# PMI operator terminals®

pilz
more than automation
safe automation

Diagnostic and operator terminals "Made in Germany"

**Professional diagnostics and visualisation.**

more than automation
s a f e  a u t o m a t i o n

# ▶ Support

**Technical help round the clock!**

Technical support is available from Pilz round the clock. This service is provided free of charge beyond standard business hours.

**Americas**
- ▶ Brazil
  +55 11 8245-8267
- ▶ Mexico
  +52 55 5572 1300
- ▶ USA
  +1 734 354 0272

**Asia**
- ▶ China
  +86 21 62494658-216
- ▶ Japan
  +81 45 471-2281
- ▶ Korea
  +82 2 2263 9540

**Australia**
- ▶ Australia
  +61 3 95446300

**Europe**
- ▶ Austria
  +43 1 7986263-0
- ▶ Belgium, Luxembourg
  +32 9 3217575
- ▶ England
  +44 1536 462203
- ▶ France
  +33 3 88104000
- ▶ Germany
  +49 711 3409-444
- ▶ Ireland
  +353 21 4804983
- ▶ Italy
  +39 031 789511
- ▶ Scandinavia
  +45 74436332
- ▶ Spain
  +34 938497433
- ▶ Switzerland
  +41 62 88979-30
- ▶ The Netherlands
  +31 347 320477
- ▶ Turkey
  +90 216 5452912

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Sichere Automation
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# ▶ Business activities

## Excellent Components

| | | |
|---|---|---|
| **Sensor technology** | ▸ Safety switches<br>▸ Safety bolts<br>▸ Optoelectronic protective devices<br>▸ Safe camera systems | |
| **Control and communication** | ▸ Electronic monitoring relays<br>▸ Safety relays<br>▸ Programmable safety and control systems<br>▸ Industrial communication | |
| **Motion Control** | ▸ Control systems<br>▸ Servo amplifiers<br>▸ Motors | |
| **Operating and monitoring** | ▸ Control and signal devices<br>▸ Operator terminals | |
| **Software** | ▸ System software<br>▸ User software<br>▸ Software tools | |

## Professional Services

| | | |
|---|---|---|
| **Consulting and Engineering** | ▸ Plant assessment<br>▸ Risk assessment<br>▸ Safety concept<br>▸ CE services<br>▸ Inspection of ESPE<br>▸ Safety design<br>▸ Safety sign-off | |
| **Training** | ▸ Seminars<br>▸ Courses | |

# Why does Pilz offer more?

**Because the integrality
of our business activities is
what sets us apart.**

COMPLETE SOLUTIONS

**Excellent
Components**

**Professional
Services**

FOR SAFE AUTOMATION

Pilz is a solution supplier for
all automation functions.
Including standard control func-
tions. Developments from Pilz
protect man, machine and the
environment. That's why all our
experience and knowledge goes
into individual products as well
as consistently sophisticated
system solutions.

▶ Sensor technology
▶ Control and communication
▶ Motion Control
▶ Operating and monitoring
▶ Software
▶ Consulting and engineering
▶ Training

Appropriate services relating
to individual components and
independent generic services
guarantee that our customers
obtain customised automation
solutions, all from one source.

**Pilz is a family business
that's closer to its customers.**

Pilz has a tradition as a
family-run company stretching
back over 50 years.
Real proximity to customers
is visible in all areas, instilling
confidence through individual
consultation, flexibility and
reliable service.

We are your contact, guide and
competency leader en route to an
optimum automation solution.

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safe automation



COMPLETE SOLUTIONS

Excellent Components

Professional Services

FOR SAFE AUTOMATION

## Contents
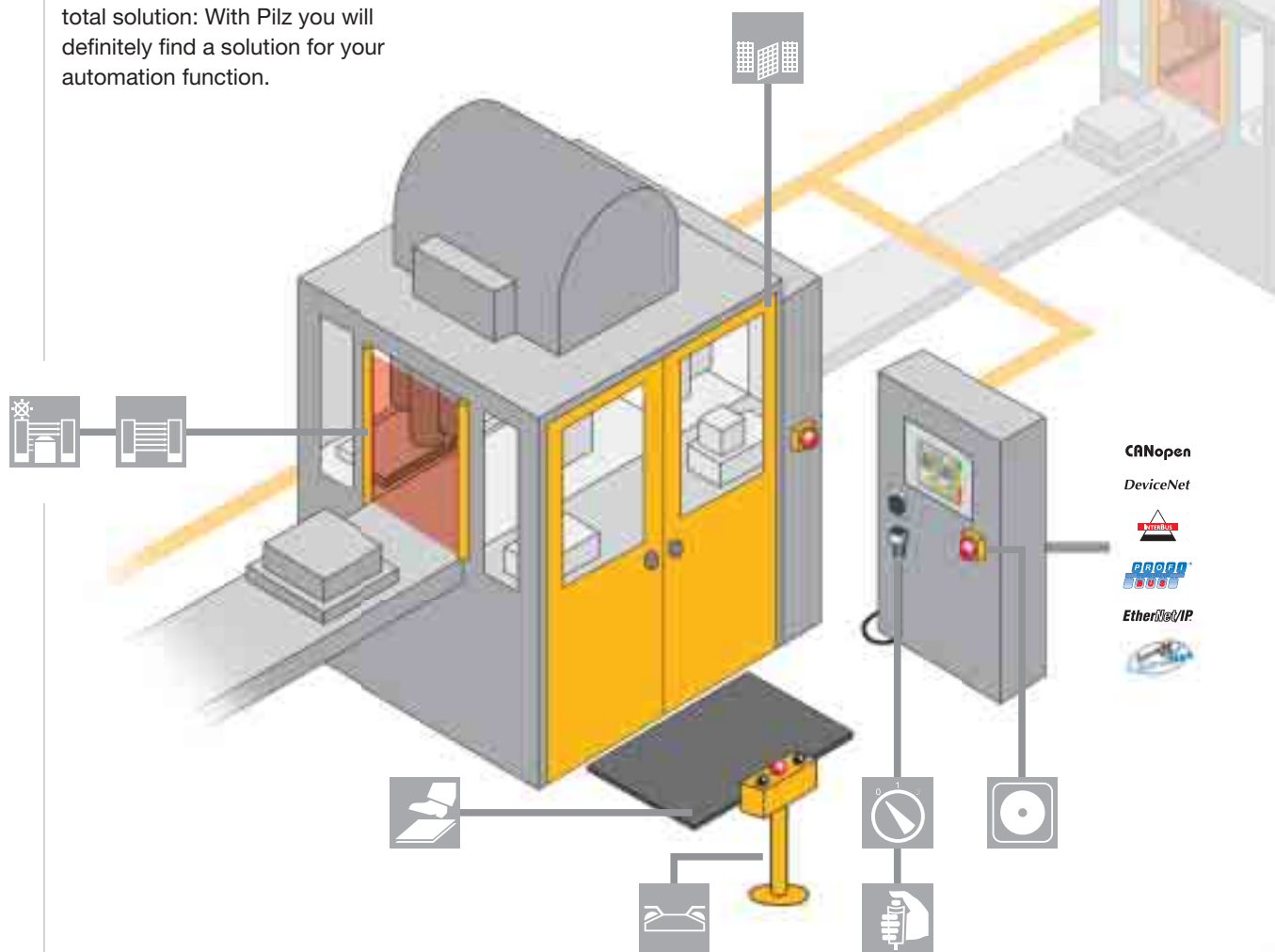
# Professional and simple

Systems for process visualisation and interaction between man and machine form the link between operator and machine. When an error occurs, diagnostics on the plant and machinery play a special role. Good visualisation and diagnostics also mean shorter downtimes and therefore increased cost effectiveness.

From the diagnostic unit PMImicro diag through to the powerful touchscreen operator terminals PMIvisu and PMIopen, Pilz offers complete customised solutions to meet your requirements.

A sophisticated concept developed from practice is the basis of good diagnostics. At Pilz we call it PVIS for short. It's a universal diagnostic concept for small machines to large plants.

# ▶ Solution suppliers for safety and standard

Pilz offers a universal concept for solutions that can be applied right across industry – whether safety-related or standard control functions – whether plant or machinery – centralised or decentralised – single product or total solution: With Pilz you will definitely find a solution for your automation function.

