

DIMA-4 Digital Manifold

Instruction manual



INDEX

Safety precautions	3
1 INTRODUCTION TO DIMA-4 DIGITAL MANIFOLD.....	4
1.1 Technical features.....	4
2 COMPONENTS DESCRIPTION AND STANDARD EQUIPMENT.....	4
2.1 Display.....	4
2.2 Manifold.....	5
2.3 Control keypad	5
2.4 Temperature probes.....	5
2.5 Flexible hoses.....	5
2.6 Support Hook	5
2.7 Battery holder space.....	5
2.8 Technical notes for the correct use of DIMA-4 digital manifold.....	6
3 PREPARING DIMA-4 FOR USE	6
3.1 Installing the 9v battery.....	6
3.2 Turning on/Turning off of DIMA-4	6
3.3 Connecting T1 and T2 temperature probes.....	6
3.4 Connecting DIMA-4 to the system	7
3.5 Vacuum cycle	7
3.6 Refrigerant selection.....	7
3.7 Unit of measurement selection.....	7
4 USING DIMA-4 UNIT	8
4.1 Reading SuperHeating	8
4.2 Reading Subcooling	8
4.3 Reading ΔT (T2-T1).....	8
4.4 Display back-lighting	8
4.5 "Zero Plus" Function - Atmospheric Pressure Calibration.....	8
5. MODIFYING DIMA-4 PARAMETERS	9

Safety precautions

- This equipment is designed for trained personnel only, who must have knowledge about the refrigeration fundamentals, cooling systems, refrigerants and possible damage that pressurized equipment may cause.
- Carefully read the instructions summarized in this manual; strict observance of the procedures described is fundamental for the operator's safety, the perfect state of the unit and constant performances as declared.
- Before performing any operation, make sure that the charging hoses used have been previously evacuated and that they do not contain non-condensable gases .
- Avoid skin contact; the low boiling temperature of the refrigerant (about -30°C) can cause freezing .
- Avoid breathing refrigerant vapours.
- It is recommended to wear suitable protections like safety glasses and gloves; contact with refrigerant may cause blindness and other personal injuries.
- Do not operate near open flames and hot surfaces; the high temperatures decompose the refrigerant releasing toxic and caustic substances which are hazardous for the operator and the environment.
- Remove the battery in case of long periods of non-use.
- Do not keep a low battery inside the instrument.
- Operate the unit only in locations with suitable ventilation and a high number of air changes.
- Before disconnecting the instrument from the system, recover the refrigerant inside the system in order to avoid wasting it in the environment .
- During operations avoid release of refrigerant to the environment; this precaution is required by international environmental standards and is essential to avoid difficult leak detection in a refrigerant polluted environment.
- Protect the unit from dripping.
- Do not modify the calibration of safety valves and control systems.
- If you recover refrigerant from a cooling system equipped with a water evaporator and/or condenser, it is necessary to drain water from the evaporator and/or condenser or to keep the circulation pump running during the entire recovery operation in order to avoid frosting.

1 INTRODUCTION TO DIMA-4 DIGITAL MANIFOLD

The DIMA-4 enables you to make an A/C system maintenance in a quick and easy way and at the same time to make its diagnosis with the calculation of Superheating and Subcooling. The inside database contains over 50 refrigerants.

1.1 Technical features

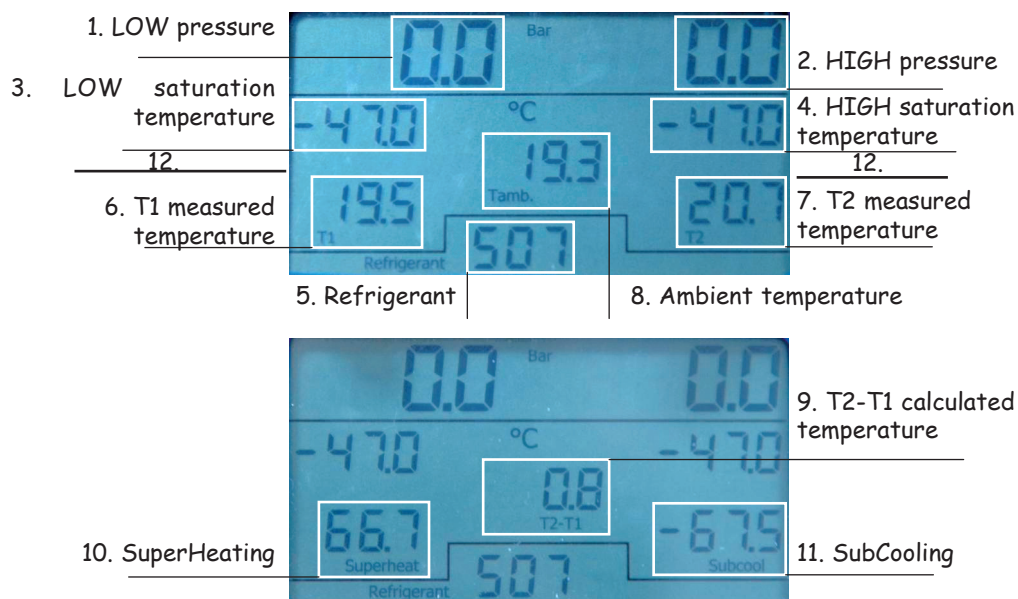
Model	DIMA-4
Refrigerants	all halogen refrigerants
Power supply	9 V (DC)
Working temperature	-10°C to +60°C
Stocking temperature	-10°C to +60°C
Working pressure	-0.99 bar to +49 bar
Temperature range	-99.9°C to +400°C
Instrument precision class	≤1%

