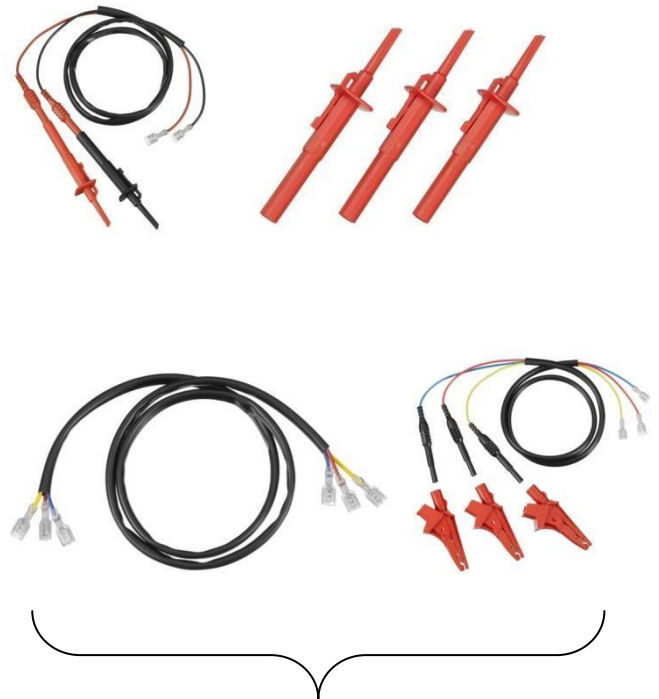
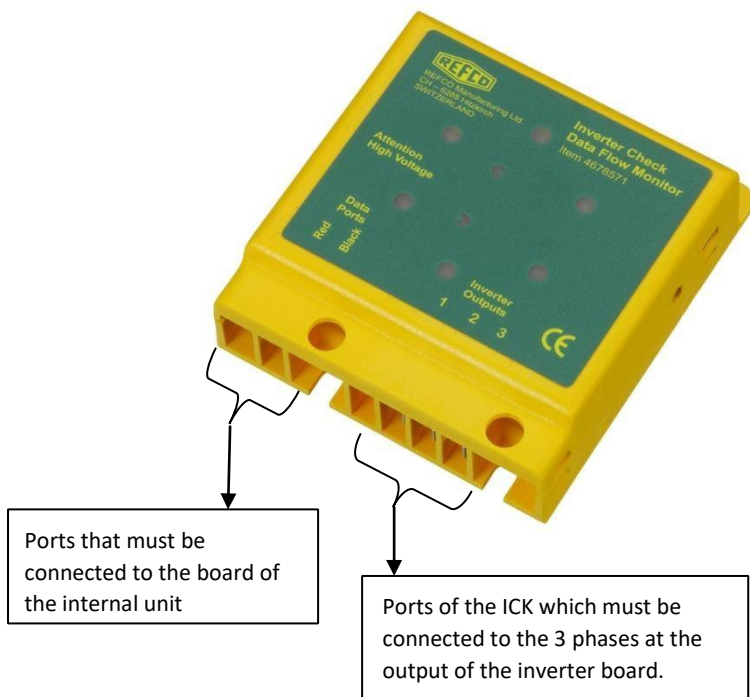




INVERTER CHECK KIT (ICK)

Presentation and operation



Function of the Inverter Check Kit (ICK)

When a malfunction occurs in the compressor of an air conditioner, it is always difficult to determine whether the compressor or the inverter is the cause. In such cases, it is common to replace both components to solve the problem. This practice is expensive and unsatisfactory because two components must be ordered and installed instead of one, while the two defective components must be disassembled and returned.

With the ICK, maintenance technicians can easily determine if the inverter's circuit board is defective, making diagnosis and repair much easier. In addition, only one component needs to be returned and ordered.

Another function of the ICK is to determine if there is a fault in the serial port that allows the internal units to communicate with the external unit.

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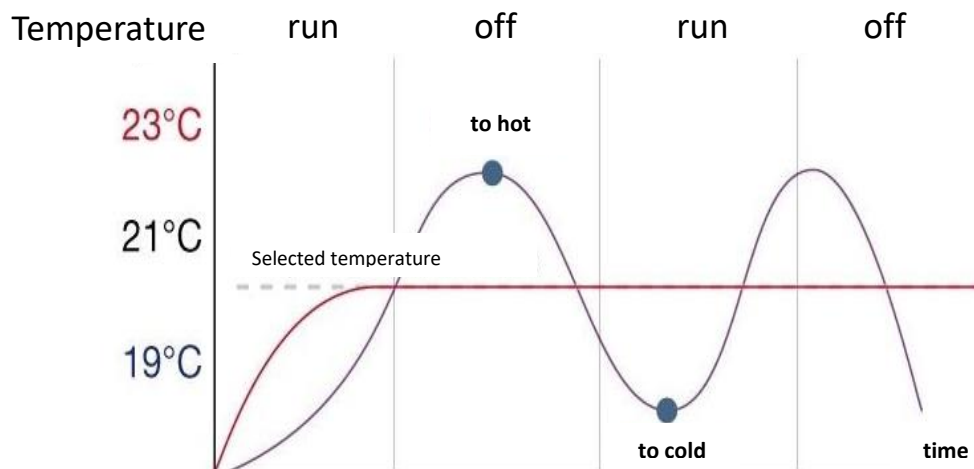
HVAC/R
Service Products





