

# MCC

**NEW  
Versions!!**

**MCC Classic 50-C8422/C**

for the automatic execution of compression, flexure, indirect tensile tests and determination of Elastic Modulus.

**MCC Multitest 50-C8422/M**

for the same performances of MCC classic plus tests under Displacement and Strain control.



The evolution of testing methods and relevant international Standards requires dedicated machines and apparatus that CONTROLS has developed as the MCC Control Consoles here presented.

The new **MCC Classic** (or MCC Multitest) control console with PC and PC cabinet 86-D2999 (optional)

Typical configuration of an Automatic Testing System with the **MCC Classic** controlling 4 test frames for compression and flexure on concrete and compression and flexure on mortar samples. PC cabinet 86-D2999 not included (see accessories).



**MAIN FEATURES**

- **Completely automatic execution of Compression, Flexure and Indirect tensile tests as well as test cycles to determine the ELASTIC MODULUS**
- **MCC Multitest version also suitable for tests under displacement and strain control.**
- **Connect up to 2 test frames extendable to 4 with the suitable upgrade**
- **Dual control system through PC and keyboard display**
- **Multi-language software with facility to introduce user defined text (Latin alphabet only)**

### Main technical specifications

(In short. For more information visit our web site)

#### Hydraulic group

Dual stage pump, 700 bar max. pressure, 2 hydraulic outputs extendable to 4 with the accessory 50-C7022/UP2, Servo-control system with proportional valve.

#### Electronics and on board firmware

- Real resolution 132000 divisions, Closed loop control with high frequency PID.
- 4 channels for deformation sensors used in Elastic Modulus determination (normally strain gauges or digital compressometers).
- Diagnostic menu to identify possible problems
- Saving of calibration curves of different sensors
- Digital linearization of calibration curves with automatic selection of coefficients

#### User interface

The system is controlled via the PC. An alphanumeric keyboard and display are also provided for factory settings and use in local mode. Icon menu.

- Graphical display 320x240 pixel

#### Software

Designed for remote control of the machine all over the test conforming to the reference Standards. Allows selection of the testing frame.

The **MCC Classic** version permits the execution, using the appropriate testing frame and accessory, of the following tests and relevant Standards:

- **Compression test:** EN 12390-3, EN 196, ASTM C39, ASTM C109, ASTM C349, AASHTO T22
- **Flexural test:** EN 1339, EN 1340, EN 12390-5, ASTM C78, ASTM C293, AASHTO T97
- **Splitting tensile test:** EN 1338, EN 12390-6, ASTM C496
- **Elastic Modulus of concrete:** ASTM C469, ISO 6784, DIN 1048, BS 1881:121, UNI 6556, pr EN 12390-XX, EN 13412, EN 13286:43

The **Datamanager** software features:

Automatic execution of compression, flexural and splitting tensile tests on concrete and building materials. Real time display of test data either in numerical or graphical format. Management of data with data base logic including client name, Standard, customization of the test report and selection of the language. Very easy to use and complete with all data required by modern laboratories.

The **E-Module** software features:

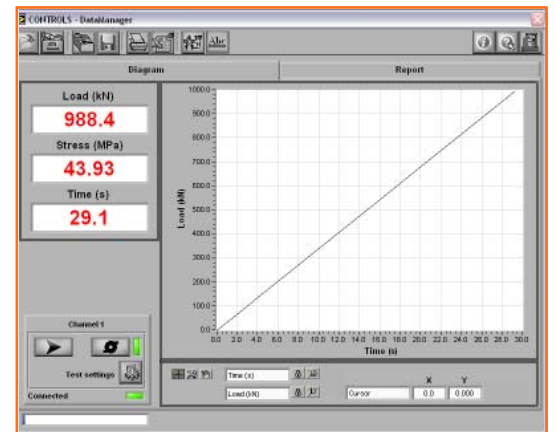
Automatic execution of tests for the determination of Elastic Modulus. Fully customizable program permits the configuration of load cycles conforming to the various Standards with high accuracy of measurements.



