DNV·GL

Certificate No:
TAA000002G

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
FlexVu® UD10, AutroVu® AV10

Issued to
DET-TRONICS Detector Electronics Corp.
MINNEAPOLIS, MN, United States

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**C**

This Certificate is valid until **2019-08-11**.

Issued at **Høvik** on **2015-08-12**

for **DNV GL**

DNV GL local station: **New York**

Approval Engineer: **Andrzej Gdaniec**

Odd Magne Nesvåg
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Job Id: **262.1-010863-4**
Certificate No: **TAA000002G**

Product description

The FlexVu model UD10 is recommended for applications that require a gas detector with digital readout of detected gas levels as well as analog 4-20 mA output with HART, relay contacts, and/or Modbus RS485. The FlexVu UD10 is designed for use with Det-Tronics' gas detectors. The display unit is designed and approved as a 'stand alone' device and performs all the functions of a gas controller. Gas concentration and unit of measurement are displayed on an alphanumeric display. The display unit provides a linear isolated/non-isolated 4-20 mA DC output signal (with HART) that corresponds to the detected gas concentration. All electronics are enclosed in an explosion-proof aluminum or stainless steel housing. The display unit is used with a single detector that may be either coupled directly to the FlexVu UD10, or remotely located using a sensor termination box. Features non-intrusive calibration, a magnet is used to perform calibration as well as to menu navigation.

The FlexVu UD10 can be used with various 4-20 mA gas detection devices, with or without HART. The unit provides display, output and control capabilities for the gas detector. The UD10 utilizes the following I/O:
- Signal Inputs: 4-20 mA loop from the sensing device.
- User Inputs: Magnetic switches (4) on the display panel + HART communication (handheld field communicator or AMS).
- Signal Outputs: 4-20 mA output loop with HART + Modbus RS485 + Three alarm relays and one fault relay.
- Visible Outputs: Backlit LCD display + HART slave interface via HART Communicator.

Application/Limitation

This Type Approval Certificate covers FlexVu Explosion-Proof Universal Display Unit Model UD10. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case.

Test results of the "Compass safe distance":

Equipment	Compass; standard	Compass; steering / standby steering / emergency
UD10-steel connected to GT3000-O2	45 cm	30 cm
UD10-alu connected to GT3000-H2S	30 cm	20 cm

Ex installations to be approved in each case according to the Rules and Ex-Certification**/** Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Ex-certification is not covered by this certificate and the following paragraph, which is for information only, is based on information received from the manufacturer, but not verified by DNV.

Information on Ex-Certification received from manufacturer – Not verified by DNV		
Equipment	Certified	Certificate No.
FlexVu UD10	Ex d IIC T6, Tamb –55°C to +75°C	FM08ATEX0042X

Type Approval documentation

Tests carried out

Environmental/EMC:
EN 60945:2002 (EMC part)
IEC 60092-504:2001

IEC 60533:1999

For the bridge mounted components the 'Acoustic noise and signals' and the 'Compass safe distance' were measured according to sections 11.1 and 11.2 of IEC 60945, 4th edition (2002).

Marking of product

Product marking of Det-Tronics FlexVu UD10 Explosion-Proof Universal Display Unit Model UD10 will be as follows:

	Type designation (Det-Tonics model - FlexVu)	**Type designation** (Autronica model - AutroVu)	**Note**
Display Unit	UD10A5M25Y2	AV10A5M25Y2	Y = A, B, C, E, T, R, W
	UD10S5M25Y2	AV10S5M25Y2	
	UD10A5N25Y2	AV10A5N25Y2	
	UD10S5N25Y2	AV10S5N25Y2	

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE