

A lighthouse on a rocky island with a ship in the background. The lighthouse is white with a dark top section and a bright light emanating from the top. The ship is a large vessel with a dark hull and a white superstructure. The scene is set against a backdrop of a cloudy sky and a rocky coastline.

Planar 4.

Clear Signals.



Features.

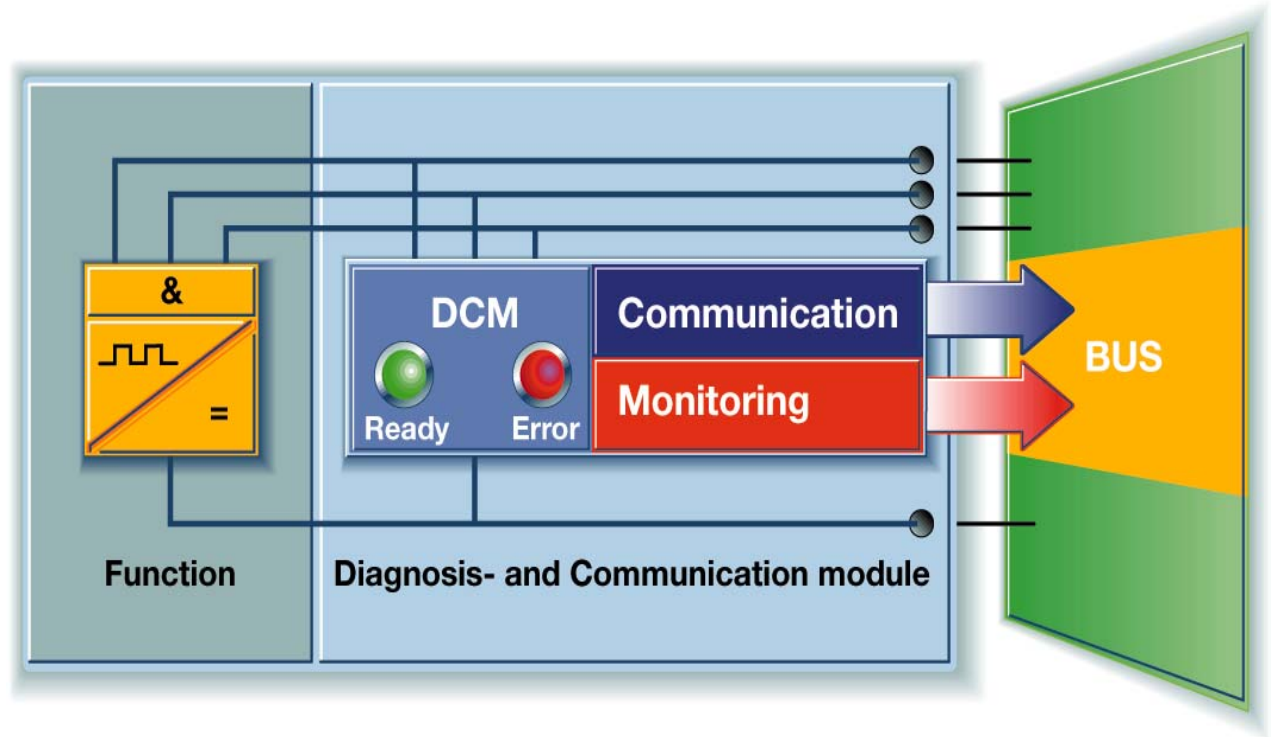
- Safety-related hard-wired controls up to SIL4 or Requirement Class 7.
- Self-diagnosis function on each module.
- Easy localization and replacement of failed modules.
- Communication with DCS or PES via the communication module (for MODBUS, Ethernet, OPC, Profibus-DP).



Planar 4 / Clear Signals.

Principle of safety-related modules with DCM-Module.

Overlook
Application
Technology



DCM = Diagnosis- and Communication module



Overlook
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Planar 4 / Clear Signals.

Intelligent Technology.

- Modules in 19" European format with 3 units high and 4 units space to DIN 41494.
- Plug connectors to DIN 41612, version F.
- Operating voltage 24 V = / -15 % ... +20 %.
- Temperature range -25 °C ... +70 °C.
- Operating voltage L - earthed or unearthed.
- Use of standard wiring techniques.
- Signals compatible with Planar System Type F and PES.
- Planar4 subrack with mother board with integrated communication bus and integrated 24 V supply.
- Hardware compatible to Planar F racks.



Diagnosis.

- Self diagnosis in all modules with the diagnosis/communication module (DCM).
- Signallind of failed modules by the red LED on the front of the module.
- Assembling the failure signals by one common signal or in groups by means of the signal contacts of the modules.
- Line monitoring in input modules with signalling and LED.
- Fuse monitoring in output modules with signalling and LED.



Communication.

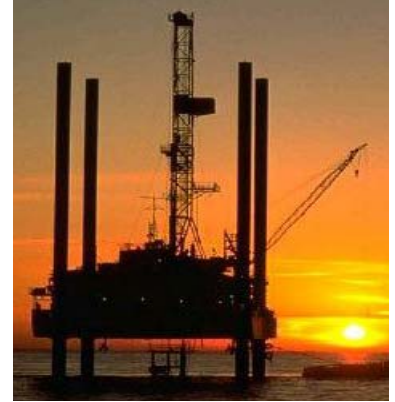
- Information about type of module, input and output signals as well as fault reporting.
- Evert recording (change of binary signals with time).
- One communication module collects the information of one subrack with 20 modules.
- MODBUS, Ethernet OPC and Profibus-DP communication without any additional configuration software.



