAT status	

Certification	
CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification



KeConnect C5 - RO 550

Relay module

Product features

- // 4 NC / NO (normally closed / normally opened; changeover)
- // 2 NO
- // Up to 30V and 6A
- // Suitable for small signals and high loads



Brief description

The relay module RO 550 provides 4 NC / NO (changeover) contacts as well as 2 NO contacts for the switching of AC and DC loads.

The contacts are floating and the gold-plated contact material (AgSnO₂) of the relays allows the switching even of small loads.

Technical specifications

Relay outputs	
Quantity	4 NC / NO 2 NO
Rated load	DC1: 30 V DC; 6 A DC13: 30 V DC; 2 A; 0.1 Hz; 7 ms L/R AC1: 30 V AC; 6 A
Min. contact rating	5 V DC; 10 mA
Permissible time between relay switching operations	Min. 100 ms
Switching cycles	Max. 6 per minute

Dimensions, weight

Height	106 mm
Width	26.5 mm
Depth	82.5 mm
Weight	118 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature -40 °C to +70 °C	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Shock and vibration resistance	According to EN 61131-2-2007

General data

Supply voltage	5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61131-2
Addressing on module bus	Automatic
Type of terminals	5 x 4-fold male header, 3.81 mm pitch
Power consumption over module bus	1.5 W @ 5 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - MM 540

Positioning module

Product features

- // 2 incremental encoder inputs for 5-V and 24-V encoders
- // 4 latch inputs, sink or source (configurable)
- // 2 digital outputs: rated current 0.3 A each
- // Built-in connectors for encoder power supply



Brief description

The incremental encoder module MM 540 provides two interfaces for the connection of 5-V (differential) or 24-V incremental encoders.

The position measurement is performed by the forward/backward counting of increments via the A and B track. A predictive approach in the position measurement yields an increased resolution of the position.

The frequency is determined by a measuring method with adaptive gate time. The frequency evaluation of both the rising and the falling edges of both tracks results in a significantly better time resolution of the frequency value at low encoder frequencies compared to the control cycle time. Thanks to an adjustable gate time, the behavior of the frequency measurement with respect to responsiveness and resolution can be adapted to the requirements of the respective application.

Additional features of the MM 540:

- // Rotary encoder monitoring via zero track information
- // Latch function of counter status via external latch inputs (DI0 - DI3) with time stamp
- // Latch function of counter status via zero pulse with time stamp
- // Counter function with or without directional evaluation
- // Sensor break monitoring of tracks A, B, and zero (only for differential mode)
- // Various referencing options of the position

Technical specifications

Incremental encoder inputs	
Quantity	2
Resolution	32 bits
Galvanic isolation	No
Max. encoder frequency	1 MHz (differential)
Interpretation	Position: 1-fold, 2-fold, 4-fold (configurable) Counter function with and without directional evaluation
Max. pulse rate	4 MHz @ 4-fold interpretation (differential)
Counter range	32 bits
Input range	5 V differential oder 24 V (configurable)
Diagnostics	Sensor break monitoring of tracks A, B, and zero (only differential)

Frequency measurement	
Measuring method	Frequency measurement with adaptive gate time
Interpretation	Frequency interpretation of both edges of both tracks Updated frequency values after each quarter period of gate time
Resolution	0.01 Hz
Minimum detectable frequency	Configurable, at least 0.75 Hz → g lower frequencies are interpreted as 0 (standstill)

Encoder power supply	
Selection of supply voltage	Bridge at connector X5 determines if supply voltage is 24 V or 5 V
Rated voltage	24 V DC looped through (fuse-protected) from 24 V input terminal 5 V DC generated internally out of 24 V via input terminal
Rated current	250 mA per encoder

Latch inputs	
Quantity	4
Response time	20 µs
Input type	Configurable as sink or source input
Assignment	Free assignment of each latch input to one of the two encoder inputs
Status indication	Green LED

KeConnect C5 - MM 540

Positioning module

Digital outputs

Quantity / wiring	2 / source
Type	Semiconductor output
Rated voltage	24 V DC
Rated current	0.3 A
Protection device	Short-circuit protection and overload protection
Status indication	Orange LED

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

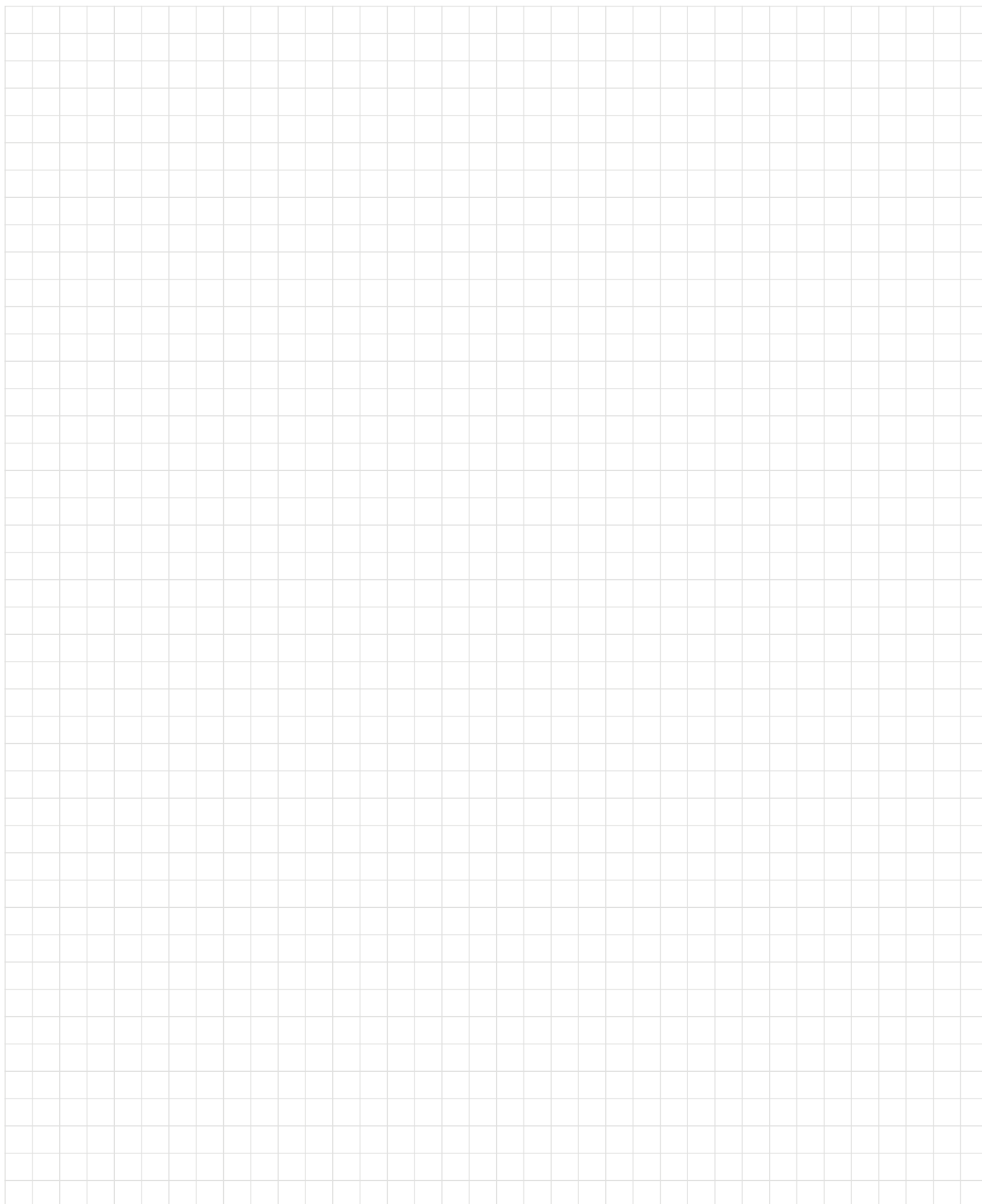
Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	125 µs
Supply voltage	24 V DC; 1.1 A (front; fuse protection required with max. 10 A) 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	3 x 4-fold male header, 3.81 mm pitch 2 x Industrial Mini IO type 2 (incremental encoder interfaces)
Max. power consumption	1.7 W @ 5 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification



KeConnect C5 - MI 550

Positioning module

Product features

- // 4 SSI interfaces
- // Data transfer rate up to 1 MBit/s
- // Connectors for encoder power supply built into module for convenient wiring
- // Sensor break detection for each interface
- // Cycle times up to 125 μ s



Brief description

The SSI interface module MI 550 provides 4 interfaces for the integration of SSI encoders into the automation system.

Various configuration settings such as bit rates, frame lengths, bit masks etc. allow the individual SSI interfaces to be adapted to the specifics of the encoders being used.

The inputs are equipped with sensor break detection. The corresponding diagnostic information is transmitted to the higher-level automation system for further use.

Technical specifications

SSI interfaces	
Quantity	4
Data transfer rate	125 kBit/s, 250 kBit/s, 500 kBit/s, 1 MBit/s
Resolution	Max. 32 bits (number of bits is configurable)
Supported data code	Binary code, Gray code
Output voltage for encoder supply	+24 V DC
Max. current for encoder supply	150 mA per channel
Diagnostics	Wire break monitoring
Protection device	Short-circuit protection via self-resetting fuse

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	125 µs
Supply voltage	24 V DC (front for encoder supply) 24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	1 x 4-fold male header, 3.81 mm pitch 4 x Industrial Mini IO type 2 (SSI interfaces)
Max. power consumption over module bus	1.6 W @ 5 V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - FM 500

Communication module

Product features

- // 2 CANopen interfaces
- // Transfer rate up to 1 MBit/s
- // Excellent noise immunity through shielded CAN connection
- // Bus termination configurable via DIP switches on module front



Brief description

The communication module FM 500 provides 2 CANopen interfaces for the integration of CAN devices into the automation system.

Depending on the line length, the interfaces can operate with a maximum transfer rate of 1 Mbit/s. The connection is made via noise-immune, shielded Industrial Mini IO plug connectors. The status of the interfaces is indicated via TX (transmit) and RX (receive) LEDs.

The bus termination can be configured using DIP switches that are accessible at the front of the module.

