



# KS 128 *flexible*

**Compact PLC with  
touch operating screen**

**12,1" colour display**

**PLC functions in accordance  
with IEC 61131-3**

**Integrated visualization system**

**Comprehensive PMA function library**

**I/O integration via CAN and/or Ethernet**

**Communication via field bus and Ethernet**

- ❖ Compact, robust hardware
- ❖ Touch-screen operation
- ❖ Brilliant color display
- ❖ Operating system 'embedded' Linux
- ❖ Realtime Soft PLC runtime
- ❖ Programming according to IEC 61131-3
- ❖ PMA function library: Controller, Programmer, ... with comfortable parametrization dialogs
- ❖ Multitasking
- ❖ Convenient debugging and commissioning tools
- ❖ Fully integrated graphical visualization editor
- ❖ Fast, efficient data exchange between visualization and soft PLC
- ❖ Graphical PLC configuration for the Vario I/O system
- ❖ Onboard CAN interface
- ❖ Optional field bus modules
- ❖ Access to variables via network (Ethernet TCP/IP)

## APPLICATIONS

- Machine building
- Plant engineering
- Factory automation
- Process automation
- Plastics processing
- Building automation

## DESCRIPTION

### General

As the central element in an automation system, the PMA **KS 128** performs all the relevant sequencing tasks:

- Soft PLC for realtime operation to IEC 61131-3
- Visualization and operation

Adjustable task priorities permit individual adaptation of partial tasks to the requirements of the sequencing program. This makes optimum use of processor performance for short response times. In this way, short cycle times of the Soft PLC are ensured, together with fast response of the user interface.

Integration of a sequencing program and a user interface in one piece of equipment with a common programming environment results in decisive time and cost advantages. Moreover, the Engineering is simplified. Thanks to the joint use of data in the sequencing program and for visualization, possible error sources are eliminated.

Via the Ethernet interface, the control terminal can be linked into existing networks very easily.

By means of network variables, other PLCs are able to access the common

data. An optional OPC server permits convenient access to the process data, e.g. from a PC.

Thanks to the proven function blocks in the PMA library, fast and highly efficient programming is ensured, as well as utmost functional safety.

### Design

The **KS 128** is a particularly compact device intended for mounting e.g. in control panels.

The computer core consists of a 'low power' processor, which operates without the need for additional cooling. The program is stored in an onboard Flash memory. Thanks to this design, the control terminal's hardware is particularly robust for a long service life.

Visualization is provided by a fully graphic colour displays with resolutions from 800 x 600 pixels. The displays feature excellent readability and brightness, plus long-life background lighting.

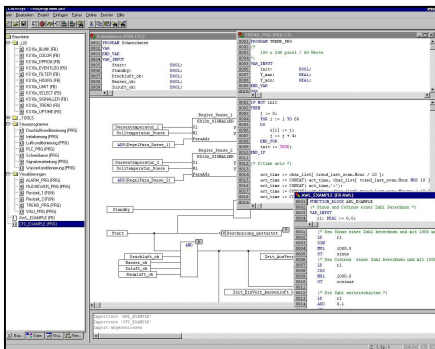
Moreover, the resistive touch feature permits direct operation via the screen. No other external operating controls (e.g. buttons, ...) are required.

## IEC 61131 programming environment

Programming of the terminal is based on the standard IEC 61131-3. The CoDeSys system is completely compatible with the standard, and offers convenient programming in all of the languages defined in IEC 61131:

- Instruction List (IL)
- Function Block Diagram (FBD)
- Ladder Diagram (LD)
- Structured Text (ST)
- Sequential Function Chart (SFC)
- Continuous Function Chart (CFC)

Powerful test functions greatly reduce the necessary programming and commissioning times.

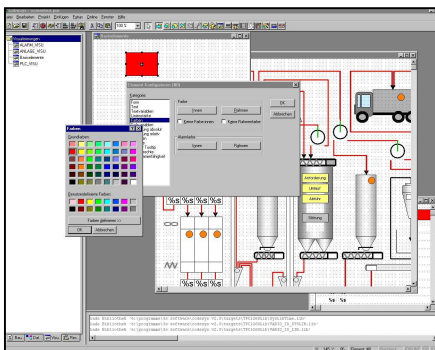


- Monitoring of variables
- Writing and forcing of variables
- Breakpoints and stepping
- Single-cycle operation
- Sequence monitoring
- Recording and graphical representation of variables (tracing)
- Online change of programs

The integrated visualization system has access to all the variables used by the sequencing program, thus eliminating the risk of multiple definitions.

