

## Castle Pro-DX VOCIS Sound Level Meter Technical Data-sheet

Future-proof technology, flexibility through power and an ability to survive, underpin the development ethos of the Castle Pro-DX Vocis sound level meters.

Castle Group are acknowledged experts in noise and vibration measurement with over 30 years experience. When you buy from Castle you can buy with confidence.

### The technology has finally arrived...

The Vocis Pro DX sound level meter brings to you unrivalled power and usability. With options for real-time octave and one third octave measurement, just about all the sound parameters you could possibly need plus a massive 128 mega bytes of on-board memory. Sound measurement technology has finally arrived.

#### A Tough Case for all Weathers...

Not only is the physical design and construction of the Castle Pro-DX casing extremely tough and durable, it is also dust-proof and weatherproof! This means that, Wherever you go and whatever you do, your Vocis can go with you without letting you down!

#### Talking to the Outside World...

Logged data can be transmitted directly to the Castle GA505 Portable Printer providing ready-formatted print-out. The Vocis features one interface for communication with a PC and with the printer interface cable to third party printers.

To gain the most out of your measured data, Castle dBdataPro software is the way to go. Post measurement analysis, presentation of graphical data and memory management of the Vocis can all be done using this package. dBdataPro also affords seamless integration with word processing and spreadsheet packages enabling you to use your own standard report formats in programmes you are used to using.

#### Simplicity and Power...

Using the meter could not be simpler. The intuitive Pro-DX operating system tells you where you are and what you need to do next. The massive power of the technology in the instrument is tamed by the user interface such that you are presented with all the information in a concise and unambiguous format. Menu choices are logical and straightforward and make maximum use of the clearly defined operation keys and the 'mobile phone' style 'soft' function keys. The data-logging system is also a breeze to use as it is based on 'Templates' and 'Files' just like a PC. You can create as many measurement templates as you like, storing all set-up information and then you simply load the one you want, take the measurements and save the results in a file for later access

#### Future-Proof...

The built in software for these meters is designed to suit future upgrading for feature enhancements, legislative changes or instrument upgrades. Details are mailed to customers as soon as they become available. With the Castle Pro-DX meters, you will always be in step with the law and market requirements.

With the addition of the Castle weatherproofing system, and the option of adding a DAT recorder, this instrument makes the ideal environmental noise measuring system. The simplicity of use and the data-logging capabilities mean that this system can be used for general environmental spot checks, Industrial boundary measurements, construction site monitoring, road noise, neighbourhood noise nuisance, entertainment noise and other measurement tasks.



# Specification

## PRO-DX VOCIS: MODELS

Vocis B (GA131B) - Type 1, 1/1 Octave (Limited Parameters)

Vocis C (GA131C) - Type 1, 1/1 Octave, Ln's

Vocis I (GA131I) - Type 1, 1/1 Octave

Vocis B (GA231B) - Type 2, 1/1 Octave (Limited Parameters)

Vocis I (GA231I) - Type 2, 1/1 Octave

Vocis E (GA131E) - Type 1, No Filters, Ln's

Vocis E (GA231E) - Type 2, No Filters, Ln's

Vocis M (GA131M) - Type 1, 1/1 and 1/3 Octave, Ln's

## APPLICABLE STANDARDS

IEC 61672-1:2002 (Integrating Sound Level Meters), IEC 1260:1995 (Octave Bands), IEC 60651:2001 (Sound Level Meters), IEC 60804:2000 (Integrating Function)

## MICROPHONE AND PREAMPLIFIER

### Type 1:

Type 1 Pre-Polarised ½" (13.2 mm) Electret Condenser Microphone -27 dB ± 2 dB re 1V/Pa

### Type 2:

Type 2 Pre-Polarised ½" (13.2 mm) Electret Condenser Microphone -32 dB ± 3 dB re 1V/Pa

### For both type 1 and type 2:

## DISPLAY

Electro-Luminescent, Back-lit LCD panel (160x160 pixels)

Sound Level Meter and analyser display

Numerical: Tabular results on-screen

Bar graph: 1/1 & 1/3 octaves

Real time clock: Day, Month, Year, Hour, Minute, Second

## LEVEL RANGE

Sound Level Meter (Linear Operating Range: 75 dB)

Display Ranges: (10-dB steps) 15-90, 25-100, 35-

110, 45-120, 55-130 (reference range), 65-140 dB

Analyser Mode (Display Range: 80 dB)

