

TABELA DE PREÇOS

2018



MORGADO & CA
MATERIAL ELÉCTRICO E ELECTRÓNICO

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Artigo	Descrição	Preço Unitário (€)
INSTRUMENTOS PARA VERIFICAÇÕES DE SEGURANÇA		
COMBI 419	Instrumento multifunções de acordo com IEC 61557	1 418,80
COMBI 420	Instrumento multifunções de acordo com IEC 61557 com analisador de qualidade de energia monofásico incorporado	1 505,90
COMBIG2	Instrumento multifunções de acordo com IEC 61557	2 056,50
EQUITEST5071	Earth conductor resistance (with 10A test current) and Line/ Loop imp. meter	2 036,00
GEO 416	Digital earth resistance and ground resistivity meter up 50 Kohm	1 073,10
GSC60	Multif.tester according to EN61557 and power quality with touch screen	4 635,00
HV000057-0201	Multifunction instrument, three-phase power analyzer and continuity 10A	4 130,90
HV000057-0203	Multifunction tester and three-phase power analyzer with HTFLEX3003	5 531,80
HT7051	Programmable digital 5kV insulation tester	3 462,50
HT7052	Programmable digital insulation tester 10 KV	4 848,00
ISO 410	Digital insulation and continuity meter	1 016,80
ISOTEST M70	1000V insulation meter, 200mA continuity meter and RMS DMM	527,60
M71	Earth resistance meter by two auxiliary earth rods	686,40
M72	500V insulation meter, 200mA continuity meter and TRMS DMM	609,60
M73	RCDs tester, global earth resistance meter and TRMS DMM	694,10
M74	Multifunction safety tester and TRMS DMM	817,00
M75	Multifunction safety tester, TRMS DMM and LAN wire mapper	983,50
MACROTESTG3	Multifunction tester according to IEC 61557	2 657,70
SPEED 418	Safety tester for RDC tripping time and earth resistance measurements	1 178,10
T2000	Earth ground clamp meter	1 247,20



Artigo	Descrição	Preço Unitário (€)
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INSTRUMENTOS PARA VERIFICAÇÕES DE INSTALAÇÕES FOTOVOLTAICAS

IV400w	I-V curve tracer up to 1000V/15A with Wifi	4 571,40
IV500w	I-V curve tracer up to 1500V/10A and 1000V/15A with Wifi	5 116,90
MPP300	Adapter for PV testing on multistring installation	2 970,80
PVCHECKs	PV installation tester 15A	1 908,00
HV00300N-0202	Solar installation efficiency recorder and power quality analyzer	7 421,80
SOLARIVe	Single-phase solar installation efficiency tester and I-V curve tracer up to 15A or 1500V	5 962,00

ANALISADORES DA QUALIDADE DA REDE

HT9022	Clamp-on power quality analyzer with Bluetooth connection	1 121,80
PQA819	Waterproof, self-powered three-phase power quality analyzer with USB and Wi-Fi communication interfaces	2 164,10
PQA820	Waterproof, self-powered three-phase power quality analyzer with USB and Wi-Fi communication interfaces	3 528,80
PQA820FULL	PQA820 + ANALYSISTAB2	2 691,60
VEGA 78	Power quality analyser CAT IV with 4 CTs HTFLEX33D	4 423,00
VEGA 78S	Power quality analyser CAT IV without CTs	3 342,10
PQA823	Power quality analyser CAT IV with 4 CTs HTFLEX33E	5 982,80
PQA824	Power quality analyser CAT IV with 4 CTs HTFLEX33E	6 318,00



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DATALOGGERS

XL421	Single-phase current data logger	850,30
XL422	3-phase current datalogger	1 357,40
XL423	Single-phase voltage data logger	594,20
XL424	3-phase voltage data logger	673,60

