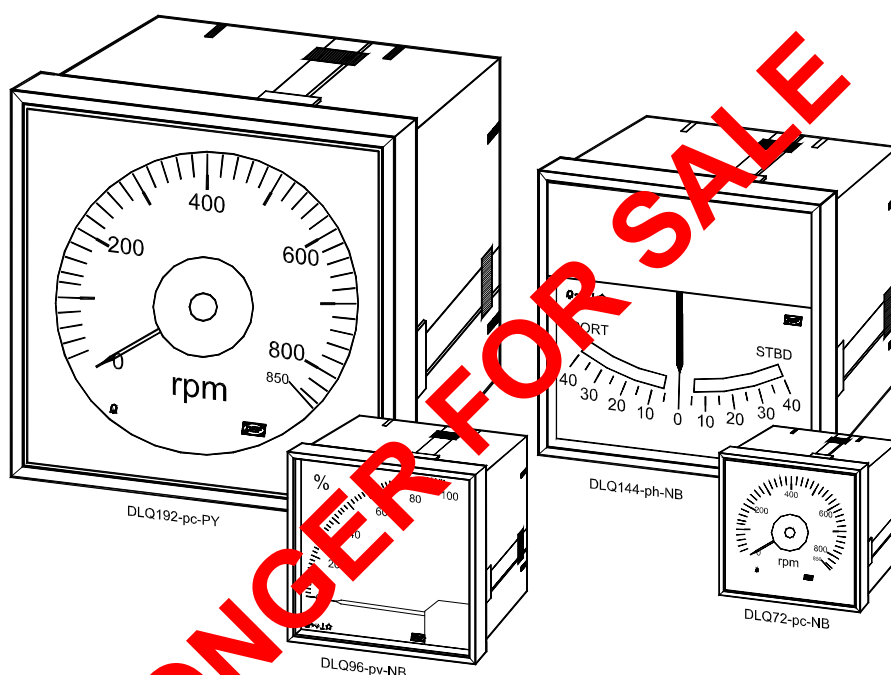


Switchboard instruments with illumination

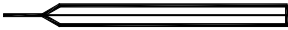

Types DLQ72, DLQ96, DLQ144 and DLQ192

4921250014F



- Wide range of sizes from 72x72 mm to 192x192 mm
- Custom-designed coloured scales
- LED illumination (long life)
- Separate pointer illumination
- Colour spectrum constant throughout dimmer range
- Approved according to the European Marine Directive

General technical specifications

Instruments are designed according to below mentioned standards				Standards	
Accuracy	Class 1.5 (-10...15...30...55°C) Linear scales: ±1.5% of Full Scale value (FS) Non-linear scales: ±1.5% of scale length				EN 60051 and IEC 51
Instrument sizes	72 x 72 mm, 96 x 96 mm, 144 x 144 mm, 192 x 192 mm				DIN 43700
Bezel	Slim bezels (except on DLQ192)				DIN 43718
Scale	Figures, lines, size and font size according to customer design and specifications Base material: Acrylic				Customer specified or according to DIN 43802 on request
Pointer	<div>Standard pointer Black or yellow for –NB and –NY types</div> <div>Triangular pointer Yellow or white for –PY and –PW types</div>				According to DIN 43802 or to customer specifications According to customer specifications
Glass	Antiglare glass, thickness: 2 mm				
Mounting angle	Standard: Vertical (90 ±5°) However, may be mounted at any angle 0...150° to horizontal without this affecting the calibration				DIN 11257
Compass safety distance	To be mounted at least 1 metre from the compass				IEC 945 and EN 60945
Measuring ranges	See page 4 Others on request				DIN 43701
Protection	Standard version		IP54 version		IEC 529 and EN 60529 IP54 version is marked: "IP54 FROM FRONT ONLY WHEN RUBBER GASKET IS MOUNTED"
	From front	From rear	From front	From rear	
	IP52	IP52	IP54	IP52	
	Terminals		Terminals		
	IP20				
Climate	Class H1/E Short term condensing allowed				DIN 40040
	Max. 95% RH: Max. 30 days per year Max. 85% RH: Remaining days Max. 75% RH: Average per year				
Temperature	Nominal: -10...55°C Operating: -25...65°C Storage: -25...65°C Influence: Max. ±1.5% within -10...55°C				EN 60051 and IEC 51
Panel influence	The accuracy is affected neither by the material nor by the thickness of the panel				EN 60051 and IEC 51
Shock test	DLQ7/96/144: 18 x 50g half sine (11mS) DLQ192: 18 x 15g half sine (11mS)				IEC 68-2-27, Test: Ea
Vibrations	2...16Hz: 2 mm 16...100Hz: 0.7g				GL + LR: Test 1 DNV: Class A
Materials	All outer materials are self-extinguishing				UL94 (VO)
Safety	300V – CAT. III Pollution deg. 2				EN 61010-1
EMC	CE marked for residential, commercial and light industry plus industrial environment				EN 50081-1/2 and EN 50082-1/2

