RENEWABLE ENERGY SOLUTIONS KINGSPAN SOLAR DATA SHEET

THERMOMAX HP400 NEW SLIMLINE DESIGN

# HEAT PIPE VACUUM TUBE SOLAR COLLECTOR





### RENEWABLE ENERGY SOLUTIONS KINGSPAN SOLAR DATA SHEET

## THERMOMAX HP400

A dry heat pipe collector for ease of installation and maintenance. The dry connection between manifold and tube means tubes can be easily fitted and replaced. A unique temperature limitation device gives added system protection. A choice between two temperature limits provides the perfect hot water solution for your home or business.

### HP400 COLLECTORS ARE AVAILABLE IN 2 DIFFERENT SIZES - both with the option of the 2 different temperature limits.

NUMBER OF TUBES         20         30           DIMENSIONS         201         3.021           Absorber Area (m²)         2.01         3.021           Overall Dimensions (mm)         1952 x 1418 x 93         1952 x 2.127 x 93           Width of Manifold (mm)         14418         2127           Length (tube and manifold) (mm)         1952         1952           Depth (mm)         93         93           Aperture Area (m²)         2.16         3.23           Fluid Volume (ttr)         1.2         1.7           Inlet and Outlet Dimensions (mm)         22         22           Weight (empty) (kg)         4.48         71           MOUNTING         20070         20700           PERFORMANCE DATA         Efficiency         Based on Aperture           Efficiency         0.0095         0.0095           OVERATING DATA - FLOW EXTURE         118         118           a2 (W/m²k)         118         118           a2 (W/m²k)         0.0095         0.0095           Maximum         300         480           Maximum         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid		HP400 / HP450	
Internet of the second secon			
Notice intensions (mm)         1952 x 1418 x 93           Width of Manifold (mm)         1418         2127           Length (tube and manifold) (mm)         1952         1952           Depth (mm)         93         93           Aperture Area (m²)         2.16         3.23           Fluid Volume (ttr)         1.2         1.7           Inlet and Outlet Dimensions (mm)         22.2         22           Weight (empty) (kg)         48         71           MOUNTING          20-70           PERFORMANCE DATA          20-70           PERFORMANCE DATA         Based on Aperture         Based on Aperture           Efficiency         Based on Aperture         0.75           a1(Wm²K)         1.18         1.18           a2 (W/m²K²)         0.0095         0.0095           OPERATING DATA - FLOW <b>&gt;TE (ttr/h)</b> 180         180           Maximum         300         480           Maximum         300         480           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         Selective Coating           Absorbe		20	
Width of Manifold (mm)         1418         2127           Length (tube and manifold) (mm)         1952         1952           Depth (mm)         93         93           Aperture Area (m²)         2.16         3.23           Fluid Volume (Itr)         1.2         1.7           Inlet and Outlet Dimensions (mm)         22         22           Weight (empty) (kg)         48         71           MOUNTING          20-70           PERFORMANCE DATA          20-70           PERFORMANCE DATA          3.23           Efficiency         Based on Aperture         Based on Aperture           Eta 0         0.75         0.75           a1 (W/m²K)         118         118           a2 (W/m²K2)         0.0095         0.0095           OPERATING DATA - FLOW <b>XTE (Itr/h)</b> 10         10           Rated         160         240           Minimum         300         480           Maximum Operating Pressure         10         10           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           Absorber         Copper <t< td=""><td>Absorber Area (m<sup>2</sup>)</td><td>2.01</td><td>3.021</td></t<>	Absorber Area (m <sup>2</sup> )	2.01	3.021
Interior         Interior         Interior           Length (tube and manifold) (mm)         1952         1952           Depth (mm)         93         93           Aperture Area (m²)         2.16         3.23           Fluid Volume (Itr)         1.2         1.7           Inlet and Outlet Dimensions (mm)         22         22           Weight (empty) (kg)         48         71           MOUNTING         20-70         20-70           PERFORMANCE DATA          1.18           Efficiency         Based on Aperture         Based on Aperture           Efficiency         0.075         0.75           al (W/m²K²)         0.0095         0.0095           OPERATING DATA - FLOW         1.18         1.18           a2 (W/m²K²)         0.0095         0.0095           OPERATING DATA - FLOW         100 Bar         180           Maximum         300         480           Maximum         300         480           Maximum Operating Pressure         106         166           Idea         166         166           Heat Transfer Fluid         Water / Glycol         Mater / Glycol           MAzimum Operating Pressure         5	Overall Dimensions (mm)	1952 x 1418 x 93	1952 x 2127 x 93
