proceq

Solutions since 1954

Portable Non-Destructive Concrete Testing Instruments

Most Comprehensive Market Portfolio

Proceq is a global leader in the development of portable, non-destructive concrete test solutions that enables users to increase their testing efficiency while lowering their cost for on-site investigations of concrete properties.

	Schmidt	Pundit		Profometer	Profoscope	Resipod	Proceq DY-2	Hygropin	Torrent
		Lab / 200	Pulse Echo						
Adhesive (bond) strength							■		
Bulk resistivity						■			
Compressive strength	■	■	■						
Compressive strength using SONREB	■	■							
Corrosion likelihood				■		■			
Cover depth				■	■				
Cover quality						■			■
Curing condition	■	■				■			
Crack depth		■							
Crack location			■						
Deformities location (voids, pipes, tubes, delaminations, spalling, honeycombing)		■	■						
Durability				■	■	■			■
Electrical resistivity						■			
Homogeneity / Uniformity	■	■	■			■			
Modulus of elasticity		■							
Moisture								■	
Permeability									■
Ultrasonic Pulse Echo			■						
Ultrasonic Pulse Velocity		■	■						
Rebar location and diameter				■	■				
Slab thickness			■						
Surface discontinuities		■							
Surface resistivity						■			
Surface strength	■						■		
Tensile strength							■		

Schmidt®
Compressive strength and homogeneity

Proceq's rebound hammers are instruments used to measure the elastic properties or strength of concrete and rock. Each rebound hammer is built for a different purpose in order to meet the specific needs of the customer.

The SilverSchmidt features superior performance, unmatched repeatability and intuitive operation all in a rugged and ergonomic unit. It has the following advantages over the traditional rebound hammer: 1. The rebound value is independent of the impact direction. 2. The rebound value is not affected by internal friction. 3. Tighter sealing against dirt and dust intrusion for longer life.

Portfolio and Applications Overview

	Concrete Compressive Strength Range					
	1 - 5 MPa 145 - 725 psi	5 - 10 MPa 725 - 1,450 psi	10 - 30 MPa 1,450 - 4,351 psi	30 - 70 MPa 4,351 - 10,153 psi	70 - 100 MPa 10,153 - 14,504 psi	> 100 MPa > 14,504 psi
	Fresh Concrete Very Low Strength Concrete		**Normal Concrete**		**High Strength Concrete**	**Ultra High Performance Concrete**
SilverSchmidt 			**SilverSchmidt ST/PC Type N**			**Only with user defined custom curves**
			SilverSchmidt ST/PC Type L			
		SilverSchmidt PC Type L with Mushroom Plunger				
Original Schmidt 			**Original Schmidt Type N/ND/NR**			
			Original Schmidt Type L/LD/LR			
Schmidt OS-120 	**Schmidt OS-120PT**					

Type N	Standard impact energy. Minimum thickness of test object: 100 mm (3.9") and should be firmly fixed in the structure.
Type L	Low impact energy. Suitable for brittle objects or structures less than 100 mm (3.9") thick.

Technical Specifications SilverSchmidt

Impact energy Type N	2.207 Nm (1.63 ft lbf)
Impact energy Type L	0.735 Nm (0.54 ft lbf)
Dimensions of housing	55 x 55 x 255 mm (2.16" x 2.16" x 9.84")
Weight	570 g (1.3 lb)
Max. impacts per series	99

Useful memory capacity ST version	Last 20 series may be reviewed in the data list
Display	17 x 71 pixel, graphic
Battery life	>5000 impacts between charges
Charger connection	USB type B (5V, 100 mA)
IP classification	IP54

Applied Standards and Norms

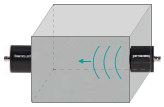
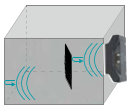
SilverSchmidt: ASTM C805, EN 12504-2, EN 13791 (the Chinese standard JGJ/T 23 has been applied for the procedure to determine the rebound number). Original Schmidt / Schmidt OS-120: ISO/DIS 8045, EN 12 504-2, ENV 206, DIN 1048 part 2, BS 1881 part 202, ASTM C805, ASTM D5873 (Rock), NFP 18-417, B 15-225, JGJ/T 23, JJG 817-199. CE certification.