Numerous functions are available for creating user-specific operating screens.

- Basic elements: rectangle, ellipse, graphics, etc.
- Complex elements: alarm handling, trends, tables, etc.
- Animation
- Various data entry keypads
- etc



## BlueLib function library

The BlueLib library contains a comprehensive range of functions based on the experience of PMA controllers for the following operations:

- Controlling
- Profiling
- Scaling
- Arithmetic
- etc.

Futhermore it provides function blocks to connect the I/O systems vario I/O and rail line.

## Integrated parametrization dialogs

Every function block of the BlueLib library automatically supplies the associated parametrization dialog.

This will start in CoDeSys by simply double-click the function block inside the CFC-Editor.

Right picture: Controller function block. Below the associated parametrization dialog.

KS108_CONTROL	
ai_PV_1	ao_SPeff
ai_PV_2	ao_PV
ai_PV_3	ao_AV
ai_SPext	ao_DV
ai_OVCP	ao_SP
ai_OVCM	ao_AVout1
ai_PF	ao_AVout2
ai_AVhm	ao_BI_no
ai_AVadd	do_AV1
ai_Casc	do_AV2
di_hide	do_c_fail
di_lock	do_off
di_inc	do_a_m
di_dec	do_AV_AV2
di_PV_fail	do_SPe_SPi
di_PF_fail	do_pi_p
di_a_m	do_o_run
di_SP_SP2	do_o_stab
di_SPe_SPi	do_o_err
di_pi_p	do_DV_sup
di_d_ovcP	
di_d_ovcM	
di_track	
di_AV_AV2	
di_off	
di_sm_hm	
di_ostart	
di_SPstop	
di_gr_off	
di_rstart	
di_o_hide	
di_oplock	
tData	

Parametrierung: Controller_Zone_1 (Universalregler)					
Kürzel	Bezeichnung	Wert	on	Bereich	
CFunc	Regelverhalten	9: Stetig			
CType	Reglertyp	0: Standard			
SPfunc	SP intern/extern	0: Festwert			
CMode	Wirkungsrichtung	0: Invers			
CDiff	Differenzierung	0: Wirkt auf DV			
CFail	Sensorfehler	1: Minimum AV			
COVC	Stellwertbegrenzung	0: Aus			
SPtrac	Sollwertübernahme	0: Aus			
Ratio	Verhältnisregler				
Dp	Dezimalstellen	0		0...3	
Disp	Bargrafanzeige	0: Stellgröße AV			
OMode	Typ Optimierung				
OCond	Prozess in Ruhe	0: PV = konstant			
PVlo	Regelbereich Start	0		MIN_VAL...100	
PVhi	Regelbereich Ende	100		0...MAX_VAL	
SFac	Faktor Verhältnis				
SPblock	SP-Umschaltung	0: Alle blockiert			
ImodePIP	PI/P-Verhalten	0: Abschalten			
SPlo	Min. Sollwert	0		MIN_VAL...400	
SPHi	Max. Sollwert	400		0...MAX_VAL	
SP2	Zweiter Sollwert	100		0...400	
GrwP	SP-Gradient+1/min	off	<input type="checkbox"/>	0.001...MAX_VAL	
GrwM	SP-Gradient-1/min	off	<input type="checkbox"/>	0.001...MAX_VAL	
Grw2	SP2-Gradient1/Min	off	<input type="checkbox"/>	0.001...MAX_VAL	
N0	PV-Offset				
A	Faktor	1		-9.99...99.9	
Xsh	Neutrale Zone				
Tpuls	Min.Stellzeit[s]				
Tm	Motorlaufzeit[s]				
Xsd1	Schalt Differenz				
LW	2.Schaltsschwelle		<input type="checkbox"/>		
Xsd2	2.Schalt Differenz				
Xsh1	Neg.Schwelle PD	0		0...1000	
Xsh2	Pos.Schwelle PD	0		0...1000	
AV2	AV2	0		-105...105	
AVlo	Min.Stellgröße	0		0...100	
AVhi	Max.Stellgröße	100		0...105	
AV0	Arbeitspunkt	0		-105...105	
AVOptm	Startwert(Tune)	0		-105...105	
dAVopt	Sprung(Tune)	100		5...100	
Xp1	P-Bereich H	100		0.1...999.9	
Xp2	P-Bereich K				
Tn	Nachstellzeit[s]	10		0...MAX_VAL	
Tv	Vorhaltezeit[s]	10		0...MAX_VAL	
TP1	Schaltperiode H				
TP2	Schaltperiode K				
Titel	Titeltext	Controller_Zone_1			
Unit_PV	Einheit Istwert	PV-UNIT			

