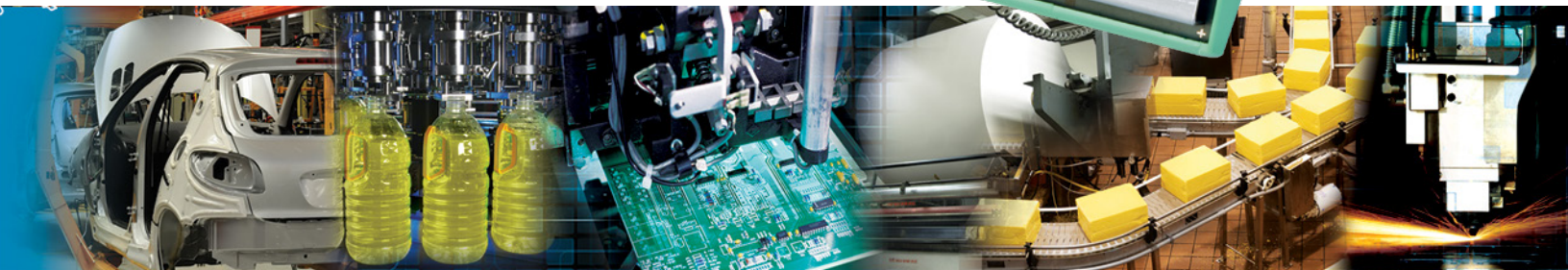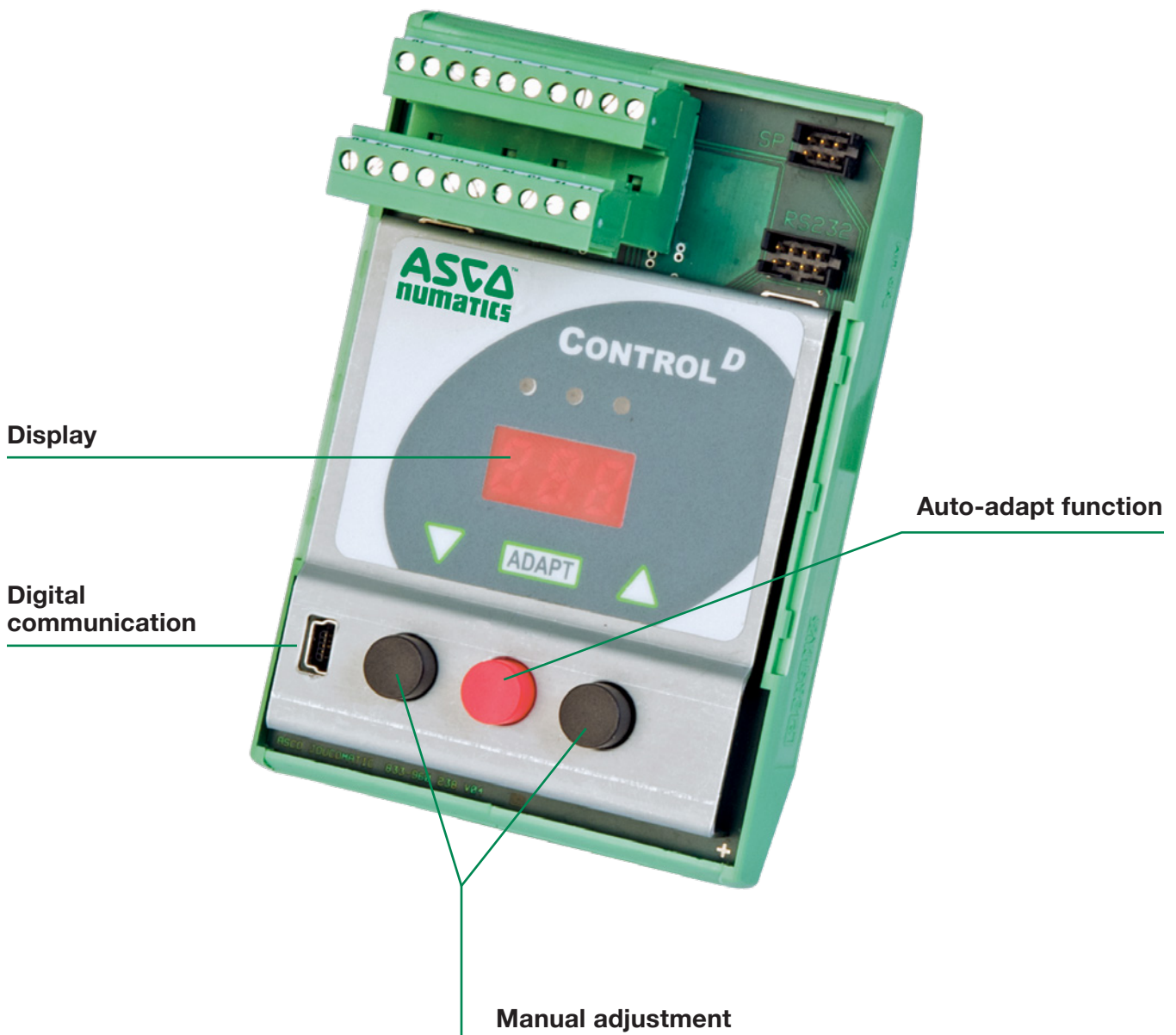# ASCO™