Scales and pointers

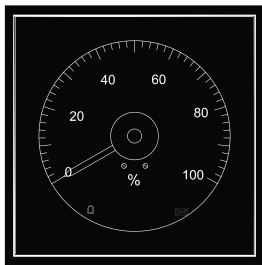
Type	Scale base colour			Possible colour combinations figures/division lines				Pointer		
	White	Black						Standard		Triangular
			No trans-illuminated section	Yellow trans-illuminated section	Black	Yellow/white	Red	Green	Black NB*	Yellow NY*
DLQ72/96/144/192-pc-XX* 240° -pc: center pointer	•			•	•	•	•	•		
		•			•	•	•			•
DLQ96-pv-XX* 90° -pv: horizontal pointer	•			•	•	•	•	•		
			•		•	•	•		•	
DLQ96/144-ph/-ps-XX* 80° -ph: "hanging" pointer -ps: "standing" pointer	•			•	•	•	•	•		
			•		•	•	•		•	

*) Substitute designation for pointer illumination/colour for "XX"

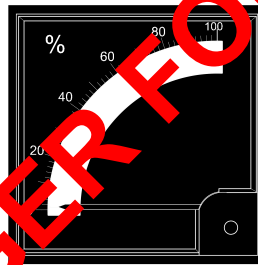
Pointer type: "N": No direct pointer illumination (standard pointer)

 "P": With direct pointer illumination (triangular pointer)

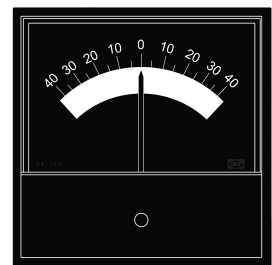
Examples with black scale base:



DLQ72/96/144/192-pc-PY/W



DLQ96-pv-NY



DLQ96/144-ps-NY

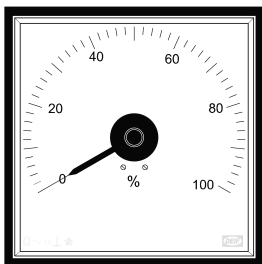
Coloured division lines and figures are transilluminated

The pointer is triangular and illuminated and colour is yellow or white

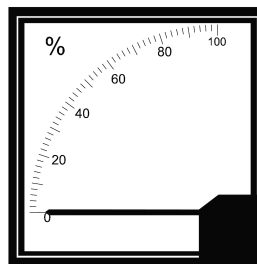
Only division lines, figures and the broad section below the division lines are transilluminated

The pointer is clearly visible as a shadow. Pointer is standard and colour is yellow

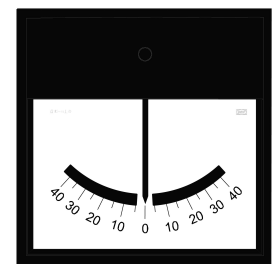
Examples with white scale base:



DLQ72/96/144/192-pc-NB



DLQ96-pv-NB



DLQ96/144-ph-NB

The scale is translucent, implying that division lines and figures are clearly visible, and the pointer is seen clearly as a shadow