2 COMPONENTS DESCRIPTION AND STANDARD EQUIPMENT

2.1 Display

The Display, with possibility to switch on a backlight, shows the following information:

- | | |
|------------------------------------|---|
| 1 LOW side pressure | 9 T2-T1 calculated temperature |
| 2 HIGH side pressure | 10 Superheating calculation |
| 3 LOW side saturation temperature | 11 Subcooling calculation |
| 4 HIGH side saturation temperature | 12 In case of non-azeotropic refrigerant,
selection of liquid or vapor |
| 5 Selected refrigerant | |
| 6 T1 measured temperature | |
| 7 T2 measured temperature | |
| 8 Ambient temperature | |

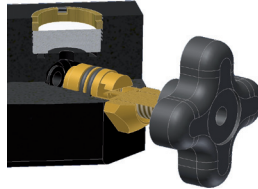


2.2 Manifold

4-way piston manifold (LOW - VAC - REF - HIGH) with double O-ring to maintain tightness in any functioning condition.

Inner pressure transducers have a precision < 1%.

The manifold is equipped with a 3/8" MFL connection that allows 4 times faster evacuation than models equipped with a 1/4" MFL connection.



2.3 Control keypad

The 5 button keypad enables a perfect control of the instrument.



2.4 Temperature probes

The instrument features 2 probes (K type) supplied in the kit with a 3 meters' cable. Another probe for measuring the ambient temperature is inside the instrument.

2.5 Flexible hoses

Their flexibility assures easy connection in any situation. They withstand the cooling system operating pressures and maintain the correct flow even when operating in vacuum.

2.6 Support Hook

In order to use the DIMA-4 handsfree, you can use the support hook, which can be set in 4 different angles.

IMPORTANT

Please be careful when putting the hook in its rest position. Give a slight manual pressure on the outer side of the hook without damaging the instrument protection cover.

2.7 Battery holder space

On the rear of DIMA-4, there is the battery holder space. When batteries must be replaced, remove the protection screw to open the cover.

2.8 Technical notes for the correct use of DIMA-4 digital manifold

When closing the DIMA-4 valves, the inner volume will decrease which can cause in the presence of liquid refrigerant overpressures (more than 100bar). This could irreparably damage the pressure sensors. As a consequence, when the instrument is used, you must always connect it with the flexible hoses and never have the input/output adapters closed by caps or other stops.

WARNING

The presence of the synoptic sticker does not exempt the user from reading carefully this user's manual and from observing the illustrated procedures.

3 PREPARING DIMA-4 FOR USE

3.1 Installing the 9v battery

A 9V battery is supplied in the DIMA-4 packaging. In order to operate the unit, it is necessary to install the battery inside the instrument.

Please proceed as follows:

- * Remove the screw from the battery space.
- * Remove the battery cover.
- * Place the battery inside the space and connect it with the internal contact.
- * Close the cover and fix it with the screw again.

IMPORTANT

When the battery is run down, the message "batt" will blink on the display alternating with the selected refrigerant. When the lowest possible voltage level is reached, the instrument will turn off automatically.

3.2 Turning on/Turning off of DIMA-4

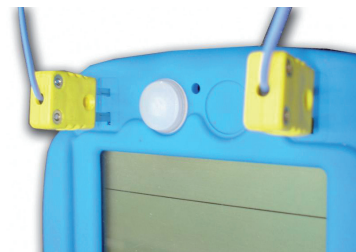
To turn the DIMA-4 on, keep the 0 button pressed for more than 1 second. The display will resume the operator's latest settings.

