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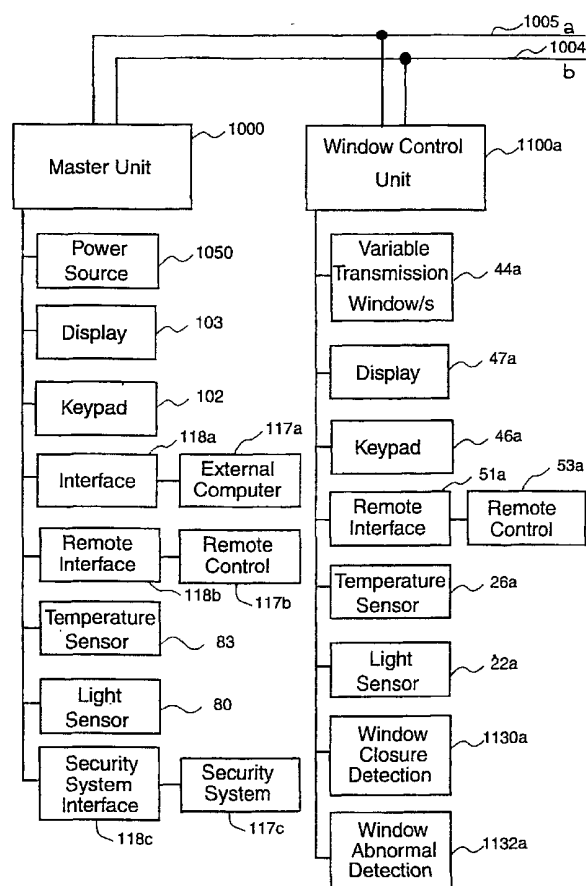
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[Continued on next page]

(54) Title: SYSTEM TO CONTROL VARIABLE TRANSMISSION WINDOWS



(57) **Abstract:** An electrical control system is disclosed for controlling a plurality of variable transmittance windows (44a). To achieve these and other aspects and advantages, the electrical control system of the present invention comprises a master control circuit (1000) for supplying control signals representing transmittance levels for the variable transmission windows, and a plurality of window control circuits (1100a) coupled to each of the master control circuits. Each window control circuit (1100a) controls the transmittance of at least one of the variable transmission windows (44a) in response to control signals received from the master control circuit (1000). Also disclosed are several window constructions that enable variable transmission windows (44a), such as electrochromic windows, to be used in architectural windows having a moving sash. Also disclosed are several window constructions that enable variable transmission elements to be more easily installed and replaced.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/21946

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G05B 19/18, 11/01; E06B 3/00

US CL : 700/3, 11; 49/501

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)

U.S. : 700/2, 3, 9, 11, 19, 20, 33 ; 49/501; 359/265, 275; 52/173.3

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,055,089 A (SCHULZ et al) 25 April 2000 (25.04.2000); whole document	1-57
Y	US 5,838,483 A (TEOWEE et al) 17 November 1998 (17.11.1998), Col. 20	1-57
Y	US 6,056,410 A (HOEKSTRA et al) 02 May 2000 (02.05.2000); Whole document	2, 3-6, 20-23, 29-32, 42, 43, 45, 46
A	US 5,099,624 A (VALENTIN) 31 March 1992 (31.03.1992), Col. 1-3	62-105
A	US 5,244,709 A (VANDERSTUKKEN) 14 September 1993 (14.09.1993), Abstract, Col. 1-3.	62-105



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/21946

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: 1-52, 53-57, 62-105
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I, claim(s) 1-52, drawn to a master control circuit for supplying control signals.

Group II, claim(s) 53-57, drawn to a receiver for receiving a command from a remote control device via a wireless communication link.

Group III, claim(s) 58-61, drawn to a sensing circuit for sensing an abnormal electrical load condition.

Group IV, claim(s) 62-105, drawn to a window having a transmittance that varies in response to an electrical signal.

The inventions listed as Groups I - IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I, requires a master control circuit classified in Class 700/3. Group II, requires a receiver for receiving a command from a remote control device via a wireless communication link classified in Class 700/11. Group III, requires a sensor for sensing an abnormal electrical load condition, classified in Class 700/275. Group IV requires a window having a transmittance that varies in response to an electrical signal, classified in Class 49/501.