INSTRUMENTOS P/ VERIFICAÇÃO DE MÁQUINAS ELÉCTRICAS E PAINÉIS DE COMANDO

FULLTEST3	IEC/EN 61439 (switchgear and controlgear) and IEC/EN 60204 (electrical equipment for machinery) safety tester	7137,40
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ACESSÓRIOS OPCIONAIS

FT3BARCR	Barcode reader type voyager	1 052,60
FT3BRSN	Accessory bag	135,80
FT3HVPRB	HV test lead 2 mt. with crocodile clip	166,30
FT3KBDEN	USB key board english version	294,60
FT3REDLP	Red warning lamp with 7 mt. cable (for FT3 hardware version pre-70)	340,70
FT3RMTCT	Remote control adpter with start save commands 7 mt.	284,30
FT3SFTSW	Safety switch with 7 mt. cable	158,30

SIMULADOR DE TESTES

TESTBOARD	Test board	6 604,80
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INSTRUMENTOS PARA VERIFICAÇÃO DE CABOS DE REDE

QUICKLAN 6055	LAN wire mapper (verifier)	238,70
QUICKLAN6050	LAN wire mapper (verifier)	717,10

MEDIDORES DA TENSÃO DE PASSO E CONTACTO

HT2055	Step contact system s/m	10 745,90
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CONTA-ROTAÇÕES

HT2234N	Optical digital tachometer	496,90
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VERIFICADORES AMBIENTAIS

HT154	Digital sound level meter type 2 complete with calibrator HT150	899,00
HT155	Sound level meter type 1	7 211,80
HT157	Sound level meter type 1 with analysis of 1/3 octave band	9 795,80
HT204	Solar meter	333,00
HT300	Professional digital thermometer with 1 input	171,60
HT307	Digital luxmeter	208,50
HT309	Led light meter	435,40
HT3300	Infrared thermometer	160,50
HT3302	Infrared thermometer	184,70
HT3320	IR Video Thermometer	1 162,70
HT4000	Air temperature/humidity, air speed, air flow and pressure meter	458,50

CONTROLADORES DE TEMPERATURA

HT950N	Electronic temperature controller	1211,40
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CÂMARAS DE TERMOGRAFIA

THT32	Infrared 32x31 pixel imager thermometer	670,80
THT45	Infrared camera 80x80pxl	1 957,10
THT46	Infrared camera 160x120 pxl	3 367,70
THT47	Touchscreen infrared camera 160x120 pxl	3 851,80
THT60	Touchscreen infrared camera 160x120 pixels	5 539,40
THT70	Touch screen infrared camera 384x288pxl	8 177,20

ACESSÓRIOS OPCIONAIS

A0045	THT45 battery charger with 4 adapters + jack connector	36,20
A0045N	THT45/THT46 battery charger with 3 adapters with miniUSB connector	63,80
BAT45	THT45 rechargeable battery	20,50
BAT7X	Rechargeable battery for tht47-60-70	72,80
RL-11-60	IR wide-angle lens 11MM for THT60	924,60
RL-11-70	Infrared 11mm wide-angle lens for THT70	2 299,80
RL-22-60	IR lens 22MM for THT60	1 536,60
RL-33-60	IR lens 33MM for THT60	2 059,10
RL-38-70	Infrared 38mm tele lens for THT70	3 185,90



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DETETORES DE FASE

HT38	Fuse finder, tx with Shuko plug and rx included	97,10
HT5	Lamp tester for gas filled lamps	63,80
HT6	Pen-type multimeter	91,50
HT70	Voltage stick with phase sequence tester	48,10
HT8	Pen-type digital multimeter with built-in non-contact phase sequence/conformity tester	116,30
HT82	Electronic phase sequence meter	132,10
HT9	Pen-type digital multimeter with built-in gas-filled lamp tester and non-contact phase sequence/conformity tester	138,60
XLITE	Rechargeable cob working lamp with European adapter	60,00
MINILITE	Multifunctional aluminium flashlight	14,10

