T3 LASER

Liquid chillers for Laser applications
Cooling capacity 6,6-97,7 kW

**Cooling your industry,
optimising your process.**

MTA®

Cooling, conditioning, purifying.

T3 LASER

T3 Laser is born from MTA's extensive experience in the Laser industry, an experience accumulated thanks to many years of cooperation together with the most prestigious manufacturers of Laser equipment. The objective is resolving problems such as the variability of the wavelengths, thermal stress, and contamination of the source and optics. The challenge is maintaining a perfect cooling fluid temperature control within continuously varying loads. The answer is MTA's T3 Laser chiller.

pure energy

Highest precision levels

With T3 Laser MTA introduces an important novelty within the Laser chiller market, an electronic hot gas by-pass valve controlled by a sophisticated PID software algorithm (from model 081). Thanks to the stepper motor technology T3 Laser ensures a continuous refrigerant flow pattern, avoiding any impulses and ensuring a high level of control precision and reduced mechanical stress.

Electronic hot gas by-pass valve

Advanced microprocessor

The microprocessor features a PID algorithm which controls the hot gas by-pass valve, ensuring a regulation accuracy of less than ± 0,5°K. The compressors are disactivated during prolonged load absences, offering notable energy savings. RS485 Modbus, GSM and web connectivity is offered, whilst an optional Westec industrial connector allows direct interfacing with the laser equipment.

Westec industrial connector

Non-ferrous water circuit

The increasing complexity of the laser sources necessitate the use of cooling fluids with an ever greater purity level. T3 Laser's non-ferrous water circuit is suited to operation with demineralised water containing additives. The tank, plate evaporator and high head pressure centrifugal pump are all in stainless steel, and protect the laser source from all forms of contamination.

Multi-impeller stainless steel centrifugal pump

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A HIGH LEVEL OF STANDARD EQUIPMENT

Refrigeration circuit

- Hermetic scroll (model 031-351) or piston compressors (model 015-020).
- Stainless steel brazed plate evaporator.
- Electronic (model 081-351) or solenoid (model 015-051) hot gas valve.
- Metallic condenser pre-filters.
- Refrigerant high and low pressure manometers.

Hydraulic circuit

- Non-ferrous design, allows the use of demineralised water containing additives.
- Stainless steel centrifugal multistage pump, including an outlet manometer.
- Heating element to maintain the process fluid above the dewpoint, minimizing condensation risks.
- Stainless steel atmospheric pressure accumulation tank with integrated drain valve.
- Hydraulic circuit fill tank with externally visible water level.
- Water inlet, outlet and by-pass valves featuring manual calibration, fitted within the unit.
- Evaporator manual bleed valve and drain valve.
- Electronic level sensor with water conductivity "teach-in" function.

Electrical and control circuits

- Numerous safety and protection features, including anticondensate and antifreeze functions.
- Automatic circuit breakers for compressors, pump and fans.
- General alarm, remote on/off and unit status volt free contacts.

Options

- Stainless steel panels.
- 460/3/60 electrical power supply.
- Coated condenser coils.
- Industrial Westec connectors (Harting compatible).
- Automatic water by-pass valve with differential overpressure.
- Compressor crankcase heater(s).
- Compressor valves.
- Electronic fan speed control (also supplied as kit).
- Wheels and handles kit (model 015-161).
- Remote control kit.
- Supervisor kits (RS485, GSM modem, XWEB300).

An all-in-one solution

XWEB 300 supervisor

Tank with visible fill level

A plug-and-play solution

T3 Laser always operates, whatever the conditions, thanks to shut-off valves, an adjustable internal by-pass valve, a 43°C ambient temperature limit, an antifreeze protection and a self-regulating level sensor. Installation is notably simplified thanks to the integration of all components within the unit itself, an IP54 protection rating and the easy transportability of the unit itself.

Microprocessor control

Robust and reliable

A robust frame with eye bolts (models 015-051) and components from renowned suppliers, including reliable scroll compressors, ensure absolute peace of mind. Advanced safety devices ensure stable and safe operation, including a heater immersed in the tank (to avoid condensation on the laser's optics), and an antifreeze function which activates the heater and starts the pump (for stable operation).

Reinforced frame

Easy to use and maintain

The sophisticated laser equipment installed within a continuous production cycle needs to be backed up by chillers which are both absolutely reliable and very easy to maintain. MTA's T3 Laser allows the chiller to be serviced even whilst it continues to operate normally, notably reducing downtimes. Easy access is ensured, thanks to the application of removable panels and access doors.

