

MIRAI X CRYO

WHERE HEAT MEETS COLD

CRYOCHILLERS FOR PROCESS COOLING
FROM -160°C TO +90°C

MIRAI X CRYO 60 PRODUCT DATASHEET

- **THE WIDEST TEMPERATURE RANGE**

From -160°C to +90°C*

- **MOTOR POWER**

40 kW

- **VARIOUS INDUSTRY APPLICATIONS**

- **ZERO GWP**

With the air cycle technology

** The temperature range varies based on the type of HTF selected and will be confirmed during the ordering process.*



BENEFITS



AIR AS REFRIGERANT

0 GWP, 0 ODP, and 0 TFA
Environmentally friendly
Refrigerant free of charge



TEMPERATURE STABILITY

$\pm 0.5^{\circ}\text{C}$ under changing load



ENERGY EFFICIENCY

High cycle efficiency
Inverter driven motor



NO VIBRATION

Turbo-compressor design
eliminates vibration



LOW OPERATING COSTS

Long equipment lifecycle
Low maintenance



TEMPERATURE RANGE*

Any temperature
from -160°C to $+90^{\circ}\text{C}$



WARRANTY

2 years of warranty



ISO CERTIFICATION

ISO 9001:2020 certified



MACHINE WHEELS

For convenience transportation of
machine in manufacture

OPTIONS



REMOTE MONITORING

Available remote monitoring or
remote access systems



VARIOUS HIGH-LEVEL COMMUNICATION PROTOCOLS



CUSTOMIZED HTF CONNECTION



CUSTOMIZED WATER CONNECTION



EXTENDED WARRANTY

Up to 4 years



HTF EXPANSION TANK

Possibility of installation HTF
expansion tank 25 or 50l



MACHINE BODY OPTIONS

Stainless steel (Cleanroom)



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Introducing the **MIRAI X CRYO 60**, our latest innovation in cryochiller technology.

This chiller is designed to meet the expectations of the most demanding industries.

A compact and powerful cryochiller in one - just what the most demanding manufacturers are looking for.

The latest model **MIRAI X CRYO** is available in motor power of **60 kW**.

COMPLIANCE WITH EU ENVIRONMENTAL REGULATIONS

The **MIRAI X CRYO** is fully compliant with EU and global environmental standards, including REACH, RoHS, and F-gas regulation. This compliance underscores our dedication to producing systems that not only meet but exceed the most stringent environmental requirements.

THE WIDEST TEMPERATURE RANGE

MIRAI X CRYO has a temperature range from -160°C to $+90^{\circ}\text{C}$ with temperature accuracy $\pm 0.5^{\circ}\text{C}$ under changing load.

VARIOUS INDUSTRY APPLICATIONS

MIRAI Intex machines are suitable for a wide range of applications. **MIRAI X CRYO** was developed for demanding industrial processes.

