CITF PA19-017

PS 1000 X-SCAN CONCRETE SCANNER

PS 1000 X-SCAN PRODUCT INTRODUCTION

Applicant Name:

Hilti (Hong Kong) Limited

Product Name:

PS 1000 X-SCAN Concrete Scanner

Specification :

Max. detection range for object location	300 mm (dependent on object spacing, size and type of object, base material type and condition
Location accuracy (standard)	+/- 10 mm (+/- 1% of length)
Location accuracy (max)	+/- 5 mm
Min. distance between two neighboring objects	40 mm
Accuracy of depth measurement	< 100 mm: +/-10 mm > 100 mm: +/-15%
Remark about accuracy of depth measurement	dependent on depth, size and type of object, base material type and condition; concrete parameter setting
Accuracy distance measurement	1%
Radar frequency range	1.0 -4.3 GHz (-10 dB)
Radar center frequency	2.0 GHz
EM Sensor sensitivity	double wire (d = 5 mm) in 8 cm depth with I = 250 mA (45 - 65 Hz)
Max. scanning speed	0.5 m/sec.
Min. scan length	320 mm
Max. scan length	10 m
Display type	TFT 5.7"
Display resolution	640x480 pixel
Display color quality	256 colors
Display width x display height	115x86 mm
Memory capacity	approx. 200 Scans (SD), approx. 10 scans (internal flash memory)
Data memory	SD-card, internal flash memory
Operation time with Li-Ion battery pack	4 h
Automatic power-off	configurable
Scanner dimensions (length x width x height)	318x190x143 mm
Scanner weight	2.45 kg
Operating temperature	-10 -+50°C
Storage temperature	-25 -+63°C
Max. relative humidity	95% @ 40°C
IP protection class	IP 54

- **Core Functions:**
  - The Hilti PS 1000 X-Scan employs pulse radar technology which allows detection of all kind of objects embedded in concrete structures, even in multiple layers up to 30 cm depth range
- **Technology Used:**
  - Pulse radar technology with EM sensor
- **Construction Process involved:**
  - Scan before drill in any application
- **Key Improvement in Construction Process:**
  - Productivity
    - Location of all kinds of embedded objects in concrete structures
    - Object classification for live electrical cable
    - Time & cost saving for re-do work with efficiency gain
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Project Name	Type of project	Year	Nature
MTRC SCL 1112	Railway	2018	Adoption
MTRC SCL 1109	Railway	2018	Adoption
Macau Wynn Palace	Casino	2018	Adoption
Tai Wo Po Heung Village	Housing	2018	Adoption

PS 1000 INNOVATIVE FEATURES

- Core Technology:
  - Non-destructive detection with Pulse Radar Technology
  - Localization: Locates objects in multiple layers up to 30 cm in cured concrete
  - Hit Prevention: Helps users to find safe spots to drill, core or saw
  - Structural Analysis: provides data analysis, evaluation and report generation

First Launch Date: Sept 2014

Safe drilling / coring

- **No object hits (rebar, tendon cables, live wire, plastic pipes …)**
- **Easy to locate objects and mark position**
- **Much safer solution in comparison with X-Ray**
- **Wireless system – self-containing scanner unit – no cables to snag**

Time & cost savings / ease of use

- **No expert skills required**
- **Immediate visualization and interpretation**
- **Scanning efficiency for large areas due to antenna array design**
- **Quick and easy set up time**
- **Cheaper and easier solution than X-ray or GPR**

ADOPTION EXAMPLE

- Project for Illustration: TAI WAI MTR STATION, 2021
- Work Process: SCAN BEFORE DRILL
- Use/ Function in project:
  - Location of all kinds of embedded objects in concrete structures
  - Object classification for live electrical cable

PS 1000 BENEFITS – SAFETY & QUALITY

- Improve Safety & Quality by:
  1. Avoid having to open the existing structure to locate objects or measure rebar size.
  2. Improve safety and avoid accidents onsite, such as cutting through a live electrical conduit or a tension cable.
  3. Avoid project delays and reduce the risk of costly structural damage and repairs.
  4. Using Hilti detection tools and software has many benefits:
  5. PS1000 are used in a non-destructive manner.