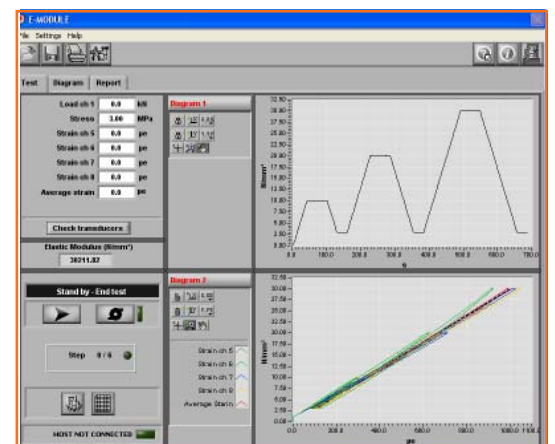
Detail of keyboard and display



Calibration menu display



Compression test screen



Elastic modulus test screen

The **MCC Multitest** version, further to the above , permits the execution, using the appropriate testing frame and accessory, of the following tests and relevant Standards:

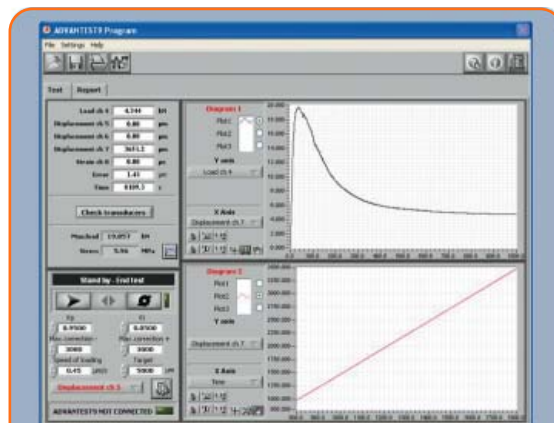
- Toughness of fiber reinforced concrete (FRC): ASTM C1550**
- Energy absorption of sprayed concrete: EN 14488-5, UNI 10834**
- Ductility of fiber reinforced concrete: UNI 11039-2**
- Flexural strength of Shotcrete: EN 14488-3**
- Flexural strength of fiber reinforced concrete (FRC): EN 14651, ASTM C1609, ASTM C1018**

The **Multitest** software features:

Automatic execution of fully customizable tests under load, load/stress, displacement and strain control which are common for materials such as fiber reinforced concrete (FRC) , Shotcrete, concrete elements lined with polymeric membranes, structural reinforcement elements. It is also possible to program a sequence of steps with different feed- back parameters. All test parameters can be easily adjusted to meet the Standards' requirements.

Physical specifications

- Power rating: 750 W
- Dimensions (l x w x h): 470x410x1000 mm
- Weight approx.: 120 kg



Results of flexure test on a fiber reinforced concrete beam performed under deflection rate control



Virtual gauges indicating the actual reading of the sensor in percentage respect the full scale. It's an excellent tool for correct transducers positioning.

**Ordering information**

Code	Description
<b>50-C8422/C</b>	<b>MCC Classic</b> , Stand alone closed loop automatic control console for up to 2 frames, expandable to 4. Software included for compression, flexure, indirect tensile tests and Elastic Modulus determination. PC and printer not included. 230 V, 50 Hz, 1 ph.
<b>50-C8422/M</b>	<b>MCC Multitest</b> , Stand alone closed loop automatic control console for up to 2 frames, expandable to 4. Software included for compression, flexure, indirect tensile tests and Elastic Modulus determination. Allows load, displacement and strain control. PC and printer not included. 230 V, 50 Hz, 1 ph.

Note: for 220 V 60 Hz models modify the last code number to 3 (ex. 50-C8423/M). For 110V 60 Hz modify the last code number to 4 (ex. 50-C8424/M).

