

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 16 December 1993

Case Number: T 0980/92 - 3.5.2

Application Number: 87307609.5

Publication Number: 0259101

IPC: H02J 13/00

Language of the proceedings: EN

Title of invention:

Master station apparatus for remote supervisory control system

Applicant:

Mitsubishi Denki Kabushiki Kaisha

Opponent:

-

Headword:

-

Relevant legal norms:

EPC Art. 52(2)(3), 56, 84, 123(2)

Keyword:

"Exclusive from patentability: no"

"Lack of support and/or clarity of the claims of the main request"

"Inventive step (auxiliary request: yes)"

Decisions cited:

T 0115/85

Catchword:

-



Case Number: T 0980/92 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 16 December 1993

Appellant: Mitsubishi Denki Kabushiki Kaisha
2-3, Marunouchi 2-chome
Chiyoda-ku
Tokyo 100 (JP)

Representative: Beresford, Keith Denis Lewis
Beresford & Co.
2-5 Warwick Court
High Holborn
London WC1R 5DJ (GB)

Decision under appeal: Decision of the Examining Division of the European Patent Office dated 2 June 1992 refusing European patent application No. 87 307 609.5 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: E. Persson
Members: L. Törnroth
A. Hagenbucher

Summary of Facts and Submissions

I. The Appellant contests the decision of the Examining Division to refuse the European patent application No. 87 307 609.5 (publication No. 0 259 101) on the ground that the subject-matter of Claim 1 did not involve an inventive step with respect to the following documents:

D1: EP-A-0 043 201

D2: ELEKTRONISCHE ZEITSCHRIFT E.T.Z., Vol. 107, No. 3, February 1986, pages 118 to 122

D4: ELEKTRONISCHE ZEITSCHRIFT E.T.Z., Vol. 106, No. 17, September 1985, front cover and page 881.

II. In reply to a communication from the Board the Appellant submitted, *inter alia*, the following prior art document:

D5: DISPLAYS, Technology and Applications, Vol. 4, No. 3, July 1983, pages 157 to 161.

III. In the oral proceedings held on 16 December 1993 the Appellant filed a set of apparatus Claims 1 and 2 by way of a **main request** and a set of method Claims 1 and 2 and a corresponding adapted description in handwriting by way of an **auxiliary request**.

IV. Claim 1 according to the **main request** reads:

"1. A master station apparatus for a remote supervisory control system for monitoring and controlling the status of a multiplicity of monitored and controlled devices (111 to 1nm), respective pluralities (111, to 11m(1), 121 to 12m(2), ... , 1n1 to 1nm(n) of which are located at respective remote stations (11, 12, ..., 1n), which apparatus comprises:

a video display (3);
a touch-sensitive panel means (4) provided on the display screen of said video display (3);
an input control means (25) responsive to signals output by said touch-sensitive panel means (4) for discriminating the co-ordinates of positions touched on the touch-sensitive panel-means (4);
a status memory means (23) for storing the respective current status of each of said devices (111 to 1nm(n)) which status is to be indicated on the display screen of said video display (3);
pattern memory means (22) storing data for producing on said screen displays for enabling said remote stations (11 to 1n) to be selected using said touch sensitive panel means (4) for enabling said devices at said remote stations when selected to be controlled using said touch sensitive panel means, for providing status information relating to said remote stations, and for providing circuit diagrams (Fig. 5 or 6) of said remote stations each comprising symbols representing said controlled devices and a pattern representing the interconnection and arrangement thereof;
display control means (24) responsive to said input control means (25), said status memory means (23) and said pattern memory means (22) for causing said displays to be produced on said display screen; and
line interface means (5) for receiving, from each remote station (11 to 1n), a signals signalling the respective current status of each of said controlled devices included therein, which line interface means (5) also is operable for transmitting to each of said remote stations control command signals produced in response to signals output from said touch-sensitive panel means (4) to change the status of respective ones of said controlled devices (111 to 1nm(n));
characterised by:

- a) means to cause each said remote station circuit diagram (Fig. 5 or 6) when displayed to indicate the status of each said controlled device in the corresponding remote station at the position of the symbol corresponding thereto and means to permit each said controlled device to be selected, for the transmission thereto of a said control command signal to change the status thereof, by touching the symbol corresponding to said controlled device;
- b) said data stored in said pattern memory means and said display control means (24) are arranged, for enabling selection of each said remote station circuit diagram (Fig. 5 or 6), to produce on said screen an overview diagram (Fig. 3) comprising a plurality of symbols each of which represents a respective different one of said remote stations, touching of a said symbol representing a remote station causing display of the circuit diagram (Fig. 5 or 6) of said remote station; and
- c) means responsive to receipt of a signal indicating an automatic change of status of a said controlled device when the circuit diagram (Fig. 5 or 6) of a remote station different from that containing the controlled device whose status has automatically changed is currently being displayed, to change the display to said overview diagram (Fig. 3) and to flash the symbol therein representing the remote station containing the device whose status has automatically changed;
- d) means responsive to a said automatic status change indicating signal when said overview diagram (Fig. 3) is currently being displayed, to flash the symbol therein representing the remote station containing the device whose status has automatically changed; and
- e) means responsive to a said automatic status change indicating signal when the circuit diagram (Fig. 5 or 6) of the remote station containing the controlled device whose status has automatically changed is currently

being displayed or is displayed as a result of selection thereof by touching the corresponding symbol in the overview diagram (Fig. 3), to flash the symbol in said circuit diagram (Fig. 5 or 6) representing the controlled device whose status has automatically changed."

