KS 108 *flexible*

Compact PLC with touch operating screen

5,7“ 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 108** performs all the relevant sequencing tasks:

- Soft PLC for realtime operation to IEC 6 1131-3
- 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 108** 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 320 x 240 pixels. The displays feature excellent readability and brightness, plus long-life background lighting.

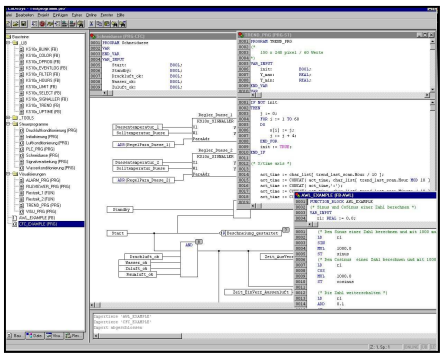
Moreover, the resistive touch feature permits direct operation via the screen. No other external operating controls (e.g. buttons, ...) are required.

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)

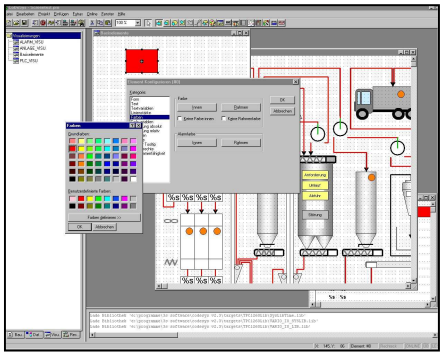
Powerful test functions greatly reduce the necessary programming and commissioning times.



- 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:

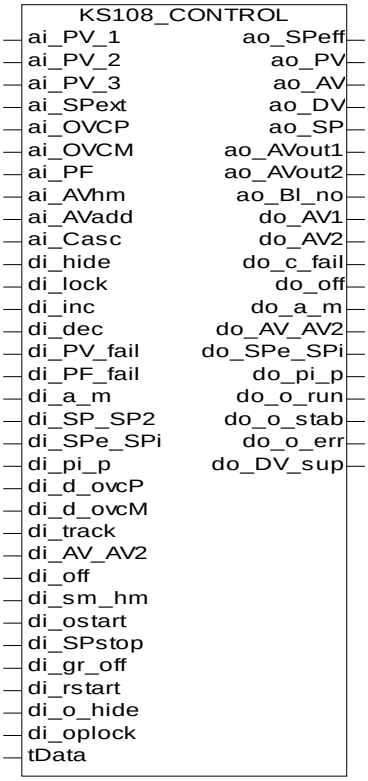
- Controlling
- Profiling
- Scaling
- Arithmetic
- etc.