Pundit®
Compressive strength and homogeneity

Ultrasonic testing of concrete, based on the pulse velocity and pulse echo methods, provides information on the uniformity of concrete, cavities, cracks, defects, slab thickness and the detection of voids, pipes and cracks.

The pulse velocity in a material depends on its density and its elastic properties which in turn are related to the quality and the compressive strength of the concrete. It is therefore possible to obtain information about the properties of components by sonic investigations.

Portfolio and Applications Overview

			Assessment of Concrete Quality		Scan Modes
Pundit PL-200 	Through Transmission: Access from two sides		Ultrasonic Pulse Velocity Uniformity	Compressive strength and SONREB	A-Scans, Line Scans, E-Modulus, Data Logging, Area Scan
				Determination of crack depth	
				Modulus of elasticity	
Pundit PL-200PE 	Pulse Echo: Single side access			Slab thickness from a single side	A-Scans, B-Scans, Area Scan
				Detection and localization of voids, pipes, cracks (parallel to surface), and honeycombing	

Ultrasonic Pulse Velocity Transducers

		24 kHz 	54 kHz 	150 kHz 	250 kHz 	500 kHz 	54 kHz 	250 kHz (S-wave) 
Test object limitations	**Wavelength***	154 mm	68.5 mm	24.7 mm	14.8 mm	7.4 mm	68.5 mm	10 mm
	Max. grain size	≈ 77 mm	≈ 34 mm	≈ 12 mm	≈ 7 mm	≈ 3 mm	≈ 34 mm	≈ 5 mm
	Min. lateral dimension	154 mm	69 mm	25 mm	15 mm	7 mm	69 mm	Greater than the object thickness
	Applications	» Concrete: Very coarse aggregate and large objects (several meters)	» Concrete » Wood » Rock	» Fine grained material » Refractory bricks » Rock (NX cores)	» Fine grained material » Refractory bricks » Rock » Use on small samples	» Fine grained material » Refractory bricks » Rock » Use on small samples	» Concrete: Rough and rounded surfaces (no couplant required) » Wood » Rock (heritage sites)	» Used for determination of elastic modulus » Concrete, wood, rock (small samples only) » Requires special shear wave couplant

*A pulse velocity of 3700 m/s (p wave) and 2500 m/s (s wave) have been used for the computation of the wavelengths.

Applied Standards and Norms

EN12504-4, ASTM C 597-02, BS 1881 Part 203, ISO1920-7:2004, IS13311, CECS2. CE certification.

Profometer 6 are advanced cover meters for the precise and non destructive measurement of concrete cover, rebar diameters and the detection of rebar locations using the eddy current pulse induction principle as the measuring method.

Based on the new generation Profometer touchscreen, the instrument offers real time control over the measurement procedure directly on site. The high resolution color display allows best possible data collection, evaluation and analysis for an entire working day. The flexible concept allows to upgrade anytime between cover meter and corrosion analysis instruments.

Portfolio and Applications Overview

	Profometer 6 Cover Meters			Profometer Corrosion
	Profometer 600	**Profometer 630 AI**	**Profometer 650 AI**	
				
	For safe drilling, coring and cutting, conformity check of concrete cover, fire resistance assessment and rebar assessment on unknown structures			For corrosion analysis
Rebar Location	■	■	■	①
Cover Measurement	■	■	■	
Diameter Estimation	■	■	■	
1-Layer NRC	■	■	■	
2-Layer AI	③	■	■	① + ③
Cover Calibration		■	■	
Single-Line Scan		■	■	
Multi-Line Scan		■	■	
Area Scan		■	■	
Cross-Line Scan	③	③	■	① + ③
Corrosion Potential	②	②	②	■

Functionality

① ② Upgrade kits available (attachable hardware) ③ Software upgrades available (activation key)