Easy access to all internal components

		015	020	031	051	081	101	121	161	201	251	301	351
Cooling capacity (1)	kW	7,2	9,6	13,1	19,4	28,7	40,7	49,8	54,6	66,1	76,9	87,2	100,8
Compressor absorbed power (1)	kW	1,8	2,2	2,8	4,0	6,0	8,2	10,3	11,2	14,1	15,6	18,2	22,3
Cooling capacity (2)	kW	6,6	8,8	13,0	18,5	28,0	38,9	48,1	52,3	63,9	75,0	84,8	97,7
Compressor absorbed power (2)	kW	2,0	2,4	3,4	4,8	7,1	9,6	11,9	13,1	16,6	18,5	21,3	26,2
External air temperature (min/max)	°C	0 / 43 (3)											
Evaporator water outlet temperature (min/max) (4)	°C	15 / 25											
Evaporator water outlet set point precision level	°K	± 0,5											
General data													
Refrigerant	-	R407C											
Power Supply	V/Ph/Hz	400±10% / 3 / 50											
Protection Class	-	IP54											
Total installed power (6)	kW	3,8	4,4	6,6	7,6	12,4	16,1	19,4	20,6	26,2	29,5	34,9	40,6
Compressors / Circuits	N°	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Fans													
N° Fans	N°	1	1	1	1	1	2	2	2	2	2	3	3
Nominal power (each)	kW	0,27	0,27	0,54	0,54	0,79	0,79	0,79	0,79	0,79	0,79	0,79	0,79
Total air flow	m³/h	3500	3100	6600	6200	8500	15100	13500	13500	16900	16300	22350	22350
Noise level (7)	dB(A)	52,4	52,4	53,1	53,1	53,6	54,1	54,1	55,0	56,3	56,3	58,0	58,0
Pump section													
P5 Water flow (nom. with ΔT 5°C / max) (5)	m³/h	1,14/2,0	1,52/2,6	2,24/3,7	3,20/4,4	4,83/7,3	6,7/9,2	8,3/12,0	9,0/13,0	11,0/15,5	13,0/17,5	14,7/19,0	16,9/21,5
P5 Available head pressure (nom./min.) (5)	bar	4,9/3,5	4,6/2,7	5,4/4,3	5,2/4,3	5,6/4,8	5,4/4,2	5,1/3,0	4,9/2,6	5,8/4,6	5,4/3,9	5,7/4,6	5,2/3,9
P5 Nominal Power	kW	0,58	0,58	1,50	1,50	3,00	3,00	3,00	3,00	5,50	5,50	7,50	7,50
Dimensions (8)													
Width	mm	750	750	650	650	850	850	850	850	850	850	850	850
Depth	mm	678	678	1228	1228	1458	1458	1458	1458	2128	2128	2128	2128
Height	mm	1330	1330	1365	1365	2060	2060	2060	2060	2060	2060	2060	2060
Operating weight	kg	245	249	447	455	884	897	894	904	1120	1130	1166	1198
Tank volume	l	50	50	105	105	260	260	260	260	320	320	320	320
Evaporator water connections	Rp	1″	1″	1″	1″	1 1/2″	1 1/2″	1 1/2″	1 1/2″	2″	2″	2″	2″

(1) Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C;
(2) Evaporator water inlet/outlet temperature 25/20°C, external air temperature 32°C;
(3) Maximum external air temperature refers to 20/15°C water inlet/outlet temperature;
(4) Values refer to laser applications. For other applications contact MTA;
(5) Nominal values refer to condition (2);
(6) Max power absorbed for unit operating within its working limits, and with pump and ON/OFF fan control;
(7) Sound pressure level in free field at 10m from unit condenser side and 1,6m from the unit support base;
(8) For unit with standard power supply, axial fans, ON/OFF fan control.

The capacity correction factors in the following table should be used as a guide only, for accurate selection at conditions differing from the above the selection software should be utilised.

Water outlet temperature ≠ 20 °C	°C	0	5	10	15	20	25
Correction factor	K1	0,605	0,723	0,837	0,957	1,000	1,000

External air temperature ≠ 32 °C	°C	25	30	32	35	40	43
Correction factor	K2	1,096	1,028	1,000	0,957	0,884	0,839

Ethylene glycol solutions	%	0	10	20	30	40	50
Correction factor	K3	1,000	0,990	0,980	0,970	0,960	0,930

DT31LY001AB ed. 03/10 replace the DT31LY001AA

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