

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Test and Calibration Equipment

with type designation(s)

Crystal Products Pressure and Temperature Calibrator Kits

Issued to

**Crystal Engineering Corporation
San Luis Obispo, CA, USA**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

The instruments are only approved for use as portable test instruments. Traceable calibration certificates are available from the manufacturer.

This Certificate is valid until **2024-06-30**.

Issued at **Hamburg** on **2019-08-15**

DNV GL local station: **Long Beach**

Approval Engineer: **Jens Dietrich**

for **DNV GL**

**Joannis Papanuskas
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.

Product description

Crystal Engineering Corp. pressure and temperature calibrator kits as listed below:

Model	Description	Model Range	Datasheet
CPF Fittings	MPH-/MPM-/MPF-series	-	4895-S, rev.K 4895, rev.K
30-series	Pressure gauges	16 to 5000 PSI	4534, rev.L
XP2i-series	Pressure gauges	15 to 15000 PSI	5179, rev.B; 4533, rev.S; 4864, rev.O
nVision	Calibrator		4791, rev.N
	Pressure – PM Module	30 to 15000 PSI	
	Current/Voltage – MA20 Module	0 to 25mA / 0 to 28VDC	
	Temperature – RTD 100 Module	0 to 400 Ohms	
	Barometric – BARO Module	10.153 to 15.954 PSI	
M1-series	Pressure gauges	15 to 10000 PSI	4725, rev.H
HPC 40	Calibrator	30 to 15000 PSI	5487, rev.F
APM	Advanced pressure module	30 to 15000 PSI	5275, rev.C
HPC 50	Calibrator	15 to 15000 PSI	6487, rev.A
APMi	Advanced pressure module	0 to 15000 PSI	6543, rev.A
ATMi	Advanced temperature module	for Pt100 RTD	6544, rev.A

Place of manufacture

Crystal Engineering Corporation
 708 Fiero Lane Suite 9
 San Luis Obispo, CA USA 93401

Application/Limitation

The Type Approval covers hardware listed under product description.
 The instruments are only approved for use as portable test instruments.
 The Type Approval of gauges and calibrators are only valid for units with a valid calibration certificate.

Type Approval documentation

Product data sheets:

4533,rev.M and rev.S; 4534,rev.J and rev.L; 4725,rev.G and rev.H; 4791,rev.I and rev.N;
 4864,rev.I and rev.O; 4895-S,rev.K; 4895,rev.K; 5179,rev.A and rev.B; 5275,rev.B and rev.C;
 5487,rev.B and rev.F; 6543,rev.A; 6544, rev.A; 6487,rev.A.

The type approval testing is documented by test reports and certificates of calibration:

Examples Crystal Engineering:

214319 dated 2015-02-25 Certificate of Calibration (MA20)
 216322 dated 2015-03-25 Certificate of Calibration (APM700BAR)
 216703 dated 2015-03-30 Certificate of Calibration (IS33-16/3000PSI)
 216815 dated 2015-03-31 Certificate of Calibration (HPC40)
 216832 dated 2015-03-31 Certificate of Calibration (M1-700BAR)
 216854 dated 2015-03-31 Certificate of Calibration (BARO)
 216861 dated 2015-03-31 Certificate of Calibration (HPC40 3KPSI)
 216887 dated 2015-03-31 Certificate of Calibration (RTD100)
 216889 dated 2015-03-31 Certificate of Calibration (15KPSI)
 216946 dated 2015-04-01 Certificate of Calibration (10KPSIXP2I)
 218888 dated 2015-05-05 Certificate of Calibration (15KPSI) APM by similiarity
 218889 dated 2015-05-04 Certificate of Calibration (15KPSIXP2I) HPC40 by Similarity
 327719 dated 2019-06-25 Certificate of Calibration (HPC50 15KPSI)

Test reports:

Job Id: **262.1-004538-5**
Certificate No: **TAA00002FD**

EMC_CRY5_001-12501-IS33_CE_rev 1 00 series EMC report
95068-4 dated 07.02.2014 APM EMC Report
GMCO0792 rev. 0 HPC 40 series EMC Report
090627E rev. B MultiCal, M1, M30 EMC Report
090441E rev. D nVision EMC Report
100129E rev. A nVision EMC-MA20
1208-048E rev. B XP2i+ EMC Report
element GMCO0895 EMC Test Report

CSA LR 110579-1 Pressure test report
CSA 6122672 Pressure test report
XP2i IP67 Test Certificate no. CTC 8930A dated 2009-02-09
nVision IP67 Test Certificate no. Sira 52A19587Alab dated 2009-04-14

DNV GL Long Beach type approval assessment report for A-14365 dated 2019-07-11.

Tests carried out

Each gauge and temperature calibrator has been calibrated at factory and is delivered with a valid calibration certificate.

Marking of product

Each model is marked with manufacturer name, model name and serial number.

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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE