

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**

60 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.*



MIRAI

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.

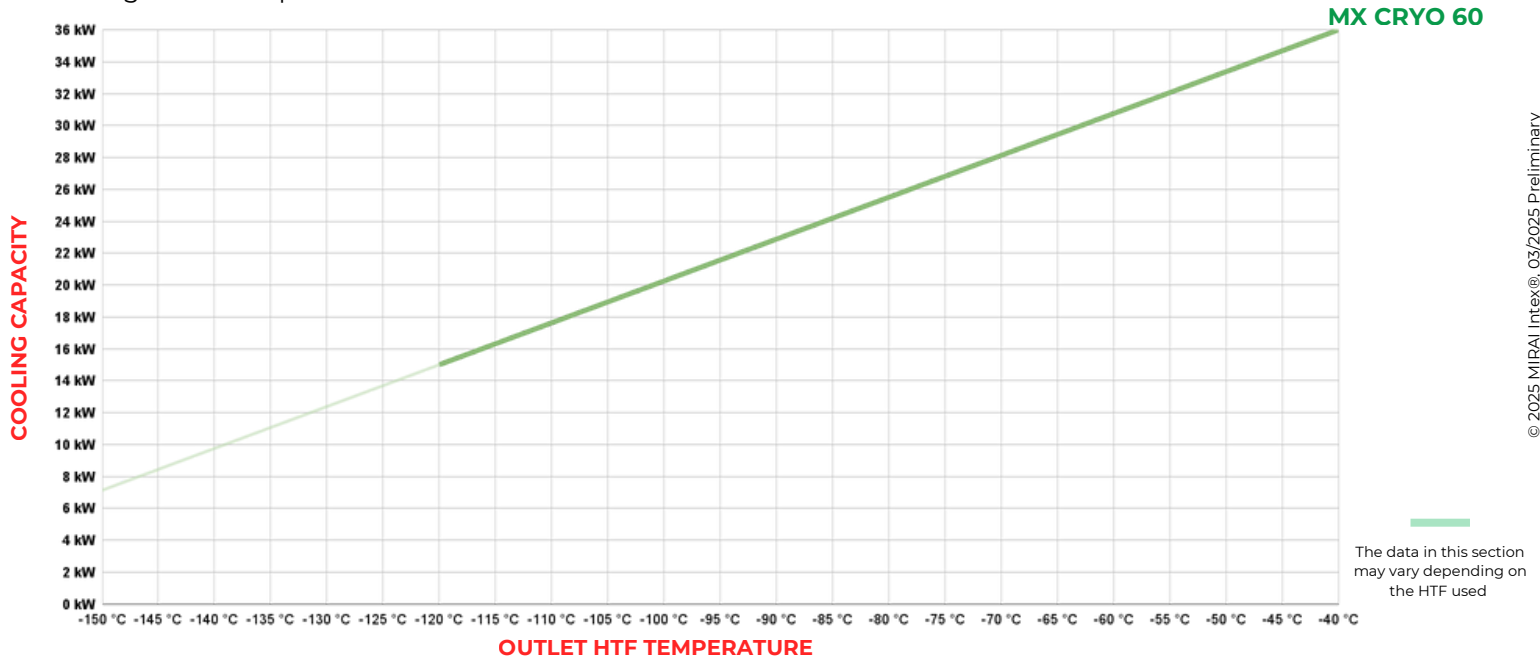
ZERO GWP

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

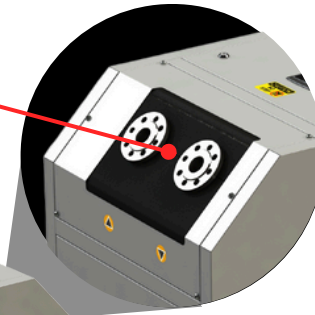
The **MIRAI X CRYO** machine is the ideal solution for retrofitting in existing installation and is easy to implement in new projects due to its Plug & Play design, compatible with multiple industry standard connection types. Also, it is ideal solution when you need to have powerful and compact machine.

