

LEVEL / PUMP CONTROLLER

WITH ONE CONTROL OUTPUT.



D-Series advantages

- Unique, robust IP66, IP67 (NEMA4X) class panel mount enclosure made of die cast aluminum, allowing even **big jets** of water and **total immersion**.
- Programming can be done by your own crew with the exact same, plain and sensible menu-driven structure like the F-Series, saving cost and irritation. **Know one, know them all!**

Features

- Level control: high / low switch points and a preset value can be set.
- Displays actual level, switch points, status and preset value.
- Switch points and preset value can be set by the operator or being password protected.
- Level: six large 17mm (0.67") digits.
- Selectable on-screen engineering units: L, m³, GAL, USGAL, kg, lb, bbl or no unit.
- LED backlight option.
- Operational temperature -40°C up to +80°C (-40°F up to 176°F).
- Input loop powered, battery powered or 8 - 30V DC. **24V AC and 115 - 230V AC are pending.**
- Sensor supply 8.2 / 12 / 24V DC.

Control output

- One on / off control output (e.g. for pump or valve control), available as passive signal, active signal or a robust, highly isolated (NO/NC) relay.

Signal input

Level

- (0)4 - 20mA.
- 0 - 10V DC.

Applications

- The D-Series is a DIN-sized display and the **better alternative** for your existing, not waterproof, panel mount indicators in extreme weather outdoor applications or e.g. in food industries where working environments are often cleaned with powerful water jets.
- The Do74 fits in basic on / off level control applications (e.g. for filling-up a container) without PI(D) control. Also very suitable when the required level changes frequently (e.g. for emptying a well or tank). Alternative basic models: Do70, Do73, Do77 or the F-Series level indicators.

General information

Introduction

The Do74 is a basic, panel mount level / pump controller that works with a preset value and two switch points to control a pump or valve. The low and high level switch points are entered as a percentage of the preset value to switch the device on / off. For pump control applications, the function can be inverted to empty a well. A stable level within a hysteresis around the preset value is the result.

Display

The display has large 17mm (0.67") and 8mm (0.31") digits which can be set to show the actual level, preset value, high / low switch points and status. The display is a transfective type, which means that a high contrast reading is guaranteed, even in full sunlight. The Do74 has a smart display update function incorporated. Related to the lower temperatures, the update frequency of the LCD is tuned automatically to achieve a readable display even at -40°C / -40°F.

Backlight

For those applications where readability during day and night is an issue, a bi-color backlight is available. The background color green or amber and the intensity can be adjusted in the configuration menu.

Configuration

All configuration settings are accessed via a simple operator menu which can be pass-code protected. Each setting is clearly indicated with an alphanumeric description, which avoids confusing abbreviations. Once familiar with one D-series product, you will be able to program **all models in all series** without a manual. All settings are safely stored in EEPROM memory in the event of sudden power failure.

Control output

One output is available to control e.g. pump or valve, according to the high / low level switch point values. The output signal can be a passive NPN, active PNP or a robust, highly isolated electro-mechanical relay (NO/NC).

Signal input

The Do74 does accept (o)4 - 20mA and 0 - 10V input signals from any type of level measurement device. The input signal type can be selected by the user in the configuration menu without having to adjust any sensitive mechanical dip-switches, jumpers or trimmers. Also a 4 - 20mA input loop powered model is available.

