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Datasheet for the decision
of 19 February 2015

Case Number: T 0810/11 - 3.5.03
Application Number: 06018651.7
Publication Number: 1762918
IPC: G05B19/4067, H05K7/14
Language of the proceedings: EN

Title of invention:
Remote terminal apparatus for programmable controller

Patent Proprietor:
OMRON CORPORATION

Opponent:
WAGO Kontakttechnik GmbH & Co. KG

Headword:
Remote terminal apparatus/OMRON

Relevant legal provisions:
EPC Art. 56
RPBA Art. 12(2), 13(1)

Keyword:
Inventive step: main request and auxiliary request 1 - (no)
Admissibility: auxiliary requests 2 and 3 - (no)

Decisions cited:
Catchword:
Case Number: T 0810/11 – 3.5.03

DECISION
of Technical Board of Appeal 3.5.03
of 19 February 2015

Appellant: WAGO Kontakttechnik GmbH & Co. KG
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Decision under appeal: Decision of the Opposition Division of the European Patent Office posted on 28 February 2011 rejecting the opposition filed against European patent No. 1762918 pursuant to Article 101(2) EPC.

Composition of the Board:
Chairman F. van der Voort
Members: T. Snell
M.-B. Tardo-Dino
Summary of Facts and Submissions

I. This decision concerns an appeal filed by the opponent against the decision of the opposition division rejecting the opposition filed in respect of European Patent No. EP 1 762 918 B.

II. Opposition had been filed on the ground of Article 100(a) EPC (novelty and inventive step), inter alia having regard to the disclosure of the document E2: EP 1353246 A.

The opposition division held, inter alia, that the subject-matter of claim 1 as granted was new with respect to the disclosure of document E2, and involved an inventive step with respect to the disclosure of document E2 in combination with other documents not relevant to the board's decision.

III. In the statement of grounds of appeal, the appellant (opponent) requested that the decision be set aside and that the patent be revoked in its entirety on the ground, inter alia, that the subject-matter of claim 1 was not new with respect to the disclosure of document E2.

IV. In a response to the statement of grounds of appeal, the respondent (proprietor) requested that the appeal be rejected. The respondent provided arguments concerning novelty and inventive step with respect to document E2.

Both parties conditionally requested oral proceedings.
V. In a communication accompanying a summons to oral proceedings, the board gave a provisional opinion that, inter alia, the subject-matter of claim 1 was not new with respect to the disclosure of document E2.

VI. In response to the summons, the respondent filed, with a letter dated 31 December 2014, claims according to auxiliary request 1. The respondent also submitted pages taken from a document entitled "SYSMAC C1000H/ C2000H Programmable Controllers OPERATION MANUAL", version revised May 2003, hereinafter referred to as document E9.

VII. In a subsequent letter, the appellant requested that auxiliary request 1 be not admitted.

VIII. Oral proceedings were held on 19 February 2015. During the oral proceedings, the respondent filed new auxiliary requests 2 and 3.

The appellant requested that the decision under appeal be set aside and the patent be revoked in its entirety.

The respondent requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained in amended form on the basis of the claims of auxiliary request 1 as filed with the letter dated 31 December 2014, or on the basis of the claims of auxiliary request 2 or 3, both as filed during the oral proceedings.

After due deliberation, the chairman announced the board's decision at the end of the oral proceedings.
IX. Claim 1 of the main request, i.e. claim 1 of the patent as granted, reads as follows (whereby annotations a to f have been added by the board for ease of reference):

"a A programmable-controller remote terminal apparatus (2, 3)

b connectable to a programmable controller through a fieldbus (5),

c said programmable controller being adapted to capture IN data from an input device through the fieldbus (5), perform logic operation for the captured IN data with a user program, and transmit OUT data as a result of the operation to an output device through the fieldbus (5),

d the apparatus comprising:

d1 a communication unit 21, 31) which is capable of communicating IN data or OUT data with the programmable controller through the fieldbus (5); and

d2 a plurality of I/O units (22, 32) to each of which at least either one of the input device or the output device is connected and each of which is capable of communicating with the communication unit (21, 31) through a serial bus line,

e the communication unit (21, 31) having

e1 a device which obtains unit information for identifying a model type for each I/O unit (22, 32) connected through the serial bus line and setting
value information set for operating said each I/O unit (22, 32),

e2 a backup device capable of storing the obtained unit information and setting value information of each I/O unit (22, 32) in a storage medium included in the communication unit (21, 31),

e3 a restoration device for transferring the setting value information stored by the backup device to a newly joined I/O unit,

f wherein the communication unit is capable of recognizing the presence of an I/O unit (22, 32) having information different from the backup information among the connected I/O units (22, 32) through the serial bus line by comparing the unit information and setting value information of each I/O unit (22, 32) obtained by the obtaining device and the unit information and setting value information stored in the storage medium of the backup device."