**MCC Upgrading options: Connection to 3rd or 4th frame**

Code	Description
<b>50-C7022/UP1</b>	Upgrading of the MCC Classic and Multitest control consoles for the connection of a third frame.
<b>50-C7022/UP2</b>	Upgrading of the MCC Classic and Multitest control consoles for the connection of a third and fourth frame.



50-C7022 4-way distribution block

**PC cabinet**

Code	Description
<b>86-D2999</b>	PC cabinet for testing systems. 230V, 50 Hz, 1 ph
<b>86-D2999/Z</b>	PC cabinet for testing systems. 110 V, 60 Hz, 1 ph

PC system protection from airborne contamination by two vented filters. The monitor can be fit on top and three extractable shelves holds keyboard, printer and mouse. PC and printer not included.

-Overall dimensions (l x d x h): 500x550x915 mm - Weight approx.: 55 kg

**PC**

Code	Description
<b>86-C8000/COMP</b>	Desktop PC and monitor Ms-Windows® preinstalled
<b>82-Q0800/3</b>	Serial cable and USB adapter for PC connection



## Concrete and Cement testing frames for compression and flexural tests

### Concrete compression frames

The following models can be connected and controlled by the **MCC Classic** and **MCC Multitest** control consoles. All the frames are supplied with connection kit to separate control console. Pedestal is included only in 2000kN and 3000kN capacity EN frames. For more information and details visit our web site.

### ASTM-AASHTO Testing frames for cylinders only

- 50-C3100/FR** 1500 kN cap. compression frame for cylinders up to dia.160x320 mm
- 50-C4700/FR** 2000 kN cap. compression frame for cylinders up to dia.160x320 mm

### ASTM-AASHTO Testing frames for cubes and cylinders

- 50-C3400/FR** 1500 kN cap. compression frame for cylinders up to dia.160x320 mm, and cubes up to 150 mm.
- 50-C4400/FR** 2000 kN cap. compression frame for cylinders up to dia.160x320 mm, and cubes up to 150 mm.
- 50-C5400/FR** 3000 kN cap. compression frame for cylinders up to dia. 160x320 mm, and cubes up to 200 mm.

### EN-ASTM-AASHTO Testing frames for cubes and cylinders

- 50-C4600/FR** 2000 kN cap. compression frame, for cubes up to 200 mm and cylinders up to dia.160x320mm, tested for stability to EN 12390-4.
- 50-C5600/FR** 3000 kN cap. compression frame, for cubes up to 200 mm and cylinders up to dia.160x320mm, tested for stability to EN 12390-4.
- 50-C6600/FR** 4000 kN cap. compression frame, for cubes up to 300 mm and cylinders up to dia.250x500mm, tested for stability to EN 12390-4.
- 50-C7600/FR** 5000 kN cap. compression frame, for cubes up to 300 mm and cylinders up to dia.250x500mm, tested for stability to EN 12390-4.

### EN-ASTM-AASHTO Four prestressed column Testing frames

- 50-C5800/FR** 3000 kN cap., four prestressed column high stiffness compression frame, for cubes up to 200 mm and cylinders up to dia. 160x320 mm, tested for stability to EN 12390-4. S
- 50-C5902/FR** 3000 kN cap., four prestressed column high stiffness compression frame, for cubes up to 200 mm and cylinders up to dia. 160x320 mm, tested for stability to EN 12390-4. Load cell incorporated in the piston.



50-C4600/FR upgraded with 50-C4600/UP4 block platens



50-C5600/FR with distant pieces



50-C5800/FR four prestressed columns frame with distance pieces

## Compression frame accessories for the determination of ELASTIC MODULUS, with both MCC Classic and MCC Multitest.

Standards: ASTM C469, ISO 6784, DIN 1048, BS 1881:121, UNI 6556, pr EN 12390-XX, EN 13412, EN 13286:43

### Electronic universal Compressometer-Extensometers

**55-C0222/F** Electronic universal compressometer-extensometer for cylinders, prisms and cubes. Complete with distance piece for small specimens, template for gauge length and pair of elastic bands to hold the meter to the specimen.