Technical specifications

CAN interfaces	
Quantity	2
Data transfer rate	125 kBit/s – 1 Mbit/s, configurable via SW
Galvanic isolation	No
Bus termination	Configurable via DIP switches on module front
Transfer medium	Shielded cable
Status indication	Status LEDs for RX and TX

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	1 ms
Supply voltage	24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Addressing on module bus	Automatic
Type of terminals	2 x Industrial Mini IO type 2
Max. power consumption over module bus	1.3 W @ 5V
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - IM 500

Communication module

Product features

- // 1 CANopen interface
Transfer rate up to 1 MBit/s
- // 1 serial interface
Interface type configurable in the SW
(RS 232-C or RS 422/485-A)
- // Excellent noise immunity through shielded connections
- // Bus termination configurable via DIP switch



Brief description

The communication module IM 500 provides 1 CANopen interface and one serial interface.

Depending on the line length, the CAN interface can operate with a maximum transfer rate of 1 Mbit/s.

The serial interface can be configured as RS 232-C or RS 422/485-A. The connection is made via noise-immune, shielded Industrial Mini IO plug connectors.

The bus terminations for the CAN interface and the serial interface can be configured using DIP switches that are accessible at the front of the module.

Technical specifications

CAN interfaces	
Quantity	1
Data transfer rate	125 kBit/s – 1 Mbit/s, configurable via SW
Galvanic isolation	No
Bus termination	Configurable via DIP switches on module front
Transfer medium	Shielded cable
Status indication	Status LEDs for RX and TX

Serial interfaces

Quantity	1
Type	RS-232-C or RS 422/485-A, configurable via SW
Data transfer rate	1.2–115.2 Mbit/s, configurable via SW
Galvanic isolation	No
Bus termination	Configurable via DIP switches on module front
Transfer medium	Shielded cable

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	tbd

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Minimum cycle time	1 ms
Supply voltage	24 V DC and 5 V DC (module bus)
Overvoltage category	II
Protection class	III according to EN 61131-2
Addressing on module bus	Automatic
Type of terminals	2 x Industrial Mini IO type 2
Max. power consumption over module bus	tbd
Status indication	LEDs for module status and EtherCAT status

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - SM 510, SM 520

Communication modules

Product features

- // Serial interface modules
- // Interface types: RS 232-C or RS 422/485-A, current loop
- // Excellent noise immunity through shielded connections
- // Bus termination configurable via DIP switch



Brief description

The communication module SM 510 provides two interfaces that can be configured as RS 232-C or RS 422/485-A interfaces. The bus termination for the RS 422/485 interfaces can be configured using DIP switches that are accessible at the front of the module.

The communication module SM 520 has a serial 20 mA current loop interface. This interface operates both for the transmitter and the receiver in active or passive mode. DIP switches on the front are provided for switching the operating mode. With a maximum transfer rate of 9.6 kBit/s, line lengths of up to 1,000 meters are possible.

The connection of both communication modules is made via noise-immune, shielded industrial Mini IO plug connectors.

Technical specifications

Serial interfaces		
	SM 510	SM 520
Quantity	2	1
Type	RS-232-C or RS 422/485-A, configurable via SW	Current loop
Data transfer rate	1.2–115.2 Mbit/s, configurable via SW	1.2–9.6 Mbit/s, configurable via SW
Galvanic isolation	No	No
Bus termination	Configurable via DIP switches on module front	–
Operating modes	–	Transmitter/receiver, active/passive—configurable via DIP switch on module front
Transfer medium	Shielded cable	

Dimensions, weight

Height	106 mm
Width	13.8 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	71 g

Environmental conditions

Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	SM 510	SM 520
Minimum cycle time	1 ms	
Supply voltage	24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	2 x Industrial Mini IO type 2	1 x Industrial Mini IO type 2
Max. power consumption over module bus	1.25 W @ 5 V	1.2 W @ 5 V 1.35 W @ 24 V
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - BL 570, BL 575 Communication modules

Product features

- // EtherCAT bus coupler module for connecting KeConnect C5 modules
- // ID switch for EtherCAT addressing
- // EtherCAT connector types RJ45 or M8



Brief description

BL 570 and BL 575 are bus coupler modules that can be used to distribute or decentralize KeConnect C5 modules via EtherCAT. They are equipped with an EtherCAT In connector and an EtherCAT Out connector. The EtherCAT Out connector can be used to connect additional EtherCAT couplers or EtherCAT devices on the same line.

The ID switch accessible at the front of the module can be used to set the EtherCAT address, if necessary (module configuration setting). Otherwise, EtherCAT addressing is done automatically.

Module BL 570 uses RJ45 connectors and module BL 575 uses M8 connectors.

Technical specifications

EtherCAT	
Interfaces	EtherCAT In EtherCAT Out
Baud rate	100 MBit/s
Addressing	EtherCAT address configurable via 8-fold DIP switch
Status indication	Link/activity LED for each EtherCAT slot

Dimensions, weight

	BL 570	BL 575
Height	106 mm	
Width	26.5 mm	
Depth	82.5 mm (snap-on height: 77.5 mm)	86.2 mm (snap-on height: 81.2 mm)
Weight	91 g	

Environmental conditions

Operating temperature	0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	BL 570	BL 575
Minimum cycle time	62.5 µs	
Supply voltage	24 V DC (front)	
Max. power consumption	77 W @ 24 V	
Max. inrush current	6 A	
Protection device	Reverse voltage protection	
Output power supply to connected modules via module bus	Max. 25 W @ 5 V Max. 48 W @ 24 V	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic or via addressing switch (DIP switch)	
Connector types	Power supply: 4-fold male header, 3.81 mm pitch	
	EtherCAT: RJ45 slot	EtherCAT: M8 slot, 4 pins
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - NM 570, NM 575 Communication modules

Product features

- // Switch module for creating EtherCAT star topologies
- // 2 ports for EtherCAT branches
- // EtherCAT connector types RJ 45 or M8



Brief description

NM 570 and NM 575 are switch modules that allow creating EtherCAT star topologies. Each of the two EtherCAT ports can be used to connect individual EtherCAT devices or entire EtherCAT lines.