Claim 1 according to the **auxiliary request** reads:

"1. A method for a remote supervisory control system for monitoring and controlling the status of a multiplicity of monitored and controlled devices (111 to 1nm(n)), respective pluralities (111 to 11m(1), 121 to 12m(2), ... , 1n1 to 1nm(n) of which are located at respective remote stations (11, 12, ..., 1n), said system containing a master station apparatus comprising:
a video display (3);
a touch sensitive panel means (4) provided on the display screen of said video display (3);
an input control means (25) responsive to signals output by said touch-sensitive panel means (4) for discriminating the co-ordinates of positions touched on the touch-sensitive panel-means (4);
a status memory means (23) for storing the respective current status of each of said devices (111 to 1nm(n)) which status is to be indicated on the display screen of said video display (3);
pattern memory means (22) storing data for producing on said screen displays for enabling said remote stations (11 to 1n) to be selected using said touch sensitive panel means (4) for enabling said devices at said remote stations when selected to be controlled using said touch sensitive panel means, for providing status information relating to said remote stations, and for providing circuit diagrams (Fig. 5 or 6) of said remote stations each comprising symbols representing said controlled

devices and a pattern representing the interconnection and arrangement thereof;

display control means (24) responsive to said input control means (25), said status memory means (23) and said pattern memory means (22) for causing said displays to be produced on said display screen;

and line interface means (5) for receiving, from each remote station (11 to 1n), a signal signalling the respective current status of each of said controlled devices included therein, which line interface means (5) also is operable for transmitting to each of said remote stations control command signals produced in response to signals output from said touch-sensitive panel means (4) to change the status of respective ones of said controlled devices (111 to 1nm(n));

such method being characterised in that:

a) each said remote station circuit diagram (Fig. 5 or 6) when displayed indicates the status of each said controlled device in the corresponding remote station at the position of the symbol corresponding thereto and permits each said controlled device to be selected, for the transmission thereto of a said control command signal to change the status thereof, by touching the symbol corresponding to said controlled device;

b) said data stored in said pattern memory means and said display control means (24) are arranged, for enabling selection of each said remote station circuit diagram (Fig.5 or 6), to produce on said screen an overview diagram (Fig. 3) comprising a plurality of symbols each of which represents a respective different one of said remote stations, touching of a said symbol representing a remote station causing display of the circuit diagram (Fig. 5 or 6) of said remote station; and

c) said display control means is operable in response to receipt of a signal indicating an automatic change of status of a said controlled device:

(i) if the circuit diagram (Fig. 5 or 6) of a remote station different from that containing the controlled device whose status has automatically changed is currently being displayed, to change the display to said overview diagram (Fig. 3) and to flash the symbol therein representing the remote station containing the device whose status has automatically changed;

(ii) if said overview diagram (Fig. 3) is currently being displayed, to flash the symbol therein representing the remote station containing the device whose status has automatically changed; and

(iii) if the circuit diagram (Fig. 5 or 6) of the remote station containing the controlled device whose status has automatically changed is currently being displayed or is displayed as a result of a selection thereof by touching the corresponding symbol in the overview diagram (Fig. 3), to flash the symbol in said circuit diagram (Fig. 5 or 6) representing the controlled device whose status has automatically changed."

V. The Appellant argued essentially as follows:

The present application dealt with the problem of easily and reliably monitoring and controlling the status of devices included in remote stations, such as power stations and substations of a power system, by relying on an overview diagram of the power system and on a circuit diagram for each remote station. As a result of an uncontrolled change of status of a device in a remote station different from the one currently displayed, the system switched automatically to the overview diagram and highlighted the symbol of the relevant station, thus immediately drawing the operator's attention to the change of status and allowing him to take appropriate measures. The supervisory control system disclosed in the closest prior art document, D1, relied on a

cumbersome multi-page index to perform all the monitoring and control functions of a complex chemical plant. It did not provide an overview diagram of the plant and, in case of an uncontrolled change of status of a device, the operator was alerted by a general alarm signal and had to search a multi-page index to find out which device had set off the alarm. The prior art documents D2, D4 and D5 dealt specifically with the problem of improving the man-machine interface in a control system for a power system. However, their solutions pointed in quite different directions. In particular, none of these documents had made provisions for automatically alerting the operator to an unexpected change of status of a device by switching automatically to the overview diagram of the power system.