#### General description and specifications

Aluminium and steel structure incorporating a high precision inductive transducer. Three units are generally recommended for axial deformation measurement.

Inductive transducer:

- Sensitivity 0.02 micron
- Feed up to 10 V
- Travel ± 1.5 mm
- Gauge length: adjustable from 50 to 160 mm
- Minimal axial dimension: 55 mm
- Full travel mechanical stop to prevent damage

### Strain gauges

Code	Description
<b>82-P0390</b>	Strain gauge, 9.53 mm gauge length. Pack of 5
<b>82-P0391</b>	Strain gauge, 20 mm gauge length. Pack of 10
<b>82-P0392</b>	Strain gauge, 30 mm gauge length. Pack of 10
<b>82-P0393</b>	Strain gauge, 60 mm gauge length. Pack of 10
<b>82-P0399/1</b>	Connecting terminals, 50 pairs sheet
<b>82-P0399/B</b>	Strain gauge application kit including: Conditioner, Neutralizer, Acetone, two Tweezers, Adhesive and Catalyst agent, 100 m of Bipolar cable, Solder, electric Welder and carrying case.
<b>82-P0398</b>	Compensation device for up to 4 Wheatstone bridges with ¼ or ½ bridge setup

#### General description and specifications

They provide a very accurate electrical signal, strictly proportional to the strain of the specimen submitted to load application, for determining the Elastic Modulus and strength characteristics as alternative to the Compressometer-Extensometers 55-C0222/F. They can be applied to the specimen surface by a special Adhesive-Catalyst agent and other accessories all included in the 82-P0399/B Strain gauge application kit. Up to 4 strain gauges ¼ bridge, and up to 8 ½ bridge, can be directly connected by the interface 82-P0398 to MCC Classic, MCC Multitest and ADVANTEST 9 consoles.

Codes	<b>82-P0390</b>	<b>82-P0391</b>	<b>82-P0392</b>	<b>82-P0393</b>
Grid width mm	4,53	3	2	1
Gauge length mm	9.53	20	30	60
Resistance ohm	120	120	120	120
Bridge	¼	¼	¼	¼
No. of gauges per package	5	10	10	10



Three electronic compressometers 55-C0222/F fitted to a cylinder specimen during the compression stage.



150 mm dia. x 300 mm cylindrical sample with 3 extension (compressometers 55-C0222/F ready for elastic modulus test).



Set of 3 extension/compressometers



40x40x160mm cement prism fitted with three 55-C0222/F



Determination of elastic modulus of cylindrical sample using surface mounted strain gauges.

**Compression-flexure cement testing frames**

The following testing frames can be connected and controlled by the MCC Classic and MCC Multitest control consoles. All the frame are supplied with connection kit to separate control console and pedestal.

**65-L1201/FR** Compression testing frame, 300 kN cap., fitted with round platens 165 mm dia. and load cell. Suitable to receive various accessories for compression tests on cement, mortars and resins conforming to EN and ASTM standards.

**65-L1211/FR** Same to 65-L1101/FR, but the vertical daylight is 358 mm and horizontal is clearance 266mm.

**65-L1301/FR** Compression/flexure testing frame, 15/300 kN cap., fitted with round platens 165 mm dia. and load cells. Suitable to receive various accessories for flexural and compression tests on cement, mortars and resins conforming EN and ASTM standards.

**65-L1401/FR** Flexural/Compression frame 15 kN cap. fitted with round platens 165 mm dia. and load cell. Suitable for flexure test, using the suitable accessory, on cement, mortars and resins, or compression test on low strength specimens.



65-L1301/FR with fragment guard  
65-L1300/P and flexural/compression devices available as accessory.

**Flexural testing frames**

Various models available, ranging from 100 to 300 kN capacity as listed below. For more information please visit our web site.

