

Diagnostic Controller

Main Features

- Solenoid-based partial stroke testing for 1oo1 systems
- Can be used with a Normally Open or Normally Closed solenoid valve
- Option for dual power supply
- Requires a Ex e terminal box

Compatibility

- 1oo1, 1oo2, 2oo2, and HIPPS
- Hydraulic and pneumatic actuators
- Spring return and double acting actuators
- HART, Modbus

Functions

- Manual control of actuated valve for testing
- Indication LED for controller status

Communication

- 4-20mA with HART v. 7 – (IDC24-AF-1100xx)
 - o Device status according to NAMUR NE 107
- Modbus RTU – (IDC24-AF-2100xx)
- Foundation Fieldbus – (IDC24-AF-3000xx)

Control

- Via display on the device
- In Ex area with MTControl pen
- Configuration via USB connection to laptop
 - o [ValConnect](#)

Digital input function

- Start Partial stroke
- Local open/close

Digital output functions

- Common OK and Error
- Valve Open and Closed



Ordering information

Part no.	Description
IDC24-AF-110011	4-20 mA - HART
IDC24-AF-210011	Modbus
IDC24-AF-300011	Foundation Fieldbus
IDC24-AF-110021	4-20 mA – HART & separate power for IDC24
IDC24-AF-210021	Modbus & separate power for IDC24
IDC24-AF-300021	Foundation Fieldbus & separate power for IDC24

Accessories

Part no.	Description
121710	MTControl pen
See separate datasheet	Pressure sensor
See separate datasheet	Sensor box – IDC24-SB (Position and pressure)

IDC24-AF



Environmental

Protection degree: IP66/IP67/IP68
Operating temperature: -30 to 80 °C
Storage temperature: -30 to 80 °C
Relative Humidity: < 95% (No condensation)
PCB coating: According to G3, ISA-71.04-2013

Mechanical

Dimensions: 155x144x124mm
Weight: 4kg
Enclosure material: SS316L (ASTM A351-00 CF3M)
Surface finish: Electro polished
Gland entries: 6 x M20x1.5

Terminals:

Screw torque: 0.4Nm (3.6Lb. in)
Wire diameter: AWG14-22 (0.5mm² to 2.5mm²)

Approvals and standards

EMC according to IEC 61000
Flameproof – ATEX/IECEX/UKCA/EAC Ex/ECAS-Ex
II 2 GD Exd IIC T4-T6



Connections

Power supply 1

Input range: 20.4 – 27.6 VDC
Power dissipation (no auxiliary connections): <2W

(IDC24-AF-110011/IDC24-AF-300011/IDC24-AF-300011)
Max power for IDC24 + equipment 4W

Power supply 2

(IDC24-AF-110021/IDC24-AF-300021/IDC24-AF-300021)
Input range: 20.4 – 27.6 VDC
Power dissipation (no auxiliary connections): <2W

Analog input 0

(IDC24-AF-110011/IDC24-AF-110021)
Impedance: < 470 Ohm at 20mA and 9.4VDC
Linearity: < 0.1%
Temperature coefficient: 0.025% / 1°C
Warm-up: 10 min
Isolation: Galvanic

Analog output (Retransmitted position)

(IDC24-AF-110011/IDC24-AF-110021)

- HART v. 7
 - FSK, 1200Hz / 2200Hz 400-800mVpp

Signal: 4-20mA
Impedance: < 470 Ohm at 20mA and 9.4VDC
Linearity: < 0.1%

Temperature coefficient: 0.15% / 1°C
Warm-up: 10 min
Isolation: Galvanic

Modbus

(IDC24-AF-210011/IDC24-AF-210011)
Interface: RS485
Modbus mode: RTU with CRC16
Isolation: Galvanic

Foundation Fieldbus (Command and position)

(IDC24-AF-300011/ IDC24-AF-300021)
Device class: H1
ITK rev.: 5.00
Power Requirements: 9-32 V
Current Consumption: < 5mA

Analog input (Position)

4-20mA position: 2-wire or 4-wire
R_{load}: Max 820 Ohm at 20mA
Operating area: 4 – 20mA
Minimum span: 12mA
Cable length: Max 1000 meters
Linearity: < 0.1%
Temperature coefficient: 0.01% / 1°C
Warm-up: 10 min
R_{in}: < 100 Ohm