CANopen

*DeviceNet*

INTERBUS

PROFIBUS

*EtherNet/IP*

*Sensor technology*

*Operating and monitoring*

*Electronic monitoring relays PMDsrange*
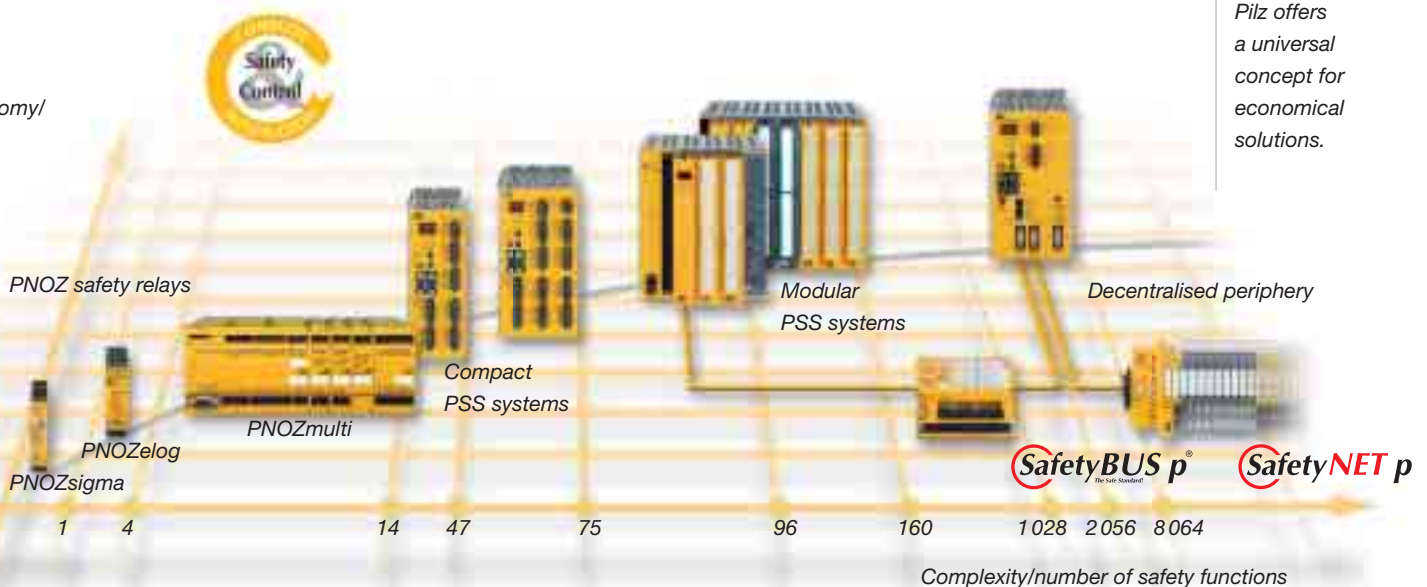
*Motion control*

**SafetyBUS p** ®
*The Safe Standard!*

▶ For electrical safety such as voltage or true power monitoring, electronic PMDsrange monitoring relays provide the optimum solution.

▶ Pilz Motion Control (PMC) represents a flexible, modular and expandable automation system for complex motion and control functions. This automation system manages all the movements of a large number of physically separate servo axes within a plant.

▶ For monitoring E-STOPs, safety gates, light curtains/light grids, two-hand control and many other functions, we recommend Pilz safe control technology in terms of functional safety. Standard control functions are included.

- For simple plant and machinery with up to 4 safety functions, use the safety relays PNOZ X, PNOZsigma and PNOZelog.
- To cover 4 to 14 safety functions, the modular safety system PNOZmulti is the most economical solution.
- On complex machinery or distributed plants, PSS programmable safety and control systems can be used with decentralised networking via SafetyBUS p and SafetyNET p.

Enjoy the benefits of approved, co-ordinated, complete solutions. Our portfolio is being extended to include control and signal devices such as E-STOP push-buttons, compatible sensor technology such as safety switches, light curtains/light grids and safe camera systems as well as operator terminals for diagnostics and visualisation. A wide range of services round off our business activities.

*Pilz offers a universal concept for economical solutions.*

Economy/costs

PNOZ safety relays

Modular
PSS systems

Decentralised periphery

Compact
PSS systems

PNOZmulti

PNOZelog

PNOZsigma

**SafetyBUS p** ®
*The Safe Standard!*

**SafetyNET p**

| 1 | 4 | | 14 | 47 | 75 | 96 | 160 | 1 028 | 2 056 | 8 064 |

*Complexity/number of safety functions*

# Professional diagnostics and visualisation with PMI®

## Robust and powerful

Every automation solution requires a sophisticated diagnostic and visualisation concept. The PMI product group provides a range of modern units for diagnostics and graphics. Used in conjunction with the PVIS diagnostic concept, the result is an optimum solution for each application. Available in various sizes, all units have been specially designed for use in a rugged industrial environment:

▶ Heat-stable due to low-power RISC processor
▶ Insensitive to vibration due to soldered memory and processors

▶ Insensitive to dust due to ventilation-free technology
▶ Front is protected against dust and sprayed water (IP65)

Powerful processors guarantee speedy performance even with complex applications.

## High flexibility

The choice is your's: a large number of display sizes, interfaces and feature options provide all the flexibility you need for your projects.

## Quality from Germany

The devices are developed and manufactured at Pilz in Germany, under the same strict quality requirements as our proven safety technology. So you receive reliable, high-quality devices plus competent advice and customer care.

Microsoft®
**Windows®**
™ **Powered**

*Windows® CE OEM with Premium Source Access*

*[1] in development*
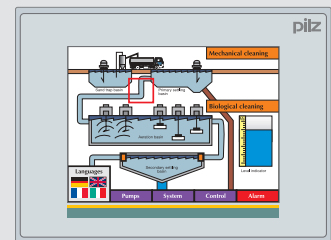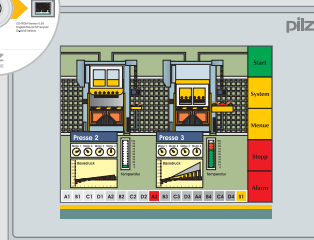
**PMImicro diag**
Diagnostics with PVIS
▶ For PSS programmable safety and control systems and the safe bus system SafetyBUS p
▶ For the multifunctional safety system PNOZmulti
▶ For PMC motion control [1]
▶ For the safe camera system SafetyEYE [1]

**PMIvisu**
Diagnostics with PVIS
▶ For PSS and SafetyBUS p
▶ For PNOZmulti, PMC [1], SafetyNET p [1] and SafetyEYE [1]
Graphics system
▶ For PSS, SafetyBUS p, SafetyNET p [1], PMC, PNOZmulti and SafetyEYE [1]
▶ For all common makes of PLC programmable logic controllers

**PMIopen**
▶ Open hardware for your software
▶ Network and multimedia functionalities
▶ Customised solutions

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▶ # Diagnostics and visualisation for any application

Applications are found in
numerous industries, e.g. in:

▶ Cable cars and ski lifts
▶ Printing and paper
▶ Packaging machines
▶ Petrochemical plants
▶ Rides in amusement parks,
  such as roller coasters
▶ Semiconductor industry
▶ Automotive industry
▶ Steel and aluminium industry

**Your benefits at a glance**

▶ Co-ordinated, pre-config-
  ured solution for efficient
  project configuration
▶ Intelligent, comprehensive
  diagnostic solution for
  high productivity
▶ Wide range of application
  options due to numerous
  display sizes
▶ Flexible application thanks
  to hardware and software
  solutions
▶ Complete tool
  for diagnostics and
  visualisation

**PVIS®**

**Based on Pilz
Diagnostic Concept**

**PVIS – Pilz
diagnostic concept**
▶ Intelligent diagnostics –
  including 50 % time saving
▶ Integrated within
  PMImicro diag
▶ Integrated within PVIS
  OPC Server for PMIvisu

*Diagnostic and
operator terminals
"Made in Germany"*

*Keep up-to-date
on PMI diagnostic
and operator
terminals:*

Webcode   0222

*Online information
at www.pilz.com*

# Selection guide – PMI operator terminals®

## PMImicro diag operator terminals – Intelligent diagnostics

| Type | Product | Diagnostic system for | Visualisation system for | Display type/size |
|---|---|---|---|---|
| **PMImicro diag** | PMI m107 diag | PSS, SafetyBUS p, PNOZmulti | PNOZmulti | 2.8"/70 mm, 128 x 64, graphic b/w LCD |
| | PMI m309 diag | PSS, SafetyBUS p, PNOZmulti, PMC, SafetyEYE | - | 3.5"/89 mm, 320 x 240, graphic colour TFT |

## PMIvisu touchscreen operator terminals – Complete solution with PMI-PRO graphics software

| Type | Product | Diagnostic system for | Visualisation system for | Display type/size |
|---|---|---|---|---|
| **PMIvisu** | PMI v309 | PSS, SafetyBUS p, SafetyNET p [2], PMC [2], SafetyEYE [2], PNOZmulti | PSS, SafetyBUS p, SafetyNET p [2], SafetyEYE [2], PNOZmulti, PMC, Siemens, Allen-Bradley, OMRON, AEG, Telemecanique, 3S, Mitsubishi, Moeller, HITACHI<br><br>All PLC drivers included | 3.5"/89 mm, 320 x 240, graphic colour TFT |
| | PMI v315 Ex | | | 5.7"/147 mm, 320 x 240, graphic colour CSTN |
| | PMI v416 | | | 6.5"/165 mm, 640 x 480, graphic colour TFT |
| | PMI v426 | | | 10.4"/269 mm, 640 x 480, graphic colour TFT |
| | PMI v431 | | | 12.1"/307 mm, 800 x 600, graphic colour TFT |
| | PMI v438 | | | 15.0"/380 mm, 1024 x 768, graphic colour TFT |

