



@TosotComfort

## MINI-SPLIT SYSTEMS CHEAT SHEET

### IF YOUR SYSTEM IS DOWN, CHECK THESE ITEMS FIRST AND THEN CALL A LICENSED HVAC CONTRACTOR...

- ✓ Tripped circuit breakers
- ✓ Cycle system off and on (Reset both outdoor and indoor units)
- ✓ Clean air filters, check for dirty indoor coil
- ✓ Any obstructions from outdoor coil
- ✓ Remote control batteries

### CHANGE REMOTE CONTROL SETTING FROM FAHRENHEIT TO CELSIUS

The remote control should come from the factory already set for °F, but if set for °C, turn remote control off, then press **"MODE"** and **"▼"** buttons on the remote simultaneously for 5 seconds.

### IF REMOTE CONTROL IS LOST – UNIT WILL OPERATE

In the case that the remote control is mis-placed, the unit can be turned on/off by lifting the panel on the Indoor Unit and pressing button on lower right hand side. The temperature cannot be changed and the unit will only operate in the "Auto" Mode.

### REPLACEMENT PART #'S

- Many TOSOT part #'s vary by one or 2 digits. This does not mean they are interchangeable, each part # has its own unique properties.
- When looking for individual parts, check parts diagrams to see if that part is also a component of an assembly or sub-assembly. For warranty purposes always select the individual part number first. If that part is not in stock, there may be a component of an assembly or sub-assembly that is available.

### LINE SETS

#### GENERAL

- TOSOT OD units contain enough R410A for, generally, up to a 25 foot line set on most 1 to 1 systems but always check submittals.
- For the MULTI systems: factory charge for Total Line Length 131-ft" - refers to the charge in the unit that is available to fill the line set, not refrigerant in the line set.

#### MINIMUMS

- 10' minimum required for all models, (this does not include the 2' section on the IDU)

## MAXIMUMS

MULTI 21 SEER Series 18K : 65' accumulative max

- Pre-charged to 33'
- Maximum run per evaporator: 33'
- Add .2 oz. per additional foot over 33' not to exceed 65' accumulative total

MULTI 21 SEER Series 24K: 197' max

- Pre-charged to 98'
- Maximum run per evaporator: 65'
- Add .2 oz. per additional foot over 98' not to exceed 197' accumulative total



MULTI 21 SEER Series 30K: 230' accumulative max

- Pre-charged to 131'
- Maximum run per evaporator: 82'
- Add .2 oz. per additional foot over 131' not to exceed 230' accumulative total

MULTI 21 SEER Series 30K: 36K 246' accumulative max

- Pre-charged to 131'
- Maximum run per evaporator: 82'
- Add .2 oz. per additional foot over 131' not to exceed 246' accumulative total

MULTI 21 SEER Series 30K: 42K 246' accumulative max

- Pre-charged to 131'
- Maximum run per evaporator: 82'
- Add .2 oz. per additional foot over 131' not to exceed 246' accumulative total

All single zone systems (Entry, Mid and High levels and UMATCH)

- All pre-charged to 25'

HIGH Level

- 9K max run 49'
- 12K max run 98'
- 18K max run 131'
- 24K max run 164'
- Add .2 oz. per foot over 25' not to exceed stated max

Mid level

- 9K max run 49'
- 12K max run 66'
- 18K max run 82'
- 24K max run 82'
- 30K max run 98'
- 36K max run 98'
- Add .2 oz. per foot over 25' not to exceed stated max

Entry Level

- 9K (115V) max run 49'
- 9K (230V) max run 49'
- 12K (115V) max run 66'
- 12K (230V) max run 66'
- 18K max run 82' 24K max run 82'

- 36K max run 98'
- Add .2 oz. per foot over 25' not to exceed stated max

#### U-MATCH

- 18K max run 164'
- 24K max run 164'
- 36K max run 164'
- 42K max run 164'
- 48K max run 230'
- Add .2 oz. per foot over 25' not to exceed stated max

