



# INNOVATIVE VERTICAL MEASURE

The INTEGRAL AFFRI® System Hardness Testers achieve the highest level of automatic hardness measurement accuracy and resolution available, for Rockwell, Brinell, Vickers and Knoop tests.

This Hardness Tester instrument is equipped with a unique closed-loop electronic force measuring system and a highly accurate "in-line" depth measuring technology for a fast, precise, and reliable testing.









The "in-line" depth measuring AFFRI® technology assures a perfect and absolute accuracy in any test condition, even if test sample deflects or if it is inclined during testing cycle. There is no need to repeat a second test. The first one is absolutely precise.



#### A SINGLE START BUTTON

Pressing a single button you can perform automatic contact, clamping of test sample and measure. It includes auto focus and auto measure in any system Brinell, Knoop, Rockwell, Vickers, even on unpolished surfaces. Touch screen and PC Windows are user friendly and include unlimited functions.



#### LARGE CAPABILITY

It automatically takes contact with any test area. The exclusive AFFRI® System assures fast adjustment on any test surface, even on difficult areas. The included clamping system assures a perfect stability.







#### OPEN SPACE

The retractable arm supporting the touch panel assures wide space to accept large parts and easy handling. User-friendly PC and multicolor touch panel for test methods set up and configuration. Graphic icons and Windows® software offer many functions. Large capacity hard Disk and PC assure infinite performance as well as remote control for easy assistance everywhere.



### ANY TEST POINT

Indenter's extension assures easy testing on difficult test areas with high accuracy.

The indenter is always protected and the measure is always accurate.









### PERFECT STABILITY

The large and open supporting base assures a secure stability for any test piece.





#### **ACCESSORIES**

Optics with multiple magnification from 10 - 20 - 30 - 40 - 60 - 160 - 400 X and infinite zoom, combined with powerful LED lights to optimize a sharpest vision in any condition.





### ACCESSORIES

A series of different anvils is available to test every size of test piece.





### **ACCESSORIES**

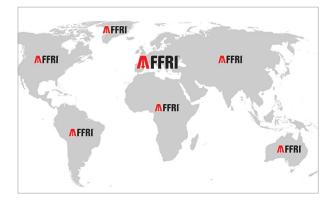
Large variety of indenters for each hardness scale of 1 - 2,5 - 5 - 10 mm 1/16" - 1/4" - 1/8" - 1/2" W carbide and 120° - 136° - 172° diamonds.





#### SURFACE PREPARATION

Surface preparation by cold-milling ensures a perfect roughness without overheating the metal surface. Extending test cycles to more than 20.000 it reduces maintenance cost and dead times. It is available a customizable version of the machine combining each specific requirement.



Real Time Support. Connect your INTEGRAL to Internet and we can remotely diagnose any technical issues, provide additional operator training and update software version.

Connect to www.affri.com for more details.



#### Made by: OMAG di AFFRI D. S.r.l.

Via M. Tagliaferro, 8 I-21056 INDUNO OLONA -CEE (VA) - ITALY Tel. +39 0332 200546 Fax +39 0332 203704 info@omagaffri.com

# Europe/Asia:

Via M. Tagliaferro, 8 I-21056 INDUNO OLONA -CEE - (VA) - ITALY Tel. +39 0332 201533 +39 0332 206289 Fax +39 0332 203621 info@affri.com - www.affri.com

