

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 6 November 2024**

Case Number: T 0046/21 - 3.5.01

Application Number: 16204505.8

Publication Number: 3336795

IPC: G06Q50/06

Language of the proceedings: EN

Title of invention:

A COMPUTERISED SYSTEM FOR MANAGING THE OPERATION OF AN
ELECTRIC POWER DISTRIBUTION GRID AND A CONFIGURATION METHOD
THEREOF

Applicant:

ABB S.p.A.

Headword:

Remote configuration of a digital relay/ABB

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step - remote configuration of a digital relay for
gathering and publishing data (no - partial problems with an
obvious solution)



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 0046/21 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 6 November 2024

Appellant:
(Applicant)

ABB S.p.A.
Via Vittor Pisani 16
20124 Milano (IT)

Representative:

De Bortoli, Eros
Zanoli & Giavarini S.p.A.
Via Melchiorre Gioia, 64
20125 Milano (IT)

Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted on 2 October 2020
refusing European patent application No.
16204505.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman M. Höhn
Members: R. Moser
C. Schmidt

Summary of Facts and Submissions

- I. This case concerns the applicant's appeal against the decision of the examining division to refuse the European patent application No. 16204505.8.
- II. The examining division held that the independent claims of the main and auxiliary request were not inventive over document D1 (EP 1 113 556 A1) and the skilled person's common general knowledge, as exemplified by documents D2 (US 2015/073613 A1) and D3 (US 2015/172124 A1).

The division considered that the distinguishing features related to aspects that were "manifestly independent of each other" and did not provide a combined technical effect (see points 6.2 and 6.3 of the decision).

- III. In the statement setting out the grounds of appeal the appellant requested that the decision be set aside and a patent be granted on the basis of the refused main or a newly filed auxiliary request.

The auxiliary request essentially corresponds to the auxiliary request on which the decision is based.

- IV. In the communication accompanying the summons to oral proceedings, the Board tended to agree with the examining division.

It identified three groups of distinguishing features and was of the preliminary view that there was no synergistic relationship between them (see point 8 of the communication). The Board further tended to

consider that the solution to each corresponding partial problem was obvious in light of D1 and the skilled person's common knowledge (reference was made to D2).

- V. Oral proceedings took place by videoconference. The appellant's final requests were those made in writing.

At the end of the oral proceedings the Chairman announced the Board's decision.

- VI. Claim 12 of the main request reads (feature numbering by the Board):

A configuration method (CFP) of at least an accessory device (1), said at least an accessory device being operatively coupled with or comprised in an electronic protection relay (2) of an electric power distribution grid (250),

(F1) *wherein said at least an accessory device is configured to gather and transmit through the Internet grid data (D), which are related to the operation of said electric power distribution grid (250) or of one or more electronic devices (21, 22, 23, 24, 2A, 2B, 2C, 2D) of said electronic protection relay or operatively connected with said electronic protection relay, which are in communication with said at least an accessory device,*
characterised in that

(F2) *said accessory device is configured to carry out data-gathering tasks basing on information included a data-gathering file (DGF) stored in said accessory device and including information to allow said accessory device to interact correctly with said electronic devices and to acquire and store correctly grid data (D) from said electronic devices,*

(F2.1) said data-gathering tasks including polling one or more electronic devices (21, 22, 23, 24, 2A, 2B, 2C, 2D) in communication with said accessory device and receiving said grid data (D) from said electronic devices in response to said polling activity,

(F3) wherein said accessory device is configured to carry out data-publishing tasks basing on information included in said data-gathering file (DGF) and in a data-publishing file (DPF) stored in said accessory device and including information to allow said accessory device to correctly interact correctly with a computerised platform (340),

(F3.1) said data-publishing tasks including transmitting said grid data (D) to said computerised platform (340) capable of communicating and interact with said at least an accessory device through the Internet;

wherein said method comprises the following steps,

- **(F4)** providing a graphic user interface (500) on a computer display (52), said graphic user interface including graphic resources (190, 11, 12, 13, 14, 15, 16, 17, 18) activatable by a user;

- **(F4.1)** providing first graphic resources (11) on said graphic user interface (500) to assist a user in checking whether there are given operating conditions required for carrying out the configuration of one or more configurable accessory devices;