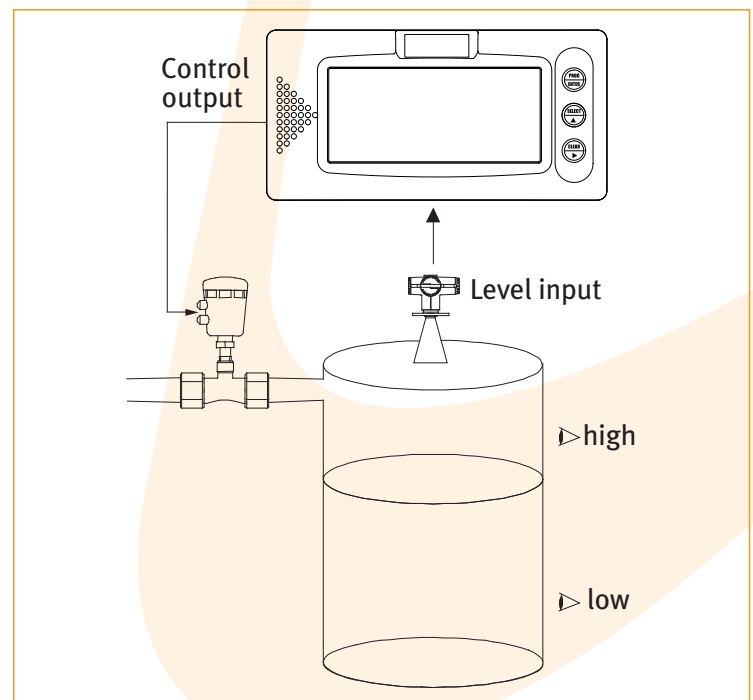
Power supply

The basic power supply for the Do74 is 8 - 30V DC. Several other power supplies are available: With the 24V DC power supply, an 8.2 / 12 / 24V DC sensor supply is offered (**just as the pending 24V AC and 115 - 230V AC power supplies**). For analog sensors, a 4 - 20mA input loop powered version is available. Finally we offer a long life lithium battery with a life expectancy that will last up to five years.

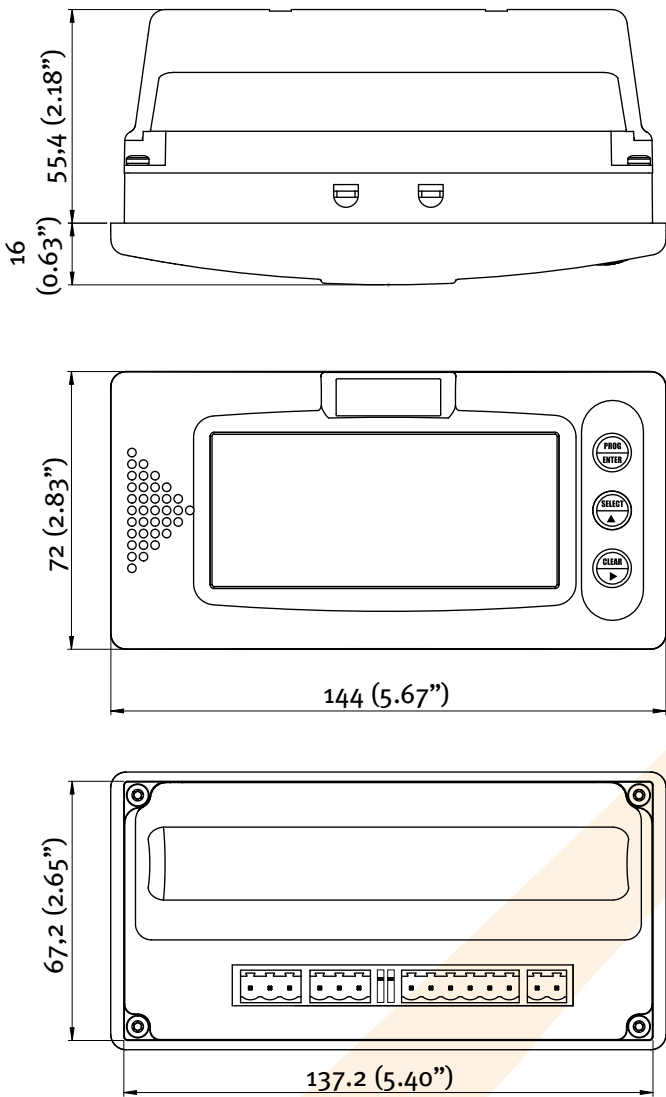
Enclosure

The Do74 is supplied in a unique, robust IP66, IP67 (NEMA4X) class panel mount enclosure made of die cast aluminum, based on a popular DIN sized enclosure with a 144 x 72mm front. The enclosure withstands powerful water jets and even total immersion. The maximum thickness of the panel is 6mm (1/4"). The D-Series is the better alternative for your existing, not waterproof, panel mounted indicators.

