

DC302

Fieldbus Remote I/O

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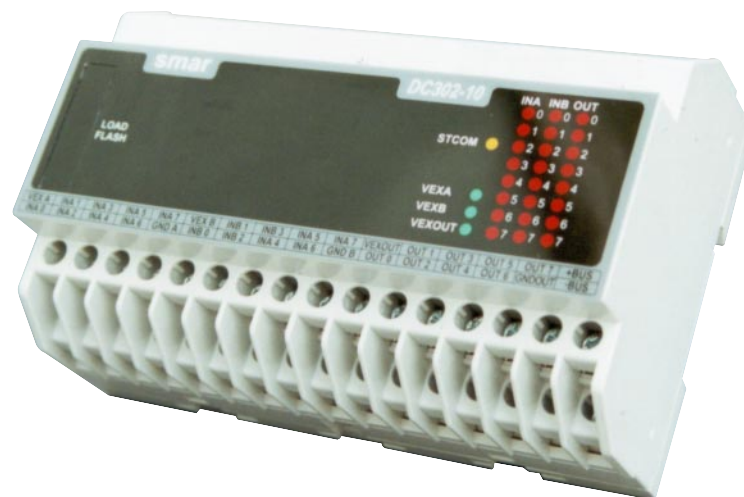
Fieldbus Remote I/O

Highlights

- Discrete I/O connected direct onto FOUNDATION™ Fieldbus.
- Instantiable Function Blocks for regulatory and discrete control in the field, including Flexible Function Block.
- Power, Control and I/O integrated in the same hardware.
- Mix Fieldbus with conventional devices.
- Reduce wiring cost.
- Network master capability.

Description

Until all types of devices are available with FOUNDATION™ Fieldbus systems will have to be of a hybrid nature accepting both Fieldbus and conventional signals. A mixed traditional and fieldbus environment is inevitable during the transition to a Fieldbus technology. DC302 Fieldbus Remote I/O makes integration of Fieldbus and conventional I/O easy. Discrete devices such as pressure switches, push buttons, on/off valves, pumps and conveyors are integrated to the system over the FOUNDATION™ H1 field-level network using DC302. It is a single integrated easy to use piece of equipment including power, control, networking and I/O under one compact device requiring less panel space than other solutions. The DC302 is an integral part of SYSTEM302 but also integrates into other systems supporting FOUNDATION™ Fieldbus.



Easy Installation

The DC302 Remote I/O units can be distributed into the field where they are mounted close to the conventional devices without the need to run the conventional wiring to the control room. The unit may be installed close to the sensors and actuators, thereby eliminating long wire runs and associated marshalling panels and cable trays for the conventional I/O, with subsequent savings further reducing overall system cost. Use DC302 to make it possible to distribute I/O at various locations in the field and connect them via H1 Fieldbus. DC302 is ideal to connect motor control centers, variable speed drives, and electrical actuators and motor operated valves to H1 Fieldbus. The DC302 is a simple low-cost DIN-rail mounted unit. It can optionally be supplied preinstalled in an enclosure ready for field mounting.

Easy Configuration

The DC302 is fully configured from the Syscon software in SYSTEM302 or any other FOUNDATION™ Fieldbus configuration tool. Function blocks provide logic such as AND, OR, NAND etc. as well as latches, Flip-Flops, Timers, counters etc. Link master capability allows the DC302 to work as a backup LAS for greater availability of network communications.

Instantiable Function Blocks

The DC302 makes conventional analog and discrete inputs and outputs available using standard FOUNDATION™ Function blocks making the system homogenous and control strategy configuration easy as conventional I/O appears as if they were regular Fieldbus devices. Control loops are implemented consistently regardless of I/O being conventional or Fieldbus based. Only a single programming language has to be used. An extensive function block library enables the DC302 to perform logic and regulatory control functions in the field integrating seamlessly into the control strategy with other H1 Fieldbus devices on the same network. Instantiable function blocks provide great flexibility in control strategy. Conventional discrete I/O now works together with pure Fieldbus devices on the same network and in the same loop. Output function blocks include standard FOUNDATION™ safety mechanism in case of failures. Inputs and outputs are isolated from each other and the fieldbus network in groups of eight channels. LEDs are used to indicate active outputs and inputs.