Display Ranges: (10-dB steps) 10-90, 20-100, 30-

110, 40-120, 50-130 (reference range), 60-140 dB

## NOISE FLOOR

Typical 'A' Weighting <18 dB(A) rms

'C' Weighting <21 dB(C) rms

'Z' Weighting <27 dB(Z) rms

## FREQUENCY WEIGHTING

'A' and 'C' to IEC 61672-1:2002 and IEC 60651:2001, 'Z' to IEC 61672-1:2002

## FREQUENCY RANGE

12.5 Hz - 20 kHz (including microphone)

1 Hz - 20 kHz (electrical characteristics)

## TIME WEIGHTING (Variations C, E, I, M)

Slow, Fast, Impulse, 10 ms and Peak

## TIME WEIGHTING (Variations B)

Slow, Fast, Peak 'C'

## MEASUREMENT AND REAL-TIME FREQUENCY ANALYSIS

Dual display measurement from a single microphone;

Display Channel A and Display Channel B

Individual frequency weighting and time weighting settings are possible for Channel A and Channel B displays.

1/1 or 1/3 octave band real-time frequency analysis capability in Channel A display only.

\*Variation B—Channel A Only

## MEASUREMENT PARAMETERS

### All Variations (I, E & M)

Lp (SPL), Leq, Lmax, Pmax (Lpeak), Ltm3, Ltm5, LAE, Lmin

### Variation B

1/1 Octave band values in Lp, Leq, Lmax, Lmin, DOSE %, projected DOSE %, Lex (Lep'd), projected Lex (Lep'd)

### Variations I & M

DOSE %, projected DOSE %, user definable criterion (75, 80, 85 or 90), user definable exchange rate (3, 4 or 5), Lex (Lep'd), projected Lep'd, 1/1 Octave values in Lp, Leq, Lmax, Lmin. Hearing Protection figures in APL, NR (Noise Rating)

### Variations E & M

7 user-definable Ln values (pre-set to: L1, L5, L10, L50, L90, L95, L99) plus LAF\* for Noise act assessment.

### Variation M only

1/3 Octave band values in Lp, Leq, Lmax, Lmin and Ln's

## LOG TIME INTERVALS

1s -10s user definable (not Ln's) and user definable in one second intervals (all parameters) up to 99 hours.

## TIMER FUNCTION (Variations C, E, I, M)

A Program Log Timer to give multiple Start-Stop timings (with sleep mode),

Real Time Clock and Calendar, plus measurement duration.

## MEMORY

2Mb On-board FLASH

2Mb On-board RAM

128Mb for File Storage

## SIGNAL OUTPUT

Serial interface RS232 19200 Baud; 8 bit; no parity, bi-

directional, 9 pin D-sub

'AC' output

## PROCESSING

A to D Converter: 24-bit Stereo, 60kHz sampling

DSP: 32-bit 61MHz processor sampling at 60kHz

Controller: 100MHz, 486SX running at 16MHz

## POWER REQUIREMENTS

9 volts DC (with mains adapter), Batteries: 6 x MN1500 (size AA), Life: approximately 8 hours (alkaline batteries, continuous operation). Simultaneous mains and battery operation.

## SIZE AND WEIGHT

Dimensions: Height: 255mm (without microphone), 368mm (with microphone) x Width: 100mm (max) x Depth: 49mm

Weight: 780g approximately (including batteries)