## PMIopen touchscreen operator terminals – Open hardware platform for your software

| Type | Product | Diagnostic system for | Visualisation system for | Display type/size |
|---|---|---|---|---|
| **PMIopen** | PMI o309 | Depends on the software that is used | Depends on the software that is used | 3.5"/89 mm, 320 x 240, graphic colour TFT |
| | PMI o315 Ex | | | 5.7"/147 mm, 320 x 240, graphic colour CSTN |
| | PMI o416 | | | 6.5"/165 mm, 640 x 480, graphic colour TFT |
| | PMI o426 | | | 10.4"/269 mm, 640 x 480, graphic colour TFT |
| | PMI o431 | | | 12.1"/307 mm, 800 x 600, graphic colour TFT |
| | PMI o438 | | | 15.0"/380 mm, 1024 x 768, graphic colour TFT |

| Operation | Included graphics software [1] | Application | Printer | Mobile memory |
|---|---|---|---|---|
| Keys | PVIS diagnostics included | Intelligent diagnostics for PSS, SafetyBUS p, PNOZmulti; visualisation of small plants with PNOZmulti | - | CF card |
| Touchscreen/keys | PVIS diagnostics included | Intelligent diagnostics for PSS, SafetyBUS p, PNOZmulti, PMC [2], SafetyEYE [2]; visualisation of small plants with PNOZmulti | - | USB stick |

| Operation | Included graphics software | Application | Printer | Mobile memory |
|---|---|---|---|---|
| Touchscreen/keys | PMI-PRO | Diagnostics and visualisation of small plants | USB | USB stick |
| Touchscreen | PMI-PRO | Diagnostics and visualisation of small plants | USB, parallel | USB stick, CF card/ PCMCIA |
| Touchscreen | PMI-PRO | Diagnostics and visualisation of medium-sized plants | USB, parallel | |
| Touchscreen | PMI-PRO | Diagnostics and visualisation of medium-sized plants | USB, parallel | |
| Touchscreen | PMI-PRO | Diagnostics and visualisation of larger plants | USB, parallel | |
| Touchscreen | PMI-PRO | Diagnostics and visualisation of complex plants | USB, parallel | |

| Operation | Included graphics software | Application | Printer | Mobile memory |
|---|---|---|---|---|
| Touchscreen/keys | - | Windows® CE-based graphics systems for customised software | USB | USB stick |
| Touchscreen | - | | USB, parallel | USB stick, CF card/ PCMCIA |
| Touchscreen | - | | USB, parallel | |
| Touchscreen | - | | USB, parallel | |
| Touchscreen | - | | USB, parallel | |
| Touchscreen | - | | USB, parallel | |

# Diagnostics made simple – With the diagno

## Minimum downtimes

Plant and machinery must be producing. As efficiently and economically as possible, and without interruption. It's not until the machine suffers an unscheduled stop that you recognise the value of good, user-friendly diagnostics.

A sophisticated concept developed from practice is a prerequisite. At Pilz we call it PVIS for short.
It's a universal diagnostic concept for small machines to large plants.

Two recognised factors were key for development. Machine manufacturers require programming to be simple, involving minimum effort. Operators, on the other hand, need clear, unambiguous instructions to enable them to rectify faults efficiently. PVIS satisfies both sides.

## Configuration features

▶ Diagnostic projects are created with just a few clicks, using familiar programming software (PSS WIN-PRO or PNOZmulti Configurator).
▶ Pre-defined plain text messages and remedy messages are available for devices and blocks. Texts can be copied, adapted or created from new.
▶ All pre-defined texts are stored in multiple languages.
▶ Diagnostic messages can be extended based on bit and word information from the control systems.

## Operational features

▶ Unambiguous information on the fault that has occurred: The operator is able to act quickly in the event of a fault.
▶ Targeted support for troubleshooting and fault recovery: This increases your ability to act in the case of a malfunction and thus your productivity. The remedy messages for the safety devices are already predefined and stored in the tools.
▶ Analysis included: For later analysis, PVIS stores every event with details of incoming and outgoing times in an "Event Log" ring memory.
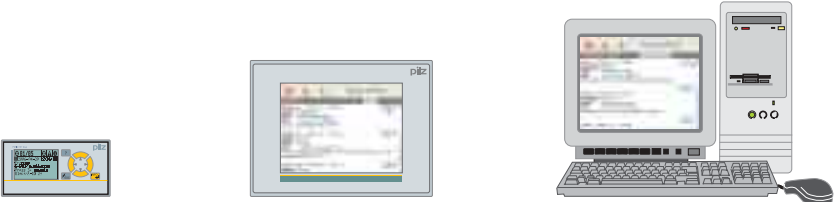
### PVIS event message components

▶ Plain text message for the event
▶ Remedy messages for each event (up to eight actions)
▶ Text-based location information on equipment identifier, scope and responsibility
▶ Messages are prioritised – the triggering event is always displayed first

The texts are stored in the relevant PSS, SafetyBUS p or PNOZmulti project. For further details please refer to our System Description! Webcode 0685
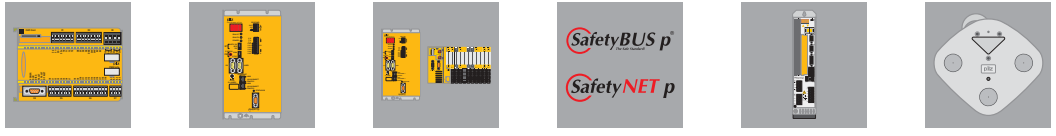www.pilz.com
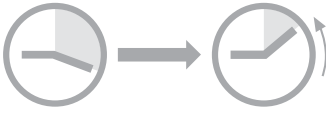
# stic concept PVIS®

*Fits perfectly into any customer topology*

*For all safety systems, control systems, SafetyBUS p, SafetyNET p, SafetyEYE and PMCprotego D*

SafetyBUS p
SafetyNET p

*Configuration
with just a few clicks*

*First fault detection*

*Graphical
location information*

Failure
Failure
Failure
Failure
Failure
**Failure first**

*Practical solution proposals –
step-by-step*

*Save time during engineering*

*Save time during operation*

*Diagnostic and
operator terminals
"Made in Germany"*

# ▶ Wide range of application options – with the



*Universal diagnostic concept: from a small machine to a large plant –
PVIS suits every application*