Function Blocks Table

BLOCK	
RES	RESOURCE – This block contains data that is specific to the hardware that is associated with the resource.
FFET	FLIP-FLOP AND EDGE TRIGGER – It can be configured to work as SR flip-flop, RS flip-flop, D-LATCH and EDGE-TRIGGER(rising, falling and bi-directional)
FFB	FLEXIBLE FUNCTION BLOCK – It can be configured to provide logic such as AND, OR, XOR, NOT etc. as well as SR flip-flops, RS flip-flops, Timer On Delay, Timer Off Delay, Timer Pulse, Counter Up, Counter Down. Based on structured text language, provides a easy way to generate the logic implementation.
AALM	ANALOG ALARM – This alarm block has dynamic or static alarm limits, hysteresis, temporary expansion of alarm limits on step setpoint changes to avoid nuisance alarms, two levels of alarm limits and delay for alarm detection

TIME	TIMER – This block has four discrete inputs, that are processed by a combination logic. The selected timer processing type operates on the combined input signal to produce a measurement, delay, extension, pulse or debounce.
DI	DISCRETE INPUT – The DI block takes the manufacture's discrete input data, selected by channel number, and makes available to other function block at its output.
DO	DISCRETE OUTPUT – The DO block converts the value in SP_D to something useful for the hardware found at the CHANNEL selection.
MDI	MULTIPLE DISCRETE INPUT – It provides a way to receive 8 discrete variables from physical inputs.
MDO	MULTIPLE DISCRETE OUTPUT – It provides a way to send 8 discrete variables to physical outputs.
ARITH	ARITHMETIC – This calculation block provides some pre-defined equations ready for using in applications as flow compensation, HTG, ratio control and others.
ISEL	INPUT SELECTOR – This block has four analog inputs that may be selected by an input parameter or according to a criterion as first good, maximum, minimum, middle and average.
PID	PID CONTROL – This standard block has a lot of valuable features as setpoint treatment (value and rate limiting), filtering and alarm on PV, feedforward, output tracking and others.
PID STEP	STEP OUTPUT PID – It is used when the final control element has an actuator driven by an electric motor.

Technical Characteristics

General

Signal (Communication)	Digital only, Fieldbus, 31.25 Kbits/s voltage mode.
Current consumption quiescent	150 mA from Vdc power supply
In Rush Current	400 mA (before first 20 sec.) after power up.
Turn-on Time	Approximately 10 seconds.
Update Time	Approximately 0.5 second.
Output impedance	Non-intrinsic safety from 7.8 kHz - 39 kHz should be greater or equal to 3 k .Intrinsic safety output impedance (assuming an IS barrier in the power supply) from 7.8 kHz - 39 kHz should be greater or equal to 400.
Vibration Effect	Meets SAMA PMC 31.1.
Temperature Limits	Operation: -40 to 85°C (-40 to 185 °F). Storage: -40 to 110°C (-40 to 230 °F).
Housing	Housing Shell and Base: Polycarbonate, 10% Glass Filled Terminals: Pressure Plate /Terminal Screws: Zinc Plated, Yellow Chromated Steel. Temperature rating: 110°C (230 °F) UL94V0. Protection: It has IP20 rating (finger protected) and meets VBG4 and other European accident prevention requirements. It can optionally be supplied preinstalled in an enclosure ready for field mounting.
Mouting	Using DIN rail (TS35-DIN EN 50022 or TS32-DIN EN50035 or TS15-DIN EN50045).

Inputs

The input senses the DC input voltage and converts it into a True (ON) or False (OFF) logic signal. It has 1 optically isolated groups of 16 inputs to detect 24Vdc.

Architecture	
Number of Inputs:	16.
Isolation	
Optical Isolation up to:	5000 Vac.
External Power	
Voltage Source for Inputs:	18 - 30 Vdc.
Typical Consumption per group	120 mA (all inputs ON).
Power indicator:	Green LED.
Inputs	
ON State Level (True Logic):	15 - 30 Vdc.
OFF State Level (False Logic):	0 - 5 Vdc.
Typical Impedance:	3k9 Ω .
Status display:	Red LED.
Switching Information	
Time from "0" to "1":	30 us.
Time from "1" to "0":	50 us.
Wiring	
One wire:	14 AWG (2 mm ²).
Two wires:	20 AWG (0.5 mm ²).

Technical Characteristics

Output

The outputs are designed with open collector NPN transistors that are able to drive relays, solenoids and other DC loads with up to 0.5 A per output. All channels within a group share the same ground whereas groups are isolated from each other and the Fieldbus network.

Architecture	
Number of Outputs:	8.
Isolation	
Optical Isolation up to:	5000 Vac.
External Power	
Voltage Source for Outputs:	20 to 30 Vdc.
Maximum Consumption:	35 mA.
Power indicator:	Green LED.
Outputs	
Maximum Switched Voltage:	30 Vdc.
Maximum Saturation Voltage:	0.55 V @ 0.5 A.
Maximum Current per Output:	0.5 A.
Status Display:	Red LED.
Indicator Logic:	ON when the transistor is on.
Maximum Leakage Current:	100 uA @ 35 Vdc.
Output State	
During Power-Up, Firmware Download Configuration Download:	OFF.
Independent Protection per Output	
Thermal Shutdown:	165 °C.
Thermal Hysteresis:	15 °C.
Over-Current Protection:	1.3 A @ 25 Vdc maximum.
Clamp Diode	
Switching Information	
Time from 0 to 1:	250 us.
Time from 1 to 0: p	3 us.
Wire	
One wire:	14 AWG (2 mm ²).
Two wires:	20 AWG (0.5 mm ²).