## ACCESSORIES

**GA607** Dual Level Calibrator:

**GA505** Portable, Battery Operated, Thermal Printer

**ZL1083-01** Printer Cable for use with GA505.

**dBdataPro** Windows Analysis Software.

**GA504** Sony TC-D8 DAT recording kit.

**KA016** Kit Case for Vocis and Accessories

**KA017** Kit Case for Vocis and Printer (GA505)

**KA018** Weatherproof Enclosure

**PSU4** Power Supply

**ZL1092-01** Microphone Extension Cable

**ZL1061-01** AC Output Cable

**PRO-DX VOCIS RANGE SOUND LEVEL METERS  
PRODUCT FEATURES SUMMARY**

| INSTRUMENT TYPE<br>FEATURES      | GA231B        | GA131B        | GA231I | GA131I | GA231E | GA131E | GA131C | GA131M |
|----------------------------------|---------------|---------------|--------|--------|--------|--------|--------|--------|
| MK250 Microphone - Type 1        |               | ✓             |        | ✓      |        | ✓      | ✓      | ✓      |
| Castle 'Aco' Mic - Type 2        | ✓             |               | ✓      |        | ✓      |        |        |        |
| "A", "C" and "Z" Weighting       | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Slow, Fast, Impulse, 10ms & Peak | Slow/<br>Fast | Slow/<br>Fast | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Linearity Range                  | 24-140        | 24-140        | 24-140 | 24-140 | 24-140 | 24-140 | 24-140 | 24-140 |
| Peak: Plot of logged value       | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| LMax RMS & Event Time            | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| LMin RMS & Event Time            | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Lp (Sound Pressure Level)        | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| 1/1 Octave Bands                 | ✓             | ✓             | ✓      | ✓      |        |        | ✓      | ✓      |
| 1/3 Octave Bands                 |               |               |        |        |        |        |        | ✓      |
| NR - Noise Rating Level          |               |               | ✓      | ✓      |        |        | ✓      | ✓      |
| Hearing Protector Attenuation    |               |               | ✓      | ✓      |        |        | ✓      | ✓      |
| LAeq, T with time displayed      | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| LA <sub>E</sub> (SEL)            | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Ltm3 & Ltm5                      | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Lex (Lep'd)                      | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Projected Lex (Lep,d)            | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Dose%                            | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Projected Dose%                  | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Exchange Rate 3dB/4dB/5dB        | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Criterion Level 80/85dB/90dB     | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Backlit LCD                      | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Start/Stop Programmable          |               |               | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Selectable Log Periods           | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| 5 Ranges in 10dB steps           | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Software Calibration             | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| LAF (Night Noise)                |               |               |        |        | ✓      | ✓      | ✓      | ✓      |
| Ln's - 7 Programmable            |               |               |        |        | ✓      | ✓      | ✓      | ✓      |
| Unlimited set-up templates       |               |               | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Time Intervals 1s - 99h          | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| One-button logging               | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Pause/Play Mode                  | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| High Speed mode logging*         | ✓             | ✓             |        |        |        |        | ✓      | ✓      |
| Standard Memory                  | 128Mb         | 128Mb         | 128Mb  | 128Mb  | 128Mb  | 128Mb  | 128Mb  | 128Mb  |
| RS-232-Bi Directional            | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| High-speed PC download           | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Direct Print-out                 | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Elapsed Time                     | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| Real Time Clock & Calendar       | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |
| AC output                        | ✓             | ✓             | ✓      | ✓      | ✓      | ✓      | ✓      | ✓      |

**\*Development Upgrades**

In the interest of continuing product development, we reserve the right to change the above specifications without prior notice.



# To the Safety, Health and Environment Professional...

The issues faced every day by Health, Safety and Environmental professionals are vast and varied. At Castle, we have spent a lot of time developing products and services to make your life easier!

Castle Group Ltd are one of the leading international group specialists in technical safety, health and environment solutions. Whether you are in Industry, Construction, Local Authority or anywhere there are safety or environment issues, we are a resource you really could use. We can help with Noise, Vibration, Air sampling, Gas detection, Light and temperature and just about anything else that needs measuring. The following services show you how we can help

## FREE Health & Safety Training Seminars!

To get you off the ground, refresh your knowledge or just to get a taste, Castle is continually running FREE Safety, Health and Environmental seminars around the country. Covering subjects from Noise at Work, to COSHH and Audiology, the list is ever growing, as are the locations. Check out our web site for the next seminar near you.



[www.castlegroup.co.uk](http://www.castlegroup.co.uk)

## Castle Instruments

Dealing with many Safety, Health and Environmental issues may well mean you need access to a plethora of **equipment** and **instrumentation** to carry out measurements and assessments necessary for the job.

At Castle we can provide you with just about any of the equipment you might need. All our equipment comes with the **guarantee** of back-up and support you only get from a company with 40 years under its belt! Here are a few of the core products we can offer, but we can also source anything you may need!