Module NM 570 uses RJ45 connectors and module NM 575 uses M8 connectors.

Technical specifications

EtherCAT	
Interfaces	2 ports for EtherCAT branches
Baud rate	100 MBit/s
Status indication	Link/activity LED for each EtherCAT slot

Dimensions, weight

	NM 570	NM 575
Height	106 mm	
Width	26.5 mm (when installed)	
Depth	82.5 mm (snap-on height: 77.5 mm)	86.2 mm (snap-on height: 81.2 mm)
Weight	91 g	

Environmental conditions

Operating temperature	0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	NM 570	NM 575
Minimum cycle time	62.5 µs	
Supply voltage	5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Connector types	EtherCAT: RJ 45 slot	EtherCAT: M8 slot, 4 pins
Max. power consumption over module bus	1 W @ 5 V	
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification

KeConnect C5 - IM 581, IM 582

Hybrid modules

Product features

Combination of

- // up to 4 high-precision analog voltage inputs with 16-bit resolution
- // up to 6 analog outputs with 12-bit resolution
- // up to 3 SSI interfaces
- // Cycle times up to 125 μ s



Brief description

IM 581 and IM 582 are hybrid modules that combine analog voltage inputs and/or analog voltage outputs with SSI interfaces.

The analog inputs have 16-bit resolution and are suitable for voltage measurement as well as ratiometric measurement. The input range is from -10 to +10 V.

Configurable digital input filters can be used to adapt the analog inputs to the control cycle times used in order to achieve optimum control characteristics.

The analog modules have a resolution of 12 bits. The signal range is from -10 to +10 V.

The SSI inputs can be used to integrate SSI encoders into the automation system. Various configuration settings such as bit rates, frame lengths, bit masks etc. allow the individual SSI interfaces to be adapted to the specifics of the encoders being used.

Data can be exchanged with the higher-level automation device with a maximum cycle time of 125 μ s.

Technical specifications

Analog inputs (only IM 581)

Quantity	4
Type	Voltage input
Input type	Configurable for voltage or ratiometric measurement
Signal range	Voltage mode: ± 10 V; ratiometric mode: 0 - Uref
Resolution	16 bits (voltage mode); 15 bit (ratiometric mode)
HW input filter	3rd order filter, crossover frequency 2500 Hz
Digital filters	Configurable: no filter, 500 μ s, 1 ms, 5 ms
Common mode range	± 13.5 V
Common mode rejection	> 80 dB
Precision	Max. error: ± 0.02 % of scale end value (at 25 °C)
Diagnostics	Sensor break detection

Analog outputs (only IM 582)

Quantity	6
Type	Voltage output
Signal range	± 10 V
Resolution	12 bits
Load resistance	≥ 1000 Ω
Highest capacitive load	≤ 10 nF
Precision	Max. error: ± 0.15 % of scale end value (at 25 °C)
Protection device	Sustained short-circuit proof

SSI interfaces

	IM 581	IM 582
Quantity	2	3
Data transfer rate	125 kBit/s, 250 kBit/s, 500 kBit/s, 1 MBit/s	
Resolution	Max. 32 bits (number of bits is configurable)	
Supported data code	Binary code, Gray code	
Output voltage for encoder supply	+24 V DC	
Output current for encoder supply	150 mA per channel	
Diagnostics	Wire break monitoring	
Protection device	Short-circuit protection via self-resetting fuse	

Dimensions, weight

Height	106 mm
Width	26.5 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	87 g