*Variety of potential solutions:
fits into any customer topology*



*Point-to-point connection*

*One control system,
multiple visualisation devices*

*Multiple control systems,
multiple visualisation devices*

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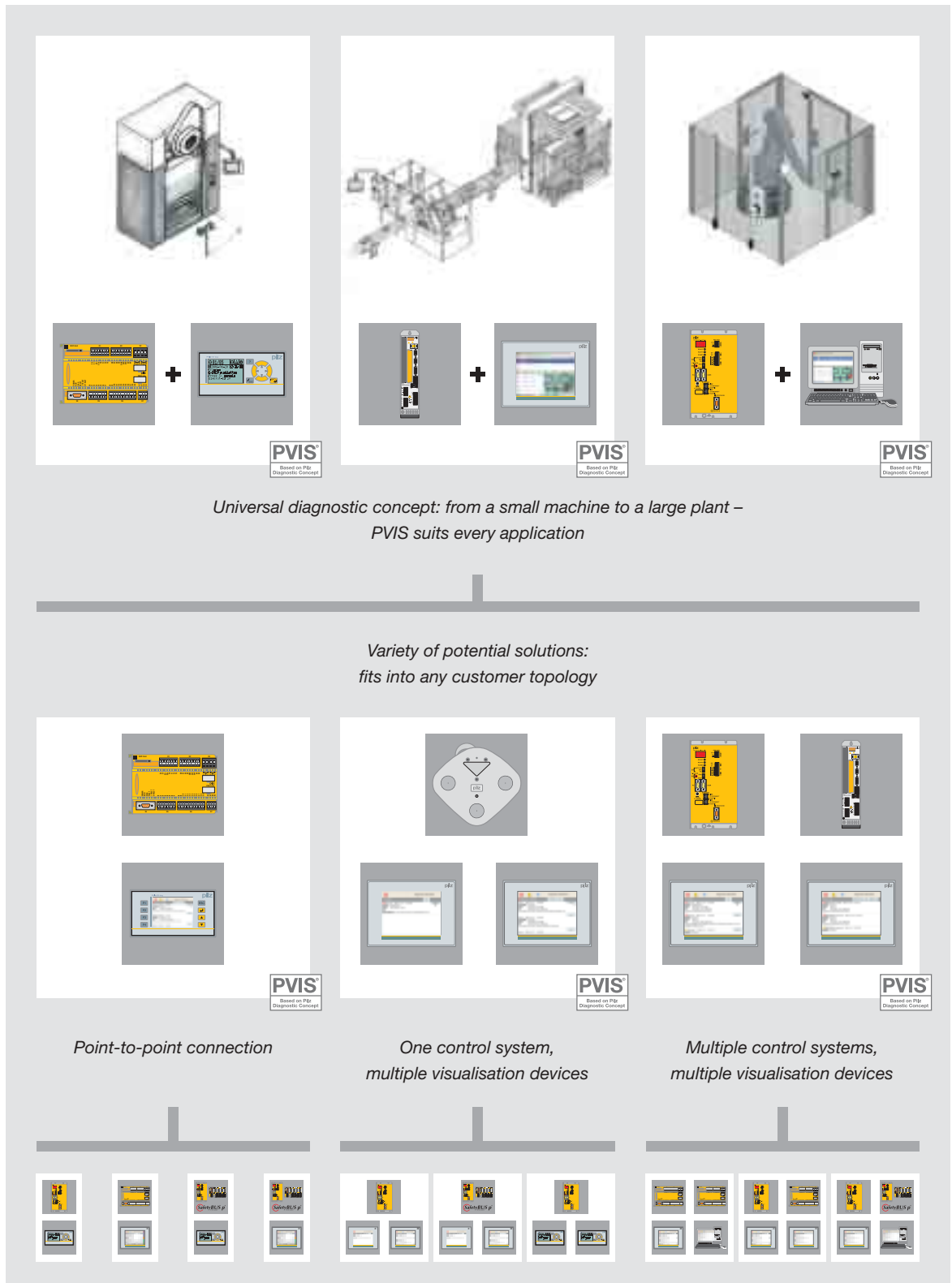
# diagnostic concept PVIS®

**Benefits for
machine operators**

▶ Saves time and money with
error messages in plain text
▶ Practical solution proposals
help to get production
restarted quickly
▶ Simple to operate,
without any knowledge
of programming
▶ Machine-specific
diagnostic solution thanks
to an intelligent concept

**Benefits for machine
manufacturers and system
integrators**

▶ Use familiar software:
PSS WIN-PRO or
PNOZmulti Configurator
▶ Pre-defined error messages
and step-by-step remedy
messages for a large
number of safety devices
▶ Save time with simple
configuration: just a
few clicks in the control
system's software
▶ Pre-defined messages
in multiple languages
▶ Flexible concept –
easy to adapt pre-defined
messages and add new
messages

*Diagnostic and
operator terminals
"Made in Germany"*

*Keep up-to-date
on the diagnostic
concept PVIS:*

Webcode   1046

*Online information
at www.pilz.com*

# Compact diagnostics – PMImicro diag



### Diagnostics made simple

To display PVIS diagnostics with PMImicro diag, the diagnostic messages are copied or created directly when the program is created for the PNOZmulti or PSS.

For the PNOZmulti, for example, the simplest option is to copy the pre-defined messages in the required language via a single click when the sensor block is configured. All messages are stored as part of the PNOZmulti application and are downloaded to the PMImicro diag once the application is complete – also via the PNOZmulti Configurator of course.

### Diagnostics for Pilz control systems

All diagnostic messages are displayed on the diagnostic unit PMImicro diag using a clear display concept.

PMImicro diag is suitable for direct connection to a PNOZmulti modular safety system or a PSS programmable safety and control system/SafetyBUS p CPU. The whole configuration is performed in the PNOZmulti Configurator or in PSS WIN-PRO.
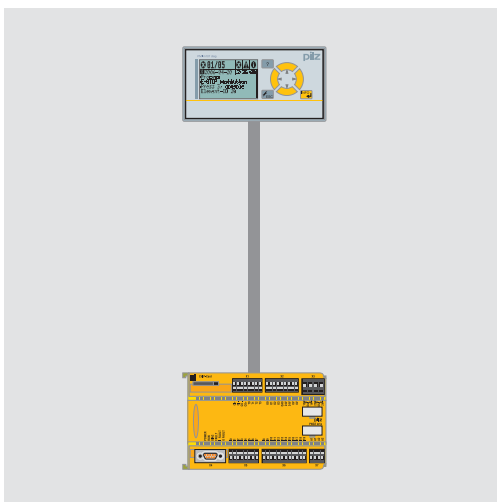
*Diagnostics for the
PNOZmulti modular safety system.*
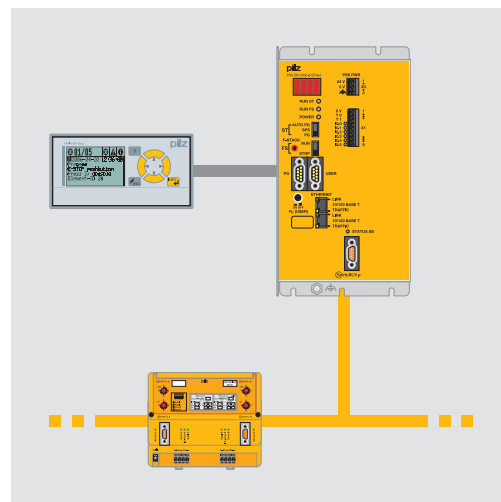


*Diagnostics for the PSS programmable
safety and control systems, the safe
bus system SafetyBUS p and SafetyNET p.*

14

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s a f e   a u t o m a t i o n

### Intelligent diagnostics in the shortest possible time – A worthwhile investment

With the diagnostic device PMImicro diag, plant and machine operators have a system that enables rapid troubleshooting when production faults occur. Error messages from PSS, SafetyBUS p and PNOZmulti are shown in plain text along with positive suggestions for how to rectify the fault.

Plant operators do not need any programming skills. And – when the system is configured appropriately – it will provide the name of the relevant contact for each fault. This ensures that the machine operator notifies the relevant specialist immediately when a fault occurs.

### PMImicro diag – Two versions to suit every purpose

PMI m107 diag is available for control systems with serial interfaces, such as the PNOZmulti or PSS. As there are two serial interfaces, the PNOZmulti (PSS) can remain connected while the projects are downloaded from the PNOZmulti Configurator (PSS WIN-PRO). That way it's possible to download sub-applications to the end devices without them having to be plugged into another socket. The PMI m309 diag version also provides an Ethernet interface for connection to PSS, PMC and SafetyEYE. In this case the application is downloaded using the PVIS OPC Configurator.

### Your benefits at a glance

▶ Compact
▶ Easy to operate
▶ Plant and machinery can be restarted quickly thanks to plain text messages
▶ High-quality hardware with good legibility
▶ Rapid configuration thanks to pre-configured system messages
▶ Events can be traced thanks to the "Event Log Function"

*Diagnostic and operator terminals "Made in Germany"*
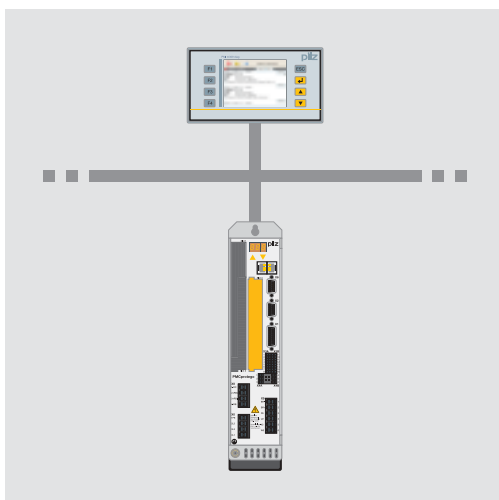


*Diagnostics for the servo amplifiers PMCprotego D.*
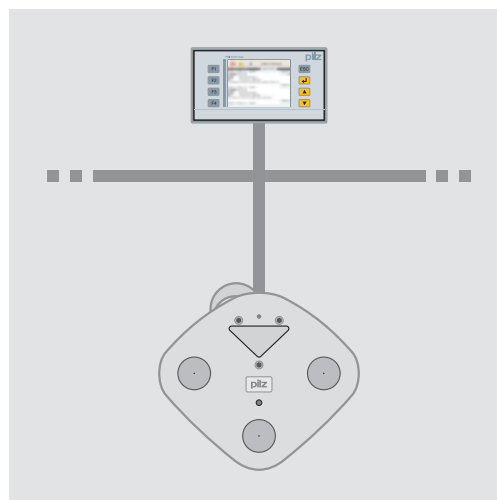