Spare Parts

NAME	CODE
Main Electronic Board	400-0367
I/O Board	400-0368
Interface Board	400-0369
Housing	400-0370

Ordering Code

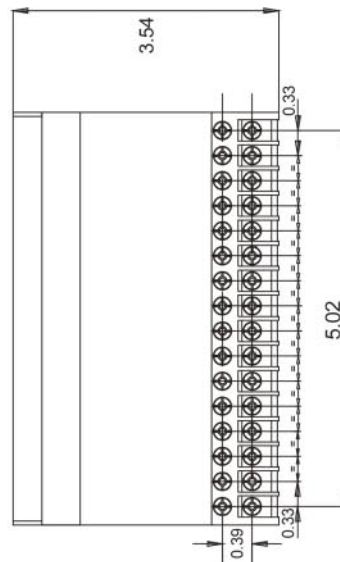
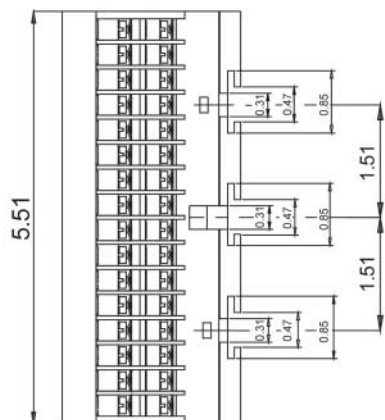
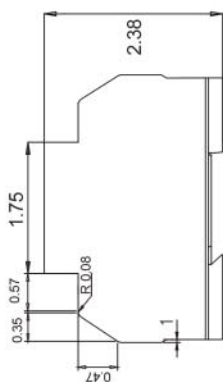
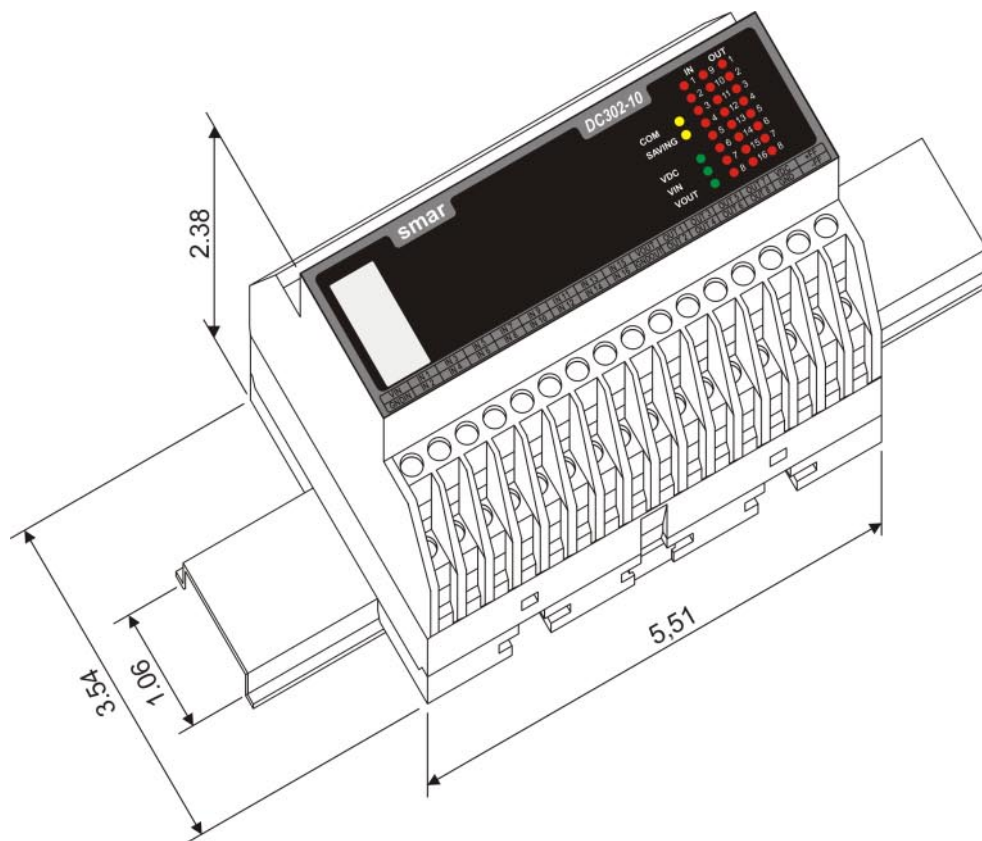
MODEL
DC302-10

Description

1 group of 16 24VDC optically isolated inputs.
1 group of 8 optically isolated open collector outputs.

Dimensions

Dimensions are inches





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

web: www.smar.com/contactus.asp