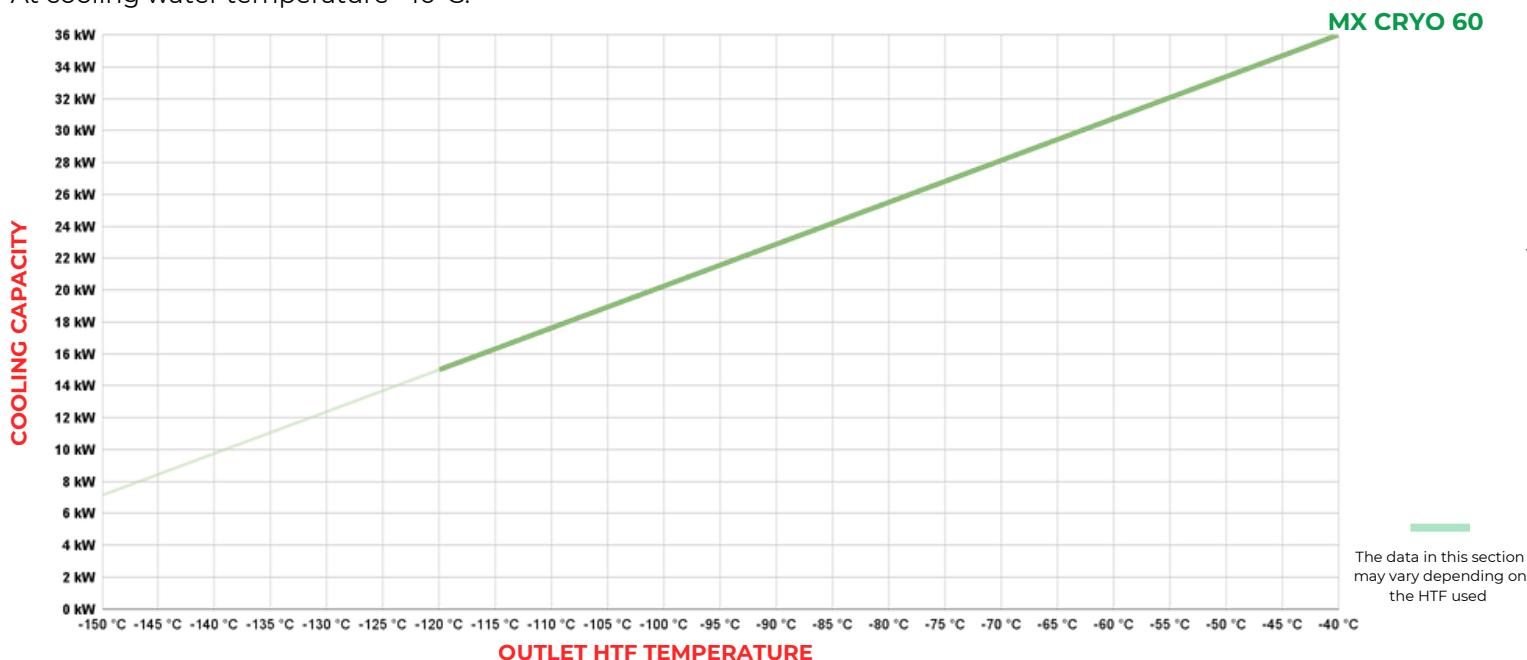
ZERO GWP

MIRAI Intex use only air cycle technology in its products. **MIRAI X CRYO** is 100% eco-friendly, has **0 GWP** and **0 ODP**, that helps for **Sustainable Development** of the industry.

**The temperature range varies based on the type of HTF selected and will be confirmed during the ordering process.*

GRAPHS

Cooling capacity of the **MIRAI X CRYO 60 kW** over a temperature range of -40°C to -150°C.
At cooling water temperature +10°C.



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INSTALLATION

PLUG & PLAY SOLUTION

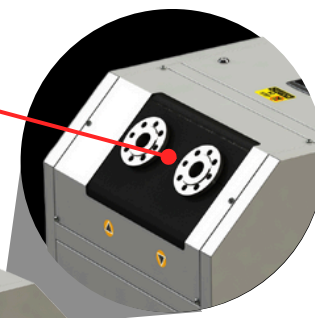
The **MIRAI X CRYO** machine is the ideal solution for retrofitting in existing installation and is easy to implement in new projects due to its Plug & Play design, compatible with multiple industry standard connection types. Also, it is ideal solution when you need to have powerful and compact machine.

DESIGN FEATURES

CONTROL PANEL



HTF INLET/OUTLET



WATER INLET/OUTLET



CONTROL PANEL

The control panel is a tool for setting the operating modes of the machine, there are 3 modes in total:

- » **Cooling mode**
- » **Heating mode**
- » **Standby mode**

This control panel allows you to easily change settings without any additional intervention in the machine, simply by using the touch screen or by sending a command signal from high-level control system.

Allows to use industrial protocols:

- » **ProfiNET**
- » **EtherCAT**
- » **EtherNET/IP**
- » **Powerlink**

*Another protocols by request.

COMPLIANCE

- » Pressure equipment directive (PED) 2017/68/EU, Module A2 Certificate
- » Electromagnetic compatibility directive (EMC) Directive 2014/30/EU Certificate
- » Low voltage directive (LVD) 2014/35/EU Certificate
- » Machinery directive (MD) 2006/42/EC
- » F-gas regulation
- » Reach, Rohs

SPECIFICATIONS MIRAI X CRYO 60

Performance is nominal and individual units may vary. The efficiency of each refrigeration unit will depend on the specific operating conditions.