Overview application Do74

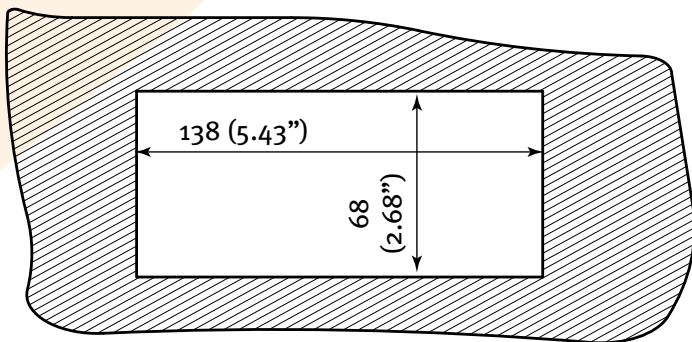


Dimensions enclosure



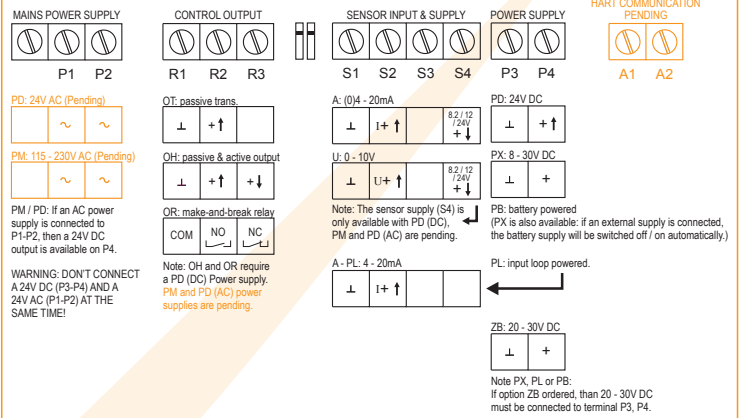
Dimensions according DIN 43700 / IEC 61554

Dimensions panel cut-out

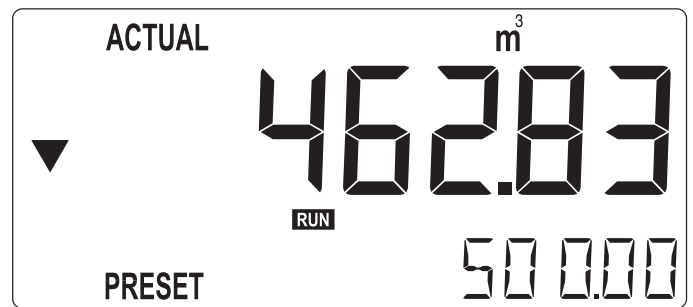


Maximum panel thickness: 6mm (1/4")