1) Test of the inverter

Introduction of inverter technology

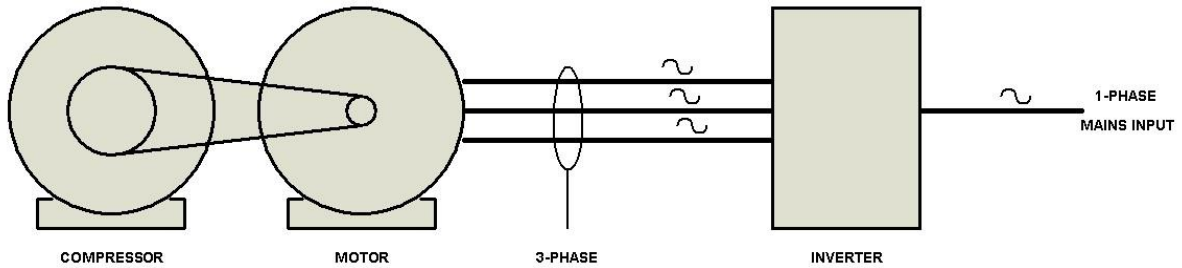
In an air conditioning system, inverter technology has the task of regulating the speed of the motor connected to the compressor in order to increase or decrease the power of the compressor depending on the desired temperature. Unlike conventional systems that operate in "all-or-nothing" mode, which leads to discomfort, increased consumption and premature wear of the compressor, inverter technology allows fine regulation of the temperature while reducing fatigue of the electromechanical organs of the system.



 With inverter: A constant temperature is maintained by controlling the compressor speed.

 Conventional model: The temperature is regulated by turning the compressor on/off.

Normally, air conditioners are operated with single-phase alternating current, but compressors are usually coupled with three-phase motors. The task of the inverter is therefore primarily to convert the single-phase current into a three-phase current. The speed of the motor is synchronized with the frequency of the three-phase current fed into it. It is therefore possible to vary the power of the compressor by modulating the frequency of the three-phase signal that feeds the motor. This is exactly the task of the inverter.



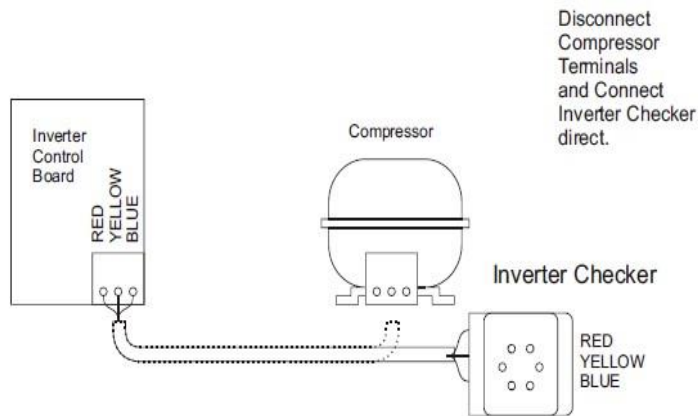
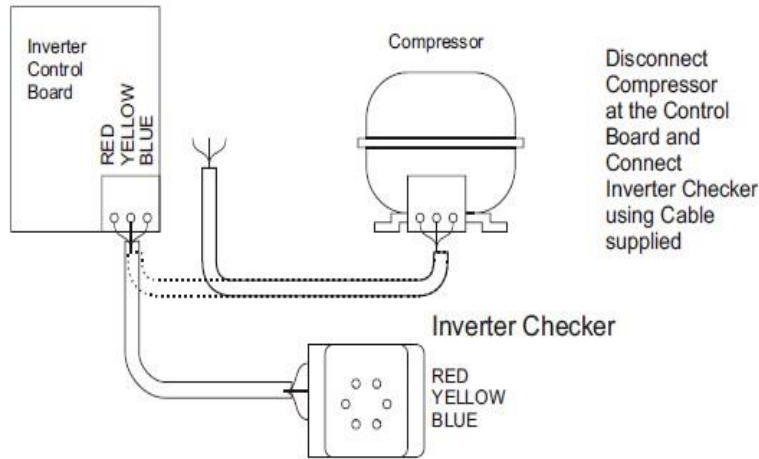
Use of the ICK

CAUTION: Before using the ICK, observe the safety instructions in the operating manual of the device.