Control^D | 603 Series
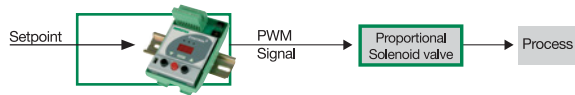Proportional Technology

EMERSON™

Control^D

The stand-alone control device Control^D is used for open-loop, closed-loop or dual-loop (cascaded) process control. It is designed to control proportional valves by regulating the current in the valve's solenoid coil. The maximum value of the solenoid coil's current is automatically determined with the auto-tune function. More complex applications can be controlled using additional analog inputs of flow, temperature, pressure, force, etc.
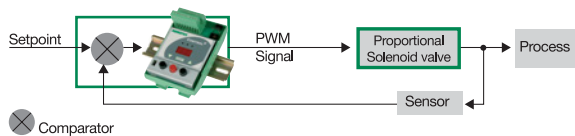
A serial RS232 or a mini USB interface allows communication with a PC where the included Numatics DigiCom software can be used to adapt the controller to the control loop. Three buttons and a 3-digit LED display on the device enable manual setpoint setting and display of feedback without the need for PLC control during start-up. Additional LEDs show the operating state and any error messages (e.g. low voltage, overvoltage, setpoint not reached) that may occur.
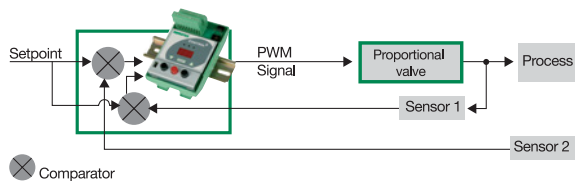
Display

Digital communication

Auto-adapt function

Manual adjustment

Open-Loop Control

Setpoint → PWM Signal → Proportional Solenoid valve → Process

Closed-Loop Control

Setpoint → PWM Signal → Proportional Solenoid valve → Process

Sensor

Comparator

Double-Loop (Cascaded) Control

Setpoint → PWM Signal → Proportional valve → Process

Sensor 1

Sensor 2

Comparator

Advantages

- Low hysteresis
- Easy change of control parameters
- Digital control
- Integrated Display
- AUTO-ADAPT button for determining max. coil current
- PC communication
- Configurable analog feedback output
- Switching output
- Scope function using DigiCom software
- USB interface
- Suitable for use with Posiflow, Preciflow and Sentronic
- Direct input for open-loop control (no measuring device required)
- Easy to duplicate control parameters

DigiCom Software

By connecting the Control^D to a PC with a USB interface, the ASCO DigiCom software that comes with the product can be used to optimally adjust the valve's control parameters to a specific application.

- The scope function allows you to log and read the system's transient response in real time.
- Control parameters can be adjusted to an application without removing the controller from service.
- Saved control parameters can be loaded at any time.

The ASCO DigiCom software offers the following features:

- Real time display of: command signal, outlet pressure, internal control parameters (e.g. P, I or D), pressure switch signal, etc.
- Parameter setting: command signal, zero offset, span, limitation of percentage of output current, ramp function, etc.
- Custom adjustment to an application
- Control of proportional devices such as Posiflow, Preciflow or proportional pressure regulator valves

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Control^D

- Control device for PWM (pulse-width modulated) proportional solenoid valve control
- Designed for open-loop, closed-loop and double-loop (cascaded) control
- Suitable for the control of flow, pressure, temperature, force, etc.
- Integrated display and LEDs
- Control parameters adjustable via software (DigiCom, USB interface)
- Auto-Adapt function/button for automatic adjustment of the Control^D control device to the control valve

A special feature of the Control^D is the "ASCO-DigiCom" software supplied for optimum adjustment over PC. Setpoint and feedback values can be viewed at the same time. Other functions are valve diagnostics, parameter setting and maintenance.
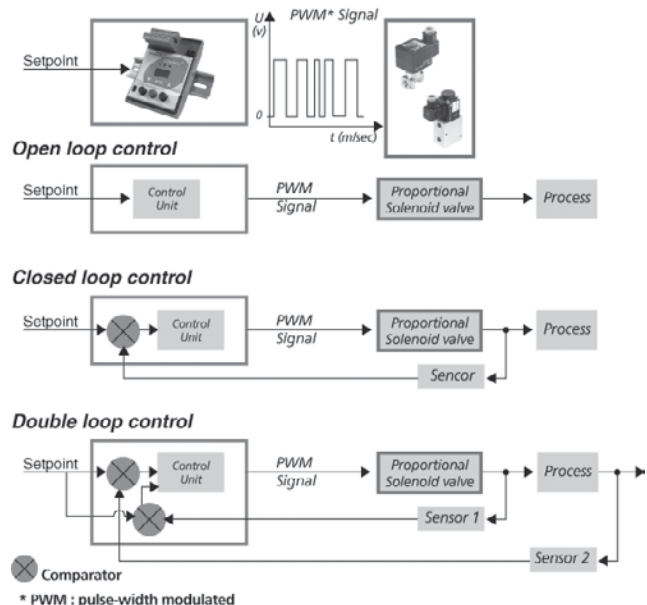
CE

General Valve Information	
Temperature Range	-20 °C to 50 °C (-4 °F to 122 °F)
Body	PA (polyamide)
Degree of Protection	IP20
Electrical Connection	Pluggable terminal block (0.08 – 1.5mm²)
Mounting	DIN-EN 50022 rail
Nominal voltage	24/12 VDC +/- 10%
Command signal	0 – 10 V, 0 - 20 mA, 4 – 20 mA
Current adjustment	0– 2A
Pressure control	0 – 100%
Process control	0 – 100%
Serial interface	Mini USB or RS 232 (option)