#### GENERAL LINE SET INFORMATION

- TOSOT Comfort stocks line sets in 25' and 50' lengths. Larger lengths must be field-supplied.
- Line sizes cannot be increased to accommodate longer line set runs
- Insulate both lines separately (this is usually a moot point as pre-flared 'packaged' line sets come with the two lines insulated separately but in Canada and some other areas it is customary to create your own line set and, in these cases, it is important to insulate the lines separately).
- Mini Split AC's have one service port, it's on the low side. The liquid line is actually a discharge vapor line because the expansion valve is in the ODU, (if you are asked why we don't put a three-way valve on the discharge line this is the reason... it ain't liquid!)
- Use nitrogen to pressure test line set to 500 PSI. Release nitrogen if no leaks and pull a vacuum to 500 microns.
- Always weigh in refrigerant, do not charge to pressure and/or temperature
- When mounting on an exposed wall you can push the flare connections out the wall and make your flare connections on the exterior...this is often easier when trying to make the flare connections between the IDU and the wall
- Do not use leak lock on the flare connections
- Only trap line set when the ODU is 30' higher than the IDU and then trap every 20'
- All TOSOT mini split systems contain R410A refrigerant

#### INDOOR UNIT (IDU)

- IDU should be mounted at least 72" up off the floor or 6" off the ceiling with 6" of clearance on both left & right sides
- All electrical connections are on the right side of the wall mounted units.
- When pulling the line set in through the hole in the wall, be sure to maintain a 4" bend radius to keep the line set tight against the interior wall and prevent kinking
- Installation bracket must be level.

- Try to catch two wall studs with the legs of the mounting bracket but if not the five screws provided with appropriate wall anchors will keep the evaporator on the wall...(IDUs weigh approx. 22 - 42lbs.)
- IDUs have as much as a 40' throw of air
- The wireless remote must be within 26 feet of the IDU and must have a clear communication to the IDU...cannot go through sheet rock, etc.
- Use expandable foam to seal hole around line set and drain (wall sleeves are nice too)
- Ceiling cassettes come with a factory condensate pump
- MULTI indoor units are powered off the outdoor unit, U-Match indoor units have separate power source.
- Indoor High-Wall fans run continuously in the Cool mode.
- Dry mode on IDU can be used for dehumidification
- Both the IDU & ODU units must be level in order for water to drain properly

## **OUTDOOR UNIT (ODU)**

### **GENERAL**

- Do not add any driers, sight glasses, crankcase heaters, hard start kits and low ambient controls.
- Do not use a drain fitting with the ODU because of potential freezing. (in freezing climates only...obviously)
- Both the IDU & ODU units must be level in order for water to drain properly

### **CLEARANCES**

- 2' clearance from the top, 2' right side, 1' left side, 6 ½' discharge (air outlet), and 1' incoming (air inlet) air side (refer to product documentation)
- ODU must be located on level ground and above the typical snow line

### **ELECTRICAL**

- 14/4 AWG stranded cooper wire 600v rated is required between the ODU & IDU, (U-Match is an exception)
- There can be no breaks (splices) in the cable between the ODU and IDU. No wire nuts / no splicing of any kind!
- The wire connected to terminal #1 on the ODU must be connected to terminal #1 on the IDU, #2 to #2, #3 to #3 and #4 to #4.
- If you get an E6 error code the wires maybe crossed between the ODU & IDU
- Surge protectors are recommended (Intermatic AG3000)
- Indoor disconnect is required (this is in the U.S. National Electrical Code but often not enforced by local code officials)

- Do not put control wires around, close to or on top of lights

#### **WALL BRACKET**

- Mini Split distance off the wall being 12" or 20" off wall for air inlet that TOSOT installation guide requires.
- Consult wall bracket installation guide and submittal for distance off wall for air inlet, sides, top and bottom of unit, as long as more than 20" off ground. This allows inlet air from bottom, top and both sides of the outdoor unit so the inlet requirement of 12" or 20" can be reduced.
- TOSOT does not manufacture wall brackets but there are several on the market which can be used as long as they meet the weight limit of the equipment and other requirements of the manufacturer of the wall bracket.

#### **CONDENSATE DRAINS**

- The drain lines do not have to be trapped
- For best draining of condensate, run the drain line below the line set
- A 5° downward pitch is recommended leaving the IDU unit for gravity draining
- There is a drain port on the IDU on both right side and left side.
- Use terminals 1 & 3 on the IDU to power the condensate pump if the pump is installed inside the IDU
- How to wire mini split condensation pump to TOSOT unit
  - Terminals N1 and 3 on the indoor unit can be used to power the pump,
  - Terminal 2 on the indoor should not be used to wire in pump or safety switch as this is dedicated communication.
  - Terminal 3 is often used for safety switch to cut power to the indoor unit rendering it non-functional.

