

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP2019/084610

**A. CLASSIFICATION OF SUBJECT MATTER****H03K 17/955**(2006.01)i; **E05F 15/73**(2015.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

H03K; E05G; E05F; G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2016364079 A1 (QIU LIANG [CN] ET AL) 15 December 2016 (2016-12-15) paragraph [0019]; figures 2, 3	1-3,5-18 4
A	US 2008252303 A1 (KATO MANABU [JP] ET AL) 16 October 2008 (2008-10-16) figure 14	7,8
A	DE 102013112909 A1 (HUF HÜLSBECK & FÜRST GMBH & CO KG [DE]) 18 June 2014 (2014-06-18) figures 1, 2	1-18

 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&amp;” document member of the same patent family

Date of the actual completion of the international search

**10 March 2020**

Date of mailing of the international search report

**19 March 2020**

Name and mailing address of the ISA/EP

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**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
US	2016364079	A1	15 December 2016	CN	106325632	A	11 January 2017
				US	2016364079	A1	15 December 2016
US	2008252303	A1	16 October 2008	DE	102007000713	A1	10 April 2008
				US	2008252303	A1	16 October 2008
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				DE	102013112910	A1	18 June 2014
				EP	2795798	A1	29 October 2014
				EP	2798740	A1	05 November 2014
				US	2015316680	A1	05 November 2015
				US	2015330768	A1	19 November 2015
				WO	2014095223	A1	26 June 2014
				WO	2014095224	A1	26 June 2014