*Diagnostics for the safe camera system SafetyEYE.*

*Online information at www.pilz.com*

# Technical details – PMImicro diag
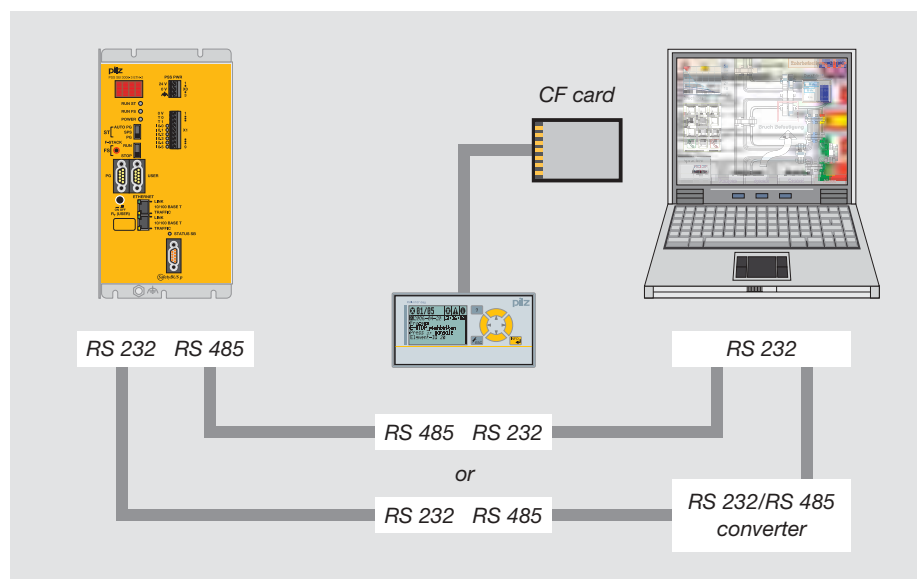
**Diagnostic device for PSS, SafetyBUS p and PNOZmulti**

*PMI m107 diag*

*PMI m309 diag*

| Type | Display | Screen resolution | Diagonal resolution | Character set |
|---|---|---|---|---|
| **PMI m107 diag** | ▶ LC dot matrix graphic module ▶ Transflective | 128 x 64 pixels | 2.8"/70 mm | European |
| **PMI m309 diag** | ▶ TFT | 320 x 240 pixels, QVGA | 3.5"/89 mm | Unicode |

CF card

RS 232   RS 485

RS 485   RS 232

or

RS 232   RS 485

RS 232

RS 232/RS 485 converter

*Connection example: PSS/SafetyBUS p and PMI m107 diag.*

| Interfaces | Mechanical data | | | Order number |
|---|---|---|---|---|
| | Dimensions incl. front panel (H x W x D) in mm | Modular depth (excl. add-on modules) in mm | Mounting cut-out in mm | |
| ▶ 1 x RS 232<br>▶ 1 x RS 485 | 78 x 148 x 57 | 51 | 68 x 138 (installation is compatible with PX 20/PX 30) | 260 000 |
| ▶ 1 x RS 232<br>▶ 1 x RS 232/RS 422/RS 485<br>▶ USB Host/Slave<br>▶ 1 x Ethernet, 10/100 Mbit/s | 87 x 157 x 52 | 52 | 68 x 138 (installation is compatible with PX 20/PX 30) | 260 500 |

**Common features**

▶ Real-time clock: Battery-buffered real-time clock
▶ Supply voltage: 24 VDC
▶ Protection type: IP65 front, IP20 back
▶ Environment:
  - Operating temperature: 0 … 55 °C
  - Storage: -25 … +70 °C
  - Climatic suitability: Max. 95 % r. h. at +40 °C

*Diagnostic and operator terminals "Made in Germany"*

*Technical documentation on diagnostic units PMImicro diag:*

Webcode 0526

*Online information at www.pilz.com*

# Flexible diagnostics – PVIS OPC Tools

**Planning**
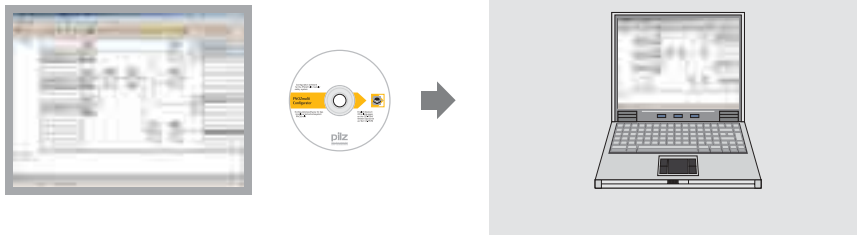
**Activate diagnostic texts at the click of a mouse**

*Diagnostic texts*

**Operation**

*error codes*

*parameter*

*PVIS OPC Server*

*PVIS ActiveX Control*
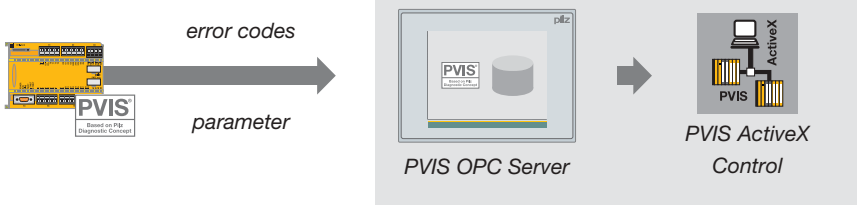
**PVIS OPC Server
and PVIS ActiveX Control**

The PVIS OPC Tools consist
of the PVIS OPC Server,
PVIS ActiveX Control and
PVIS OPC Configurator. The
PVIS OPC Server supplies all the
data from the connected control
system based on the OPC
standard. The PVIS OPC Server
obtains the required diagnostic
texts through the PVIS OPC
Configurator Tool.
The messages are displayed in
a pre-programmed window in
PVIS ActiveX Control format.
They can be incorporated directly
into many graphics software
packages without any additional
programming, incl. Pilz PMI-PRO,
WinCC, iFIX or even Internet
Explorer.

**OPC**

OPC stands for openness,
productivity, collaboration.
It is a standardised software
interface, which enables
applications from a wide
variety of manufacturers to
exchange data.

**ActiveX Control**

An ActiveX Control is a
reusable software component,
which can be developed for
a variety of uses, e.g. for
graphical data display.

**OPC Configurator**

The PVIS OPC Configurator
is used to collect diagnostic
data from the PSS WIN-PRO/
PNOZmulti Configurator
projects.
The data is then downloaded
from the OPC Configurator
to the diagnostic unit
PMImicro diag.

## Data access to process data

In addition to its diagnostic functionality the PVIS OPC Server also provides data access to process data in the PSS. Access is via a standard OPC Client (e.g. PMI-PRO, WinCC, …). Access is read/write, of course.

**Access to process data**



error codes

parameter

PVIS OPC Server

PVIS ActiveX Control

PMI-PRO graphics software
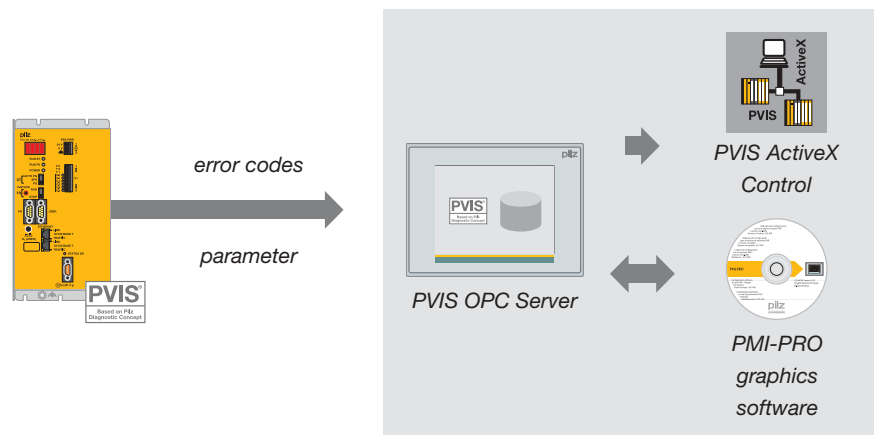
## PVIS diagnostics and visualisation of multiple control systems

With PVIS OPC Tools it is possible to visualise several control systems simultaneously – including a combination of PSS and PNOZmulti.
The messages can be displayed using several diagnostic devices. Several PVIS ActiveX Controls can access one PVIS OPC Server in the process. Diagnostic devices may be units from the PMIvisu-range or standard PCs/industrial computers.