KeConnect C5 - IM 581, IM 582

Hybrid modules

Environmental conditions

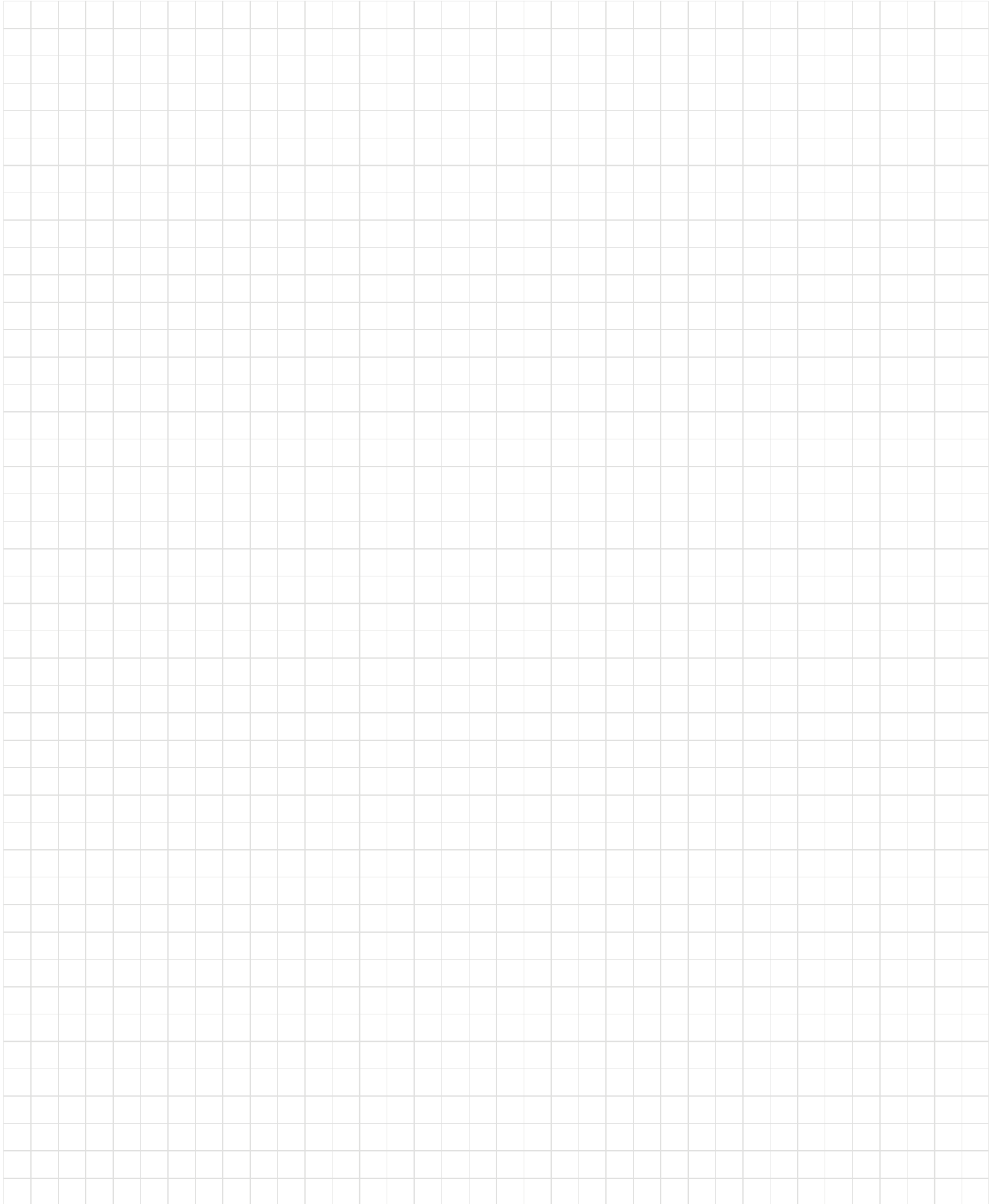
Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

	IM 581	IM 582
Minimum cycle time	125 µs	
Supply voltage	24 V DC (front for sensor/encoder supply) 24 V DC and 5 V DC (module bus)	
Overvoltage category	II	
Protection class	III according to EN 61010-2-201	
Addressing on module bus	Automatic	
Type of terminals	6 x 4-fold male header, 3.81 mm pitch 2 x Industrial Mini IO type 2 (SSI interfaces)	4 x 4-fold male header, 3.81 mm pitch 3 x Industrial Mini IO type 2 (SSI interfaces)
Max. power consumption over module bus	1.4 W @ 5 V 1.2 W @ 24 V	1.4 W @ 5 V 1.8 W @ 24 V
Status indication	LEDs for module status and EtherCAT status	

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification



KeConnect C5 - PI 570

System module

Product features

- // Power supply module
- // Can be used to enhance the power supply if the head end (bus coupler, CPU module) cannot provide sufficient power for supplying all connected modules



Brief description

Power supply unit PI 570 is used if the power supplied by the built-in power supply unit of a CPU module or a bus coupler module is not sufficient to supply all directly connected KeConnect C5 modules internally.

If a PI 570 module is integrated into the KeConnect C5 modules, all modules arranged on the right will be supplied with power. On the left, the supply pins of the module bus interfaces are disconnected.

Technical specifications

Dimensions, weight	
Height	106 mm
Width	26.5 mm (when installed)
Depth	82.5 mm (snap-on height: 77.5 mm)
Weight	91 g