LOCALIZADORES DE CABOS E TUBOS

HT-5000	Intelligent cable and pipe tracer system	6 497,20
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DISTANCIÓMETROS

DM40	Laser meter up to 40 mt.	191,40
IDM70	Laser meter up to 70 mt. with bluetooth	315,00

CALIBRADORES DE PROCESSOS

HT8051	Process calibrator	591,60
HT8100	TRMS process calibrator	732,50

MULTÍMETRO PARA A VERIFICAÇÃO DA SEGURANÇA ELÉTRICA CEI 64-8

JUPITER	Professional DMM with Loop and RCD test	473,80
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MULTÍMETROS

HT12	Multimeter with built-in fork clamp	163,70
HT14D	Pocket digital multimeter	33,30
HT20	Electronic voltage tester HT20S	25,10
HT21	3 3/1 digits digital multimeter	69,50
HT210	Digital 4000 counts multimeter	105,30
HT211	Digital 4000 counts multimeter	86,10
HT25N	Multifunction digital multimeter	48,70
HT321	Digital multimeter CAT IV	106,60
HT322	Digital multimeter with temperature measurement CAT IV	135,70
HT326	Digital 4000 counts multimeter CAT IV	164,80
HT327	Digital 4000 counts TRMS multimeter CAT IV	199,30
HT37	Digital multimeter 4000 counts TRMS	225,70
HT39	Digital multimeter 4000 counts TRMS with optical serial output	258,70
HT401	TRMS digital mutlimeter AC+DC	297,10
HT410	Digital multimeter cat III 1000V-Cat IV 600V	191,40
HT60	DMM 4000 counts TRMSCAT IV	136,90
HT61	DMM 6000 counts TRMS CAT IV	170,00
HT62	DMM 6000 counts TRMS CATIV with temp.	201,00
HT63	Professional DMM 6000/60000 counts TRMS CATIV	277,90
HT64	Graphic DMM 6000 counts TRMS CATIV with datalogger	443,10
HT603	Digital multimeter	88,70
HT701	TRMS insulation multimeter	665,90
HT710	Pen multimeter	108,10
HT712	Pen multimeter + phase rotation meter	155,80
IRONMETER	Compact DMM 4000 counts TRMSCAT III	116,80



Artigo	Descrição	Preço Unitário (€)
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PINÇAS DE CORRENTE

F3000	Flexible clamp with 110mm diameter rogowsky toroid	257,50
HT100	Automatic fork clamp AC 200A	199,30
HT12	Multimeter with built-in fork clamp	163,70
HT4010	Digital clamp AC600A	154,90
HT4011	Digital clamp AC400A Cat III 600V	80,50
HT4012	AC digital clamp	125,90
HT4013	Clamp meter AC/DC 400A CAT III 600V	127,30
HT4020	TRMS 400Aac clamp meter with power measurements	487,30
HT4022	Professional clamp meter 400A	422,00
HT7003	Miniclamp 300A AC	63,80
HT7004	Miniclamp AC 300A TRMS	84,60
HT7005	Miniclamp ac/dc 300A TRMS	139,90
HT7010	Automatic clamp 400A AC	236,20
HT7011	Automatic digital clamp 200A AC	180,90
HT7016	Digital clamp 1000A AC	299,70
HT77N	Leakage current clamp meter	517,40
HT78	Leakage current clamp meter	1 966,90
HT9012	Digital AC Clamp 600A 2000 points CAT IV	278,70
HT9014	Clamp meter 600A AC TRMS	195,90
HT9015	Digital clamp AC/DC 600A TRMS 6000 counts CAT IV	257,60
HT9019	Clamp meter 1000A AC TRMS	466,00
HT9020	Clamp-on power quality analyzer 1000A AC/DC TRMS	438,00
HT9021	Clamp meter 1000A AC/DC TRMS	288,60
HT9022	Clamp-on power quality analyzer with Bluetooth connection	1 121,80



Artigo	Descrição	Preço Unitário (€)
ACESSÓRIOS		
425	2 cables (black/red), 2 test leads (black/red), 2 pincers (black/red) kit	75,10
44100	Basic kit for digital multimeters	160,90
44700	Basic kit for oscilloscopes	315,00
1066-IECN	Black connector for extensions (4mm banana)	13,60
1066-IECR	Red connector for extensions (4mm banana)	13,60
402-IECN	Black safety test lead	13,60
402-IECR	Red safety test lead	13,60
404-IECN	Black safety test lead (Ø 4 mm)	13,60
404-IECR	Red safety test lead (Ø 4 mm)	13,60
4312-2	2 straight banana professional test leads (red/black)	23,10
4413-2	2 90° banana professional test leads (red/black)	23,10
4717-S-IEC100N	Black retractable test lead	27,70
4717-S-IEC100R	Red retractable test lead	27,70
5004-IECB	Blue 20A alligator clip	17,00
5004-IECN	Black 20A alligator clip	17,00
5004-IECR	Red 20A alligator clip	17,00
5004-IECV	Green 20A alligator clip	17,00
6007-IECN	Black flexible 6A alligator pincer	25,90
6007-IECR	Red flexible 6A alligator pincer	25,90
6009-IECN	Black rigid 20A alligator pincer	23,10
6050MARKER01	Remote unit #1	33,30
6050MARKER0204	Remote units #2 ÷ #4 + 3 patch cables kit	87,10
606-IECN	Magnetic adapter for connection to screw heads	24,40
A0050	Power supply 230V / 50-60Hz EU plug	54,90
A0053	Power supply 115V / 50-60Hz - US plug	67,40
A0055	Power supply 230V / 50-60Hz EU plug	191,40
A0056	Power supply 115V / 50-60Hz - US plug	183,40
ABNACON	Banana to Hypertac adapter	70,50
ACON3F4M	3-pin female to 4-pin male Hypertac adaptor to connect battery DC current clamps to MPP300	83,00
ACONBIN	Adaptor to connect non-waterproof current clamps to PQA820	69,50
ANALYSISITAB	Ht tablet with pre installed htanalysis	348,30
B80	Carrying case	29,00
BORSA2000	Carrying case	29,00
BORSA2051	Carrying bag	76,60
BORSA2051N	Carrying bag	75,10
BORSA75	Carrying bag	65,60
C2001	Optical to RS232 serial cable	75,10



Artigo	Descrição	Preço Unitário (€)
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ACESSÓRIOS (Continuação)