**Multiple control systems**



PVIS OPC Server

PVIS ActiveX Control

PVIS ActiveX Control

Standard SCADA
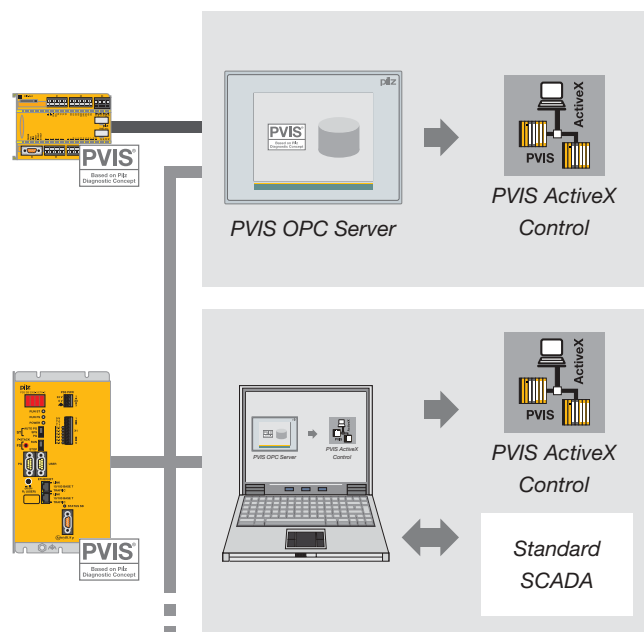
*Diagnostic and operator terminals "Made in Germany"*

*Keep up-to-date on PVIS OPC Tools:*

Webcode   2975

*Online information at www.pilz.com*

# ▶ Diagnostics and visualisation – PMIvisu

PMIvisu graphics touchscreen terminals provide a flexible, complete solution for

▶ Diagnostics on PSS program-mable safety and control systems, the safe bus system SafetyBUS p, SafetyNET p, the modular safety system PNOZmulti and the safe cam-era system SafetyEYE, using the PVIS diagnostic system

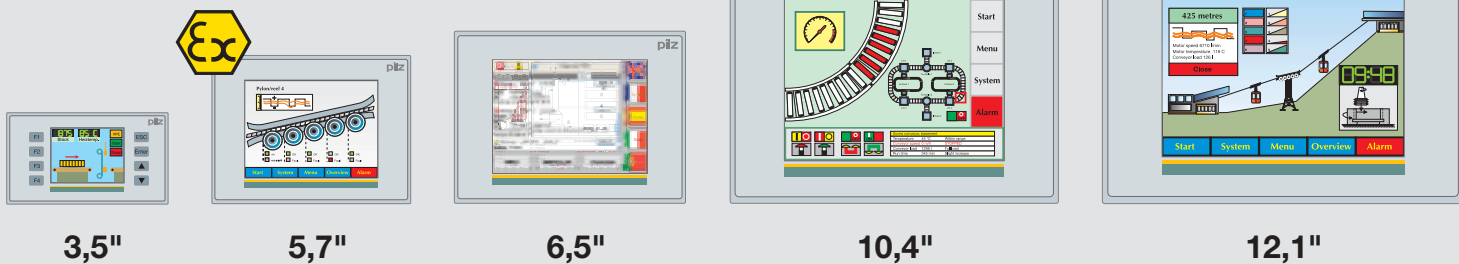▶ Visualisation of PSS, SafetyBUS p, SafetyNET p, Pilz Motion Control (PMC), PNOZmulti and other common PLC systems, using PMI-PRO

**Diagnostics**

PMIvisu offers all the attractive diagnostic functionalities of PVIS (see page 10).

▶ Simultaneous diagnostics on several PSS programmable safety and control systems, SafetyBUS p CPUs and PNOZmulti units, including a combination of these units
▶ Diagnostics can be displayed on multiple visualisation devices
▶ Clear presentation and simple display-based operation

**Visualisation**

In conjunction with PMI-PRO graphics software, PMIvisu graphics touchscreen terminals can master all common visualisa-tion tasks: simple configuration, implementation and application.

PMI-PRO and numerous interfaces on the device enable PMIvisu to be connected to a large number of programmable logic controllers, even simultane-ously. A selection of drivers for standard PLCs is available for this purpose. For example, PMIvisu can be connected to programmable logic controllers from Pilz, Siemens, Allen Bradley, Telemechanique, HITACHI, OMRON and Mitsubishi. The drivers are included in the package. A detailed list of drivers is available on the Internet at www.pilz.com

Microsoft®
Windows®
™ Powered

3,5"          5,7"          6,5"          10,4"          12,1"

Modbus TCP      PROFI BUS®      SafetyBUS p®      SafetyNET p      CANopen

**pilz**

more than automation
s a f e   a u t o m a t i o n

An overview of some of the functionalities of PMI-PRO:

▸ Online language switching
▸ Automatic scaling when the display size is changed
▸ Password protection
▸ Object libraries
▸ Offline simulation during configuration
▸ Optical and acoustic signals during operation

**Ready to tackle growing requirements**

With PMI-PRO, projects can easily be adapted to suit growing requirements. A fully networkable PC solution is available. Applications created for the PMI can still be used without restriction. This provides greater flexibility and security of investment.

**Your benefits at a glance**

▸ Diagnostics and visualisation in one device
▸ Diagnostics for PSS, SafetyBUS p, SafetyNET p and PNOZmulti
▸ Large range of functions enables quick, easy configuration
▸ Quality product from Germany

*PMI-PRO – The professional configuration and operating software.*

*Diagnostic and operator terminals "Made in Germany"*
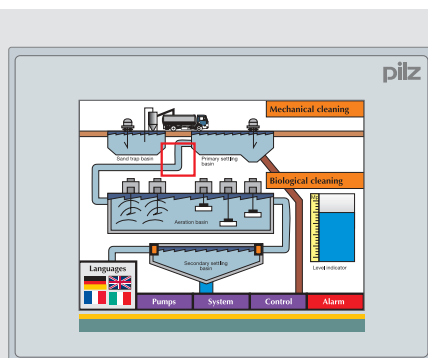
**15,0"**

**MPI          Ethernet**

**Hardware**

The units are developed and manufactured in-house in Germany. So you receive reliable, high-quality devices plus competent advice and customer care. A selection of display sizes and feature options are available, providing the flexibility you need for your work:

▸ Visualisation for compact projects – PMI v309 with 3.5" display and PMI v315 with 5.7" display
▸ High level of visualisation within a small area – PMI v416 with 6.5" display
▸ Visualisation that's easy to read – PMI v426 with 10.4" display
▸ The solution for large plants – PMI v431 with 12.1" display
▸ The solution for complex plants – PMI v438 with 15.0" display

*High level of flexibility with six display sizes and a wide range of interfaces.*

*Keep up-to-date on PMIvisu operator terminals:*

🖰 Webcode  2939

*Online information at www.pilz.com*

# Technical details – PMIvisu

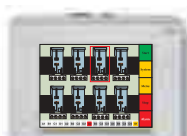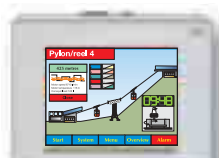## PMIvisu diagnostics and visualisation device

*PMI v309*

*PMI v315*

*PMI v416*

*PMI v426*

*PMI v431*

*PMI v438*

A wide selection of accessories is available for the PMIvisu devices, e.g. protective membranes, configuration stands and CompactFlash cards.

Further information: www.pilz.com

| Type | Display | | | | | Interfaces |
|------|---------|--|--|--|--|------------|
| | Type | Colours | Diagonal resolution | Brightness | HBT [1] | Communication |
| **PMI v309** | TFT | 32,768 | ▶ 3.5"/89 mm ▶ 320 x 240 pixels QVGA | 250 cd/m² | 10,000 h (LED) | ▶ 1 x RS 232 ▶ 1 x RS 232/422/485 ▶ 1 x Ethernet 10/100 Mbit/s |
| **PMI v315** | CSTN | 256 | ▶ 5.7"/147 mm ▶ 320 x 240 pixels QVGA | 200 cd/m² | 40,000 h (CCFL) | ▶ 1 x RS 232 ▶ 1 x RS 232/422/485 ▶ 1 x Ethernet 10/100 Mbit/s |
| **PMI v416** | TFT | 65,536 | ▶ 6.5"/165 mm ▶ 640 x 480 pixels VGA | 400 cd/m² | 40,000 h (CCFL) | ▶ 1 x RS 232 ▶ 1 x RS 232/422/485 ▶ 1 x Ethernet 10/100 Mbit/s |
| **PMI v426** | TFT | 65,536 | ▶ 10.4"/269 mm ▶ 640 x 480 pixels VGA | 300 cd/m² | 40,000 h (CCFL) | ▶ 1 x RS 232 ▶ 1 x RS 232/422/485 ▶ 1 x Ethernet 10/100 Mbit/s |
| **PMI v431** | TFT | 65,536 | ▶ 12.1"/307 mm ▶ 800 x 600 pixels SVGA | 300 cd/m² | 50,000 h (CCFL) | ▶ 1 x RS 232 ▶ 1 x RS 232/422/485 ▶ 1 x Ethernet 10/100 Mbit/s |
| **PMI v438** | TFT | 65,536 | ▶ 15.0"/380 mm ▶ 1 024 x 768 pixels XGA | 300 cd/m² | 40,000 h (CCFL) | ▶ 1 x RS 232 ▶ 1 x RS 232/422/485 ▶ 1 x Ethernet 10/100 Mbit/s |