Potentiometer input

3-wire potentiometer: 5 kΩ to 20 kΩ
Cable length: Max 1.5 meters
Linearity: < 0.1%
Temperature coefficient: 0.01% / 1°C
Warm-up: 10 min

Digital Input

Number of inputs: 4
Cable length: Max 20 meters
Cable resistance Max 100 Ohm
Sensor supply voltage 8 VDC
Input type: Wet

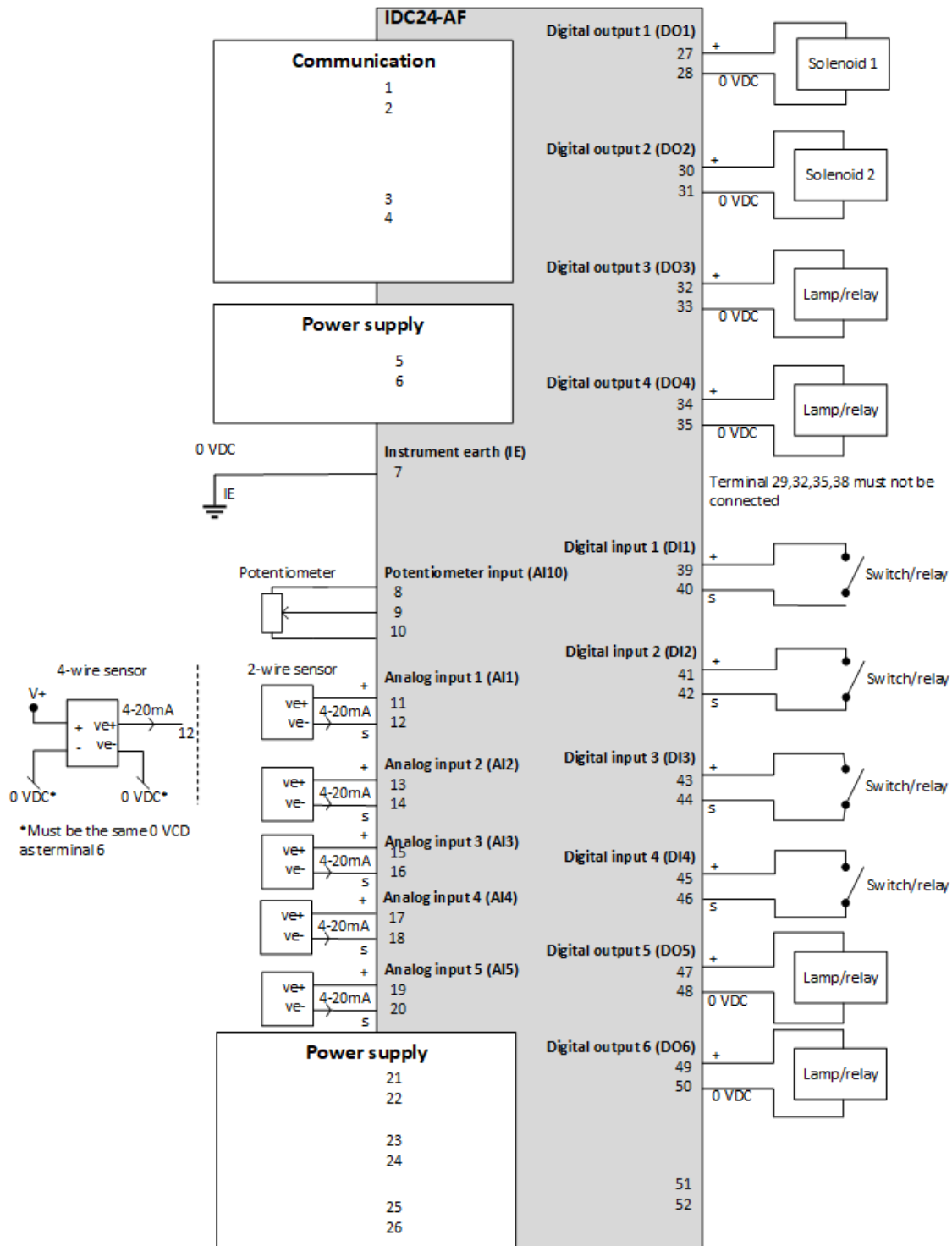
Digital outputs

(IDC24-AF-110011/IDC24-AF-300011/IDC24-AF-300011)
Outputs for lamps/relays: 6
Total load: Max 2W at 24 VDC