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

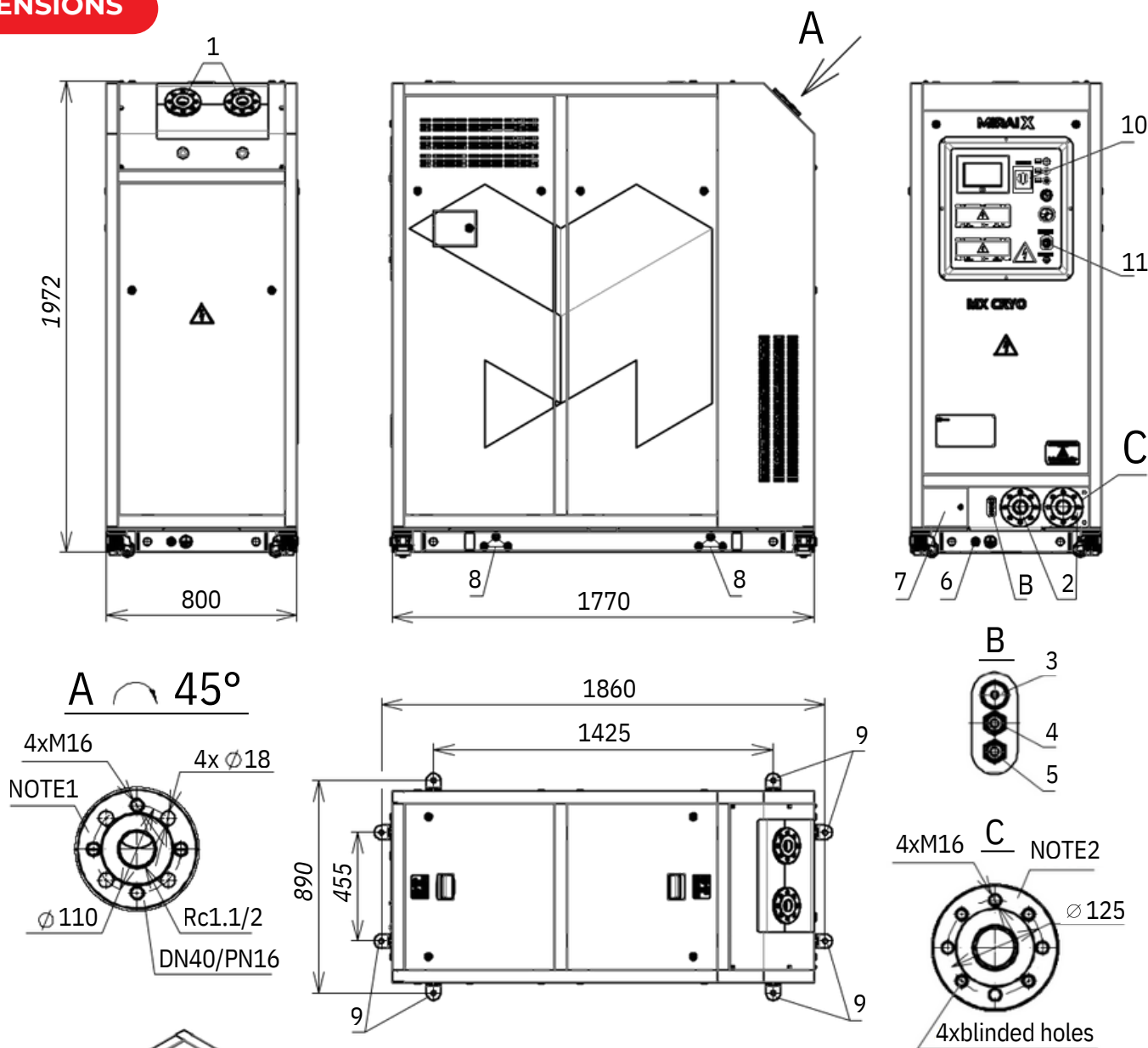
*3 COOLING CAPACITY WILL BE REDUCED BY 2.3 KW

*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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DIMENSIONS



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. Slinging place
9. Fixing place to floor (optionally with brackets,
possibility of fixation from any side)
10. Main switch
11. Emergency stop button

Mirai Intex: MX CRYO 60