Technical Specifications Profometer Touchscreen

Display	7” colour display 800x480 pixels
Memory	Internal 8 GB flash memory
Regional settings	Metric and imperial units and multi-language supported
Power input	12 V +/-25 % / 1.5 A
Dimensions	250 x 162 x 62 mm
Weight	1525 g (incl. battery)

Battery	3.6 V, 14 Ah
Battery lifetime	> 8 h (in standard operating mode)
Humidity	< 95 % RH, non condensing
Operating temperature	-10°C to +50°C (14° to 122°F)
IP classification	Touchscreen IP54, universal probe IP67

Applied Standards and Norms

BS 1881-204, DIN 1045, DGZfP B2, SN 505 262, SS 78-B4, DBV-guideline (Concrete Cover and Reinforcement), CE certification

The corrosion of the reinforcing steel is the primary cause of deterioration of reinforced elements. The mapping of the electrical potential as measured on the surface of the concrete allows the detection of the spots with increased corrosion likelihood and represents a primary tool for the maintenance and for the structural assessment of a concrete structure.

As the direct successor to the Canin+, the Profometer Corrosion represents the most advanced corrosion instrument in the market. With the flexible concept, the user can upgrade anytime to the Profometer 6 Cover Meter functionalities.

- Most versatile half-cell potential solution available
- Proceq's unique wheel electrodes allow the fastest and most efficient on site testing
- Compatible with existing Canin and most third party electrodes
- Improved digital filtering to remove the effect of external noise (civil and industrial power sources)
- Profometer touchscreen with illustrative display and assisted workflow

Applied Standards and Norms

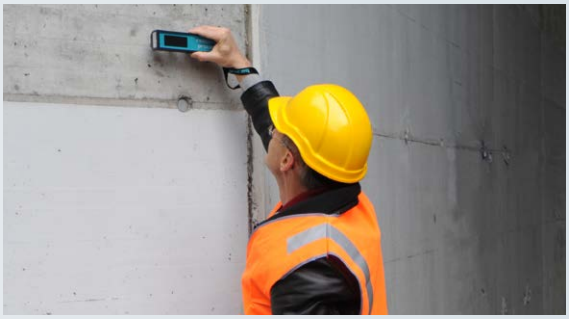
ASTM C876, RILEM TC 154-EMC, DGZfP B3, SIA 2006, UNI 10174, JGJ/T 152, JSCE E 601, CE certification

Resipod
Corrosion analysis and durability

Resipod is the the world's most versatile concrete surface resistivity meter.

The construction industry is rapidly moving towards performance based specifications for concrete durability of new structures; at the same time the assessing of service life of actual reinforced concrete elements is being a subject of increasing concern in the industry.

Concrete resistivity has been used for years as one of the critical parameters used to determine the quality of concrete, both in new constructions and existing structures.



Portfolio and Applications Overview

	Resipod 	Resipod Geometric 	Resipod Bulk Resistivity 
Surface resistivity test on standard cylinders	■	■	■
Bulk resistivity test on cylinders up to 100 mm (4") diameter			■
Surface resistivity test on non-standard cylinders (aggregate sizes > 1.5", 38 mm)	■	■	■
Correction factor for probe spacing		■	
Correction factor for sample geometry		■	
User definable correction factor		■	
Variable probe spacing		■	
Surface resistivity mapping on-site for estimation of likelihood of corrosion, corrosion rate and implementation of cathodic protection systems	■	■	

Lab testing on cubes / cylinders for durability: Electrical resistivity proved to perfectly correlate with classical lab testing aimed at verifying the ability of concrete to withstand the classical lab tests where for resistance to chloride ingress. Proceq's Resipod represents a future-proof solution, able to cover all surface and bulk resistivity measurements in a flexible and efficient way.

On site testing for homogeneity: Resipod is used for checking the homogeneity of a concrete composition (water/cement ratio), assess the curing efficiency and avoid premature dying and to verify the fibre distribution in metallic fibre-reinforced concrete.

