EXD-SH1/2 Controller for EX/CV/FX
With ModBus Communication Capability

EXD-SH1/2 are stand-alone universal superheat and or temperature controllers for air conditioning units or refrigeration systems.

Features
- EXD-SH1: Control of one valve
- EXD-SH2: Control of two valves in two independent circuits
- Main function

	Circuit 1	Circuit 2
EXD-SH1	Superheat or Temperature Control	
EXD-SH2	Superheat or Temperature Control	Superheat Control

- Other functions: Limitation of evaporating pressure (MOP), Low pressure switch, freeze protection and manual positioning of valve(s)
- Self-adapting superheat control function in conjunction with Emerson EX4-8 and FX5-9 series
- For multiple refrigerants, including ultralow temperature refrigerant R23 (only with ECN-Z60)
- Modbus (RTU) communication
- EXD-SH2: capability the operation of two evaporator/ EXV / Pressure sensor with single pressure transmitter
- Integrated keyboard with two lines display
- Monitoring of sensors and detection of sensor (ECN/PT5) stepper motor wiring failures
- Optional upload/download key (accessory) for transmission of parameter settings among controllers with the same setting
- Low/high superheat alarm as well as other function alarms
- Electrical connection via plug-in type screw terminals included with controller and Micro Molex EXD-M03 (must be ordered separately)
- DIN rail mounting housing

EXD-SH2

EXD-M03

Selection Table

Type	Description	Part No.	
	Controllers	Multipack (20 pieces)	Single Pack
EXD-SH1	Controller for Single Refrigeration Circuit	-	807 855
EXD-SH2	Controller for Two Independent Refrigeration Circuits	-	807 856
EXD-M03	Molex Terminal with 3 Meter Wires	-	807 865
ECN-N30	Temperature Sensor with 3 Meter Cable	-	804 496
ECN-N60	Temperature Sensor with 6 Meter Cable	-	804 497
ECN-Z60	Ultralow Temperature Sensor with 6 Meter Cable	-	807 826
Pressure Transmitters: PT5 (7/16-20UNF Connection)			
PT5-07M	Sensing Pressure Range -0.8...7 Bar	802 350M	802 350
PT5-18M	Sensing Pressure Range 0...18 Bar	802 351M	802 351
PT5-30M	Sensing Pressure Range 0...30 Bar	802 352M	802 352
PT5-50M	Sensing Pressure Range 0...50 Bar	802 353M	802 353
PT5-150D	Sensing Pressure Range 0...150 Bar (1/4 NPTF)	802 379M	802 379
Pressure Transmitters: PT5 (Brazing Connection)			
PT5-07T	Sensing Pressure Range -0.8...7 Bar	802 380M	802 380
PT5-18T	Sensing Pressure Range 0...18 Bar	802 381M	802 381
PT5-30T	Sensing Pressure Range 0...30 Bar	802 382M	802 382
PT5-50T	Sensing pressure range 0...50 Bar	802 383M	802 383

Note: Pressure Range 18 Bar for System with R410A, 30 Bar for R410A Economizer, 50/150 Bar for CO_2
    *) PT5-xxM: 20 pcs, PT5-xxT: 10 pcs

Accessories

Type	Description	Part No.	
	M12 Plug And Cable For Pressure Transmitters PT5	Multipack (20 Pieces)	Single Pack
PT4-M15	1.5 m	804 803M	804 803
PT4-M30	3.0 m	804 804M	804 804
PT4-M60	6.0 m	804 805M	804 805
Uninterruptible Power Supply			
ECP-024	Backup Battery with Two Outputs for Two Controllers	-	804 558
K09-P00	Electrical Terminal Kit for ECP-024	-	804 560
EXD-PM	Super Cap for Only EXD-SH1 (Two Pieces of EXD-PM Required for One EXD-SH2)	-	807 854

Available Configuration Options

	Selectable Valves	
	FX5-9	EX4-8
Refrigerants	R134a, R407C, R410A, R22, R32*	R22, R23, R32*; R124, R134a, R404A, R407C, R507, R744
Main Function	Superheat control	Superheat or and temperature control
Pressure Transmitters	PT5, PT6 or 3rd party ratio metric	PT5, PT6 or 3rd party ratio metric

Technical Data: EXD-SH1/2

Supply Voltage	24VAC/DC ±10%, 50/60Hz	Mounting	DIN Rail Mounted
Power Consumption	EXD-SH1: Max. 25VA EXD-SH2: Max. 50VA	Accessory (12 Poles Molex Plug with 3 Meter Cable)	Type: EXD-M03 (to be Ordered Separately)
Terminals 1 to 12	Suitable for 12 Poles Molex Plug		
Terminals 13 to 36	Suitable for Removable Screw Version: Wire Size 0.14 ... 1.5mm^2 Included in Controller Delivery		
Protection Class	IP 00		
Marking	CE		

Note: EXD-SH1/2 are not released for flammable refrigerants

Input, Output EXD-SH1/2

Description	Specification
Analogue Input(s): NTC Temperature Sensor Analogue Input: PT1000 Temperature Sensor	ECN-N... (-45 ... +50°C Sensing Range) ECN-Z60 (-80 ... -40°C Sensing Range)
Analogue Input(s): 4...20 mA Pressure Transmitters Analogue Input(s): 0.5...4.5 V Pressure Transmitters	PT5 Third Party Ratio Metric Pressure Transmitters (Total Error: ≤ 1%)
Digital input(s)	Dry Contact, Potential Free
Digital output(s): Alarm Relay(s) Contact is closed: During Alarm Condition Contact is open: During Normal Operation and Supply Power OFF	Resistive Load 24 V AC/DC, Max. 1 A Inductive Load 24 V AC, Max. 0.5 A
Communication	RS485 RTU Modbus, Two Wires