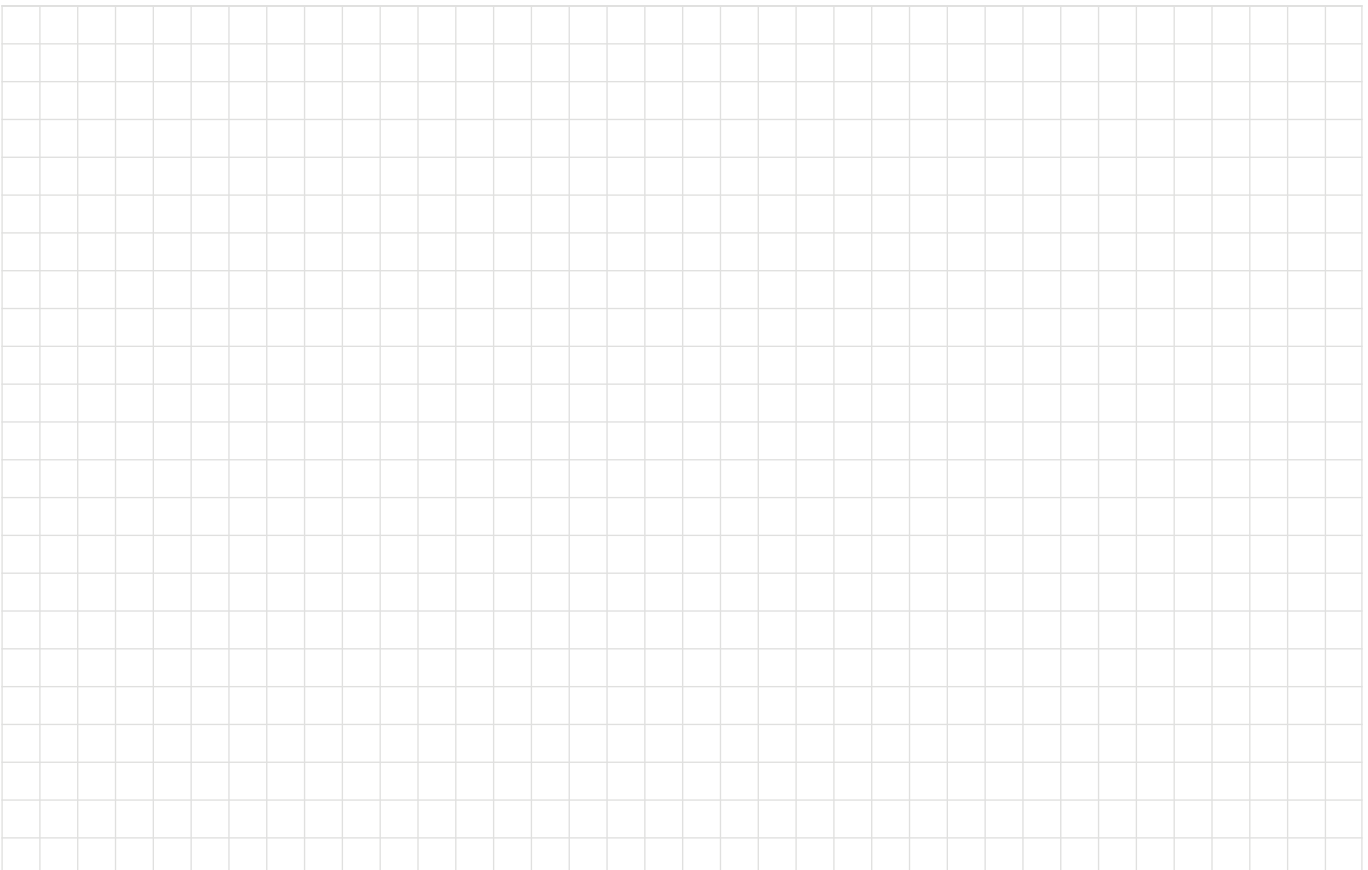
Environmental conditions	
Operating temperature	+0 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	10 % to 95 % (non-condensing)
Vibration/shock resistance	According to EN 61131-2

General data

Supply voltage	24 V DC (front)
Max. power consumption	75 W @ 24 V
Max. inrush current	6 A
Protection device	Reverse voltage protection
Output power supply to connected modules via module bus	Max. 25 W @ 5 V Max. 48 W @ 24 V
Overvoltage category	II
Protection class	III according to EN 61010-2-201
Connector types	Power supply: 4-fold male header, 3.81 mm pitch

Certification

CE	2014/30/EU and 2011/65/EU
UL	UL 61010-1 and UL 61010-2-201
UKCA	Conformity with relevant statutory requirements
KC	Korea EMC Certification



KeConnect C5

Accessories

Female connectors

Connectors for the power supply and/or connection of input and output signals.

Plug BCF3,81 4pos. 180G Push In BK	All I/O modules
Plug BCF3,81 4pos. 180G Push In AU GY	Temperature inputs of TI 57x I/O modules



Mini I/O connectors

Mini I/O connectors for serial, CAN, SSI, and incremental encoder interfaces. Installation requires the relevant crimping pliers.

Mini I/O plug kit Typ2 8pos. 180°
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Mini I/O cables

Cables with prepared Mini I/O connector and open end (wire end ferrules) for the serial, CAN, SSI, and incremental encoder interfaces.