X. Claim 1 of auxiliary request 1 is the same as claim 1 of the main request except that the initial part of the claim reads as follows:

"A programmable-controller remote terminal apparatus (2, 3) connectable to a programmable controller through a fieldbus (5), said programmable controller being adapted to capture IN data from at least one of a sensor and a switch as an input device through the fieldbus (5), perform logic operation for the captured IN data with a user program, and transmit OUT data as a result of the operation to an actuator as an output device through the fieldbus (5), the apparatus
comprising:
a communication unit (21, 31) which is capable of
communicating IN data or OUT data with the programmable
controller through the fieldbus (5); and
a plurality of I/O units (22, 32) to each of which at
least either one of the at least one of a sensor and a
switch as the input device or the actuator as the
output device is connected and each of which is capable
of communicating with the communication unit (21, 31)
through a serial bus line, ..." (board's underlining).

XI. Claim 1 of auxiliary request 2 is the same as claim 1
of the main request except that the term "building
block-type" is inserted before "programmable-controller
remote terminal apparatus" in the first line of the
claim, and in that the clause el, i.e.

"a device which obtains unit information for
identifying a model type for each I/O unit (22, 32)
connected through the serial bus line and setting value
information set for operating said each I/O unit (22,
32),"

is replaced by the wording:

"an obtaining device which obtains, from each I/O unit,
unit information for identifying a model type for each
I/O unit (22, 32) connected through the serial bus
line, the unit information corresponding to information
to determine whether presence or absence of I/O unit
replacement [sic], and setting value information set
for operating said each I/O unit (22, 32), the setting
value information being information which a user
arbitrarily sets to operate the remote terminal
apparatus;"
XII. Claim 1 of auxiliary request 3 reads as follows:

"A building block-type programmable-controller remote terminal apparatus (2, 3) connectable to a programmable controller through a fieldbus (5), said programmable controller being adapted to capture IN data from at least one of a sensor and a switch as an input device through the fieldbus (5), perform logic operation for the captured IN data with a user program, and transmit OUT data as a result of the operation to an actuator as an output device through the fieldbus (5), the apparatus comprising:
a communication unit block (21, 31) which is capable of communicating IN data or OUT data with the programmable controller through the fieldbus (5); and
a plurality of I/O unit blocks (22, 32) to each of which at least either one of the at least one of a sensor and a switch as the input device or the actuator as the output device is connected and each of which is capable of communicating with the communication unit (21, 31) through a serial bus line,
wherein the communication unit block (21, 31) and the plurality of I/O unit blocks (22, 32) are mechanically coupled to each other,
the communication unit block (21, 31) having
an obtaining device which obtains, from each I/O unit block, unit information for identifying a model type for each I/O unit block (22, 32) connected through the serial bus line and setting value information set for operating said each I/O unit block (22, 32),
a backup device capable of storing the obtained unit information and setting value information of each I/O unit block (22, 32) in a storage medium included in the communication unit block (21, 31),
a restoration device for transferring the setting value information stored by the backup device to a newly
joined I/O unit block, wherein the communication unit block is capable of recognizing the presence of an I/O unit block (22, 32) having information different from the backup information among the connected I/O unit blocks (22, 32) through the serial bus line by comparing the unit information and setting value information of each I/O unit block (22, 32) obtained by the obtaining device and the unit information and setting value information stored in the storage medium of the backup device."