Depth (mm)         93         93           Aperture Area (m²)         2.16         3.23           Fluid Volume (ltr)         1.2         1.7           Inlet and Outlet Dimensions (mm)         22         22           Weight (empty) (kg)         48         71           MOUNTING         20-70         20-70           PERFORMANCE DATA         83sed on Aperture         8ased on Aperture           Efficiency         Based on Aperture         8ased on Aperture           Efficiency         0.075         0.75           al (W/m²K)         1.18         1.18           a2 (W/m²K²)         0.0095         0.0095           OPERATING DATA - FLOW ×TE (Itr/h)         7         7           Rated         160         240           Maximum         300         480           Maximum         300         480           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         36           MASTERIALS         5         5           Mounting Frame and Clips         Stalless Steel, Aluminium, EPDM           Glass         Low Iron - Transm.	Width of Manifold (mm)	1418	2127
Aperture Area (m <sup>2</sup> )         2.16         3.23           Fluid Volume (ltr)         1.2         1.7           Inlet and Outlet Dimensions (m)         22         22           Weight (empty) (kg)         48         71           MOUNTING          20.70           Recommended Inclination (*)         20.70         20.70           PERFORMANCE DATA          0.075           Efficiency         Based on Aperture         Based on Aperture           Eta 0         0.75         0.75           a1 (W/m <sup>2</sup> K)         1.18         1.18           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095           OPERATING DATA - FLOW <b>XTE (Itr/h)</b> 10         10           Rated         160         240           Minimum         300         480           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         10           MASSorbarce (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92           Vac	Length (tube and manifold) (mm)	1952	1952
Fluid Volume (itry)         1.2         1.7           Inlet and Outlet Dimensions (mm)         2.2         2.2           Weight (empty) (kg)         48         71           MOUNTING          71           Recommended Inclination (*)         2.070         2.0-70           PERFORMANCE DATA          71           Efficiency         Based on Aperture         Based on Aperture           Eta 0         0.75         0.75           a1 (W/m <sup>2</sup> K)         1.18         1.18           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095           OPERATING DATA - FLOW KTE (Itr/h)          70           Rated         160         240           Minimum         10 Bar         10 Bar           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MATERIALS         Selective Coating         Selective Coating           Absorbarce (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92 <td>Depth (mm)</td> <td>93</td> <td>93</td>	Depth (mm)	93	93
Index         Initian         Initian         Initian           Inlet and Outlet Dimensions (mm)         22         22           Weight (empty) (kg)         48         71           MOUNTING         E         70           Recommended Inclination (*)         20-70         20-70           PERFORMANCE DATA         Essed on Aperture         Essed on Aperture           Efficiency         Based on Aperture         0.75           a1 (W/m <sup>2</sup> K)         0.0095         0.0095           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095           OPERATING DATA - FLOW KTE (Itr/h)         0.0095         0.0095           Rated         160         240           Minimum         120         180           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MASorbarce (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92           Vacuum         10°mbar         10°mbar           Glass         Low Iron - Transm.	Aperture Area (m <sup>2</sup> )	2.16	3.23
Mile and oddet bindmation (min)         AB         AI           Weight (empty) (kg)         AB         71           MOUNTING         Recommended Inclination (*)         20-70         20-70           PERFORMANCE DATA         Efficiency         Based on Aperture         Based on Aperture           Efficiency         0.075         0.75         0.75           a1 (W/m <sup>2</sup> K)         0.0095         0.0095         0.0095           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095         0.0095           OPERATING DATA - FLOW KTE (Itr/h)         160         240         160           Maximum         100 Bar         100 Bar         100 Bar           Maximum Operating Pressure         106 Bar         106         100 Bar           Stagnation Temperature (*C)         166         166         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol         100 Bar	Fluid Volume (Itr)	1.2	1.7
Mounting         Addition (%)         20-70         20-70           PERFORMANCE DATA         Efficiency         Based on Aperture         Based on Aperture           Efficiency         Based on Aperture         Based on Aperture         Efficiency           Eta 0         0.75         0.75         0.75           a1 (W/m <sup>2</sup> K)         0.0095         0.0095         0.0095           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095         0.0095           OPERATING DATA - FLOW KTE (Itr/h)         160         240         160           Maximum         100 Bar         100 Bar         100 Bar           Maximum Operating Pressure         106 Bar         106 Bar         100 Bar           Stagnation Temperature (°C)         166         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol         100 Bar           Absorber         Copper         Copper         100 Bar           Coating         Selective Coating         Selective Coating         10 Bar           Absorbance (%)         5         5         10 Bar           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92         10 mbar           Glass         Low Iron - Transm. 0.92         Low Iron	Inlet and Outlet Dimensions (mm)	22	22