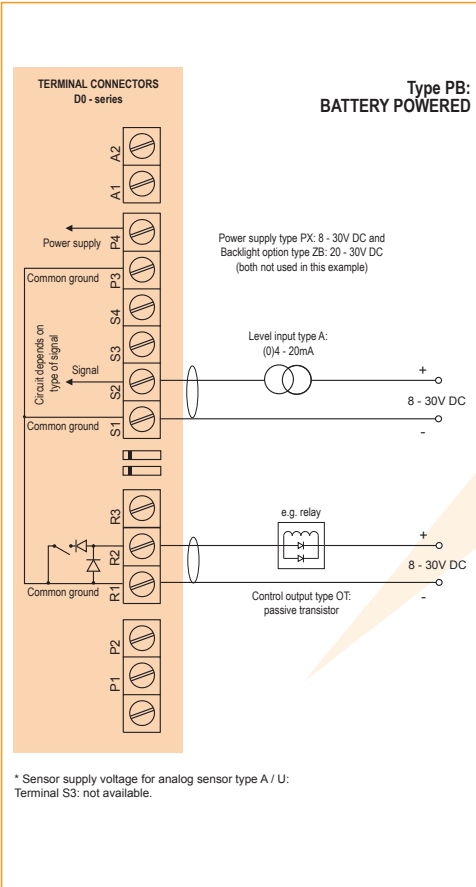
Terminal connections Do74



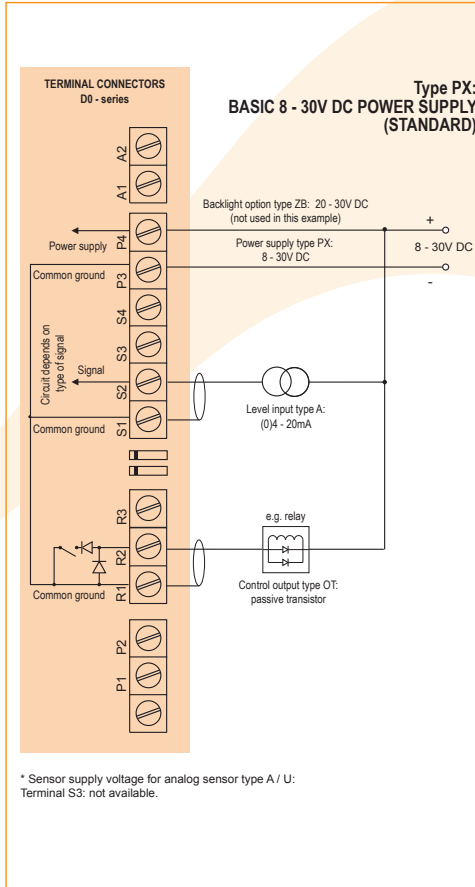
Display example - 90 x 40mm (3.5" x 1.6")



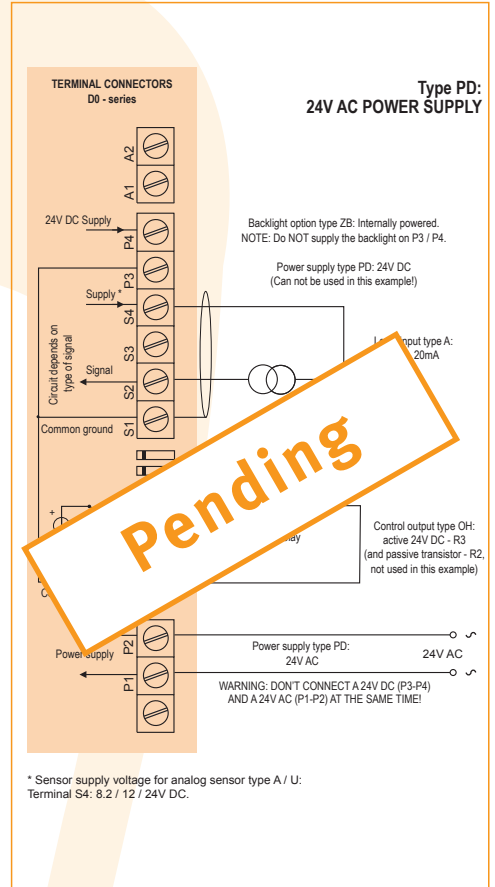
Wiring diagram Do74-A-OT-PB-(PX)-(ZB)



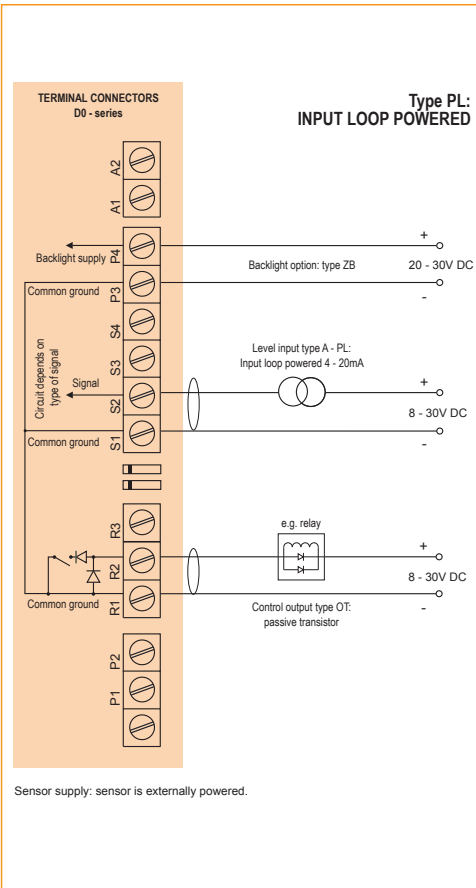
Wiring diagram Do74-A-OT-PX-(ZB)