## America:

111 S. Lombard Rd Unit #4 ADDISON, IL 60101 - USA Tel. 224 374 0931 - 630 303 1588 sales@affriusa.com www.affri.com

	TECHNICAL DATA
Accuracy	Better than 0.5 %
Temperature range	From 10 °C to 35 °C
Power supply and data output	111 or 220 V / $50 \div 60$ Hz and air compressed 5 ATM - USB / Ethernet (Wire connection for technical assistance auto diagnosis)
Software and principle of operation	Easydur - Load Cell and Closed Loop (Pat. AFFRI)
Feasible tests	Automatic Brinell, Vickers, Rockwell, Shore, case depth treatment and HDTL (depend on the models)
Standards	ISO 2039 / ISO 7619 / ISO 868 / ISO 6506 / ISO 6507 / ISO 6508 / ASTM E384 / ASTM E18 / ASTM E10 / ASTM E103
Turret	Automatic turret. Self switching 1 indenter + 1 objective (optional 5 -7 steps)
Lighting and objectives	LED - Objectives: 1X, 2X, 5X, 10X, 20X, 40X, 160X (depend on the models)
Camera	Firewire
Focus and reading	Both automatic and manual
Head stroke	500 mm
Depth capacity	170mm (other on request)
X-Y table	400 x 400 mm
Tolerable weight	3000 kg
Fields of use	For all metals: iron, steel, tempered steel, cast iron, brass, aluminium, copper and metal alloys. Heat treatment, hardening, nitriding, cementation and hardfacing. Hard and soft plastics.
Packing weight and measurements	600 kg - 160 x 130 x 230 cm

	FORCE RANGE
INTEGRAL 1	Brinell 153.2 - 306.5 - 612.9 - 1226 - 1839 - 2451 - 4903 - 7355 - 9870 - 29421 <b>N</b> (15.6 - 31.2 - 62.5 - 125 - 187.5 - 250 - 500 - 750 - 1000 - 3000 <b>kgf</b> )
INTEGRAL 2	Brinell 9.807 - 49.03 - 98.07 - 147.1 - 153.2 - 294.2 - 306.5 - 612.9 - 1226 - 1839 - 2452 <b>N</b> (1 - 5 - 10 - 15 - 15.6 - 30 - 31.2 - 62.5 - 125 - 187.5 - 250 <b>kgf</b> )
	Vickers 9.807 - 19.60 - 29.42 - 49.03 - 98.07 - 147.1 - 294.2 - 490.3 - 980.7 <b>N</b> (1 - 2 - 3 - 5 - 10 - 15 - 30 - 50 - 100 <b>kgf</b> )
	Rockwell 588.4 - 980.7 - 1471 <b>N</b> (60 - 100 - 150 <b>kgf</b> ) Superficial Rockwell 147.1 - 294.2 - 441.3 <b>N</b> (15 - 30 - 45 <b>kgf</b> )
	Optional test loads 49 - 132 - 358 - 961 <b>N</b> (for plastic, rubber as per EN-ISO 2039 std) Shore A - B - C - D
INTEGRAL 3	Brinell 29.42 - 49.03 - 98.07 - 153.2 - 306.5 - 612.9 - 1226 - 1839 - 2452 - 4903 - 7355 - 9807 <b>N</b> (3 - 5 - 10 - 15.6 - 31.2 - 62.5 - 125 - 187.5 - 250 - 500 - 750 - 1000 <b>kgf</b> )
	Vickers 29.42 - 49.03 - 98.07 - 147.1 - 294.2 - 490.3 - 980.7 - 1176.8 <b>N</b> (3 - 5 - 10 - 15 - 30 - 50 - 100 -120 <b>kgf</b> )
	Rockwell 588.4 - 980.7 - 1471 <b>N</b> (60 - 100 - 150 <b>kgf</b> ) Superficial Rockwell 147.1 - 294.2 - 441.3 <b>N</b> (15 - 30 - 45 <b>kgf</b> )
	HDTL case depth automatic HV 525 - 550 - 600 - 650
	Optional test loads 49 - 132 - 358 - 961 <b>N</b> (for plastic, rubber as per EN-ISO 2039 std) Shore A - B - C - D
INTEGRAL 5	Brinell 98.07 - 294.2 - 306.5 - 612.9 - 1226 - 1839 - 2452 - 4903 - 7355 - 9807 - 29421 <b>N</b> (10 - 30 - 31.2 - 62.5 - 125 - 187.5 - 250- 500 - 750 - 1000 - 3000 <b>kgf</b> )
	Vickers 98.07 - 147.1 - 294.2 - 490.3 - 980.7 - 1176.8 <b>N</b> (10 - 15 - 30 - 50 - 100 - 120 <b>kgf</b> )
	Rockwell 588.4 - 980.7 - 1471 <b>N</b> (60 - 100 - 150 <b>kgf</b> )
	HDTL case depth test HV 525 - 550 - 600 - 650
	Optional test loads 49 - 132 - 358 - 961 <b>N</b> (for plastic, rubber as per EN-ISO 2039 std) Shore A - B - C - D