Recommended Inclination (*)         20-70         20-70           PERFORMANCE DATA             Efficiency         Based on Aperture         Based on Aperture           Eta 0         0.75         0.75           a1 (W/m <sup>2</sup> K)         1.18         1.18           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095           OPERATING DATA - FLOW KTE (Itr/h)          240           Minimum         120         180           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MASirbance (%)         Selective Coating         Selective Coating           Absorber         Copper         5           Coating         Selective Coating         Selective Coating           Absorbance (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM         Glass           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92           Vacuum          10°mbar         10°mbar           Temperature Limitation (*C)         90 / 135         90 / 135	Weight (empty) (kg)	48	71
PERFORMANCE DATA         Based on Aperture           Efficiency         Based on Aperture           Eta 0         0.75           a1 (W/m <sup>2</sup> K)         1.18           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095           OPERATING DATA - FLOW <b>XTE (Itr/h)</b> 0.240           Minimum         120           Maximum Operating Pressure         10 Bar           Stagnation Temperature (*C)         166           Heat Transfer Fluid         Water / Glycol           MASINDER         Copper           Coating         Selective Coating           Absorber         Selective Coating           Coating         Selective Coating           Absorbance (%)         5           Mounting Frame and Clips         Stailess Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92           Vacuum         10° mbar           Glass         Low Iron - Transm. 0.92           Vacuum         10° mbar           Glass         Low Iron - Transm. 0.92           Vacuum         90 / 135           Monting Frame and Clips         Stailess Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92           Vacuum         10° mbar	MOUNTING		
Efficiency         Based on Aperture           Efficiency         Based on Aperture           Efficiency         0.75         0.75           a1 (W/m <sup>2</sup> K)         1.18         1.18           a2 (W/m <sup>2</sup> K <sup>2</sup> )         0.0095         0.0095           OPERATING DATA - FLOW <b>KTE (Itr/h)</b> 10         10           Rated         160         240           Minimum         120         180           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MAStrophant Efficiency         Selective Coating         Selective Coating           Absorber         Selective Coating         Selective Coating         Selective Coating           Absorbance (%)         5         5         S           Mounting Frame and Clips         Stailess Steel, Aluminium, EPDM         Stailess Steel, Aluminium, EPDM         Stailess Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92         Stailess Steel, Aluminium, EPDM           Youum         Glos Mater         90 / 135         90 / 135         S	Recommended Inclination (°)	20-70	20-70
Eta O         O.75           a1 (W/m²K)         1.18           a2 (W/m²K)         0.0095           a2 (W/m²K)         0.0095           OPERATING DATA - FLOW RATE (Itr/h)         0.0095           Rated         160         240           Minimum         120         180           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MATERIALS         Selective Coating         Selective Coating           Absorber         Selective Coating         Selective Coating           Absorbance (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM         Glass           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92           Vacuum         <10°mbar	PERFORMANCE DATA		
Init         Init           al (W/m²K)         1.18           a2 (W/m²K)         0.0095           OPERATING DATA - FLOW RATE (Itr/h)         0.0095           Rated         160           Minimum         120           Maximum Operating Pressure         10 Bar           Stagnation Temperature (°C)         166           Heat Transfer Fluid         Water / Glycol           MATERIALS         Vater / Glycol           Absorber         Copper           Coating         Selective Coating           Absorbance (%)         5           Mounting Frame and Clips         Stailess Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92           Vacuum         10°mbar           Glass         Low Iron - Transm. 0.92           Vacuum         90 / 135           MCS Certificate Number         KM 559829	Efficiency	Based on Aperture	Based on Aperture
