EXD-SH1/2 Controller for EX/CX
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 EX5-8 and CX4-7 series
- For multiple refrigerants, including ultralow temperature refrigerant R23
- Modbus (RTU) communication
- Integrated keyboard with two lines display
- Monitoring of sensors and detection of sensor (ECN/PT5/6)/ 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-M05 (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/PT6 (7/16-20UNF connection)			
PT5-07M	Sensing pressure range -0.8 to 7 bar	**802 350M**	**802 350**
PT5-18M	Sensing pressure range 0 to 18 bar	**802 351M**	**802 351**
PT5-30M	Sensing pressure range 0 to 30 bar	**802 352M**	**802 352**
PT5-50M	Sensing pressure range 0 to 50 bar	**802 353M**	**802 353**
PT5-150D	Sensing pressure range 0 to 150 bar (1/4 NPTF)	**802 379M**	**802 379**
PT6-18M	Sensing pressure range 0 to 18 bar	**802 361M**	**-**
PT6-30M	Sensing pressure range 0 to 30 bar	**802 362M**	**-**
PT6-50M	Sensing pressure range 0 to 50 bar	**802 363M**	**-**
Pressure transmitters: PT5 (Brazing connection)			
PT5-07T	Sensing pressure range -0.8 to 7 bar	**802 380M**	**802 380**
PT5-18T	Sensing pressure range 0 to 18 bar	**802 381M**	**802 381**
PT5-30T	Sensing pressure range 0 to 30 bar	**802 382M**	**802 382**
PT5-50T	Sensing pressure range 0 to 50 bar	**802 383M**	**802 383**

Notice: Pressure range 18 bar for system with R410A, 30 bar for R410A economizer, 50/150 bar for CO_2

Accessories

Type	Description	Part No.	
		Multipack (20 pieces)	Single pack
M12 Plug and cable for pressure transmitters PT5/PT6			
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	
	EX4-8	**CX4-7**
Refrigerants	R22, R23, R32*; R124, R134a, R404A, R407C, R407A, R407F, R507, R744	R744 (CO$_2$)
Main function	Superheat or and temperature control	Superheat control
Pressure transmitters		
3rd party ratio metric		
3rd party ratio metric		

*) R32 is for systems/regions which it does not consider R32 as potential explosive media (flammable or low flammable) and PED/CE marking is not required.
EXD-SH1/2 IS NOT ATEX APPROVED.

Technical Data: EXD-SH1/2

Supply voltage	24VAC/DC ±10%, 50/60Hz
Power consumption	EXD-SH1: Max. 25VA EXD-SH2: Max. 50VA
Terminals 1 to 12	Suitable for 12 poles molex plug
Terminals 13 to 36	Suitable for removable screw version: wire size 0.14 ... 1.5mm² Included in controller delivery
Protection class	IP 00
Compliance	EMC, RoHS,
Marking	CE and EAC pending

Mounting	DIN rail mounted
Temperatures storage operating/ surrounding	-25 ... +60℃ 0 ... +60℃
Relative humidity	20 ... 85% non condensing
Accessory (12 poles molex plug with 3 meter cable)	Type: EXD-M03 Part: No 807826 (to be ordered separately)
Housing	Self-extinguishing ABS
Weight	320 g

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°C ... -40°C sensing range)
Analogue input(s): 4-20 mA pressure transmitters Analogue input(s): 0.5 to 4.5 V pressure transmitters	PT5 / PT6 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
Stepper motor output	Valves: EX4-8 and CX4-7