**Reasons for the Decision**

1. **The patent**

The patent in suit concerns a "programmable-controller remote terminal apparatus". In accordance with the description, this is understood by the board to mean a terminal apparatus connected to and sited remotely from a programmable controller, commonly referred to in the art of industrial control as a PLC. The programmable-controller remote terminal apparatus builds the interface between input and output devices such as sensors and actuators and the remotely sited PLC, with which it may communicate via a fieldbus. The apparatus comprises one or more I/O (input/output) units, each of which is connected to an input and/or output device (e.g. a sensor or an actuator). The apparatus further comprises a communication unit which is connected to the I/O units and which is capable of communicating with the PLC via the fieldbus. In accordance with the description, a programmable-controller remote terminal apparatus with the above features was well-known in the art at the priority date of the application (cf. paragraph [0002] of the patent).
2. The subject-matter of present claim 1 is broadly concerned with the problem of configuring a newly-joined I/O unit, e.g. one which replaces a failed unit. In essence, the communication unit includes a backup device and a restoration device. The backup device is adapted to store unit information for identifying a model type for each I/O unit, and "setting value" information obtained from each of the I/O units. The restoration device is adapted to transfer the stored setting value information to a newly-joined I/O unit. The communication unit is capable of recognising the presence of an I/O unit (e.g. a newly-joined unit) by comparing the unit information and setting value information obtained from the (new) I/O unit with data stored in the backup device. The board notes however that claim 1 does not require the restoration device to transfer stored data obtained from a specific replaced I/O unit. This is in fact the feature of dependent claim 2.

3. Closest prior art

3.1 The board considers that document E2 represents the closest prior art.

Document E2 discloses a bus control system (cf. Figs. 1, 3 and 4) in which a plurality of I/O units ("Ein-/Ausgangsstufen" 3, 10, cf. paragraph [0050]) are connected to a master controller 4 via a fieldbus 6. The master controller forms the interface between the fieldbus 6 and a remote programmable controller 5. The I/O units 3, 10, also referred to as "slaves", include a sensor and/or an actuator (cf. paragraph [0051]) as well as interface circuitry 8 for communicating with the master controller (cf. paragraph [0027]). The bus
system further comprises a security monitor ("Sicherheitsmonitor" 9, cf. paragraph [0028]) in communication with both the I/O units 3, 10 and the programmable controller 5 via the fieldbus. In a configuration step, unit parameters ("gerätespezifische Parameter") are transferred from the slaves to the security monitor 9 (cf. paragraph [0067]). The parameters may be codes representing the unit type ("Gerätetyp") and the unit version ("Geräteversion") (cf. paragraphs [0068] and [0069]). In addition to the active unit version ("aktuelle Geräteversion"), the slaves store previous unit versions which are also transferred to the security monitor and stored ("hinterlegt") (cf. paragraph [0069]). The board interprets "unit version" here as referring to a version of an application program run by the unit/slave (cf. paragraph [0071], "unter seiner aktuellen Geräteversion aufgerufen" and "unter einer früheren Geräteversion angesprochen"). The board regards the unit version information as "setting value information" within the meaning of the present patent, since it represents a code value which determines the behaviour of the slave. The board also considers that the data representing the active unit version and previous unit versions transferred and stored in the security monitor can be considered as "backup" information within the meaning of claim 1.

3.2 As part of the configuration process, it is further disclosed in E2 that the security monitor checks on the basis of the unit version information read from each slave which versions are compatible with each other (cf. paragraph [0071], [0081] and [0082]). In dependence on this check, the security monitor determines under which unit version each respective slave is to be addressed for a particular application
during the operation of the bus system. If, for example, there is a new unit version for a slave which is not present at the remaining slaves and is incompatible with the unit versions of these remaining slaves, it is determined by the security monitor ("vereinbart") that this slave should not be called up ("aufgerufen") under its present version. Rather, it is determined that the slave should be addressed ("angesprochen") under an earlier unit version which is compatible with the versions of the remaining slaves.

This is the embodiment which, in the board's view, comes closest to the subject-matter of the patent in suit.

4. Main request - claim 1 - novelty and inventive step
(Article 52(1) EPC)

4.1 In view of the above, document E2 discloses the following features of claim 1 (cf. claim 1 as reproduced above at point IX with annotations a to f):

Feature a: cf. Figs 1, 3 and 4, the terminal apparatus including I/O units 3, 10, bus interface circuitry 8 and security monitor 9.

Feature b: cf. Fig. 4, the terminal apparatus being connectable to programmable controller 5 via fieldbus 6 and master controller 4.

Feature c: cf. paragraphs [0019] - [0021].

Feature d1: cf. Fig. 4, security monitor 9.
Feature d2: cf. Figs 3 and 4, Ein-/Ausgangsstufen 3, 10, which are connected to output devices 2 or include input devices (cf. paragraphs [0073] and [0075]).

Features e1 and e2: cf. paragraphs [0066] - [0069]. For "model type", see "Gerätetype" (paragraph [0068]). For "setting value information", see "Geräteversion".