#### **TROUBLESHOOTING**

- The Electronic Expansion valves EEV are in the ODU
- The error code that is most common, (E6) is caused by a fault with the communication wiring

#### **TROUBLESHOOTING TO GET WiFi CONNECTED TO TOSOT UNIT:**

- ✓ May have wrong app loaded
- ✓ Could need to Refresh the App

Error Codes One Pager  
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## Most Common Error Code Questions / Check Points

<b>E1</b>	<p><b>High pressure.</b></p> <p>Common causes: overcharge, dirty coils, failed indoor or outdoor fan motor, faulty high-pressure switch.</p> <ul style="list-style-type: none"> <li>• First check for overcharge. Ambient temperature too high.</li> <li>• If a MULTI system be sure wires to indoor units are not mis-matched at outdoor.</li> </ul>
<b>E3</b>	<p><b>Restriction or leaking system</b></p> <ul style="list-style-type: none"> <li>• Check refrigerant charge</li> <li>• Check EEV to see if metering</li> <li>• Check filter dryers both sides for temperature change</li> </ul>
<b>E5</b>	<p><b>Over current protection (line voltage too high or low supply voltage is unstable)</b></p> <ul style="list-style-type: none"> <li>• Check line voltage from breaker L1 &amp; L2 for proper voltage</li> <li>• Check the for dirty Evap coil</li> </ul>
<b>E6</b>	<p><b>Communication error</b></p> <ul style="list-style-type: none"> <li>• Start at the outdoor unit. You should have 55VDC or close to it on terminals N1 and 2 where the indoor units wires attach. If you have the 55VDC then outdoor board is ok.</li> <li>• Move to the indoor units and remove the #2 wire and check between N1 and 2 and you should have 55VDC there as well.</li> <li>• Run a temporary replacement cable thru a door or window, whatever is easy, and hook it up just to rule out any problem with the wiring.</li> <li>• If you determine that the outdoor control board and wiring are ok then likely the indoor control board has failed.</li> </ul>
<b>F0</b>	<p><b>Gathering refrigerant or low refrigerant charge</b></p> <ul style="list-style-type: none"> <li>• Check to be sure system is not low on refrigerant, if charge is not low, check to be sure coils are clean and fans are operating properly</li> <li>• Check indoor coil thermistor against the Ohm chart in the back of service manual</li> </ul>
<b>H5 &amp; H7</b>	<p><b>Dirty indoor coil, Fan motor failed, fan blade dirty</b></p> <ul style="list-style-type: none"> <li>• High depends on which mode (Heat or Cool)</li> <li>• High Pressure on charge: loose or broken wire to board &amp; components</li> <li>• High pressure switch default, bad temp sensor - check ohms to compressor 2 – 4 ohms any two legs. All 3 readings should be close to equal.</li> </ul>

<b>C5</b>	<b>Jumper missing</b> <ul style="list-style-type: none"> <li>• Replace indoor board and remove the jumper from old board to new board</li> <li>• Some models outdoor board has jumper too</li> <li>• Check jumper for damage or incorrect jumper</li> </ul>
<b>E7</b>	<b>Mode Conflict – One indoor unit in heat mode and one in cooling mode</b> <ul style="list-style-type: none"> <li>• Both need to be in Heat or Cool</li> </ul>
<b>LP</b>	<b>Mismatch</b> – Indoor and outdoor units do not match or are not compatible
<b>On</b>	<b>Not an error code</b> <ul style="list-style-type: none"> <li>• Means system turned on</li> <li>• Shows on the 88 display on UMAT control board</li> </ul>
<b>U1 &amp; U5</b>	<b>Current detection</b> <ul style="list-style-type: none"> <li>• Check All wires to board to determine no wires are pinched rubbed or spliced</li> <li>• Check compressor 2 to 4 ohms between any two wires going to compressor</li> <li>• Check outdoor fan motor ohms for short</li> <li>• If all components check out OK, replace outdoor main board</li> </ul>
<b>U3</b>	<b>Voltage drop on DC bus bar</b> <ul style="list-style-type: none"> <li>• Make sure the Line voltage is stable and between the Voltage Range 187 - 253 V</li> <li>• Check DCV between N1 &amp; 2 without #2 wire on #2 terminal should be 55 DCV</li> <li>• If all check ok, replace outdoor Main Board</li> </ul>