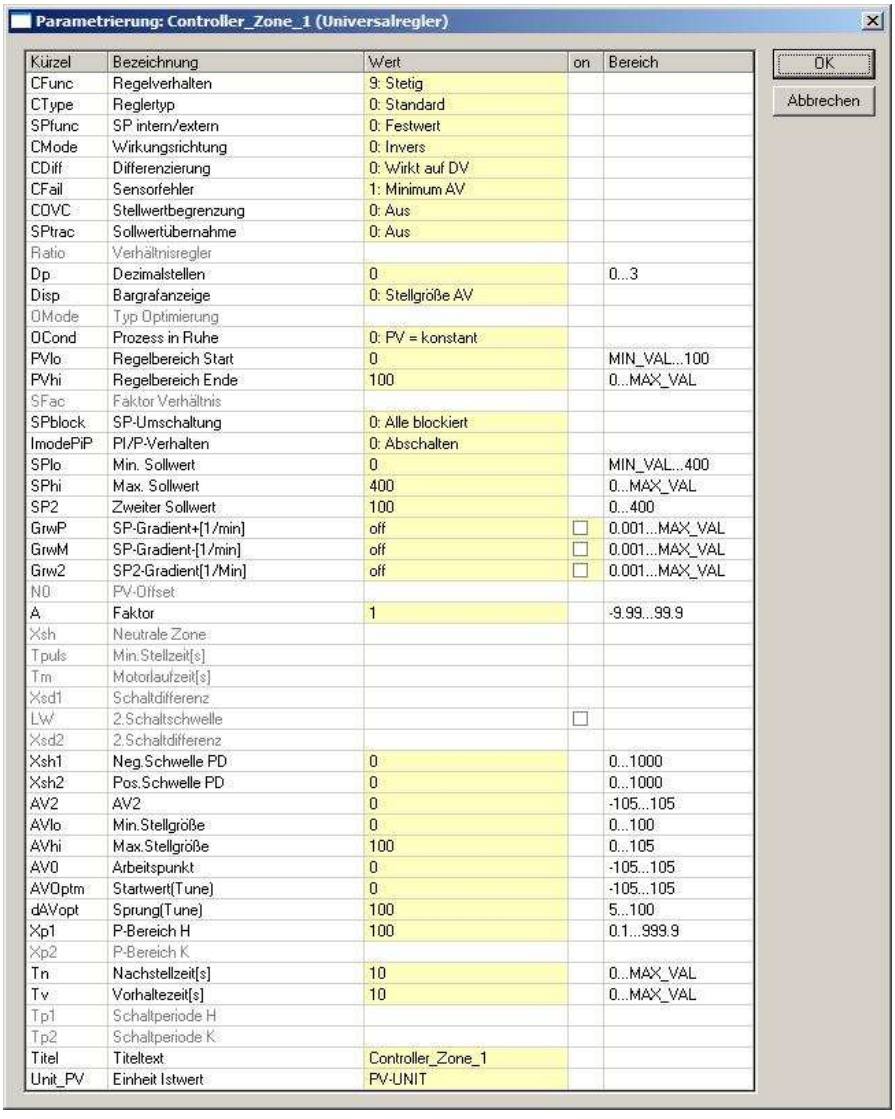
Futhermore it provides function blocks to connect the I/O systems vario I/O and rail line.

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.





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	☐	0.001...MAX_VAL
GrwM	SP-Gradient-[1/min]	off	☐	0.001...MAX_VAL
Grw2	SP2-Gradient[1/Min]	off	☐	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	Schaltdifferenz			
LW	2.Schaltschwelle		☐	
Xsd2	2.Schaltdifferenz			
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 / 266 MHz
Fanless cooling
64 MByte RAM / 32 MByte free
16 MByte Flash / 8 MByte free
16kByte RAM (Retain)
Real time clock
Backup: Lithium battery

DISPLAY

5,7-inch colour TFT or CSTN,
Resolution: QVGA 320 x 240 pixels
256 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 fielbus module
Slot for SD card

POWER SUPPLY

Supply voltage:
24 V DC (18…32V / SELV)
Galvanic isolated
Residual ripple: ≤ 4 Vss
Current consumption: typical 1A, max. 2 A

ENVIRONMENTAL CONDITIONS

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

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. 1,5 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

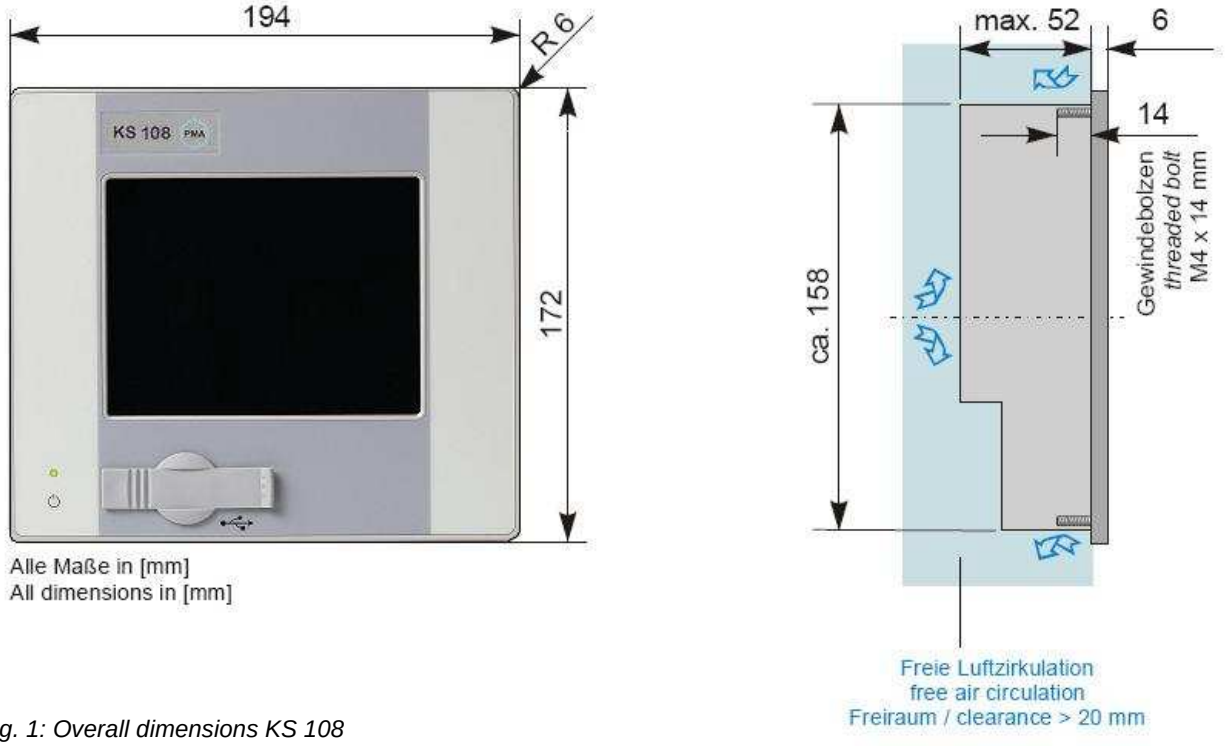


Fig. 1: Overall dimensions KS 108

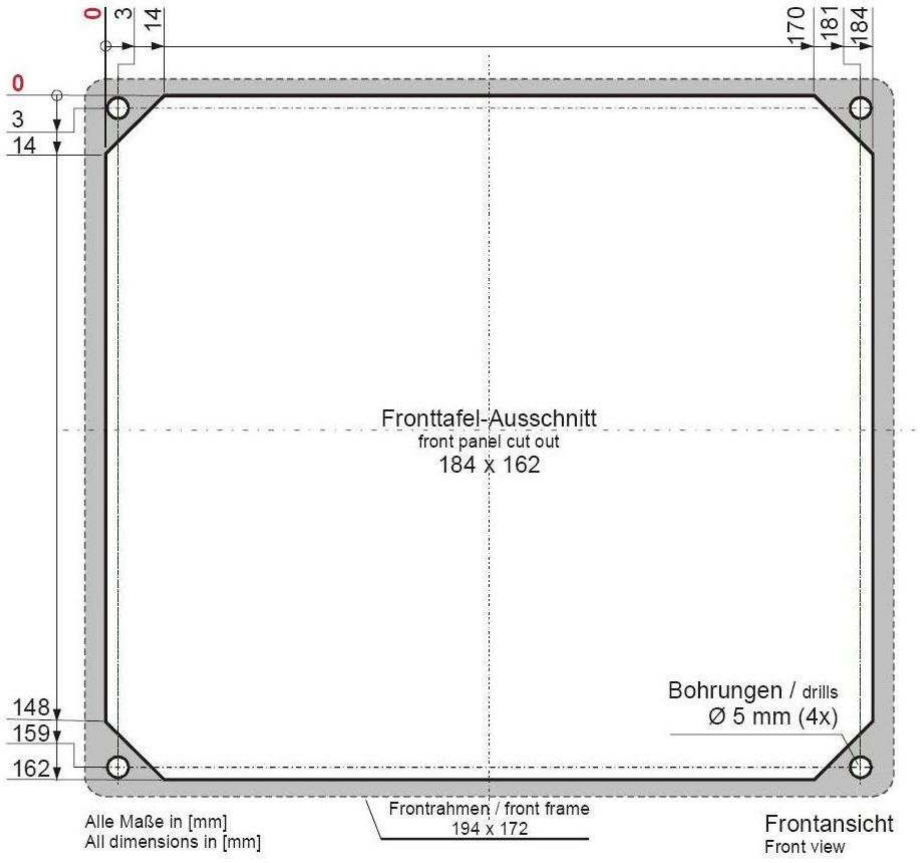


Fig. 2: Fitting dimensions KS 108

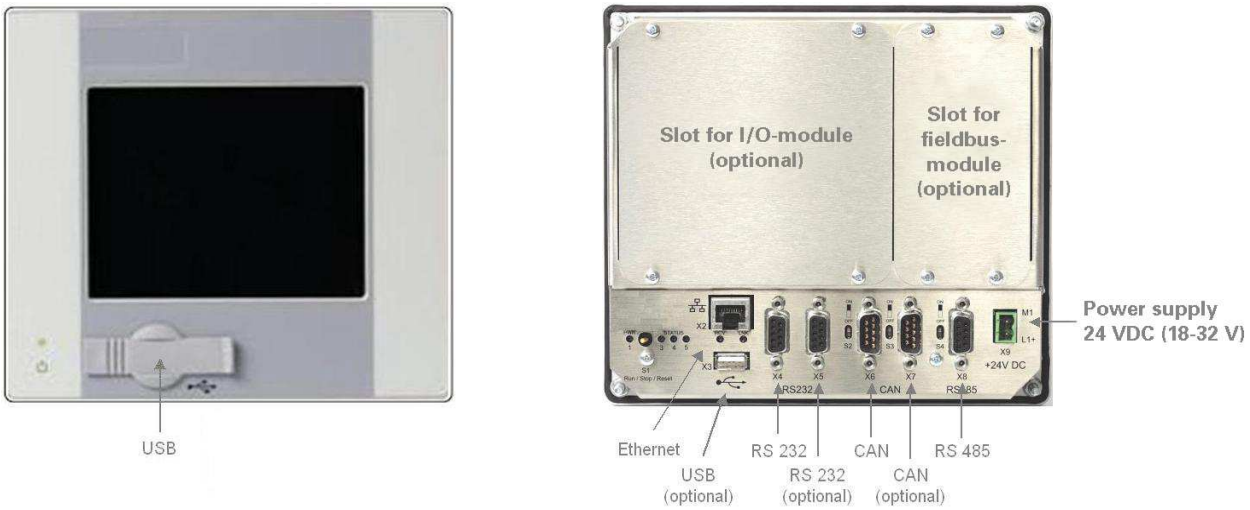


Fig. 3: Connections KS 108

Ordering information

Description	*Order-No.*	*Function*
KS 108 with PMA front	K108-230-00000	Compact Panel-PLC with touch screen, 5,7-inch TFT colour display
KS 108 with neutral front	K108-330-00x00	Compact Panel-PLC with touch screen, 5,7-inch TFT colour display
Standard interfaces	0	Ethernet, CAN (isolated), RS232, RS485 (isolated), Front-USB
Optional interfaces	1	Additionally: CAN (not isolated), RS232, USB (Rear side)

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 ... (www.pma-online.de)
rail line	RL40-xxx-xxxxx	See data sheet ... (www.pma-online.de)

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Printed in Germany – Edition 11/2008 – Subject to alteration without notice – 9498-737-54113