## PMI-PRO and PMI-PRO open accessories

Professional configuration and operating software PMI-PRO

| Type | Full licence (DE, EN, ES, FR, IT) incl. download cable | Upgrade licence (DE, EN, ES, FR, IT) | Licence (DE, EN, ES, FR, IT) |
|------|--------------------------------------------------------|--------------------------------------|------------------------------|
| **PMI-PRO Editor** | Order no. 310 400 | Order no. 310 405 | - |
| **PMI-PRO open** | - | - | Order no. 250 500 |

| Communication options [2] | Expansion | Dimensions in mm (H x W x D): | Order number |
|---|---|---|---|
| ▶ MPI<br>▶ PROFIBUS DP-Slave<br>▶ CANopen<br>▶ SafetyNET p | ▶ 2 x USB<br>▶ 1 x Audio (LINE OUT) | 87 x 157 x 52 | ▶ Basic.................................... 261 000<br>▶ MPI ...................................... 261 002<br>▶ PROFIBUS DP-Slave........... 261 003<br>▶ CANopen ............................. 261 005 |
| ▶ MPI<br>▶ PROFIBUS DP-Slave<br>▶ CANopen<br>▶ SafetyNET p | ▶ 2 x USB [3]<br>▶ 1 x Audio (LINE OUT) [3]<br>▶ 2 x PCMCIA [3]<br>  (2 x Type II or 1 x Type III) | 155 x 196 x 66 | ▶ Basic.................................... 261 050<br>▶ LPT or LPT/USB/VGA.......... 261 051<br>▶ MPI ...................................... 261 052<br>▶ PROFIBUS DP-Slave........... 261 053<br>▶ CANopen ............................. 261 055<br><br>ATEX [3]  (Ex)<br>▶ Basic.................................... 261 070<br>▶ LPT ..................................... 261 071<br>▶ MPI ...................................... 261 072<br>▶ PROFIBUS DP-Slave........... 261 073<br>▶ CANopen ............................. 261 075 |
| ▶ MPI<br>▶ PROFIBUS DP-Slave<br>▶ CANopen<br>▶ SafetyNET p | ▶ 4 x USB<br>▶ 1 x Audio (LINE IN/OUT)<br>▶ 1 x PCMCIA (1 x Type II)<br>▶ 1 x LPT     ▶ 1 x VGA<br>▶ 1 x PS/2 Combi | 165 x 212 x 79 | ▶ Basic.................................... 263 080<br>▶ MPI ...................................... 263 082<br>▶ PROFIBUS DP-Slave........... 263 083<br>▶ CANopen ............................. 263 085<br>▶ SafetyNET p......................... 263 086 |
| ▶ MPI<br>▶ PROFIBUS DP-Slave<br>▶ CANopen<br>▶ SafetyNET p | ▶ 4 x USB<br>▶ 1 x Audio (LINE IN/OUT)<br>▶ 1 x PCMCIA (1 x Type II)<br>▶ 1 x LPT     ▶ 1 x VGA<br>▶ 1 x PS/2 Combi | 243 x 317 x 82 | ▶ Basic.................................... 263 100<br>▶ MPI ...................................... 263 102<br>▶ PROFIBUS DP-Slave........... 263 103<br>▶ CANopen ............................. 263 105<br>▶ SafetyNET p......................... 263 106 |
| ▶ MPI<br>▶ PROFIBUS DP-Slave<br>▶ CANopen<br>▶ SafetyNET p | ▶ 4 x USB<br>▶ 1 x Audio (LINE IN/OUT)<br>▶ 1 x PCMCIA (1 x Type II)<br>▶ 1 x LPT     ▶ 1 x VGA<br>▶ 1 x PS/2 Combi | 276 x 352 x 83 | ▶ Basic.................................... 263 180<br>▶ MPI ...................................... 263 182<br>▶ PROFIBUS DP-Slave........... 263 183<br>▶ CANopen ............................. 263 185<br>▶ SafetyNET p......................... 263 186 |
| ▶ MPI<br>▶ PROFIBUS DP-Slave<br>▶ CANopen<br>▶ SafetyNET p | ▶ 4 x USB<br>▶ 1 x Audio (LINE IN/OUT)<br>▶ 1 x PCMCIA (1 x Type II)<br>▶ 1 x LPT     ▶ 1 x VGA<br>▶ 1 x PS/2 Combi | 332 x 412 x 83 | ▶ Basic.................................... 263 260<br>▶ MPI ...................................... 263 262<br>▶ PROFIBUS DP-Slave........... 263 263<br>▶ CANopen ............................. 263 265<br>▶ SafetyNET p......................... 263 266 |

## Common features

▶ Processor: RISC processor 400MHz (PMI v3xx)/624 MHz (PMI v4xx), XScale
▶ Supply voltage: 24 VDC
▶ Protection type: IP65 front, IP20 back
▶ Environment:
  - Operating temperature 0 … 50 °C
  - Storage -20 … 60 °C
  - Humidity max. 90 % r. h. at +40 °C (non-condensing)

[1] *HBT = Half Brightness Time*
[2] *Partly as unit type*
[3] *For operation under ATEX conditions, please refer to the guidelines provided in the units' manual*

*Diagnostic and operator terminals "Made in Germany"*

*Technical documentation on PMIvisu operator terminals:*

Webcode  2945

*Online information at www.pilz.com*

# Open hardware for your software – PMIopen
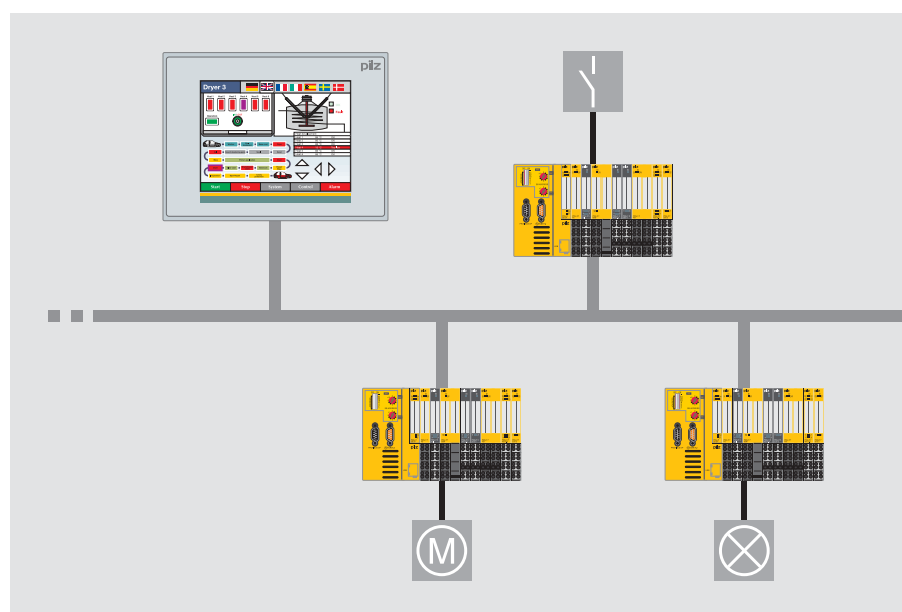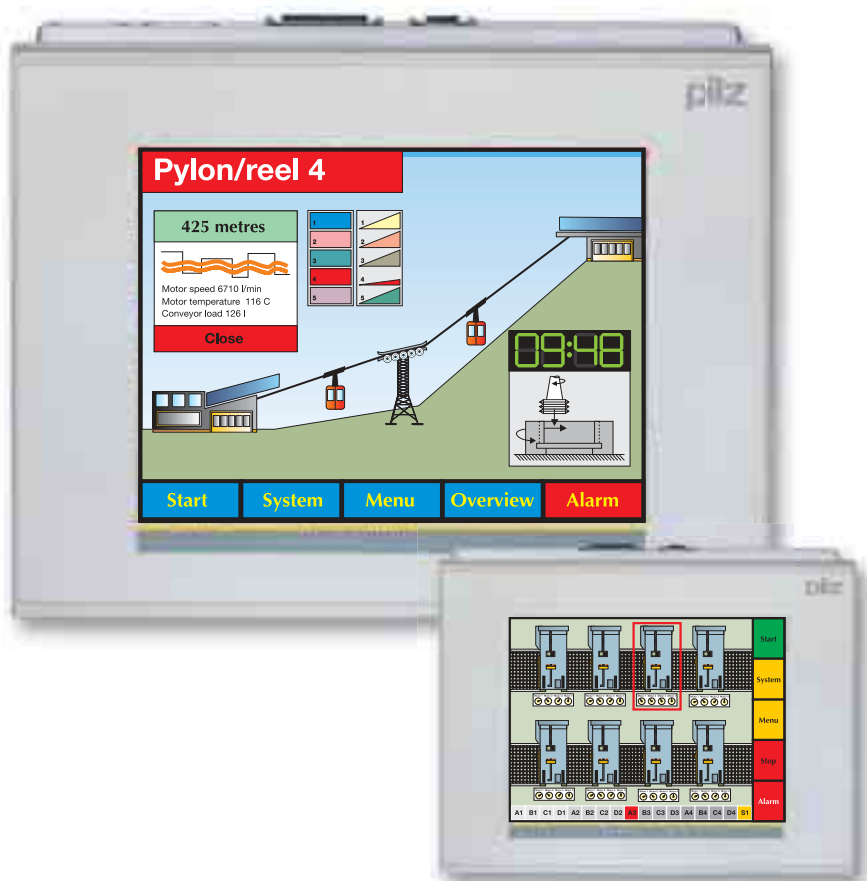
**PMIopen –
Use your normal software**