Flexural frame for standard beams

**50-C0900/FR** 100 kN cap. flexure frame complete with rollers, pressure transducer, pedestal and connection kit for connection to control consoles

General description and specifications (in short)

A simple and practical frame developed for testing on standard concrete beams. The distance of both pair of loading and support rollers can be easily adjusted: one of the two upper rollers can be removed and the other placed in the centre for centre point loading.

Max. load capacity	kN 100
Load sensor	Pressure transducer
Distance between upper rollers mm	150, 100 or single roller
Distance between lower rollers mm	450 and 300
Weight approx. kg, frame only	105
Weight approx. kg including pedestal	152



65-L1201/FR detail of round platen and load cell with compression device.



50-C0900/FR

### Universal Flexural Frames, 100-150 kN cap.

**50-C1200/BFR** 150 kN cap. flexural frame, complete with pressure transducer and connection kit for separate control console. Rollers not included.

**50-C1201/BFR** 100 kN cap. flexural frame, complete with load cell and connection kit for separate control console. Rollers not included

#### Specifications (in short)

Codes	50-C1200/BFR	50-C1201/BFR
Max cap. kN	150	100
Load sensor	Pressure transducer	Load cell
Max. vertical clearance mm	207	182
Horizontal clearance mm	720	720
Piston travel mm	130	130
Overall dimensions (lxwxh) mm	950x1000x981	950x1000x981
Weight approx. kg	130	130

#### Accessories for 50-C1200 and 50-C1201 series frames

**50-C1200/8** Upper and lower roller dia.40x300mm assembly for centre and third point test of concrete beams, conforming to EN 12390-5, ASTM C78.

**50-C1200/3** Accessory for testing flagstones and kerbs to EN 1339 and EN 1340, including two loading supports and central loading roller dia.40x620 mm and top loading swivel jointed pad 40 mm dia. Weight approx.: 45 kg

**50-C1200/4** Accessory to complete 50-C1200/3 to perform the third point and centre point flexure test to EN 12390-5, including two rollers dia.40x300mm (one removable for centre point test) and support plate with cylindrical seat. Lower rollers not included. Weight approx.: 23 kg

### Universal, Open Structure, Flexural Frame, 300 kN cap.

**50-C1601/FR UNIFLEX 300**, Universal open structure flexural frame, 300 kN cap., complete with connection kit for separate control console.

#### General description and specifications (in short)

The "C" shaped open structure allows an easy and practical front loading but, once the specimen is in the loading position, the structure is closed by a vertical rod hydraulically clamped assuring high rigidity.

Fitted with high precision strain gauge load cell.

- Max. load capacity: 300 kN
- Min./Max. distance between lower bearers: adjustable from 80 to 1500 mm
- Overall dimensions (lxwxh) : 1700x1266x1512 mm
- Weight approx. : 605 kg

#### Accessories for 50-C1601/FR

**50-C1601/1** Upper and lower roller assembly dia.40x300mm for centre and third point test of concrete beams up to 200x200x800 mm, conforming to EN 12390-5, ASTM C78, ASTM C1609, ASTM C1018, EN 14488-3. Weight approx. 52 kg

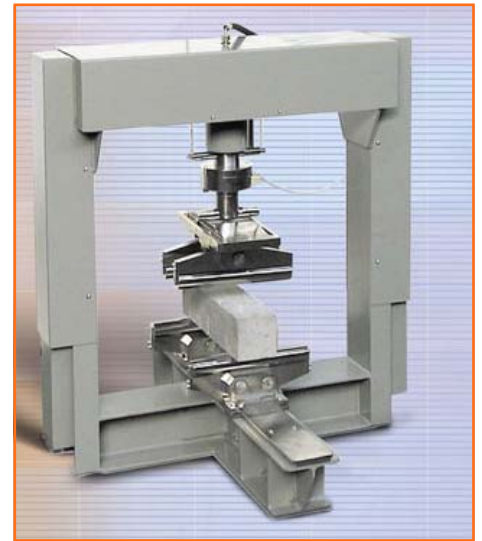
**50-C1601/2** Set of one upper and two lower roller assembly dia.40x620mm for testing paving flags, conforming to EN 1339

