DESCRIPTION

Digital RS-485 communicating, addressable gas transmitters, for the detection of carbon monoxide (CO) in the ambient air for direct daisy-chain link to NES TR & FG Series digital controllers. Provides Modbus or BACnet-MSTP communication.

NES Series 200 CO includes 4-20 mA analog input channel that also can be used for remotely monitoring additional gases, e.g., NO_2.

APPLICATION

To sense carbon monoxide (CO) in a wide variety of commercial and industrial applications, such as vehicle exhaust in parking structures, engine repair shops, tunnels, equipment rooms and ventilation systems, etc., and to transmit to the NES central controller.

FEATURES

- *Continuous monitoring*
- *RS-485 serial communication*
- *Modbus or BACnet-MSTP protocol*
- *Plug-in, electrochemical sensor with low cross-sensitivity to other gases*
- *4-20 mA input from remote analog transmitter*

- *Overload & short circuit protected*
- *Modular plug-in technology simplifies mounting and wiring*
- *High-impact polycarbonate enclosure, NEMA 4X*
- *Fast commissioning and easy maintenance*

PolyGard®

NRTL Performance Tested & Certified
Conforms to STD
UL 2075

SPECIFICATIONS

Electrical

Power supply	18-28 VDC, polarity protected
Power consumption	22 mA (0.6 VA), max.

Sensor Performance

Gas detected	Carbon monoxide (CO)
Sensor element	Electrochemical, diffusion
Range	0-250 ppm factory set
Stability & Resolution	± 3.0 ppm of reading
Repeatability	± 3.0% of reading
Long term output drift	< 0.4% signal loss/month
Response time	t_{90} < 50 sec.
Sensor life expectancy	3-5 years, normal operating environment
Sensor coverage	5,000 sq.ft., max. 10,000 sq.ft. (465 m², max. 930 m²), under "ideal conditions"

Installation Location

Mounting height	5 to 6 ft. (1.5 to 1.8 m) above floor

Type of Control

General	Continuous proportional sensor signal
Output signal for serial communication	Digital, RS-485 (Modbus or BACnet-MSTP) 19200 baud

AT series remote gas transmitter input capability

- analog input	(1) 4-20 mA, overload and short circuit protected
- power output	24 VDC, max. load 50 mA

Physical

Enclosure, standard	
- material	Polycarbonate, UL 94-HB, fire-retardant
- conformity	UL 50
- color	Light gray
- protection	NEMA 4X (IP65)
- installation	Wall (surface) mounted, or single gang electrical box
Dimensions (H x W x D)	5.12 x 3.70 x 2.25 in. (130 x 94 x 57 mm)
Cable entry	1 hole for 1/2 in. conduit for wall (surface) mounting, and 1 hole on backside of base plate for single gang electrical box mounting
Wire connection	Terminal blocks, screw type for lead wire
Wire size	Min. 24 AWG (0.25 mm²), Max. 14 AWG (2.5 mm²) *"Each terminal connection can handle two 18 AWG wires"*
Weight	0.6 lbs. (0.25 kg)

NES Series 200 CO

SPECIFICATIONS

Approvals/Listings

- unit rating   NRTL Performance Tested & Certified
Conforms to STD ANSI/UL 2075
City of Los Angeles
CE
VDI 2053, air treatment systems for garages and tunnels
EMV-Compliance 2004/108/EWG, low voltage directives 73/23/EWG
- enclosure   UL Listed, E208470
CSA Certified, E208470

Warranty   Two years material and workmanship, 12 months normal exposure for sensor element
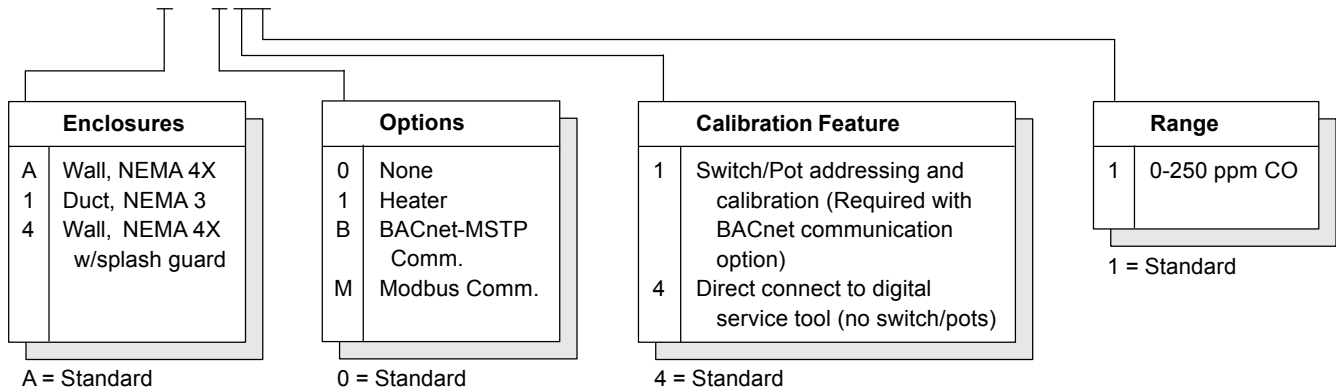
OPTIONS

Enclosures

Duct mounted "1"   NEMA 3 (IP45)
- w/probe*   7/8 in. (22 mm) diameter and 7.16 in. (182 mm) length
- cable entry   1 hole for 1/2 in. conduit
Wall mounted "4"*   NEMA 4X (IP65), w/splash guard
- material   ABS UL94 V0
- color   Light gray
- installation   Wall (surface) mounted
- dimensions (H x W x D)   4.80 x 4.72 x 3.42 in. (122 x 120 x 87 mm)
- cable entry   (1) PG 13.5 compression fitting, removable, hole fits 1/2 in. conduit conductor