On-site testing for corrosion: Electrical resistivity is a critical parameter to be taken into consideration when assessing the likelihood and the speed of corrosion on a reinforced structure. The accepted standard procedure involves the mapping of surface resistivity together with half-cell potential and concrete cover in order to allow the most comprehensive evaluation of the possible ongoing corrosion and the definition of areas at risk.

Technical Specifications

Resolution (nominal current 200µA)	±0.2 kΩcm or ±1%
Resolution (nominal current 50µA)	±0.3 kΩcm or ±2%
Resolution (nominal current <50µA)	±2 kΩcm or ±5%
Frequency	40 Hz

Memory	Non volatile, ca. 500 measured values
Power supply	>50 hours autonomy
Charger connection	USB type B, (5V, 100mA)
Operating temperature	0° to 50°C (32° to 122°F)

Applied Standards and Norms

Resipod complies with the AASHTO Standard TP 95 on surface resistivity.

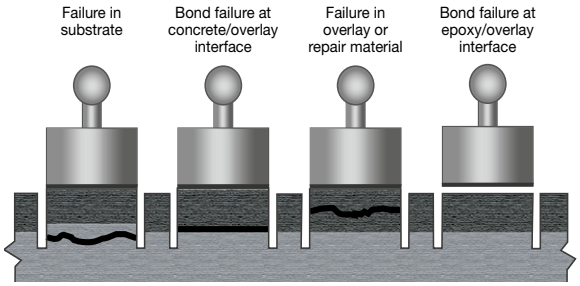
The Proceq DY-2 family of automated pull-off testers covers the complete range of pull-off applications with unmatched ease of operation and the ability to store a complete record of the test.

Pull-off or adhesion (bond) testing is one of the most widely used test methods in the construction industry. It has long been known that one of the major influences on the result of a pull-off test is the operator influence in the application of a constant load rate. The Proceq DY-2 with its integrated feedback controlled motor removes this variable completely by providing a fully automated test at a constant load rate which can be verified.

Portfolio and Applications Overview

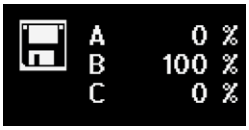
		Working Range		Maximum Pulling Speed
		Tensile Force	Test Disc Ø 50mm	
	**Proceq DY-206**	0.6 – 6 kN	0.3 – 3.1 MPa	4.65 mm/min 0.183 inch/min
		135 – 1349 lbf	44 – 443 psi	
	Proceq DY-216	1.6 – 16 kN	0.81 – 8.1 MPa	
		360 – 3597 lbf	118 – 1182 psi	
	Proceq DY-225	2.5 – 25 kN	1.3 – 12.7 MPa	2.2 mm/min 0.086 inch/min
		562 – 5620 lbf	185 – 1847 psi	

Examples for Ø 50mm test discs. Note: Below the working range, the accuracy is not guaranteed.



Failure Mode Reportig

Most pull-off testing standards require the operator to record the mode of failure. Proceq DY-2 is unique in that it allows this information to be saved along with the test result. For example „B 100%“ indicates a complete failure in the overlay or repair material.



Typical adhesives used are:

- Devcon 2 Ton Epoxy
- Loctite 907, Loctite 3430
- Sikadur 30, Sikadur 31
- Araldite Regular/Rapid

Technical Specifications

Max stroke	5 mm
Calibration accuracy	EN ISO 7500-1 Class 1 (±1 % from 20 % of max. Force)
Memory capacity	100 measurements
Battery capacity	1500 mAh, 3.7V (min. 80 measurements)

Charger connection	USB type A (5V, 500mA)
Weight	4.5 kg
Dimensions of housing	109 x 240 x 205.5 mm
Operating temperature	-10 to +50°C (14° to 122°F)
IP classifiaction	IP54

Applied Standards and Norms

EN 1542, EN 1015-12, EN 1348, ISO 4624, BS 1881 Part 207, ASTM D4541, ASTM C1583, ASTM D7234-05, ASTM D7522, ZTV-SIB 90.