Feature f: cf. paragraphs [0068] and [0071], which describe the configuration procedure of a newly joined slave, e.g. for replacing a previous slave unit (cf. paragraphs [0081] and [0082]), as described more fully above (cf. point 3.2 above). As stated above, the unit type, the active unit version, and the history of previous versions are transmitted from the new slave to the security monitor and stored. This stored information is regarded as "backup information". The security monitor determines compatibility of unit versions of the new slave with stored versions of all the other slaves, which implicitly requires a comparison of the unit version information. It follows that the security monitor is capable of recognising a new slave having information different from the backup information among the connected slaves by comparing the unit version of the new slave with information stored in the storage medium of the security monitor.

The board notes that E2 arguably does not require a comparison of the unit type information ("Gerätetyp") as well as the unit version information ("Geräteversion"), as required by claim 1. On the other hand, in the board's view, it would be evident to the skilled person that compatibility is preferably determined by comparing both unit type and version information, e.g. by determining whether unit type X, version A is compatible with unit type X, version B or
unit type Y, version A, it being noted that both unit type and unit version are transferred from the slaves to the security monitor for the purpose of configuring the bus system (cf. point 3.1 above and E2, paragraph [0067]). Consequently, if not already implicit, this feature is in any case obvious and, hence, can not contribute to inventive step; nor did the respondent argue otherwise.

4.2 The subject-matter of claim 1 therefore differs from the apparatus disclosed in E2 essentially in that E2 does not disclose feature e3, namely:

"a restoration device for transferring the setting value information stored by the backup device to a newly joined I/O unit".

In this respect, it is not disclosed in E2 that the unit version information ("Geräteversion") stored in the security monitor is transferred to a newly joined I/O unit. It is merely stated that the new I/O unit is called up or addressed under a particular unit version.

Consequently, the subject-matter of claim 1 is new (Articles 52(1) and 54 EPC).

4.3 The respondent argued that the subject-matter of claim 1 differed in other respects from the apparatus disclosed in E2, namely:

(i) In E2, the "Ein-/Ausgangsstufen" 3, 10 and the security monitor 9 in Fig. 4 do not form a "remote terminal apparatus". In this respect, it was an unjustifiably broad interpretation of the term "remote terminal apparatus" to consider features separated by a fieldbus as being part of the same apparatus. It should
be understood that an apparatus is "something that, basically, has a given spatial extension, is located in one place and handled in one piece" (cf. the reply to the statement of grounds of appeal).

(ii) E2 does not disclose I/O units within the meaning of the patent. In this respect, the Ein-/Ausgangsstufen 3, 10 are not I/O units connected to input/output devices as claimed but are the input/output devices themselves (actuators and sensors). The terms I/O units and input/output devices moreover have a clear and distinctive meaning in the art, as evidenced by document E9.

(iii) The security monitor of E2 does not carry out any comparisons. In particular, paragraph [0076] of E2 discloses that unit parameters are transferred directly to a new slave unit without any comparison.

4.4 Re (i): The board disagrees that the term "remote terminal apparatus" has to be interpreted in this restricted sense. In the field of communication systems, the term "remote terminal apparatus" has a broader meaning, in particular in respect of the physical location of the elements of the apparatus. In the communications field, different elements of the same "remote terminal apparatus" are frequently connected by communication links, including wireless links, without needing to be within the same housing or located in close proximity to each other. For example, a cordless telephone system with a base station and several handsets can be regarded as a remote terminal apparatus from the perspective of a local exchange. Nevertheless, the various elements can be widely separated.
Re (ii): The board notes that claim 1 is not limited to a particular meaning of either I/O units or input/output devices. Document E9, which is a glossary of terms, concerns a particular PLC system and hence does not necessarily represent common general knowledge. Consequently, the board does not agree that these terms have to be given the same meaning as in E9. Furthermore, it is noted that the "Ein-/Ausgangsstufen" 3, 10 of E2 may include sensors and/or actuators (cf. paragraphs [0020], [0050] and [0054]), but also include functionality which the board regards as equivalent to the I/O units of the present patent, in particular the bus interface circuitry 8 and application processing means implicit from the disclosure in paragraphs [0068] to [0071]. In the board's view, an I/O unit and an associated sensor/actuator as claimed does not exclude an implementation in which these elements are parts of one and the same "I/O" entity, i.e. "Ein-/Ausgangsstufe" 3, 10, as in E2.