With PMIopen operator terminals Pilz provides universal devices for use with any Windows® CE-compatible software.

Devices are available in six display sizes:

▶ PMI o309 -
 with 3.5" TFT display
▶ PMI o315 –
 with 5.7" CSTN display
▶ PMI o416 –
 with 6.5" colour TFT display
▶ PMI o426 –
 with 10.4" colour TFT display
▶ PMI o431 –
 with 12.1" colour TFT display
▶ PMI o438 –
 with 15.0" colour TFT display

**Premium support**

Pilz was one of the first compa-nies in Germany to be granted the status of "Windows® CE OEM with Premium Source Access". This means that Pilz has access to the Windows® CE source code and can therefore modify the code independently. The benefit for users is that it allows Pilz to provide premium support and to adapt the operating system exactly to the customer's needs.

Microsoft®
Windows®
™ Powered

*Windows® CE OEM with Premium Source Access*

Pylon/reel 4

425 metres

Motor speed 6710 l/min
Motor temperature 116 C
Conveyor load 126 l

Close

09:48

| Start | System | Menu | Overview | Alarm |

## Simple software installation

PMIopen is ready for the installation of both standard graphics software and customised software. The software is installed via the Microsoft® ActiveSync functionality, so it is quick and uncomplicated.

In principle, any software created for Windows® CE.net and Intel® XScale processor can be operated on PMIopen (SDK [1] is included).

Installation has been tested for a selection of graphics software programs:

▸ zenOn from COPA-DATA [2]
▸ Web Studio from InduSoft [2]
▸ Movicon from Progea [2]

## Extensive multimedia and network functionalities

PMIopen offers a wide range of functionalities for multimedia and network applications:

▸ PPPoE enables remote maintenance, e.g. via DSL
▸ WLAN via PCMCIA interface
▸ PPTP, L2TP, VPN via the Internet
▸ FTP, SMB
▸ HTTP with Jscript, VBScript, WebDAV, SOAP
▸ Telnet
▸ SNTP
▸ VNC
▸ RDP-Windows Terminal Server Client
▸ Internet Explorer
▸ Media Player

When you use PMIopen you benefit from the products' high performance and from quality that was developed and manufactured in Germany. The existing expertise at Pilz means that specific adaptations are easy to make.

## Your benefits at a glance

▸ Makes use of existing software expertise
▸ Reliable hardware from Germany
▸ Robust and long-lasting, with ventilation-free Intel® XScale technology, Flash memory and high-quality display
▸ Suitable for industrial use as the front panel is resistant to chemicals and protected against dust and sprayed water, plus the unit is designed to be tolerant of shock and vibration
▸ Applications worldwide thanks to UL/cUL approval

*Diagnostic and operator terminals "Made in Germany"*

*Keep up-to-date on PMIopen operator terminals:*

Webcode   2938

*Online information at www.pilz.com*
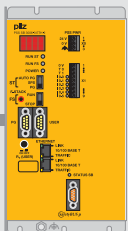
*PMIopen performs visualisation and control functions, depending on the software you use.*

[1] *System Developer Kit*
[2] *Please purchase from the software manufacturer*

# Technical details – PMIopen

## PMIopen diagnostics and visualisation device


*PMI o309*


*PMI o315*


*PMI o416*


*PMI o426*


*PMI o431*
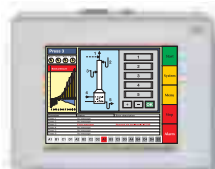

*PMI o438*

*A wide selection of accessories is available for the PMIopen devices, e.g. protective membranes, configuration stands and CompactFlash cards.*

*Further information: www.pilz.com*

| Type | Display | | | | |
|------|---------|--|--|--|--|
| | **Type** | **Colours** | **Diagonal resolution** | **Brightness** | **HBT [1]** |
| **PMI o309** | TFT | 32,768 | ▶ 3.5"/89 mm<br>▶ 320 x 240 pixels QVGA | 250 cd/m$^2$ | 10,000 h (LED) |
| **PMI o315** | CSTN | 256 | ▶ 5.7"/147 mm<br>▶ 320 x 240 pixels QVGA | 200 cd/m$^2$ | 40,000 h (CCFL) |
| **PMI o416** | TFT | 65,536 | ▶ 6.5"/165 mm<br>▶ 640 x 480 pixels VGA | 400 cd/m$^2$ | 40,000 h (CCFL) |
| **PMI o426** | TFT | 65,536 | ▶ 10.4"/269 mm<br>▶ 640 x 480 pixels VGA | 300 cd/m$^2$ | 40,000 h (CCFL) |
| **PMI o431** | TFT | 65,536 | ▶ 12.1"/307 mm<br>▶ 800 x 600 pixels SVGA | 300 cd/m$^2$ | 50,000 h (CCFL) |
| **PMI o438** | TFT | 65,536 | ▶ 15.0"/380 mm<br>▶ 1 024 x 768 pixels XGA | 300 cd/m$^2$ | 40,000 h (CCFL) |

| Interfaces Communication | Expansion | Dimensions in mm (H x W x D): | Order number |
|---|---|---|---|
| ▶ 1 x RS 232<br>▶ 1 x RS 232/422/485<br>▶ 1 x Ethernet 10/100 Mbit/s | ▶ 2 x USB<br>▶ 1 x Audio (LINE OUT) | 87 x 157 x 52 | ▶ Basic.................................... 262 000 |
| ▶ 1 x RS 232<br>▶ 1 x RS 232/422/485<br>▶ 1 x Ethernet 10/100 Mbit/s | ▶ 2 x USB [2]<br>▶ 1 x Audio (LINE OUT) [2]<br>▶ 2 x PCMCIA [2]<br>  (2 x Type II or 1 x Type III) | 155 x 196 x 66 | ▶ Basic.................................... 262 050<br>▶ LPT ...................................... 262 051<br><br>ATEX [2] ⟨Ex⟩<br>▶ Basic.................................... 262 070<br>▶ LPT ...................................... 262 071 |
| ▶ 1 x RS 232<br>▶ 1 x RS 232/422/485<br>▶ 1 x Ethernet 10/100 Mbit/s | ▶ 4 x USB<br>▶ 1 x Audio (LINE IN/OUT)<br>▶ 1 x PCMCIA (1 x Type II)<br>▶ 1 x LPT<br>▶ 1 x VGA<br>▶ 1 x PS/2 Combi | 165 x 212 x 79 | ▶ Basic.................................... 264 080 |
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| ▶ 1 x RS 232<br>▶ 1 x RS 232/422/485<br>▶ 1 x Ethernet 10/100 Mbit/s | ▶ 4 x USB<br>▶ 1 x Audio (LINE IN/OUT)<br>▶ 1 x PCMCIA (1 x Type II)<br>▶ 1 x LPT<br>▶ 1 x VGA<br>▶ 1 x PS/2 Combi | 332 x 412 x 83 | ▶ Basic.................................... 264 260 |

### Common features

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▶ Supply voltage: 24 VDC
▶ Protection type: IP65 front, IP20 back
▶ Environment:
  - Operating temperature 0 … 50 °C
  - Storage -20 … 60 °C
  - Humidity max. 90 % r. h. at +40 °C (non-condensing)

[1] HBT = Half Brightness Time

[2] For operation under ATEX conditions, please refer to the guidelines provided in the units' manual

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*Technical documentation on PMIopen operator terminals:*

Webcode 2944

*Online information at www.pilz.com*

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**pilz**
more than automation
safe automation