a2 (W/m²k²)         0.0095           a2 (W/m²k²)         0.0095           OPERATING DATA - FLOW KATE (Itr/h)         0.0095           Rated         160         240           Minimum         120         180           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MATERIALS         Selective Coating         Selective Coating           Absorbarce (%)         Selective Coating         Selective Coating           Absorbance (%)         Stainless Steel, Aluminium, EPDM         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92           Vacuum         10°mbar         10°mbar           Temperature Limitation (°C)         90 / 135         90 / 135	Eta O	0.75	0.75
OPERATING DATA - FLOW RATE (Itr/h)       Intervention of the second	a1 (W/m²K)	1.18	1.18
Rated         160         240           Minimum         120         180           Maximum         300         480           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (*C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MATERIALS         Copper         Copper           Absorbarce (%)         Selective Coating         Selective Coating           Absorbance (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92           Vacuum         10°mbar         10°mbar           Temperature Limitation (*C)         90 / 135         90 / 135	a2 (W/m <sup>2</sup> K <sup>2</sup> )	0.0095	0.0095
Nation         120         180           Minimum         120         180           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MASIMUM Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MATERIALS         Copper         Copper           Coating         Selective Coating         Selective Coating           Absorbance (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92         10°mbar           Vacuum         <10°mbar	OPERATING DATA - FLOW RATE (ltr/h)		
Maximum         300         480           Maximum Operating Pressure         10 Bar         10 Bar           Stagnation Temperature (°C)         166         166           Heat Transfer Fluid         Water / Glycol         Water / Glycol           MASTERIALS         Copper         Copper           Absorber         Copper         Copper           Coating         Selective Coating         Selective Coating           Absorbance (%)         95         95           Emissivity (%)         5         5           Mounting Frame and Clips         Stainless Steel, Aluminium, EPDM         Stainless Steel, Aluminium, EPDM           Glass         Low Iron - Transm. 0.92         Low Iron - Transm. 0.92         Vacuum           Yacuum         <10°mbar	Rated	160	240
Maximum Operating Pressure10 BarStagnation Temperature (°C)166166Heat Transfer FluidWater / GlycolWater / GlycolHeat Transfer FluidWater / GlycolWater / GlycolMATERIALSCopperCopperCoatingSelective CoatingSelective CoatingAbsorbarce (%)9595Emissivity (%)55Mounting Frame and ClipsStainless Steel, Aluminium, EPDMGlassLow Iron - Transm. 0.92Low Iron - Transm. 0.92Vacuum<10°mbar	Minimum	120	180
Stagnation Temperature (°C)166Stagnation Temperature (°C)166Heat Transfer FluidWater / GlycolMATERIALSAbsorberCopperCoatingSelective CoatingAbsorbance (%)95Emissivity (%)5Stainless Steel, Aluminium, EPDMGlassLow Iron - Transm. 0.92Vacuum<10°mbar	Maximum	300	480
Heat Transfer FluidWater / GlycolWater / GlycolMATERIALSAbsorberCopperCoatingSelective CoatingAbsorbance (%)95955Mounting Frame and ClipsStainless Steel, Aluminium, EPDMGlassLow Iron - Transm. 0.92Vacuum<10 °mbar	Maximum Operating Pressure	10 Bar	10 Bar
MATERIALS       Absorber     Copper       Coating     Selective Coating       Absorbance (%)     95       Emissivity (%)     5       Stainless Steel, Aluminium, EPDM     Stainless Steel, Aluminium, EPDM       Glass     Low Iron - Transm. 0.92       Vacuum     <10 °mbar	Stagnation Temperature (°C)	166	166
AbsorberCopperCopperCoatingSelective CoatingSelective CoatingAbsorbance (%)9595Emissivity (%)55Mounting Frame and ClipsStainless Steel, Aluminium, EPDMStainless Steel, Aluminium, EPDMGlassLow Iron - Transm. 0.92Low Iron - Transm. 0.92Vacuum<10 °mbar	Heat Transfer Fluid	Water / Glycol	Water / Glycol
Coating     Selective Coating       Absorbance (%)     Selective Coating       Absorbance (%)     95       Emissivity (%)     5       Mounting Frame and Clips     Stainless Steel, Aluminium, EPDM       Glass     Low Iron - Transm. 0.92       Vacuum     <10 °mbar	MATERIALS		
Absorbance (%)95Absorbance (%)95Emissivity (%)5Mounting Frame and ClipsStainless Steel, Aluminium, EPDMGlassLow Iron - Transm. 0.92Vacuum<10 cmbar	Absorber	Copper	Copper
Absolution (C (N))     Image: Constraint of Co	Coating	Selective Coating	Selective Coating
Mounting Frame and Clips     Stainless Steel, Aluminium, EPDM     Stainless Steel, Aluminium, EPDM       Glass     Low Iron - Transm. 0.92     Low Iron - Transm. 0.92       Vacuum     <10 smbar	Absorbance (%)	95	95
GlassLow Iron - Transm. 0.92Low Iron - Transm. 0.92Vacuum<10 °mbar	Emissivity (%)	5	5
Vacuum         <10 °mbar         <10 °mbar           Temperature Limitation (°C)         90 / 135         90 / 135           MCS Certificate Number         KM 559829         KM 559829	Mounting Frame and Clips	Stainless Steel, Aluminium, EPDM	Stainless Steel, Aluminium, EPDM
Temperature Limitation (°C)         90 / 135         90 / 135           MCS Certificate Number         KM 559829         KM 559829	Glass	Low Iron - Transm. 0.92	Low Iron - Transm. 0.92
MCS Certificate Number KM 559829 KM 559829	Vacuum	<10 <sup>-6</sup> mbar	<10 <sup>-6</sup> mbar
	Temperature Limitation (°C)	90 / 135	90 / 135
Solar Keymark Licence Numbers 011-7S1793 011-7S1793	MCS Certificate Number	KM 559829	KM 559829
	Solar Keymark Licence Numbers	011-751793	011-751793