Torrent / Hygropin
Permeability and humidity

Torrent provides a fast, reliable and non-destructive measurement of the air permeability of concrete structures.

The “Covercrete” is the layer of concrete that protects the rebars from aggressive elements that cause corrosion. The Torrent air permeability tester allows a completely non destructive test of the covercrete quality on site as described in the Swiss standard SIA 262/1.

A measurement of the concrete permeability with Proceq’s permeability tester Torrent takes 2 to 12 minutes. The permeability data can be analyzed easily afterwards from the instrument’s display.

Hygropin offers a standardized method for the flooring industry.

Excess moisture in concrete can be fatal to a floor covering installation. To prevent mildew and major damage, the flooring industry requires smart solutions to check surfaces for moisture prior to installing floor coverings or coatings.

The moisture meter Hygropin offers the perfect solution to identify, test and monitor moisture in concrete. Due to the small and fast moisture sensors of the humidity meter, diagnosing moisture is quicker and easier than ever before.

Technical Specifications

Torrent	
Display	128 x 128 graphic LCD
Interface	RS 232 or with adapter to USB
Software	Integrated for printing out measured objects and transmission to PC
Batteries	6 1.5 V, LR 6 batteries for 60 hours operation
Temperature Range	-10° to 60° C (14° F to 140° F)
Carrying Case	325 x 295 x 105 mm, total weight 2.1 kg

Hygropin	
Display	Pixel graphic LCD
Dimension	270 x 70 x 30 mm (10.63 x 2.76 x 1.17”)
Memory	Max. 10’000 readings
Battery	9 V alkaline (standard)
Operating temperature	-10° C to 60° C (14° F to 140° F)
IP classification	IP 40
Measuring range	0 to 100% RH: - 40° C to 85° C (-40° F to 185° F)

Applied Standards and Norms

Torrent: SN 505 252/1, Annex E. Hygropin: CE / EMC immunity, EMC Directive 2004/108/EG, EN 61000-6-1 / 6-2 / 6-3 / 6-4.

Profometer

392 10 001	Profometer 600
392 20 001	Profometer 630 AI
392 30 001	Profometer 650 AI
392 50 001	Profometer Corrosion

Profoscope

391 10 000	Profoscope
391 20 000	Profoscope+

Resipod

381 10 000	Resipod, 50 mm probe spacing
381 20 000	Resipod, 38 mm probe spacing
381 30 000	Resipod Bulk Resistivity
381 50 000	Resipod Geometric

SilverSchmidt

341 30 000	SilverSchmidt ST Type N
341 40 000	SilverSchmidt ST Type L
341 31 000	SilverSchmidt PC Type N
341 41 000	SilverSchmidt PC Type L
310 01 001	Original Schmidt Type N
310 01 002	Original Schmidt Type N (PSI)
310 02 000	Original Schmidt Type NR
310 03 002	Original Schmidt Type L
310 04 000	Original Schmidt Type LR
340 00 202	Digi-Schmidt ND
340 00 211	Digi-Schmidt LD
310 06 001	Schmidt OS-120PT
310 06 002	Schmidt OS-120PM

Pundit

327 10 001	Pundit PL-200
327 20 001	Pundit PL-200PE
327 10 002	Pundit Touchscreen
326 10 001	Pundit Lab
326 20 001	Pundit Lab+

Proceq DY-2

346 10 000	Proceq DY-206
346 20 000	Proceq DY-216
346 30 000	Proceq DY-225

Torrent

380 02 200	Torrent Permeability Tester

Hygropin

780 10 000	Hygropin

Service and Warranty Information

Proceq is committed to providing complete support for each testing instrument by means of our global service and support facilities. Furthermore, each instrument is backed by the standard Proceq 2-year warranty and extended warranty options for electronic portion.

Standard warranty

- Electronic portion of the instrument: 24 months
- Mechanical portion of the instrument: 6 months

Extended warranty

When acquiring a new instrument, max. 3 additional warranty years can be purchased for the electronic portion of the instrument. The additional warranty must be requested at time of purchase or within 90 days of purchase.

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