## TECHNICAL DATA

### PROCESSOR

CPU: Freescale Power PC / 400 MHz  
Fanless cooling  
128 MByte RAM / 96 MByte free  
32 MByte Flash / 24 MByte free  
16kByte RAM (Retain)  
Real time clock  
Backup: Lithium battery

### DISPLAY

12,1-inch colour TFT,  
Resolution: SVGA 800 x 600 pixels  
65536 colours, resistive touch operation

### INTERFACES

#### Serial interfaces

Type: RS 232, 9-pin Sub-D  
Max. cable length: 12 m

Type: RS 485, 9-pin Sub-D  
Galvanic isolated,  
Max. cable length: 1000 m

#### CAN interface

galvanic isolated, 9 pol. Sub-D,  
max. cable length according to CANopen  
standard

#### Network

Ethernet interface (10/100 Base-T)  
Galvanic isolated

#### USB interface

USB Host (Typ A, front access)

#### Expansion interface

Slot for I/O module  
Slot for fieldbus module  
Slot for SD card

### POWER SUPPLY

Supply voltage:  
24 V DC (18...32V / SELV)  
Galvanic isolated  
Residual ripple:  $\leq 4$  V<sub>ss</sub>  
Current consumption: typical 1A, max. 2 A

### ENVIRONMENTAL CONDITIONS

Permissible temperatures  
For specified accuracy: 0...50°C  
Storage & transport: -20...70 °C

Relative humidity: max. 85%  
no condensation

### INFLUENCING FACTORS

#### Power supply

No effect. No loss of data in case of a  
power supply failure (Flash, EEPROM)

#### Vibration test

Sinusoidal oscillations in accordance with  
IEC 60068-2-6 and EN 60068-2-6;  
Test Fc: 10...150Hz, 1g

#### Shock test

To IEC 60068-2-27 and EN 60068-2-27  
Test Ea: 15g for 10 ms, half sine wave

### ELECTROMAGNETIC COMPATIBILITY

#### Immunity test

In accordance with 61000-6-2 and  
EN 61326-1, Industry

#### Emission test

In accordance with 61000-6-4 and  
EN 61326-1, Industry

### GENERAL

#### Weight

approx. 6 kg

#### Protection class

Front panel: IP 65  
Rear: IP 20

#### Electrical safety

Complies with EN 61 010-1  
and IEC 61131-2  
Over-voltage category II  
Contamination degree 2  
Protection Class III

#### CE marking

Fulfills the EU Directives for electro-  
magnetic compatibility and low voltage.