To turn the DIMA-4 off, keep the 0 button pressed for more than 3 seconds.

3.3 Connecting T1 and T2 temperature probes

With the instrument 2 temperature probes (type K thermocouple) are being supplied which have to be connected to the special K-type receptacles on the instrument (make sure that the polarity is correct) (see picture below).

Wait a few seconds till the correct temperature value appears on the display. When the thermocouples are not connected, the display will show "- - -"



connecting temperature probes

3.4 Connecting DIMA-4 to the system

Connect the blue hose to the LOW connection.

Connect the red hose to the HIGH connection.



Connect the 3/8" yellow hose to the 3/8" VAC connection and the 1/4" yellow hose to the REF connection.

3.5 Vacuum cycle





IMPORTANT

Before using the instrument, make sure you have evacuated the hoses and manifold body with a vacuum cycle of at least 5 minutes (in order to make a vacuum, we suggest the use of an ITE vacuum pump, model MK-40 or a bigger one).

3.6 Refrigerant selection

Press the  and  keys at the same time; when you release them, the latest refrigerant used will appear on the display

Select the refrigerant type by means of the  and  keys.

If a Non Azeotropic refrigerant is selected, move to the Liq. - Vap. ranges by means of the  or  keys and modify the value by means of  and .










After the selection, you can confirm with the  central key.

List of available refrigerants:

R22	R407H	R442A	R507
R32	R410A	R448A	R508A
R134a	R417A	R449A	R513A
R152a	R422A	R450A	R600a (Isobutane)
R236fa	R422D	R452A	R744 (CO2)
R245fa	R424A	R452B	R1234yf (234f)
R290 (Propane)	R426A	R453A	R1234ze (234e)
R404A	R427A	R454B	R1270
R407A	R428A	R454C	
R407C	R434A	R455A	
R407D	R437A	R466A	
R407F	R438A	R502	

DIMA-4 version with R717 (Ammonia) is available on request.

3.7 Unit of measurement selection

- Press the  and  keys at the same time; when you release them, the pressure unit of measurement will blink on the display.
- Select the pressure unit of measurement (MPa - bar - psi) by means of the  and  keys.
- Move to the temperature unit of measurement (°C - °F) by means of the  or  keys and select the measurement (°C - °F) by means of  and .
- Confirm the effected modification pressing the  central key.

4 USING DIMA-4 UNIT

4.1 Reading SuperHeating

By means of the  key, it is possible to display alternately the value of the temperature measured by T1 probe or the value of SuperHeating calculation.



4.2 Reading Subcooling

By means of the  key, it is possible to display alternately the value of the temperature measured by T2 probe or the value of SubCooling calculation.

4.3 Reading ΔT (T2-T1)

By means of the  key, it is possible to display alternately the value of the temperature measured by the internal ambient temperature probe or the value of T2-T1 calculation.


4.4 Display back-lighting

By means of the  key, you can activate the display back-lighting. This backlight turns off automatically after 16 seconds (this parameter may be set by the user, see chapter 5 for more information), or by pressing the  key a second time.

4.5 "Zero Plus" Function - Atmospheric Pressure Calibration

The DIMA-4 manifold has a special function called "Zero Plus" - Atmospheric Pressure Calibration.

This function must be used when one wants to calibrate the unit to 0 at atmospheric pressure.

To perform this operation, it is necessary to make sure that the pressure sensors of the DIMA-4 are at atmospheric pressure. Then press the  key for more than 4 seconds; the message "done" on the display means that the operation has been successful.


WARNING

If the above function is performed with a different pressure than the atmospheric one, this could cause an incorrect calibration of the instrument.

Therefore, perform this function with open knobs, in connection with the atmosphere.






5. MODIFYING DIMA-4 PARAMETERS

DIMA-4 has an inner series of parameters, that handle its correct operation. These parameters can be modified by the user in order to personalize the instrument according to his own needs.

To enter the menu of parameters configuration, press the  key for more than 3 seconds. The message "tOFF" in the refrigerant range means that you are inside the parameters menu.

Parameter

name	Description	Default value	Range
tOFF	Time of instrument self-turning off	300 seconds	0 to 3600
t bL	Time of display back-lighting self-turning off	16 seconds	10 to 255
tLOG	Time of data transfer to Datalogger	-----	-----

Select the parameter you would like to modify by means of the  key. Then, modify the value by means of the arrow   keys. When the wanted value is reached, confirm by pressing the  central key. If you scroll the complete list of parameters by means of the  key, the display will go back to the standby screen when the list is over. "tOFF" and "t bL" parameters can be deactivated if positioned on OFF.