

Title (en)  
AIR-CONDITIONING DEVICE, RAILWAY VEHICLE AIR-CONDITIONING DEVICE, AND METHOD FOR CONTROLLING AIR-CONDITIONING DEVICE

Title (de)  
KLIMAAANLAGE, SCHIENENFAHRZEUGKLIMAAANLAGE UND VERFAHREN ZUR STEUERUNG EINER KLIMAAANLAGE

Title (fr)  
DISPOSITIF DE CLIMATISATION, DISPOSITIF DE CLIMATISATION DE VÉHICULE FERROVIAIRE ET PROCÉDÉ DE COMMANDE DE DISPOSITIF DE CLIMATISATION

Publication  
**EP 3604970 A4 20200415 (EN)**

Application  
**EP 18775602 A 20180323**

Priority  
• JP 2017065291 A 20170329  
• JP 2018011700 W 20180323

Abstract (en)  
[origin: EP3604970A1] An air-conditioning device includes (i) a compressor, (ii) an outdoor heat exchanger, (iii) an indoor heat exchanger and an electronic expansion valve, (iv) a bypass passage communicatively connecting a middle compression chamber and a low pressure space, the middle compression chamber being a chamber to accommodate a refrigerant undergoing compression by the compressor, the low pressure space being a space to accommodate the refrigerant having a pressure lower than a pressure of the refrigerant in the middle compression chamber, (v) a bypass valve to open or close the bypass passage, and (vi) a controller to execute setting of a degree of opening of the electronic expansion valve based on a degree of superheat of a refrigerant. Based on a change from a closed state of the bypass valve to an open state of the bypass valve, the controller starts restriction processing in which the degree of opening of the electronic expansion valve is corrected to a value that is less, by a given degree  $\theta_a$  of opening, than a value set by the degree-of-superheat control.

IPC 8 full level  
**F25B 1/00** (2006.01); **B61D 27/00** (2006.01); **F25B 49/02** (2006.01)

CPC (source: EP US)  
**B61D 27/00** (2013.01 - EP); **F25B 1/00** (2013.01 - EP); **F25B 13/00** (2013.01 - US); **F25B 49/022** (2013.01 - EP US); **F25B 2313/02741** (2013.01 - US); **F25B 2500/28** (2013.01 - EP); **F25B 2600/0262** (2013.01 - EP); **F25B 2600/2501** (2013.01 - US); **F25B 2600/2513** (2013.01 - EP US); **F25B 2700/1933** (2013.01 - EP US); **F25B 2700/21151** (2013.01 - EP US); **F25B 2700/21152** (2013.01 - US)

Citation (search report)  
• [Y] JP S5743171 A 19820311 - MATSUSHITA ELECTRIC IND CO LTD  
• [Y] JP H11324951 A 19991126 - MITSUBISHI ELECTRIC CORP  
• [Y] US 2003074910 A1 20030424 - MOON JOONG-KI [KR], et al  
• [Y] EP 0949465 A2 19991013 - MATSUSHITA ELECTRIC IND CO LTD [JP]  
• See references of WO 2018180985A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3604970 A1 20200205**; **EP 3604970 A4 20200415**; **EP 3604970 B1 20220803**; CN 110462306 A 20191115; JP 6704512 B2 20200603; JP WO2018180985 A1 20190627; US 2020232683 A1 20200723; WO 2018180985 A1 20181004

DOCDB simple family (application)  
**EP 18775602 A 20180323**; CN 201880020456 A 20180323; JP 2018011700 W 20180323; JP 2019509709 A 20180323; US 201816486867 A 20180323