Noise and Vibration Measurement Equipment  
Audiometers, Otophoses and Booths  
Air-Sampling Pumps, Calibrators and Consumables  
Gas-Detection and Personal Monitors  
Emissions and Air Quality  
Light, Temperature, Humidity and Airflow

[www.castlegroup.co.uk](http://www.castlegroup.co.uk)



## Castle Training Academy

Training is becoming an ever more important area of consideration to industry **professionals** and the Castle Training Academy is fulfilling the need for more and more companies every year. The Academy now offers **competence** training along with IOSH and CIEH **qualifications**. What is more, look out for our NEW City & Guilds provision. All courses come with professional **CPD** points and many are eligible for CITB and Train to Gain **grant funding**.



You can see a full list of courses and book-online on our website.

[www.castletrainingacademy.com](http://www.castletrainingacademy.com).

## CastleRent

There are a number of **reasons** why rental may be the solution for you. You may only have a one-off use, a special contract, a limited budget or a need for supplementary products. In any case, our **flexible booking** system, next day a.m. delivery and open-pricing mean that you can address any of these issues without delay. For long-term contracts, such as construction projects, Castle Rent is also a **tax efficient** way to 'own' equipment. Finally, for peace of mind, what better way is there to try a product before deciding to buy it? We even give you money back if you do purchase!

### The Advantages of Castle Rent;

- Easier on cash-flow
- Rent for long- or short-term as you need it
- Let the Tax Man pay for you!
- Try before you buy
- Four weeks for the price of three
- No on-going maintenance costs
- Sourcing service for any other equipment you need

[www.castle-rent.com](http://www.castle-rent.com)

## Castle Care

Measurement instrumentation must be **regularly** calibrated to a traceable standard and this is certainly true for most health, Safety and Environmental monitoring equipment. At Castle, our team of **highly trained and experienced** technical staff can service and calibrate almost any type of monitoring equipment from Noise and Vibration meters to Thermometers to Scales. The Castle '**Premier Service**' includes menu pricing and a normal turnaround time within 5 days. What is more, we will evaluate any instrument and return it for **FREE** if you do not want to proceed.



### Castle premier service and calibration offers...

- Free Evaluation Service
- Clear and Simple Pricing
- UKAS Accreditation Available
- Large range of equipment calibrated
- 4 Levels of calibration available for most equipment
- Annual contract calibrations with up to 20% off

[www.castle-care.com](http://www.castle-care.com)



## Castle Contracts

For companies with **multiple** pieces of **equipment**, there is also Castle's 'Contract Calibrations'; an annual scheme to take the hassle out of maintaining equipment certification. Castle will issue calibration **reminders**, collect your equipment if required and return it calibrated as soon as possible. This scheme also affords a **saving** of up to 20% on annual calibration charges.

[www.castle-care.com](http://www.castle-care.com)

## Castle Consultancy

Castle **experts** are waiting to help you. Because we have a **network** of consultants across the country, we are poised to **react** to your requirement. Not only can we normally provide a local service, but we can usually help right away if you need us to!

Whether you are limited for time, in need of further **expertise** or just want some **advice**, we can assist. We have provided a wide range of services to many top companies for projects large and small.

**Here are some of the services we can provide, but if it's not here, just ask!**

- Noise or Vibration risk assessments
- Building Acoustics
- COSHH compliance
- Environmental Impact Assessments
- Air Quality Monitoring
- Occupational Health Screening programmes

[www.castle-consultancy.com](http://www.castle-consultancy.com)

## Castle Online

You can access all our products and services online whenever you want, just go to [www.castlegroup.co.uk](http://www.castlegroup.co.uk) and you will find a **knowledgebase** packed full of useful facts and information. You will also find details of all our upcoming **FREE seminars** and training courses as well as product information on literally hundreds of health, safety and environmental items, which are available to purchase directly through a secure server. Among other things you will find:

- HS&E Measurement Products
- Books, Standards and Publications
- HS&E CD's DVD's
- Stopwatches and Timers
- Scales and Distance Measurement
- Water Testers

You will also find our shop on ebay of all places - <http://stores.ebay.co.uk/Castle-Group-Safety> or just go onto ebay and type Castle Group Safety in the shops section.

## Who are Castle

For 40 years, Castle has been driving forward with product and service innovation. For a number of the early years, the company focussed on the development of sound and vibration measuring equipment. This was then progressed by adding training courses, rental and consultancy eventually leading to the Castle of today, which is helping many customers deal with a vast range of health, safety and environmental issues in a variety of ways. The future is a very exciting place at Castle and we are working on many new initiatives with our customers firmly in mind!