- **(F4.2)** providing second graphic resources (12) on said graphic user interface (500) to assist a user in launching a search to establish a communication link with said configurable accessory devices (1);

- **(F4.2.1)** performing a search through the Internet of said configurable accessory devices (1) in response to the activation of said second graphic resources;

- **(F4.3)** providing third graphic resources (13) on

said graphic user interface (500) to assist a user in selecting an accessory device (1) among said one or more configurable accessory devices and in providing a security access code to access to a selected accessory device, said security access code being manually obtainable from said selected accessory device;

- **(F4.3.1)** activating a communication link with said selected accessory device (1) in response to the input of said security access code;

- **(F4.4)** providing fourth graphic resources (14) on said graphic user interface (500) to assist a user in providing first configuration information (CF1) to configure said selected accessory device, said first configuration information including one or more sets of configuration values directed to set-up operation parameters of said accessory device;

- **(F4.5)** providing fifth graphic resources (15) on said graphic user interface (500) to assist a user in providing second configuration information (CF2) to associate said selected accessory device to an electric plant, said second configuration information including linking information on how to associate said accessory device to a corresponding electric plant;

- **(F4.6)** providing sixth graphic resources (16) on said graphic user interface (500) to assist a user in launching a configuration process of said selected accessory device;

- **(F5)** executing said configuration process in response to the activation of said sixth graphic resources, said configuration process comprising the following steps:

- **(F5.1)** generating a data-gathering file (DGF) and a data-publishing file (DPF) for said selected accessory device (1) based on said first and second configuration information (CF1, CF2);

- **(F5.2)** transmitting said data-gathering file

(DGF) and said data-publishing file (DPF) to said selected accessory device;

- (F5.3) transmitting said first and second configuration information (CF1, CF2) to said computerised platform (340).

VII. Claim 12 of the auxiliary request adds the following features:

(F1.1) wherein said at least an accessory device is in communication with a protection and control unit (21) of said protection relay, with one or more accessory devices (21, 22, 23) of said protection relay and with one or more with one or more [sic] electronic devices (2A, 2B, 2C, 2D) in communication with said protection relay

(F2.2) wherein said accessory device is configured to operate as a "master" device when carrying out said data-gathering tasks

(F3.2) wherein said accessory device is configured to operate as a "client" device when carrying out said data-publishing tasks

VIII. The appellant's arguments are discussed in detail in the reasons for the decision.

Reasons for the Decision

1. The invention

1.1 The invention relates to the configuration of digital (protection) relays. Digital relays, which can be remotely configured, are known in the art. However, they do not provide enhanced monitoring services and simple configuration options (see [0008] to [0011] of

the A1-publication).

- 1.2 Figure 1 illustrates a digital relay 2 which is connected via communication buses to a plurality of electronic devices within a power distribution grid 250, such as other digital relays 2A or sensors 2D. The digital relay is connected to an accessory device 1 that functions as an Internet gateway. This accessory device performs data-gathering tasks by collecting operational data ("grid data") from the power distribution grid and data-publishing tasks by transmitting this data to a remote server (30) associated with a computerised platform (340).
- 1.3 Users can remotely configure the accessory device using a configuration application or GUI on a laptop (50), referred to as the "configuration computerized unit". Through the GUI, users can set operational parameters for the accessory device ("first configuration information") and associate it with an electric plant ("second configuration information").
- 1.4 Based on the user's input, the application generates two configuration files: one for "data-gathering" (DGF) and one for "data-publishing" (DPF). These files are then sent to the accessory device and the remote server.

Additionally, the configuration application aids the user in establishing a secure connection with the accessory device (see paragraph [0153]).

2. **Auxiliary request, inventive step**

- 2.1 The Board finds it convenient to start with the auxiliary request as it provides the most specific

definition of the invention.

- 2.2 D1 is a suitable starting point for assessing inventive step, as it describes a system similar to the invention, albeit with fewer technical details.

As shown in Figure 1, D1 discloses a digital relay 1 with a computerised interface 3 that is remotely configurable (see Figure 1, [0001] to [0004], [0032], [0033] and [0036]).