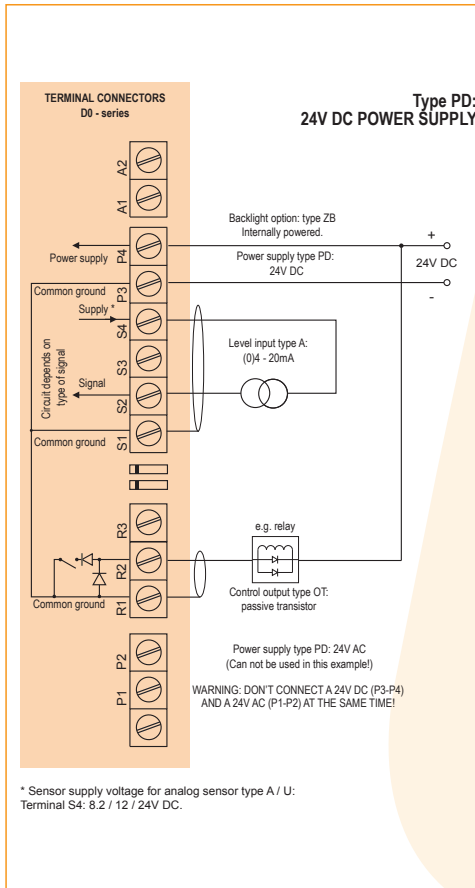
Wiring diagram Do74-A-OH-PD-ZB



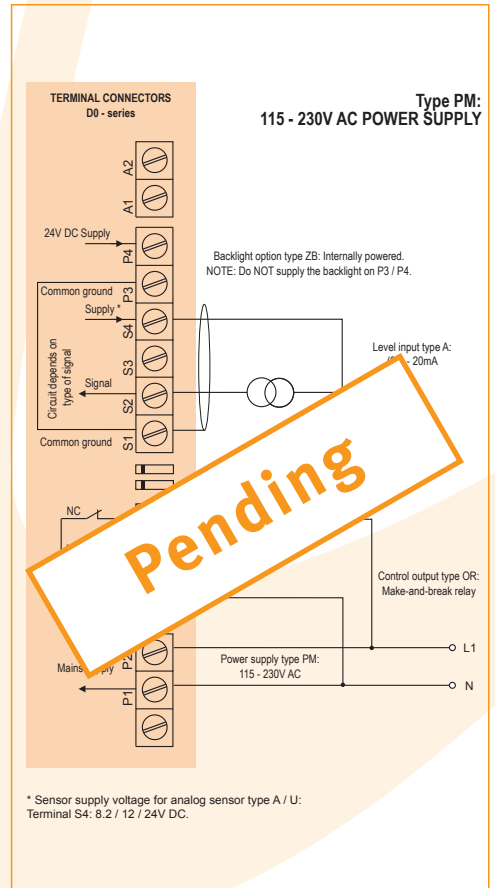
Wiring diagram Do74-A-OT-PL-ZB



Wiring diagram Do74-A-OT-PD-ZB



Wiring diagram Do74-A-OR-PM-ZB



Technical specification

General

Display	
Type	High intensity reflective numeric and alphanumeric LCD, UV-resistant.
Dimensions	90 x 40mm (3.5" x 1.6").
Digits	Seven 17mm (0.67") and eleven 8mm (0.31") digits. Various symbols and measuring units.
Refresh rate	User definable: 8 times/sec. - 1time/30 secs - off.
Option ZB	Transflective LCD with bi-color LED-backlight; green / amber. Intensity and color can be adjusted in the configuration menu. Good readings in full sunlight and darkness.

Operating temperature

Standard unit	-40°C to +80°C (-40°F to +176°F).
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Environment

Electromagnetic compatibility	Compliant ref: EN 61326 (1997), EN 61010-1 (1993).
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Power requirements

Type PB	Long life Lithium battery - life-time depends upon settings and configuration - up to 5 years.
Type PD	24V DC \pm 10%. Power consumption max. 15 Watt. 24V AC is pending.
Type PL	Input loop powered from sensor signal 4 - 20mA (requires type A).
Type PM	115 - 230V AC \pm 10% is pending. Power consumption max. 15 Watt.
Type PX	8 - 30V DC. Power consumption max. 0.3 Watt.
Type ZB	20 - 30V DC. Power consumption max. 1 Watt. With type PD / PM: internally powered.