Heater, built-in   For low temperature environment
Ambient temperature   -40°F (-40°C)
Power consumption   0.2 A (5 VA), max.
Thermostatic control   32°F (0°C) ± 5°F (3°C)

ORDERING INFORMATION
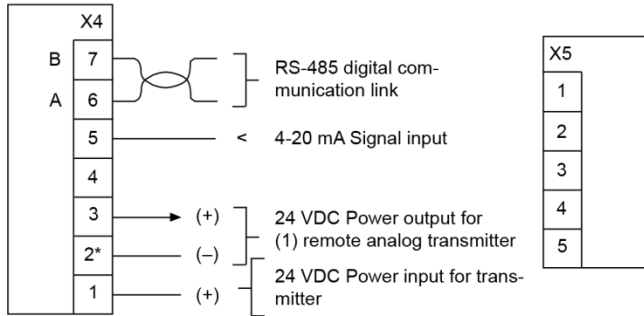
DT5 - 1112 - A - 2 0 4 1 *(Product label "DT5-1112-A-2041 V1")*

Enclosures	
A	Wall, NEMA 4X
1	Duct, NEMA 3
4	Wall, NEMA 4X w/splash guard

A = Standard

Options	
0	None
1	Heater
B	BACnet-MSTP Comm.
M	Modbus Comm.

0 = Standard

Calibration Feature	
1	Switch/Pot addressing and calibration (Required with BACnet communication option)
4	Direct connect to digital service tool (no switch/pots)

4 = Standard

Range	
1	0-250 ppm CO

1 = Standard

NES Series 200 CO

WIRING CONFIGURATION

DT5-1112

RS-485 digital com-
munication link

< 4-20 mA Signal input

(+) 24 VDC Power output for
(1) remote analog transmitter

(−)

(+) 24 VDC Power input for trans-
mitter

*   Terminal X4 No. 2, common (−),
    for both power input and output

Notes:
*   No wiring connection to terminal block X5

Fig.1

RS-485 digital communication and 24 VDC
power supply, trunk/bus configuration

DT5-1112
transmitters

Fig.2

4-20 mA analog transmitter piggybacked via RS-485 digital transmitter

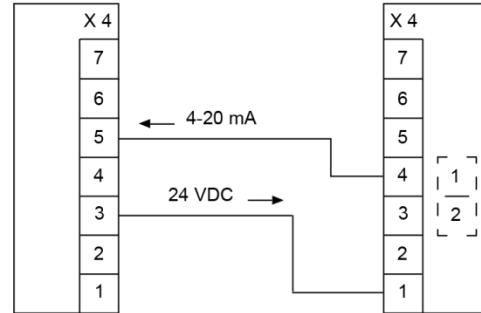**DT5-1112**
RS-485

AT-11.. Version 3
4-20 mA loop powered

4-20 mA

24 VDC

Fig.3

DT5-1112
RS-485

AT-33.. Version 3
4-20 mA, 3-wire

4-20 mA

24 VDC

(−)

Fig. 4

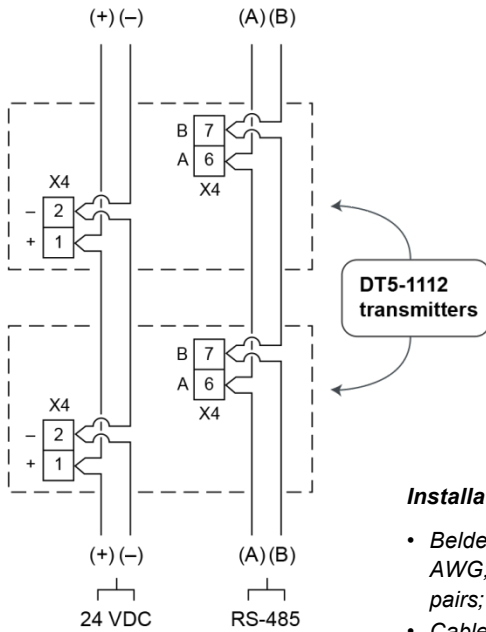### Installation notes:

*   Belden #9368 cable or equivalent (18 AWG; two individually twisted/shielded pairs; all wires different colors).
*   Cable must be "daisy-chained" through transmitter/relay module. "T" drops and "star" configurations are not permitted.
*   Bus/trunk cable should not be installed in same conduit with high voltage lines.
*   The polarity **A** to **A** and **B** to **B** must be maintained throughout the system.
*   Shields should be continuous but not connected or shorted to ground anywhere in the system.
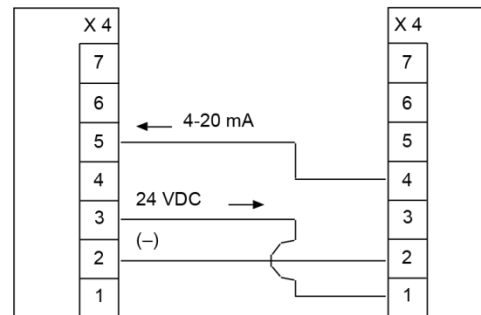
*   Do not connect power to RS-485 communication pair A and B; this **may damage** transmitter/relay modules or controller.
*   560 Ω resistor must be installed between terminals 6 and 7 on the last device on every trunk.
*   See controller data sheet for maximum number of transmitters and trunk length.