**50-C1601/3** Swivel jointed loading pad for testing kerbs, conforming to EN 1340. To be used with the accessory 50-C1601/2 in place of the upper bearer. Weight approx. 5 kg

**50-C1601/4** Set of lower platen and upper platen spherically seated, 165 mm dia., for compression tests on small and low strength specimens. This accessory can also be used to perform the splitting test on paving blocks with the accessory 50-C9070. Weight approx. 19 kg

**50-C1601/5** Electronic transducer, 110 mm travel, for measuring the piston displacement. Weight approx. 1 kg

**50-C1601/KIT** Set of 4 distance pieces for adjusting the vertical daylight. To be used with C1601/1, C1601/1B, C1601/2, C1601/4. Weight approx. 10 kg



50-C1201/BFR with 50-C1200/8



50-C1601/FR



50-C1601/FR + 50-C1601/1B + 50-C1601/5 + 50-C1200/5 + 2 x 82-P0331/C + 82-P0331/2 + 50-C1601/KIT + 82-P0331/E

#### NOTE:

For more information visit our web site or ask for the specific data sheet.



**Accessories for tests under Displacement and Strain control. For MCC Multitest only.**

Flexural strength of fiber reinforced concrete and sprayed concrete. Standards: ASTM C1609, ASTM C1018, EN 14651, EN 14488-3

**COMMON ACCESSORIES**

50-C1200/5 Auxiliary testing frame for the measurement of deflection of beams.

82-P0331/C High precision displacement transducer, 10 mm travel (2 pcs to be ordered)

82-P0331/2 Electric mean device for displacement transducers 82-P0331/C

82-P0331/E Crack Tip Opening Displacement (CTOD) and Crack Mouth Opening Displacement (CMOD) transducer.

**Additional accessories****WITH 50-C1201/FR FRAME**

50-C1200/8 Upper and lower roller dia.40x300 mm assembly for centre and third point test of concrete beams.

50-C1200/8B Same to 50-C1200/8, but dia. 30x300 mm.

**WITH 50-C1601/FR FRAME**

50-C1601/5 Electronic transducer, 110 mm travel, for measuring piston displacement.

50-C1601/1 Upper and lower roller assembly dia.40x300 mm for centre and third point test of concrete beams.

50-C1601/1B Same to 50-C1601/1, but dia.30x300 mm.

50-C1601/KIT Set of 4 distance pieces for adjusting the vertical daylight.

Energy absorption of sprayed concrete. Standards EN 14488-5, UNI 10834.

**WITH 50-C1201/FR**

50-C1200/6 Auxiliary testing frame for energy absorption test on sprayed concrete slab 600x600x100 mm to EN 14488-5.

82-P0331/D1 High precision displacement transducer, LDT type, 50mm travel 2mv/v

82-D1260 Magnetic holder for transducers.

**WITH 50-C1601/FR**

50-C1601/5 Electronic transducer, 110 mm travel, for measuring the piston displacement.

C1601/6 Auxiliary testing frame for energy absorption test on sprayed concrete specimens 600x600x100 mm.

50-C1601/8 Displacement transducer, 50 mm travel, for measuring sprayed concrete slab deflections complete with adaptors.

Toughness of Fiber Reinforced Concrete. Standards ASTM C1550

**WITH 50-C1601/FR**

50-C1601/5 Electronic transducer, 110 mm travel, for measuring the piston displacement.

50-C1601/7 Round lower support for testing round slabs of fiber reinforced concrete to ASTM C1550.

50-C1601/8 Displacement transducer, 50 mm travel, for measuring sprayed concrete slab deflections.