C2006	Optical serial cable-UsbA	117,30
C2007	UsbA-UsbB cable	10,80
C2032-2MM	European plug to bananas 2 wires power supply cable	33,30
C2033UK	3-banana (black/blue/green) to British plug cable	75,10
C2033X	3-banana (black/blue/green) to Shuko plug cable	36,70
C2075	2-wires (black/blue) Shuko plug	21,60
C232NG1	RS232 serial cable	67,40
C5700	Low Ohm 10A power cable	6,20
C7000	2 double core two bananas to single alligator clip 3m cables for 10A continuity measurements	252,00
C7000/05	2 double core two bananas to single alligator clip 5m cables for 10A continuity measurements	315,00
C7000/10	2 double core two bananas to single alligator clip 10m cables for 10A continuity measurements	425,20
C7051	Shuko-europlug 2 wires power supply cable	10,80
CF800	Compact flash memory card for PQA and SOLAR series	99,70
CN0050	Free hands kit	64,30
COC4-UK	Kit including 4 alligator clips (black/red/blue/green)	42,80
CP-05	Software on CD-ROM and RS232 serial cable	30,50
F3000U	Flex transducer with 2 output bananas	208,50
HP30C2	Transducer for AC currents 0÷200 - 0÷2000 A AC	479,00
HP30C3	Transducer for AC currents 0÷3000 A AC	473,80
HP30D1	Transducer for AC/DC currents 0÷1000 A AC/DC	2 571,30
HT304N	Reference cell with tilt stand and connection cable	1 060,30
HT4003	Transducer for AC currents 400A/0.4V - cable 2m - with banana connectors	88,70
HT4004	Transducer for AC/DC currents 0÷10 - 0÷100 A AC/DC	279,20
HT4004P	Unbatteried transducer for AC/DC currents 0÷10 - 0÷100 A AC/DC	755,50
HT4005K	Transducer for AC currents 0÷200 A AC	353,50
HT4005N	Transducer for AC currents 0÷5 - 0÷100 A AC	350,90
HT4006	Tranducer for ac/dc currents 400a	91,20
HT52/05	Transducer for temperature/humidity measurements - with Hypertac connector	502,00
HT53/05	Transducer for lux measurements - with Hypertac connector	407,20
HT903	Transducer 3x1-5A/1V for connection to CTs with accessories	1 201,10
HT96U	Transducer for AC currents (including leakage current) 0÷1 - 0÷100 - 0÷1000A AC	489,20
HT97U	Transducer for AC currents 0÷10 - 0÷100 - 0÷1000 A AC	443,10
HT98U	Transducer for AC/DC currents 0÷1000 A AC/DC	1 075,70



Artigo	Descrição	Preço Unitário (€)
ACESSÓRIOS (Continuação)		
HTFLEX3003	Set of 3 flexible clamps 0÷300 - 0÷3000 A AC - Ø 174mm - with external driver	1 372,70
HTFLEX33DE	HTflex for VEGA76 only	261,30
HTFLEX33E	Flexible transducer for AC currents Ø 174mm without integrator (not for VEGA76)	256,10
HTFLEX33L	Waterproof flexible transducer for AC currents Ø 174mm without integrator for PQA820	261,30
HTFLEX35	Flexible transducer for AC currents Ø 274mm without integrator	333,00
IMP57	High resolution impedance measurements adapter	2 466,30
KIT0071	Carrying case containing 3 banana-banana cables, 3 alligator clips and 2 earth rods	78,20
KIT0075	Kit including 2 cables (black/green), 2 alligator clips (black/green), 1 test lead (black)	45,90
KIT14000	Kit including 3 high voltage banana to alligator clip cables (black/red/red), 2 high voltage banana to test lead cables (red/red)	186,00
KIT4000A	Kit including 2 test leads (black/red)	29,00
KIT800	Kit including 5 cables (black/blue/red/green/brown), 5 alligator clips (black/blue/red/green/brown)	166,30
KITGSC4	Kit including 4 cables (black/blue/red/green), 4 alligator clips (black/blue/red/green)	122,20
KITGSC5	Kit including 4 cables (black/blue/red/green), 4 alligator clips (black/blue/red/green), 2 test leads (black/blue)	125,50
KITKELVIN	Kit with two cables with test leads RBk/banana RB/BkG	174,20
KITMPPACC	Kit including 4 alligator clips (black/blue/brown/green)	47,20
KITMPPACW	Kit including 4 cables (black/blue/brown/green)	91,50
KITMPPDCC	Kit including 2 alligator clips (black/red)	22,60
KITMPPDCW	Kit including 2 cables (black/red)	47,20
KITPCMC3	Kit including 2 Multi-Contact 3 adapters (banana to MC3 male connector / banana to MC3 female connector)	97,90
KITPCMC4	Kit including 2 Multi-Contact 4 adapters (banana to MC4 male connector / banana to MC4 female connector)	75,10
KITPVEXT25M	Extension for photovoltaic measurement kit	171,60
KITPVMC3	Kit including 2 Multi-Contact 3 adapters (bananas to MC3 male connector / bananas to MC3 female connector)	113,00
KITPVMC4	Kit including 2 Multi-Contact 4 adapters (bananas to MC4 male connector / bananas to MC4 female connector)	91,70
KITERRNE	Carrying case containing 4 banana-banana cables and 4 earth rods	238,70
LINESPLITTER	Current adapter with shuko plug/socket	46,10
M304	Mechanical inclinometer for detection of solar incidence angle	119,40