Digital outputs

(IDC24-AF-110021/IDC24-AF-300021/IDC24-AF-300021)
Outputs for lamps/relays: 6
Load per digital output: Max 48W at 24 VDC
Total load: Max 192W at 24VDC

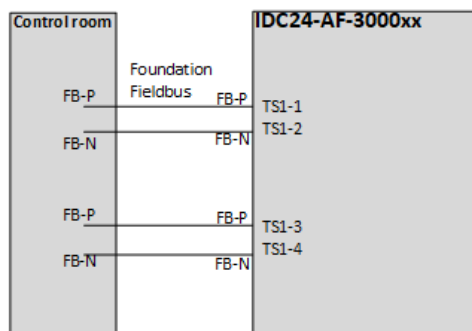
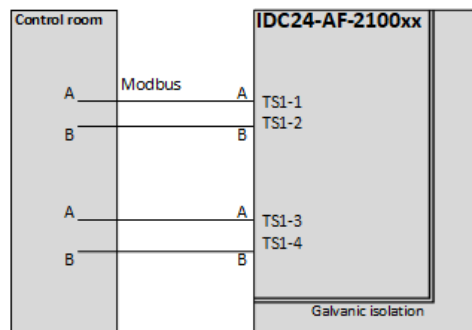
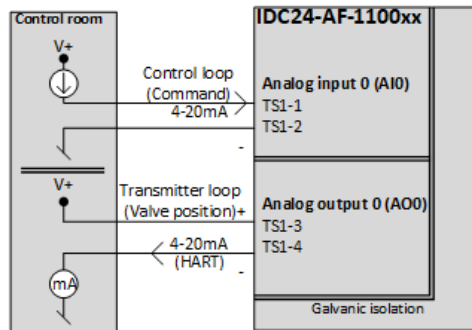
Connections



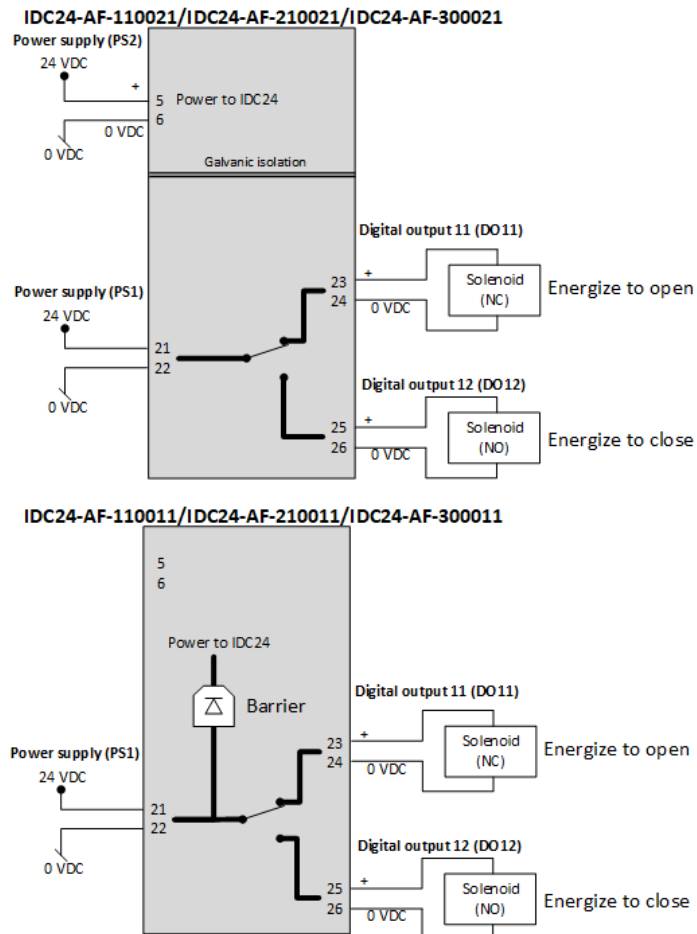
On the PCB are the following terminals shared:

- 0V: 6, 28, 31, 34, 37, 48, 50
- 8V out: 39, 41, 43, 45
- 24V out (fused): 11, 13, 15, 17, 18

Communication



Power supply



The relay breaks the 0V line. Terminals 21, 23 and 25 are common.