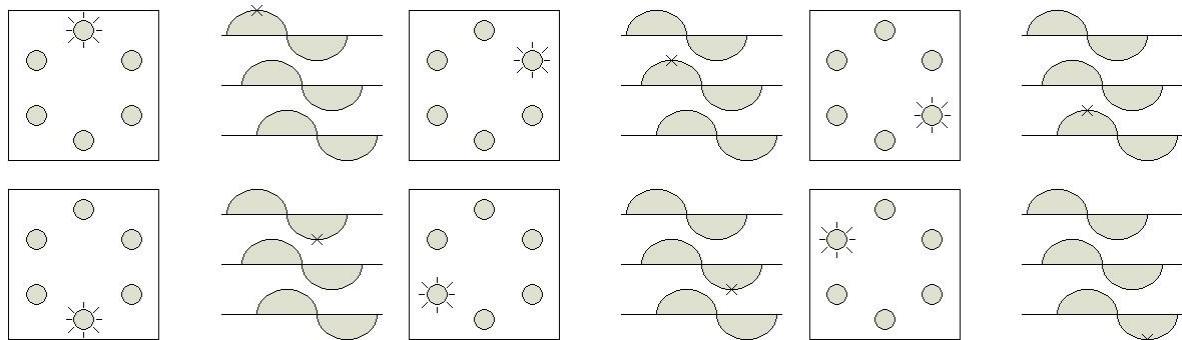
After turning off the power and waiting at least 3 minutes to make sure all capacitors are discharged, disconnect the compressor from the inverter and connect inputs 1 (R "red"), 2 (Y "yellow") and 3 (B "blue") of the ICK to the 3 phases of the inverter. When you have made all the connections, lay the unit flat on a dry surface and turn the inverter back on. The ICK will now test the output signal of the inverter and inform the technician of the status of each of the three phases through an LED system visible on the top of the unit.



Connecting the Inverter Phase Check



Each of the three pairs of LEDs represents the state of each of the three phases at the output of the inverter. They light up alternately when the signal reaches its peak value (positive and negative), as shown below.





If all the LEDs light up one after another with the same intensity, it means that the inverter is working correctly and the fault comes from the compressor, which must be repaired or replaced.

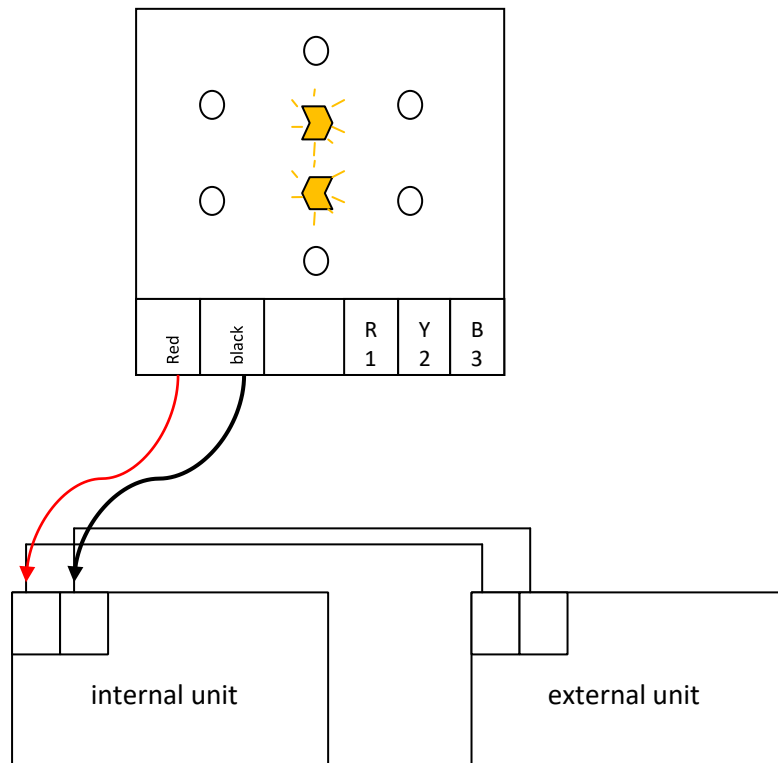
If at least one of the LEDs does not light up or its intensity is lower than that of the others, it means that the associated phase has a fault and the board of the inverter must be replaced or repaired.

NOTE: The ICK is supplied with different cables and connectors to facilitate the connection of the device to the inverter board for the different models on the market.

2) Checking the serial connection between the internal units and the external unit

In a system that uses an inverter, data flows between the control card of the external device and the control cards of the internal devices. To test that data is being exchanged correctly between the various components, simply use the red and black cables supplied with the ICK and connect them in parallel to the two (data) ports on the board of the indoor unit that are connected to the outdoor unit. When the unit is turned on, the two center arrows on the ICK should both light to indicate that data exchange is occurring in both directions. The flash frequency and intensity of the two arrows are not symmetrical, as they depend on the type and amount of data being exchanged. It is only important to verify that the information is flowing in both directions.

If one of the two arrows is not lit, you should first check that the cables are not damaged and are firmly connected at both ends. If this is the case, the board of the internal unit must be replaced and tested again. If the problem still persists, the problem is with the external unit's circuit board, which must be replaced.



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