



# Discrete I/O in FF architecture using System302

## Characteristics:

- FF originally designed for Process Control
- Some architectures need to include Discrete I/O in FF
- HSE can handle Discrete I/O
- Flexible Function Blocks and Discrete Integration
- Access via internal bus for up to 64 conventional I/O modules
- Discrete control through ladder language in compliance with IEC 61131

As a complete process control system, SMAR System302 also complies with standard PLC requirements, including discrete signal integration. Although Foundation Fieldbus is not originally designed to deal with discrete I/O, such integration is possible by using different approaches, such as a HSE Device as signal concentrator or a pure FF Remote I/O.

Modular units as SMAR DFI302 consists on a chassis (also called a rack) into which are placed modules with different functions. The processor and selection of I/O modules is customized for each particular application.

Several racks can be administered by a single processor, and different types of I/O can be connected.

Flexible Function Blocks are defined as a block where user may configure its internal algorithm as needed by application. This configuration can be done using different languages, as structured text or even ladder logics.

On every DFI302 CPU it is possible to use a Flexible Function Block, which has complete access to all I/O modules located in the chassis. In other hand, this same Flexible Function Block is standardized by Fieldbus Foundation, allowing integration of any data within it to a higher level network, as Foundation Fieldbus HSE.

Putting this way, DFI302 can act as Discrete Signal integration hardware, converting discrete data physically connected to an I/O card to FF environment, allowing the interface of such data with other FF applications and blocks, including data exchange with other compatible CPUs on the same HSE network.

Discrete signals can also be interfaced on the Field, by using a

Foundation Fieldbus Remote I/O. System302 counts with DC302, a FF device that connects directly into FF channels and allows the use of Standard MDI and MDO blocks to make possible discrete data integration into a FF channel. Discrete data can be mapped into these blocks and linked directly to other FF devices on the same channel, or to FF blocks in a CPU.



Discrete data is processed by a Flexible Function Block, that may be located on the CPU or even in a dedicated FFB located in the DC302 itself. In this case, a control cycle of 100 ms is possible for local control and interlocks, while only integration data is published on HI channel for integration with other devices. Logics are maintained even in the event of main CPU failure, as long as power is maintained, keeping full benefits of FF architecture.

Characteristic	DC302 Availability
Physical Points (I/O)	16DI + 8DO
Communication	FOUNDATION Fieldbus on 31.25 kbit/s
Housing	IP20 Polycarbonate
Function Blocks	up to 20(including FFB)
Local Cycle Time	100 ms
VDC Power Supply	20 to 30VDC

For additional information please contact us.

Specifications and information are subject to change without notice.  
Up-to-date address information is available on our website.

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