Artigo	Descrição	Preço Unitário (€)
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ACESSÓRIOS (Continuação)

MCR800	USB compact flash reader for PC	61,30
MPP300	Adapter for PV testing on multistring installation	2 970,80
NOCANBA	Hypertac to banana adapter	87,10
P710EU	Black test lead for HT710 and HT712	19,80
P711EU	Red test lead for HT710 and HT712	19,80
PR400	Test lead with remote START button	81,00
PT300N	Double temperature probe (PT1000 + environmental)	163,70
PT400	Stylus	7,50
RCDX10	RCD current multiplier up to 10A	427,70
REM1	Remote unit #1 + patch cable	29,00
REM2	Remote unit #2 + patch cable	29,00
REM3	Remote unit #3 + patch cable	29,00
REM38	Remote units #3 ÷ #8 + 6 patch cables kit	166,30
REM4	Remote unit #4 + patch cable	29,00
REM5	Remote unit #5 + patch cable	29,00
REM6	Remote unit #6 + patch cable	29,00
REM7	Remote unit #7 + patch cable	29,00
REM8	Remote unit #8 + patch cable	29,00
SOLAR02	Remote unit for recording irradiation and temperature	701,80
SP-0400	Free hands kit	42,80
SP-5404	Hard empty carrying bag for tools	91,70
SP-6085	Carrying case	33,90
SSHIELD49	Sun shield for THT41-42-44-49	186,00
SW39	Software with optical serial cable for HT39	86,10
T10	Type K adapter	19,80
T2100	Earth ground clamp meter w/RS232	1 260,00
TK107	Type K probe for air and gas temperature	102,70
TK108	Type K probe for inner temperature of fluids and semisolid substances	97,10
TK109	Type K probe for inner temperature of fluids and solid substances	102,70
TK110	Type K probe for surface temperature	105,30
TK111	Type K probe for surface temperature with 90° fixed tip	110,90
TOPVIEW	Software on CD-ROM and RS232 serial cable C232NG1	284,30
TOPVIEW2006	Software on CD-ROM and optical-to-USB connection cable C2006	309,90
TOPVIEW2007	Software on CD-ROM and USB connection cable C2007	284,30
TRIPO48	Universal tripod adapter	266,40
TRIPO49	Universal tripod adapter	322,70



Artigo	Descrição	Preço Unitário (€)
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ACESSÓRIOS (Continuação)

UNIVERSALKIT	Kit including 3 cables (black/blue/green), 3 alligator clips (black/blue/green), 1 test lead (black)	58,40
UNIVERSALKIT-COMBI	Kit including 3 cables 3 croco 3 test leads (black blue green)	69,50
VA500	Hard carrying case	190,10
VA501	Hard carrying case	180,90
VA502	Hard carrying case	361,10
VA503	Hard carrying case	361,10
VA504	Hard carrying case	180,90
VA6070	Hard carryng case for THT60/70	166,30
WP1991N	Carrying case	52,80
YAAMS0000000	RJ45 20cm FTP patch cord	6,20
YABAT0003000	Battery PANASONIC HHR210AABxx	10,00
YABAT0004000	Charger for 8 batteries art 30/8660	38,00
YABAT0003HT1	Li-Ion 3,7V rechargeable battery	56,40
YCCA0004000	Logger serial cable 2004	47,40

Esta tabela anula e substitui as anteriores.

- Todos os preços estão sujeitos ao I.V.A. em vigor

- Os preços e características técnicas podem ser alterados sem aviso prévio

Rio Tinto, 02/01/2018