XW 599-010	1 m
XW 599-020	2 m
XW 599-030	3 m
XW 599-050	5 m

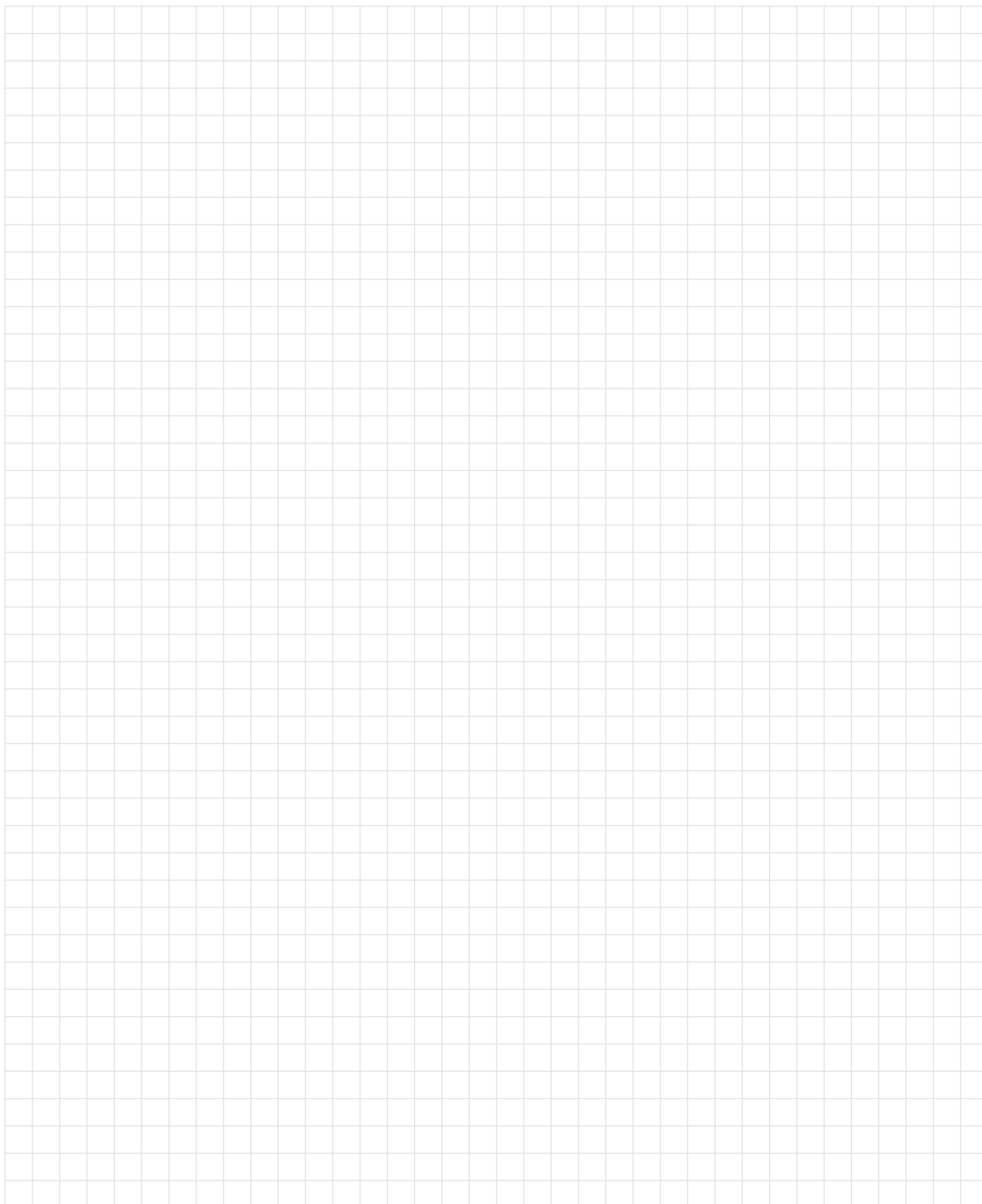


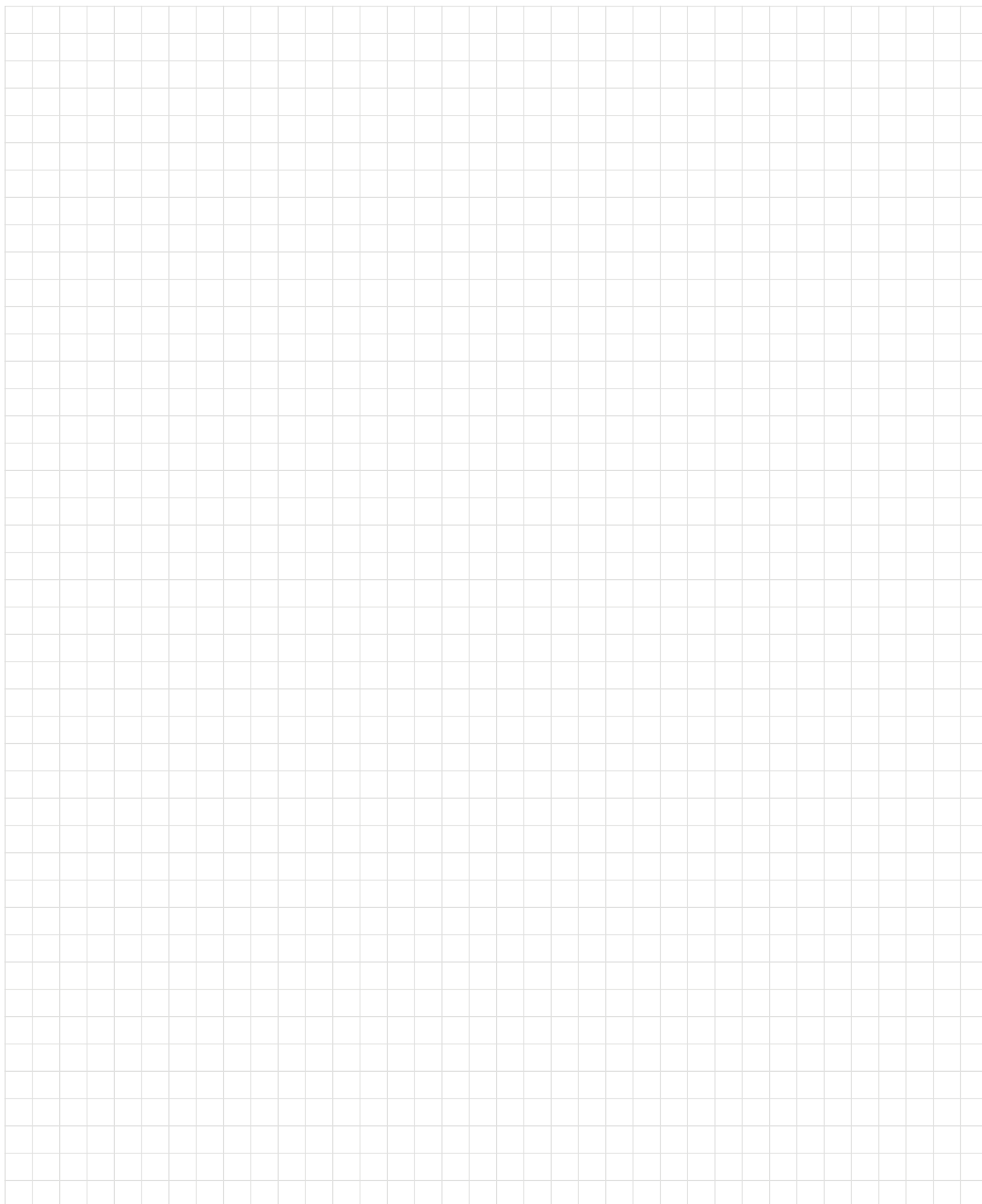
Ethernet/EtherCAT cables

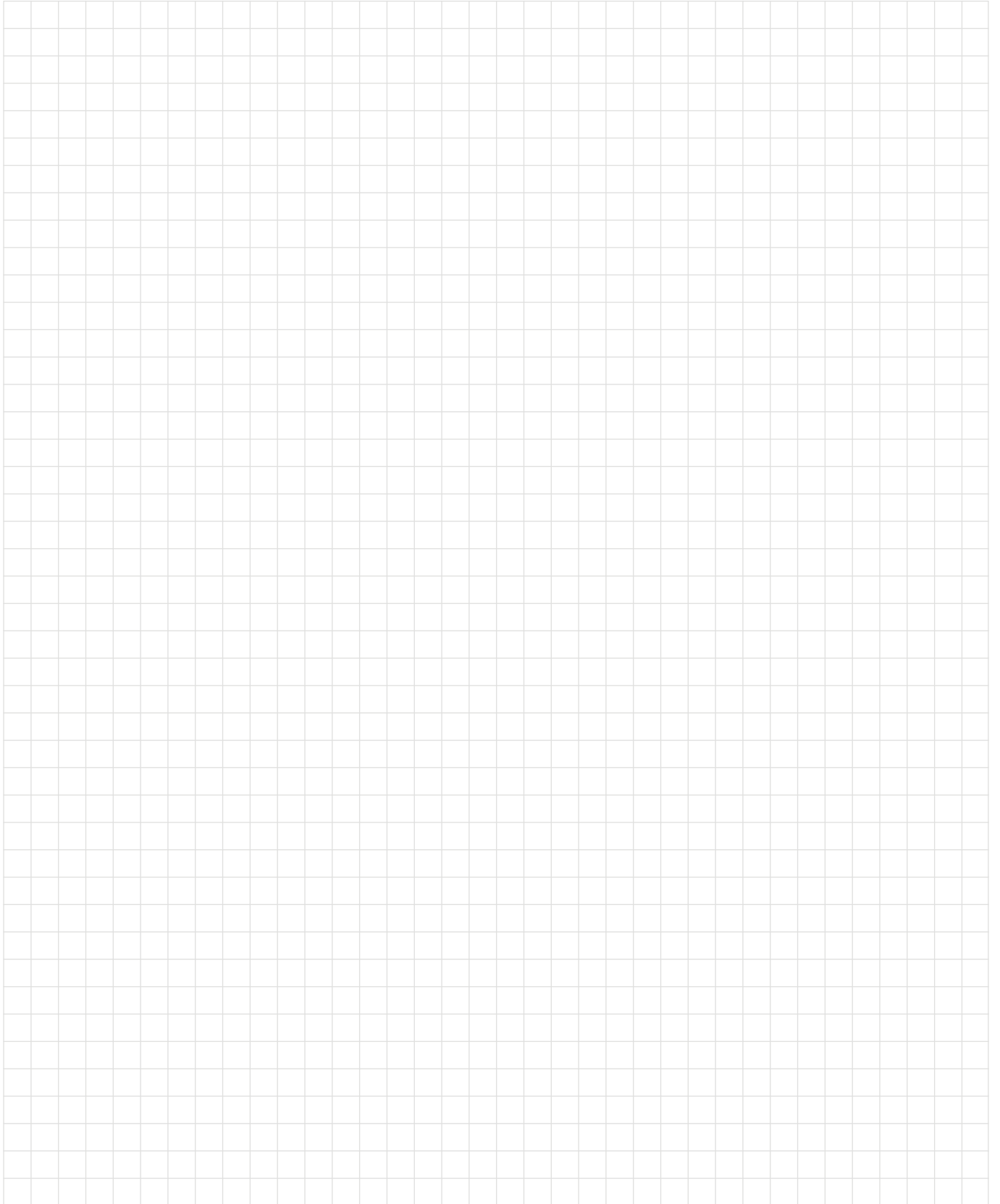
Cables for EtherCAT communication for modules BL 570 and NM 570. Other lengths available upon request.

XW 020-005	0.5 m
XW 020-010	1 m
XW 020-020	2 m
XW 020-050	5 m
XW 020-100	10 m
XW 020-200	20 m









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