#### PERFORMANCE AND SAVINGS

Designed specifically for higher latitude climates, Thermomax products provide heat even in cold, windy or humid conditions.

The unique 'plug and play' design of Thermomax solar collectors makes installation quick and easy. There is no need for heavy lifting equipment as tubes can be carried onto the roof individually. The collector is fixed to the roof by easy-fit brackets, which are simply fixed to the rafter.

- An improved hinge means the lid is never separated from the manifold and a tube retaining lip is incorporated into the lid.
- A shorter neck on the tubes reduces movement, retaining their flexibility but making them easier to insert.
- A superior vacuum is maintained over a longer period of time through.
- The dry fit of heat pipe tubes allows easy maintenance as tubes can be removed without draining the system.
- 30% more effective than flat plate collectors.
- Supplies up to 70% of your annual hot water needs.
- > 20 year warranty when fitted by a Kingspan Accredited Installer.

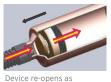
### UNIQUE FEATURE

### Temperature Limitation Device

HP400 collectors contain a unique temperature limitation device for system protection.







temperature falls below the

set point, reactivating heat

The device is open and heat transfer occurs until the condenser reaches its set point temperature.

INSTALLATION OPTIONS

**Collector Positions** 

Snap disks operate and close the device, stopping heat transfer into condenser.

transfer.

Call us today for pricing and sales information.

Wakefield Office 0845 260 0258 or email: sales@kingspansolar.com

Portadown Office 028 3836 4500 or email: info@kingspansolar.com



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APPROVED PRODUCT