Measuring ranges

Standard measuring ranges • Voltage			Standard measuring ranges • Current		
Lowest range	Highest range	Load	Lowest range	Highest range	Load
0...1V DC	0...100V DC	0.5k Ω /V	0...1mA DC	0...100mA DC	0.6V
-0.5...0...0.5 V DC	-100...0...100V DC	1k Ω /V	-0.5...0...0.5mA DC	-100...0...100mA DC	0.3V
			4...20mA		1.6V

The instruments are fitted with a potentiometer with a slotted screw for adjustment of the measuring range (adjustment of ranges 0...1mA, -0.5...0...0.5mA, 4...20mA not possible). The potentiometer is accessible from the rear of the instrument and is marked "INSTR. ADJ". Standard adjustment range: $\pm 10\%$ (on request: up to $\pm 50\%$).

Other measuring ranges are available on request.

Illumination

Consumption Illumination	DLQ72-pc DLQ96-pv/ph/ps	DLQ96-pc DLQ144-ph/ps	DLQ144-pc	DLQ192
Type -PY	60mA/24V	110mA/24V	200mA/24V	275mA/24V
Types -NB/-NY	40mA/24V	80mA/24V	150mA/24V	150mA/24V

Illumination: 24V DC/AC. Adjustment range: 7...30V (5...30V range is optional on request).

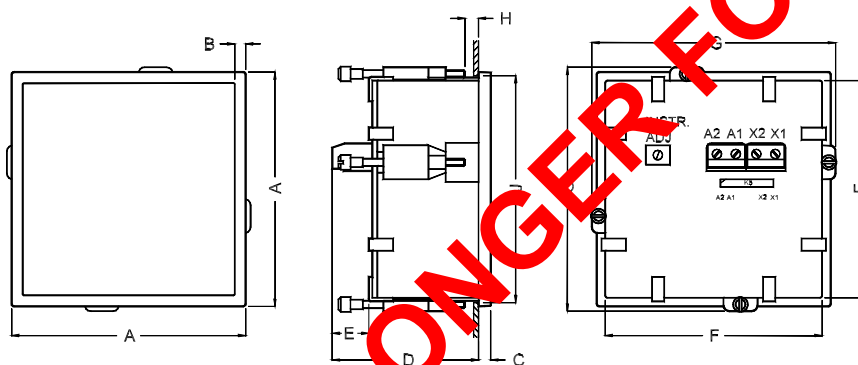
Optional red-only or green-only illumination is available on request for special purposes.

Connection: Screw terminals for instrument input and illumination.
Maximum 2.5 mm² (multi-stranded) or 4.0 mm² (single-stranded).
Alternative connection: Male/female connector for 26 AWG cable.

If required by the class, suitable protection against voltage transients (surge pulses) must be built into the power supply (e.g. light dimmer unit) to the instrument illumination input.

Dimensions

All dimensions in mm



Connections:

Instrument:

A1 +
A2 -

Illumination:

X1: 24V AC/DC
X2: 24V AC/DC

Type	A	B	C	D	E	F	G	H (max.)	J (panel cut-out)	Weight (kg)
DLQ72	72 x 72	3.5	5.5	63	19	66 x 66	77	12	68 x 68 +0.7	0.220
DLQ96	96 x 96	4.5	5.5	63	19	90 x 90	103	12	92 x 92 +0.8	0.230
DLQ144	144 x 144	4.5	8.0	66	19	136 x 136	150	12	137 x 137 +1.0	0.385
DLQ192	192 x 192	7.0	8.0	71	19	184 x 184	196	12	186 x 186 +1.0	0.500

All dimensions in mm

Note: The above drawing is a DLQ96, the other types may vary in details

Order specifications

Examples:	Type	Scale	Measuring range
	DLQ96-pc-PY	0...100%	0...10V DC
	DLQ192-pc-NB	-300...0...300RPM	-20...0...20mA
When ordering new scales, always forward detailed drawing			

Due to our continuous development we reserve the right to supply equipment which may vary from the described.



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