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Planar 4 / Clear Signals.

Fields of Applications.



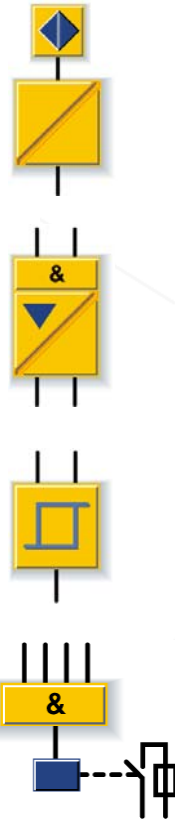
- For high safety requirements.
- For very high availability requirements.
- For high degree of module stability (fit & forget).



- High Integrity Pressure Protection Systems (HIPPS)
- Emergency Shutdown Systems
- Burner Control Systems
- Class A Circuits
- Fire & Gas Systems etc.



Product Range.



Input modules

Modules for proximity switches, also (Ex)i, with line monitoring.

With wire break and short circuit monitoring.

Output modules

Modules with prelogic, short-circuit proof outputs with 3 W, 24 W and 60 V/24 W.

Limit monitor

0 ... 20 mA and 0/1 ... 5 V.

Two channels with two limit values each.

Relay amplifier

With prelogic and monitored contacts and fuses.

Switching voltages: 24 V, 48/60 V, 110/127 V, 220/230 V.



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Product Range.

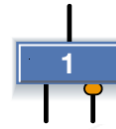
Logic modules



4-fold or 8-fold AND-element.



8-fold OR-element.



4-fold blocking-element.



4-fold selection-element (2oo3 selection)
with monitoring of discrepancy.



Product Range.

Logic module

Long time and short time module



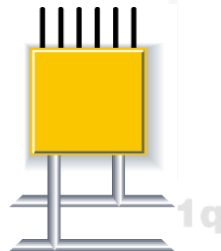
Communication module

Ethernet based on TCP/IP standard,
10/100 Base T.

MODBUS with interface RS 485.

Profibus-DP. Serie

Ethernet with OPC.



Fuse module

4-fold fuse module with fuse monitoring.



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Maximum Safety.



- Safety-related modules, tested on DIN V 19250 and **IEC/EN 61508.**
- Certified to use up to AK7 (DIN V 19250) and SIL4 (IEC/EN 61508).
- Module with micro processor (limit monitor, time level) are approved up to AK6/SIL3.
- CE certified.



Communication.

1st level

Diagnosis and communication module on each module

- common information, status IO signals, current values and presets

2nd level

communication module in each rack

- polling of the data of all the modules in the rack
- generation of events (change of IO signals)
- data pool for external communication

3rd level

Master system (f. ex. MODBUS-Master with RS 485) to request

- common information, status IO signals, current values, presets and events



Planar 4 / Clear Signals.

Communication between Communication Module and DCMs.

Request of the data by the communication module:

Status modules, common information, status IO signals, current values and presets in ≤ 4 ms of all the modules in one rack

Planar4

Byte	D7	D6	D5	D4	D3	D2	D1	D0	
1	UL	FL	FB	U	DT3	DT2	DT1	DT0	common data
2	X	X	X	X	X	X	X	X	type of the module
3	X	X	X	X	X	X	X	X	inputs or current value preset
4	X	X	X	X	X	X	X	X	inputs or current value preset
5	X	X	X	X	X	X	X	X	inputs or current value preset, residual time
6	0	0	0	0	0	0	0	0	spare or current value preset, residual time
7	X	X	X	X	X	X	X	X	outputs
8	X	X	X	X	X	X	X	X	Check sum

- UL supply voltage for the contacts
- FL line failure
- FB module failure
- U monitoring of the operating voltage
- DT3 -DT0 data type (transmission of IO, current value, preset, residual time)
- x 0 or 1 signal



Planar 4 / Clear Signals.

Request of the values of the modules via MODBUS.

MODBUS Code 1

In $21 \times 8 = 168$ Bytes, this means that **the data of all the 20 (21) modules** in one rack can be transmitted **with one transmission**

Each communication module (each rack) is one slave (bus subscriber no.)

From address 2000 H: common data, IO or residual time or current value
(limit mon.)

From address 3000 H: common data, IO or residual time or preset ch1
(limit mon.)

From address 4000 H: common data, IO or residual time or preset ch2
(limit mon.)

The value of one single boolean variable (MODBUS Code 1) or one single analog variable (MODBUS Code 3) can be read. The address no. depends on the position in the rack and the channel (bit or byte).



Request of events via MODBUS.

Same function codes as in H41q/H51
(66 / 67 or 1 / 3 and 65)

- Events of all physical IOs
- Size of the event buffer: 1024
- Software clock without battery back up
- Time synchronisation via function codes 70 or 6

So the system **PLESY II** can be connected.

The main applications of the communication will be:

- Event recording
- Request of the status of the modules (diagnosis)
- Signals and values of the modules