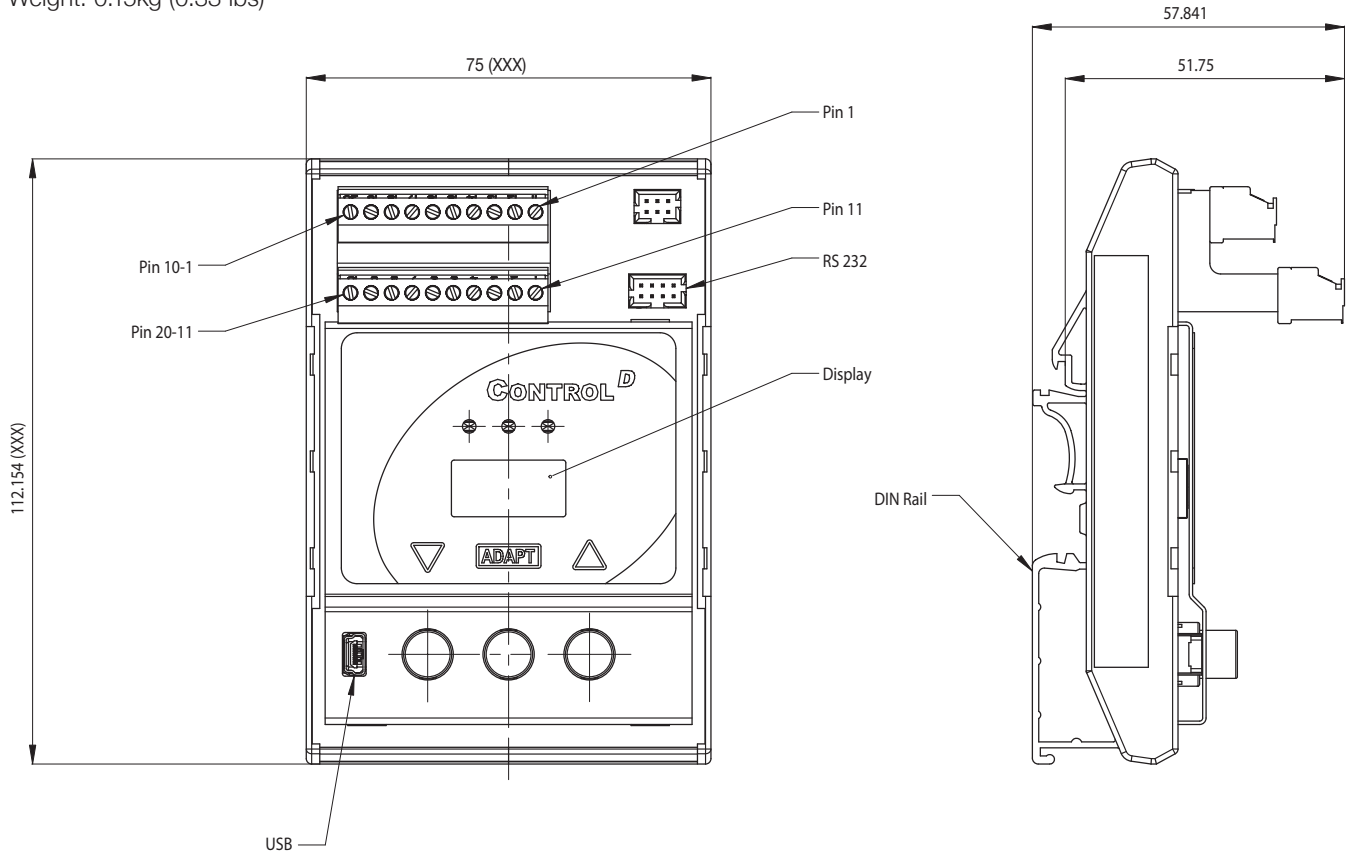| Electrical Characteristics	
Supply Voltage	(U_r) 24 VDC ±10%, max. ripple 10% or 12 VDC +15% -5%, max. ripple 10%
Max. Current of Proportional Solenoid Valve	0.2A/2A
Setpoint Input	0 – 10 VDC, 0 – 20 mA, 4 – 20 mA
Sensor Input	0 – 10 VDC, 0 – 20 mA, 4 – 20 mA
Feedback Output	0 – 10 V, 0/4 – 20 mA
Ramp	ON/OFF, adjustable between 0.1 and 20 seconds
Adjustable Switching Frequency	20 to 2000 Hz

Control^D offers 3 control modes

PWM* Signal

Open loop control

Setpoint → Control Unit → PWM Signal → Proportional Solenoid valve → Process

Closed loop control

Setpoint → Control Unit → PWM Signal → Proportional Solenoid valve → Process → Sencor

Double loop control

Setpoint → Control Unit → PWM Signal → Proportional Solenoid valve → Process → Sensor 1 → Sensor 2

Comparator

* PWM : pulse-width modulated

Specifications	
Description	Catalog Number
Control^D control device - 12 VDC/2 A	60300117
Control^D control device - 24 VDC/2 A	60300118
Control^D control device - 24 VDC/200 mA	60300119

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Dimensions: mm (inches)

Weight: 0.15kg (0.33 lbs)

Connector Pinning
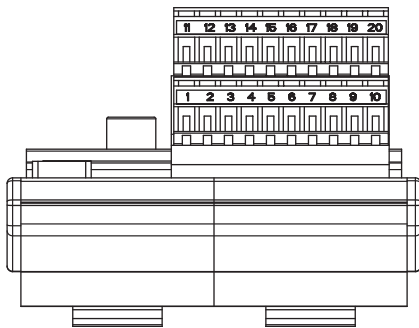
Pin	Description	Pin	Description
1	V DC IN/ + supply	11	Setpoint
2	GND IN/ ground	12	GND setpoint
3	Protective earth PE	13	Digital input
4	Frequency input	14	GND Digital input
5	Sensor supply voltage +	15	Valve/coil connection
6	Analog input 1	16	GND valve
7	GND sensor supply voltage	17	Digital output
8	Sensor supply voltage +	18	GND Digital output
9	Analog input 2	19	GND Analog output
10	GND sensor supply voltage	20	Analog output

Accessories	
Description	**Catalog Number**
"ASCO-DigiCom" Control^D software on CD-ROM (supplied with the controller)	88100893
USB cable for Control^D to PC connection (to be ordered separately)	88100894
RS 232 cable converter; 2m cable with 9-pin Sub-D (plug connector)	88100732
RS 232 cable converter; 2m cable with 9-pin Sub-D (screw connector)	833-993708

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