TECHNICAL DATA	MX CRYO 60
AIR-CYCLE	
TEMPERATURE RANGE *1	From -160°C up to +90°C
RATED MOTOR POWER (kW)	60
COMPRESSOR	Mirai Turbo-Compressor (water-cooled)
REFRIGERANT	Natural Air (R729)
REFRIGERATION CAPACITY (-100°C)*2 (kW)	20
TEMPERATURE ACCURACY UNDER CHANGING LOAD	±0.5°C
HTF PARAMETERS	
MIN PRESSURE (bar)	1
MAX PRESSURE (bar)	10
NOMINAL*2/MAX ALLOWED PROCESS PRESSURE DROP*3(kPa)	20/400
MIN HTF FLOW (l/min)	35
NOMINAL HTF FLOW (l/min)	75
MAX HTF FLOW (l/min)	101
HTF CONNECTION	DN 40 PN16/ 1.5"
WATER COOLING	
WATER CONNECTION	DN 50/2"
NOMINAL PRESSURE DROP (bar)	2.5
MAX ALLOWED PRESSURE ON WATER INLET (bar)	10
COOLING WATER TEMPERATURE RANGE ON INLET	From +5°C to +30°C (other temperatures are possible on request)
MIN COOLING WATER MASS FLOW (l/min)	122
NOMINAL COOLING WATER MASS FLOW (l/min)	145
MAX COOLING WATER MASS FLOW (l/min)	165
WATER QUALITY	See specification*4
GENERAL TECHNICAL SPECIFICATION	
SAFETY PROTECTION	High pressure protection, water supply cut-off protection, over-current protection, high temperature protection, sensor failure protection, heater protection.
SOUND PRESSURE, AT A DISTANCE OF 1M FROM CM (dB)	up to 68
CONTROL SYSTEM	KEB system compatible with digital communication protocols ProfiNET, EtherCAT, EtherNET/IP, and Powerlink. Another protocols by request.
POWER REQUIRMENTS	
POWER SUPPLY	~3PE, 400 V/440 V/480 V , 50 Hz/60 Hz
TOTAL CONSUMPTION/WITH BOOST MODE (kW)	71/89
MAX REFRIGERATION MODE CONSUMPTION (kW)	66
HEATER POWER (kW)	18
PUMP POWER (kW)	4.0
NOMINAL CURRENT (A)	132A@400VAC, 120A@440VAC, 110A@480VAC
MAIN CIRCUIT BREAKER (A)	150
DIMENSIONS	
DIMENSIONS (HxLxW) ±5 mm	1972x1770x800
WEIGHT (kg)	1875 (can vary depending on options)

*1 THE TEMPERATURE RANGE VARIES BASED ON THE TYPE OF HTF SELECTED AND WILL BE CONFIRMED DURING THE ORDERING PROCESS.

*2 DATA ARE SPECIFIED FOR FRAGOLTERM X-T9-A OIL (INLET=-90°C / OUTLET=-100°C) AT COOLING WATER +10°C

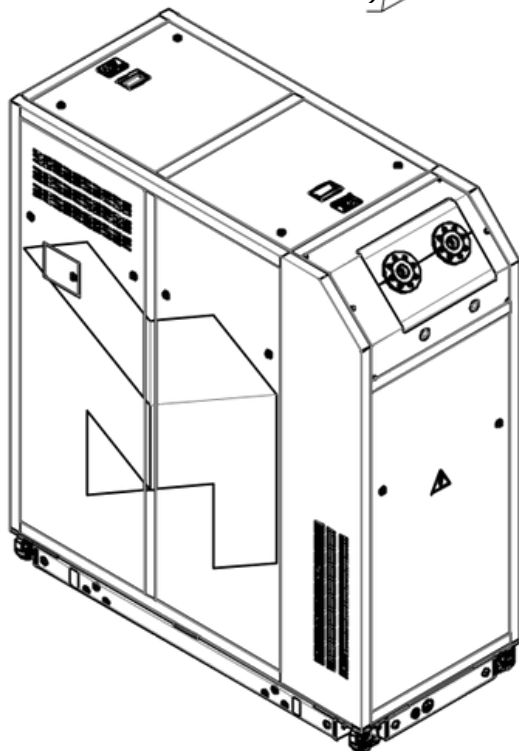
*3 COOLING CAPACITY WILL BE REDUCED BY 2.3 KW

*4 THE WATER SHOULD CONTAIN A CORROSION INHIBITOR THAT PROTECTS ALUMINUM ALLOYS AND COPPER IN THE CONCENTRATION RECOMMENDED BY THE MANUFACTURER (FOR DETAILED INFORMATION CONTACT MIRAI INTEX.)

CM - COOLING MACHINE

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1. Heat transfer fluid (HTF) connection:
flange EN1092-1/DN40/PN16 or Rc1.1/2
2. Cooling water/glycol mixture: flange EN1092-1/
DN50/PN16 or G2
3. Air/Nitrogen, Quick disconnect coupling DN 7.2
(Euro standard)
4. Cooling liquid drain, Connection for plastic tube 8/6 mm
5. Condensate drain, Connection for plastic tube 8/6 mm
6. Grounding point (PE) - M16
7. Power connection hatch
8. Slings place
9. Fixing place to floor (optionally with brackets,
possibility of fixation from any side)
10. Main switch
11. Emergency stop button

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