

Fact Sheet

# VACON® Advanced Safety Options

## Improve flexibility with integrated safety



The VACON® Advanced Safety Options operate the safety functions of an AC drive via the PROFIsafe fieldbus or I/O control. They improve flexibility by connecting safety devices within a plant.

The Advanced Safety Options are a preferred choice for highly flexible machines with modular and variable quantity of safety zones in any manufacturing production line. Central and decentral drives located at different machinery cells can easily be interconnected with the PROFIsafe safety fieldbus or with I/O inputs. These safety functions are implemented and tested according to:

- EN 61800-5-2
- IEC 61508
- EN ISO 13849-1
- IEC 61511-1
- EN 62061

**Advanced**  
safety functionality  
for VACON® NXP AC  
drives

### Advanced Functional Safety with VACON® NXP

The VACON® Advanced Safety Options expand the capabilities of the VACON® NXP air and liquid cooled AC drives by integrating nine advanced safety functions into the AC drives including both safe speed functions as well as a PROFIsafe interface.

- OPT-BL – Advanced safety with proximity switch and PROFIsafe
- OPT-BM – Advanced safety with HTL/TTL encoder and PROFIsafe
- OPT-BN – Advanced safety with SIN/COS encoder and PROFIsafe

Fieldbus profiles like PROFIsafe and PROFIdrive are elements of the PROFIBUS and PROFINET fieldbus protocols. This permits the transmission of standard and safety-related data on a single bus cable. The existing network infrastructure is optimally utilised, since no separate cabling is required.

### VACON® Advanced Safety Option is available to install in slot C, D or E of VACON® NXP Air and Liquid Cooled drives

Feature	Benefit
Standard safety option integrated in the VACON® NXP Air and Liquid Cooled drives – configurable through the VACON® Safe tool	<ul style="list-style-type: none"> <li>- Integrates 9 Advanced Safety functions inside the AC drive</li> <li>- Reduced wiring and components</li> <li>- Simple selection, configuration, project planning, and installation</li> <li>- Easy to configure via VACON® Safe</li> </ul>
Four configurable safe digital inputs	<ul style="list-style-type: none"> <li>- Connect door switches or emergency stop switches directly to the drive</li> <li>- Select whether the inputs directly activate the STO, or if the failsafe controller monitors the safe inputs for use in its failsafe program</li> </ul>
Two configurable safe outputs	<ul style="list-style-type: none"> <li>- Enables control of external devices that are not connected with PROFIsafe</li> </ul>
PROFIsafe device (with PROFIBUS or PROFINET option card)	<ul style="list-style-type: none"> <li>- Usable in a wide range of safety applications</li> <li>- Increased plant availability possible by formation of safe I/O groups</li> </ul>
Easy to retrofit – fits in slot C, D and E of VACON® NXP Air and Liquid Cooled drives	<ul style="list-style-type: none"> <li>- High level of flexibility when expanding plants</li> <li>- Drives already running on PROFINET or PROFIBUS are easy to upgrade to PROFIsafe</li> <li>- Closed-loop control, without additional encoder board, possible when installed in slot C</li> </ul>
GSD files that are easy to incorporate in Step 7 and TIA Portal	<ul style="list-style-type: none"> <li>- Efficient programming and commissioning</li> </ul>

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### Easy configuration

To customize the safety application, adapt the settings of safety parameters. To configure via software, use the VACON® Safe PC tool.



Convenient PC-based VACON® Safe user interface.

### Easy integration

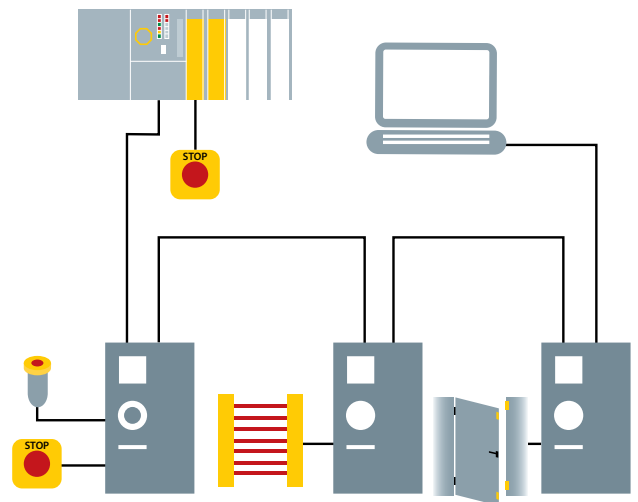
Fail-safe controllers, fail-safe I/O, and fail-safe drives permit the implementation of safety requirements in every machine. The PROFIsafe device extends the advantages of functional safety to the next level of flexibility. It enables extension from an isolated safety device to interconnecting and cooperating safety-related devices within a plant.



### Specifications

Digital inputs	
Number of digital inputs	8 (4 x 2-channel digital safety input)
Input voltage range	0-24 V DC
Input voltage, logic 0	< 5 V DC
Input voltage, logic 1	> 13 V DC
Input voltage (maximum)	30 V DC
Input current (minimum)	3 mA @ Vin = 24 V
Input resistance	> 3 kΩ
Galvanic isolation	No
Short circuit-proof	Yes
Input pulse recognition time (min.)	4 ms
Discrepancy time (min.)	500 ms
Digital output (Safe output)	
Number of outputs	2 (2 x 2-channel digital output)
Output voltage low	< 5 V DC
Output voltage high	> 17 V DC
Output voltage (maximum)	27 V DC
Maximum output current (@24 V)	100 mA
Maximum output current (@0 V)	< 0.1 mA
Galvanic Isolation	No
Diagnostic test pulse	< 1 ms
Short circuit-proof	Yes
24 V supply output	
Supply voltage	24 V DC ±15%
Maximum output current	160 mA
Short circuit-proof	Yes
Encoder input (TTL/HTL & SIN/COS)	
Voltage	5, 12, 15, 24 V DC ± 5%
Number of Pulses per rotation (PPR)	Configurable
Zero pulse	Configurable
Maximum frequency	350 kHz
Proximity switch input	
Supported switch type	4-wire PNP
Voltage	24 V DC ±15%
Number of Pulses per rotation (PPR)	Configurable
Maximum frequency	10 kHz

The VACON® Advanced Safety Options allow full flexibility to connect safety switches, light curtains or door switches where they are most optimally located.



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