Sensor excitation

Type PB/PX	Not available.
Type PD (AC)	8.2 / 12 / 24V DC max. 35mA @ 8.2V DC @ 20°C. max. 50mA @ 12V DC @ 20°C. max. 75mA @ 24V DC @ 20°C.
Note PD/PM	Total consumption of sensor, active output OH and backlight may not exceed 75mA @ 24V DC @ 20°C.
Note	The PD (AC) and PM are pending.

Data protection

Type	EEPROM backup of all settings. Data retention at least 10 years.
Pass-code	Configuration settings can be pass-code protected.

Casing

Panel mount enclosure	
Dimensions	144 x 72 x 71.4mm (5.67" x 2.83" x 2.81") - W x H x D according DIN 43700 / IEC 61554.
Panel cut-out	138 x 68mm (5.43" x 2.68") L x H.
Material	Die-cast aluminum front panel + GRP back enclosure
Protection	IP66, IP67 (NEMA 4X).
Weight	325 gr.
Panel thickness	Max. 6mm (1/4").

General

Window	Polycarbonate window.
Sealing	Silicone.
Control keys	Three industrial micro-switch keys. UV-resistant silicone keypad.

Signal input

Level sensor	
Type A	(0)4 - 20mA. Analog input signal can be scaled to any desired range within 0 - 20mA.
Type U	0 - 10V DC. Analog input signal can be scaled to any desired range within 0 - 10V DC.
Accuracy	Resolution: 16 bit. Error < 0.01mA / \pm 0.05% FS. Low level cut-off programmable.
Span	0.001 / 999,999 with variable decimal position.
Offset	-999,999 / +999,999 units.
Update time	Four times per second.
Voltage drop	Type A: max. 2V DC @ 20mA.
Voltage drop	Type A - PL (loop powered): max. 2.6V DC @ 20mA.
Load impedance	Type U: 3k Ω .
Relationship	Linear and square root calculation.
Note	For signal type A and U: external power to sensor is required; e.g. type PD / PM.

Signal output

Control output	
Function	Control output that switches e.g. a pump or valve on / off, according the high/low level switch point values.
Type OH	<ul style="list-style-type: none"> Active 24V DC transistor output (PNP); Load max. 75mA. Requires PD (DC). Passive transistor output (NPN) - not isolated; Max. 50V DC - 300mA per output. Requires PD (DC)
Type OR	Isolated electro-mechanical relay (NO/NC). Req. PD(DC). Maximum resistive load: 2A @ 250V AC / 30V DC. Maximum inductive load: 0.5A (pilot duty applications)
Note OR	In case of inductive load, use RC snubbers.
Type OT	Passive transistor output (NPN) - not isolated. Max. 50V DC - 300mA per output.

Operational

Operator functions	
Displayed functions	<ul style="list-style-type: none"> Actual level. Preset value - can be entered by the operator. Switchpoint values can be set as % (or only displayed). Status.

Level and preset

Digits	7 digits.
Units	L, m ³ , GAL, USGAL, kg, lb, bbl, no unit.
Decimals	0 - 1 - 2 or 3.

Switch point values

Digits	7 digits.
Units	According to the settings for level / preset.
Decimals	According to the settings for level / preset.
Time units	According to the settings for level / preset.
Note	The switch point values have to be entered as a percentage of the preset value. The unit will calculate and display the absolute value automatically.

Ordering information

Standard configuration: Do74-A-HB-OT-PX-ZX.

ordering information:	D074	-	-HB	-O	-P	-Z
Level input signal						
A	(o)4 - 20mA input.					
U	o - 10V DC input.					
Panel mount enclosure - IP66, IP67 (NEMA4X)						
HB	Aluminum DIN 43700 / IEC 61554 front panel.					
Control output						
OH	Active and passive transistor output - requires PD (DC). (PD (AC) and PM are pending).					
OR	Highly isolated mechanical relay output - requires PD (DC). (PD (AC) and PM are pending).					
OT	Passive transistor output - standard configuration.					
Power supply						
PB	Lithium battery powered.					
PD	24V DC + sensor supply. (24V AC is pending)					
PL	Input loop powered from sensor signal 4 - 20mA - requires type A.					
PM	115 - 230V AC + sensor supply. (Pending)					
PX	Basic power supply 8 - 30V DC (no real sensor supply).					
Other options						
ZB	Backlight.					
ZX	No options.					

The bold marked text contains the standard configuration.