- VI. The Appellant requests that a patent be granted on the basis of Claims 1 and 2 according to the main request as filed in the oral proceedings and a description to be adapted, or on the basis of Claims 1 and 2 according to the auxiliary request and the introductory part of description in handwriting as filed in the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. *Patentability*

Having considered this issue, the Board has come to the conclusion that the contribution of the claimed subject-matter to the prior art is not excluded from patentability under Article 52(2)(3) EPC (cf. T 115/85, OJ EPO 1990, 30).

3. *Main request*

Claim 1 is directed to a master station apparatus. Its preamble covers conventional hardware features, such as known from D1, whereas the features of the characterising part are defined as "means to" perform certain process steps. In the application as filed, however, only the conventional hardware referred to above performs these functions and there is no disclosure of any specific "means". Moreover, it is apparent that the contribution of the invention to the prior art relates to an operating process which can typically be implemented by conventional hardware and appropriate software. Hence, Claim 1 is not supported by the description and it is not possible to adapt the description to this claim without infringing Article 123(2). Claim 1 is therefore not allowable under Article 84.

4. *Auxiliary request*

4.1 Admissibility of the amendments and Novelty

Since the subject-matter of independent Claim 1 and of dependent Claim 2 according to this request is covered by the original application documents and the available prior art does not anticipate the subject-matter of Claim 1, the requirements of Article 123(2) and Article 54 EPC are met.

4.2. Inventive step

4.2.1 The closest prior art document is D1. It discloses a method for a remote supervisory control system containing a master station apparatus according to the preamble of Claim 1. This method, which according to the described embodiment is directed to monitoring and

controlling the operations of a complex chemical plant, involves, *inter alia*, utilising a multi-page index display on a touch sensitive screen for selecting a variety of further displays, such as: a bar chart diagram illustrating the conditions in various parts of the system, a bar chart diagram for effecting control operations, a circuit diagram of a remote station and a multi-page alarm summary listing all alarm conditions arisen since the last reset.

4.2.2 Starting from D1 the objective problem addressed in the present application consists in providing a method which allows accurate and rapid control and identification of devices belonging to systems, such as power systems, which require quick and less complex control operations.

4.2.3 According to the features of the characterising part of Claim 1 the above problem is solved essentially by providing all control and monitoring functions in two kinds of display patterns, namely an overview diagram of the system and circuit diagrams of each remote station, and particularly by switching automatically from a circuit diagram to the overview diagram to alert the operator of an uncontrolled change of status of a device located in a remote station other than the one currently displayed.

4.2.4 The Appellant has acknowledged that the method according to the present invention is essentially directed to systems, such as power systems, in which the control operations to be performed are substantially simpler than those required in a chemical plant, and in which the status of each device can be more easily defined and displayed to the operator. In fact, the Appellant has admitted that the method of the invention would not be suitable for the application described in D1. However, even allowing for the simplifications which the skilled

person would inevitably consider when adapting the method according to D1 to a less complex system, nothing in D1 suggests that it would be obvious to arrive at the method steps of the characterising part of Claim 1.

4.2.5 The other relevant prior art documents also deal with the problem of improving the operator machine interface in power systems. Their solutions, however, point in quite different directions. D4 utilises a mosaic type monitor control panel showing all the plant's devices and their interconnections. D2 is based on the combination of a video display and a digitiser panel to control the status of the devices. Both D2 and D4 make use of custom made hardware to provide an overview diagram of the power system. However, this is expensive to make and difficult to operate, in particular, when large power systems with many substations are involved. D5 shows a system with a touch screen video display but does not make any provisions for showing automatically on the display where an unexpected change of status has occurred.

4.2.6 For the above reasons the Board concludes that, in view of the teaching of the prior art presently on file, it would not have been obvious to the skilled person to arrive at the claimed invention. Hence, independent Claim 1 and its dependent Claim 2 according to the Appellant's auxiliary request meet the requirements of Article 56 EPC.

4.3 Since it was not possible during the oral proceedings to finalise the necessary amendments to the description on the basis of the handwritten pages submitted by the Appellant, it should be left to the Examining Division to take care that:

- (a) the introductory part of the description is adapted to Claim 1;
- (b) it is clearly stated, when defining in the description the problem to be solved, that the claimed method applies to systems, in particular power systems, which are simpler to operate than the chemical plant described in D1;
- (c) the relevant prior art documents D1, D2, D4, D5 are properly acknowledged;
- (d) the title of the invention should read: "Method for a remote supervisory control system".

Order

For the above reasons, it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution in accordance with the above reasons.

The Registrar:

The Chairman:

M. Kiehl

E. Persson