#### USL / CNL (cULus)

Type 1 (indoor use)  
File: E208286

#### Standard accessories

Supply voltage terminal  
Mounting accessories

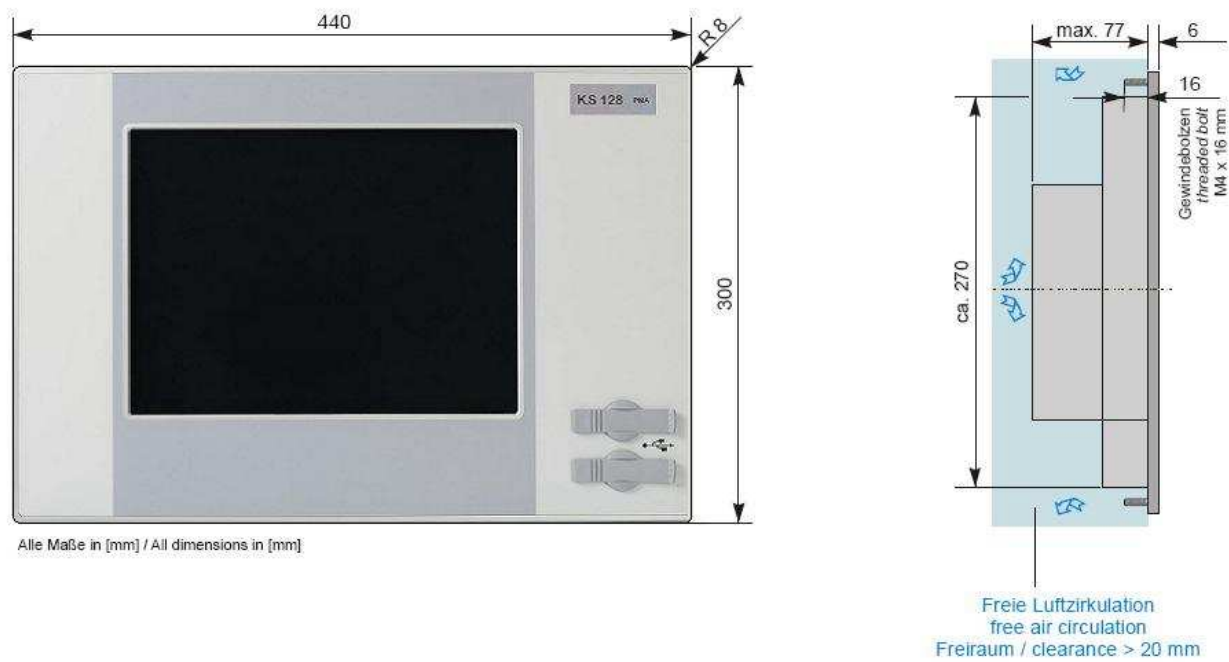


Fig. 1: Overall dimensions KS 128

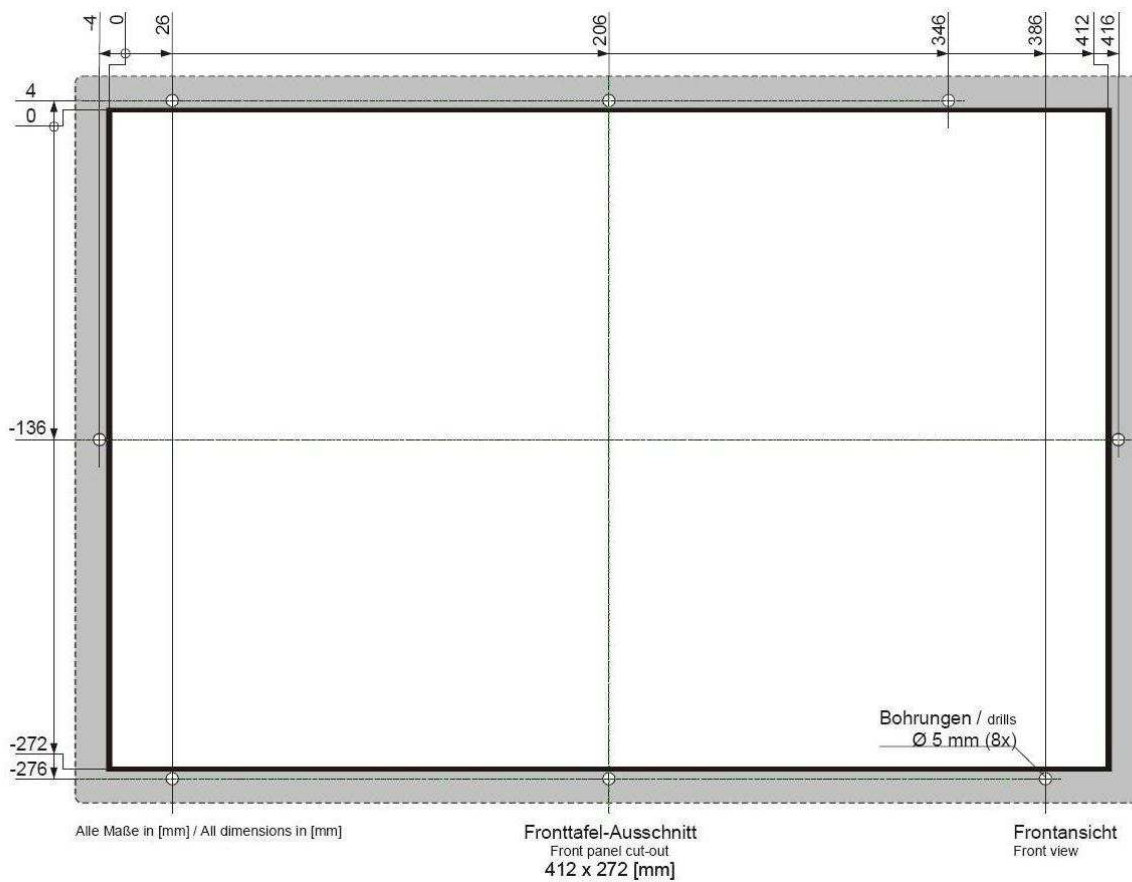


Fig. 2: Fitting dimensions KS 128

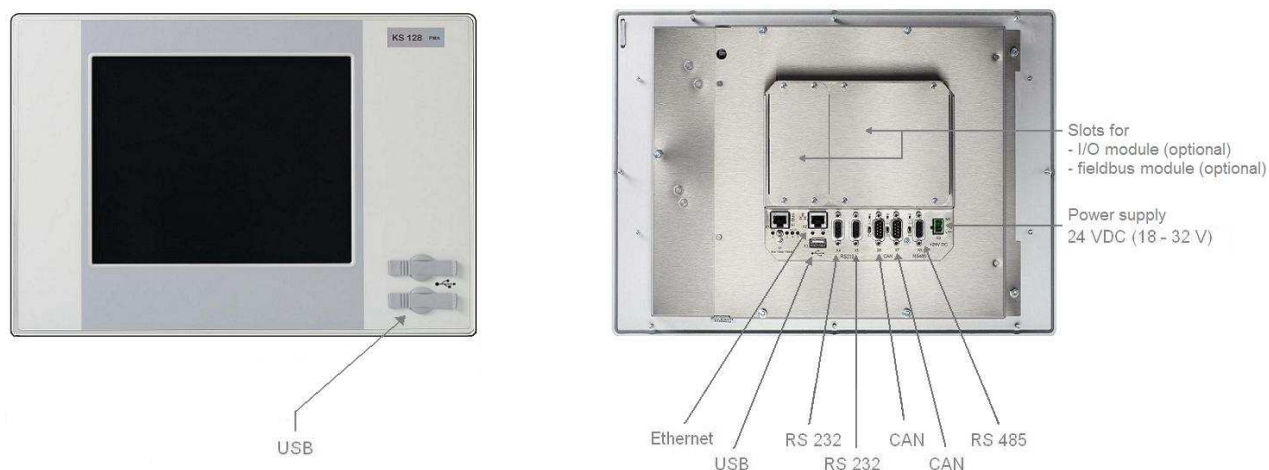


Fig. 3: Connections KS 128

### Ordering information

Description	Order-No.	Function
KS 128 with neutral front	K128-330-00100	Compact Panel-PLC with touch screen, 12,1-inch TFT colour display

### Accessories

Description	Order-No.	Function
CoDeSys programming tool	PMA-PLC-TOOLS01	Installation-CD with CoDeSys IEC 61131-3 programming system
8 port Ethernet switch	EDG-6528L	8 port industrial switch for rail mounting

### Recommended I/O systems

Description	Order-No.	Function
vario I/O	KSVc-xxx-xxxxx	See data sheet ... ( <a href="http://www.pma-online.de">www.pma-online.de</a> )
rail line	RL40-xxx-xxxxx	See data sheet ... ( <a href="http://www.pma-online.de">www.pma-online.de</a> )



**PMA**  
 Prozeß- und Maschinen- Automation GmbH  
 P.O. Box 31 02 29  
 34058 Kassel / Germany  
 Tel.: +49 561 505 1307  
 Fax.: +49 561 505 1710  
 E-mail: [mailbox@pma-online.de](mailto:mailbox@pma-online.de)  
 Internet: <http://www.pma-online.de>

**Your local representative:**