Through this computerised interface - which corresponds to the accessory device in the invention - the digital relay collects sensor data and transmits it to a remote computer 12, analogous to the remote server in the computerised platform of the invention (see [0004] and [0041]).

Using a computer 7, which corresponds to laptop 50, users can configure a Man-Machine-Interface (MMI) of the computerised interface. Configurable options include adding new functionalities to the MMI, adopting control strategies "or other data related to the status of the digital relay or the power distribution system" (see [0032] and [0036]). The computerised interface also allows users to retrieve system data ([0041]), which implies the connection to other electronic devices in the digital relay or power distribution grid, such as sensors, which supply this data.

The MMI can be configured via a web browser, involving steps such as verifying operating conditions (e.g. network connectivity) and initiating the configuration process, which for example involves uploading a modified HTML file or providing an updated control

strategy to the control unit ([0035] and [0036]).

2.3 In its communication the Board identified three groups of distinguishing features over D1.

These features, with reference to method claim 12, are as follows:

A. Task distribution: These features specify that the accessory device acts as a master device, polling electronic devices for data gathering, and acts as a client device for data publishing (**F2.1**, **F2.2**, and **F3.2**).

B. Configuration parameters/settings: These refer to a data-gathering/data-publishing file (DGF/DPF) that includes first/second configuration information (set-up operation parameters and linking information) (**F2** and **F3**, **F4.4** and **F4.5**, **F5.1** to **F5.3**).

C. Configuration process facilitation: These features facilitate the configuration process itself, including an automatic search for accessory devices and entry of a security access code (**F4.2** to **F4.3.1**).

2.4 The appellant did not object to this feature analysis, but argued that these three groups produced a synergistic technical effect, namely facilitating the configuration and installation of the accessory device in a "plug & play" mode, as described in [0158].

For instance, the role of the accessory device was not dependent on the underlying communication protocol but was instead determined by the configuration parameters as defined in the DGF and DPF. Furthermore, the features in group **C** were essential for implementing

those in group **B**, as they enabled the user to input first and second configuration parameters and transmit them to both the accessory device and the remote server.

2.5 The appellant argued that the features in group **A** defined the operating mode of the accessory device, leading to optimised data gathering and publishing tasks, such as by providing appropriate "timing information" (see [0074] and [0080]). In contrast, the accessory device in D1 (reference numeral 3 in Figure 1) acted merely as a web server (see [0033]) and only enabled the exchange of e-mail messages for data retrieval (see [0041]).

2.6 The features in group **B** contributed to a highly flexible configuration process. The configuration parameters could be easily modified by the user and were sent not only to the accessory device but also to the computerised platform. This enhanced system interaction, as the computerised platform was configured to properly communicate and interact with the accessory device (see [0147]).

In the appellant's view, this aspect was not addressed in D1. D1 only showed that HTML files could be modified to add new functionality to the MMI of the accessory device (see [0036] and [0037]), without hinting to a configuration for interaction with both local and remote devices.

2.7 The appellant further argued that the features in group **C** also facilitated the configuration process. They went beyond simply establishing a secure link between the configuration laptop and the accessory device. A preliminary check for configuration requirements (see

[0104] and [0108]) also helped to prevent errors in the configuration process.

2.8 The Board is not persuaded by these arguments. The features in Groups **A** to **C** address partial problems whose solutions are obvious when starting from the system disclosed in D1.

2.9 Partial problems exist if the groups of features **A** to **C** constitute a mere aggregation (juxtaposition). This means that they are not functionally interdependent, i.e. they do not mutually influence each other to achieve a technical effect over and above the sum of their respective individual effects, as would be expected in the case of a combination of features.

The fact that the features in groups **A** to **C** all contribute to a method for configuring the accessory device and the computerised platform is not sufficient to establish synergy among them. The Board acknowledges the appellant's point that, for instance, establishing a connection with the accessory device is necessary for providing configuration parameters, and that such parameters may depend on the communication model used. However, determining whether there is synergy among Groups **A** to **C** depends on whether their technical effects produce a combined effect that exceeds the sum of their individual technical effects.

2.10 The Board judges that no such combined technical effect is achieved.

Each group of features achieves its intended effect independently, and their combination does not produce an effect beyond the sum of these individual effects.

For instance, the features of group **A** allow for fine-tuning the data gathering strategy (see [0075]) and reduce the vulnerability of the accessory device (see [0081]). This is independent of whether communication parameters, such as device addresses (see [0073] and [0079]), are provided through remote or local configuration. Similarly, the configuration method itself does not depend on the type of parameters the user wishes to configure. Undoubtedly, the features in group **C** facilitate establishing a secure connection with the accessory device. While such a connection is necessary for remote configuration, it neither affects the selection of configuration parameters nor the communication mode of the accessory device.

- 2.11 The Board further concludes that the solution to each partial problem is obvious in light of D1 and the skilled person's common general knowledge.
- 2.12 For the features in group **A**, the Board agrees with the examining division that the role assumed by the accessory device (as master for polling data and client for publishing data) is either a consequence of the chosen protocol or a well-known implementation choice.

At the priority date of the application, using communication buses for digital relays with monitoring and metering capabilities was common (see also D3, [0006] to [0010]). The application, for instance, explicitly references protocols such as MODBUS, PROFIBUS, PROFINET, or MODBUS-TCP (see [0027]). In these protocols, the device responsible for polling other devices for data assumes the role of master by definition.

Additionally, in D1, the accessory device functions as

a web server for providing a configuration website (see [0033]) and as an email client, likely for sending system data to a user (see [0041]). The Board agrees with the examining division that a skilled person would assign the role of client or server depending on the initiator of the communication without exercising any inventive skill.

The advantages described in the application (see [0075] and [0080]) are inherent to the selected roles and protocols and thus cannot provide the basis for an inventive step.

- 2.13 For the features in group **B**, the Board concludes that the system in D1 must have similar configuration parameters, such as the communication addresses of devices involved in data gathering and transmission, including sensors (see [0004]), an email server, or computers (12) (see [0041] and Figure 1). Although D1 does not specify how these parameters are set, the user may indeed lack the ability to change them remotely, as argued by the appellant.

However, the Board considers this merely a user requirement that would be provided for implementation to the skilled person. Implementing it by programming the MMI of the accessory device in D1 accordingly (see [0036]) would have been straightforward.

The Board also agrees with the examining division that using two sets of configuration information and corresponding files is an implementation choice. Specifically, the second set, which links the accessory device with a plant, has no apparent technical function or effect.

Furthermore, configuration files describing the functions of monitoring/controlling accessory devices, including communication parameters, are well-known in power distribution networks (see for example D3, [0018] to [0023]).

Although claim 1 defines a system "for managing the operation of an electric power distribution grid," the Board notes that the parameters input by the user are not used for operating or controlling the grid. They do not alter the accessory device's functionality in this regard; rather, they primarily set up communication parameters for collecting and transmitting data to a remote computer.

2.14 For the features in group **C**, the Board first notes that in D1, the user inputs a URL to connect with the accessory device (see [0044]), which implies checking "operating conditions required for carrying out the configuration" (**F4.1**). For if the server is down, the user would receive an HTTP status "503 Service Unavailable".

Second, an automatic search through the Internet (**F4.2** and **F4.2.1**), as described in [0115], is well-known, as illustrated by the Universal Plug and Play (UPnP) networking protocol used in D2 (see [0042] to [0044]). Similarly, the use of an access code (**F4.3** and **F4.3.1**) as a security measure is also well-known.

The overall effect of these features is to facilitate establishing a secure connection with the accessory device. The Board concludes that these features represent known solutions in the art that a skilled person would have implemented as routine work without

the need for inventive skills.

- 2.15 In summary, the Board judges that the identified three groups of distinguishing features do not create a synergistic effect. Furthermore, the solution to each partial problem does not involve an inventive step in view of D1 and the skilled person's common general knowledge, as exemplified by documents D2 and D3.

Claim 12 of the auxiliary request therefore lacks an inventive step (Article 56 EPC).

3. Main request, inventive step

- 3.1 Since claim 12 of the main request has a broader scope, it lacks inventive step (Article 56 EPC) for the same reasons as the auxiliary request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



T. Buschek

M. Höhn

Decision electronically authenticated