Re (iii): The board relies on the disclosure of paragraph [0071], not [0076], which refers to a different embodiment. In accordance with paragraph [0071], a comparison of version information is implicit and a comparison of type information at least obvious, as explained above (cf. point 4.1, re Feature f, above).

4.5 The technical problem to be solved starting out from E2 can be seen as how to implement the configuration procedure of E2, paragraph [0071], which requires that a newly joined slave is to be called up ("aufgerufen") or addressed ("angesprochen") under an earlier unit version than the currently active version when the compatibility test determines that the active version
is not compatible with the versions of the slaves stored in the security monitor.

4.6 The board considers that in order to solve this problem, the skilled person on the basis of common knowledge would regard it as obvious to arrange for the security monitor to inform the new slave of the version under which it should operate, e.g. by sending a bit code. This code would however correspond to the "setting value information" stored in the security monitor. Consequently, the skilled person would arrive at the subject-matter of claim 1 without requiring inventive skill.

4.7 The respondent argued that claim 1 requires a restoration device that transfers the setting value information of the replaced I/O unit. This would not be the case in E2 since the unit version decided on after the compatibility check would be the unit version information of one of the other slave units.

The board however notes that claim 1 does not define which setting value information stored in the backup device is transferred to the I/O unit, but merely refers to "the setting value information". Claim 1 therefore embraces transferring any one of the stored setting values. The board therefore finds the respondent's argument unconvincing.

4.8 The board concludes that the subject-matter of claim 1 does not involve an inventive step having regard to the disclosure of document E2 in combination with common general knowledge of the skilled person. The main request is consequently not allowable (Articles 52(1) and 56 EPC).
5. **Auxiliary request 1 - claim 1 - inventive step**

5.1 The board used its discretion under Article 13(1) RPBA to admit auxiliary request 1 as it was filed more than one month before the oral proceedings and in response to comments raised by the board in the communication accompanying the summons.

5.2 Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that it is specifically defined that the input device is at least one of a sensor and a switch and the output device is an actuator (cf. point X above).

5.3 The respondent argued that E2 did not disclose I/O units within the meaning of claim 1 of auxiliary request 1. The "Ein-/Ausgangsstufen" of Fig. 4 were equivalent to the sensor/switch and actuator features of claim 1. In the context of E2, Fig. 4, the skilled person would look to block 9 (the security monitor) to find I/O functionality, which was at a different system level. The skilled person would have no motivation to move such functionality to the level represented by the Ein-/Ausgangsstufen. Even if these had an interface function (reference numeral 8), this had only very limited functionality. Furthermore, the unit version information and the unit type information in E2 referred to either sensors or actuators and not to I/O units.

5.4 The board however considers that there is no requirement in claim 1 for the I/O units to have any more functionality than that provided by the Ein-/Ausgangsstufen of E2. Further, claim 1 does not exclude that the setting value information can be related to the sensor or actuator connected to the I/O unit. In
any case, the various unit versions referred to in E2 could in the board's view obviously refer to
differences in the communication protocol used by
interface 8 and not necessarily refer directly to
features of the sensors or actuators themselves.
Consequently, the board finds the respondent's
arguments to be unconvincing.

5.5 The board concludes that the subject-matter of claim 1
of auxiliary request 1 does not involve an inventive
step either (Articles 52(1) and 56 EPC). Consequently, auxiliary request 1 is not allowable.

6. **Auxiliary request 2 - admissibility**

6.1 The respondent submitted auxiliary request 2 in the
course of the oral proceedings. After a study of the
request, the board informed the respondent of five
reasons as to why the request appeared, prima facie, to
be deficient and therefore problematic with respect to
admissibility under Article 13(1) RPBA:

(i) Although claim 1 was a claim for an apparatus, it
appeared that a method step had been introduced ("the
setting value information being information which the
user arbitrarily sets..") , leading to a lack of
clarity (Article 84 EPC);

(ii) The term "arbitrarily" was a term of unclear scope
(Article 84 EPC);

(iii) The term "building block-type" was also a term of
unclear scope (Article 84 EPC);
(iv) The request was divergent considering that the limitations introduced into claim 1 of auxiliary request 1 had been left out; and

(v) The newly introduced definition of the unit information ("the unit information corresponding to information to determine whether presence or absence of I/O replacement" [sic]) was not clearly compatible with the antecedent definition that the unit information was "for identifying a model type for each I/O unit".

6.2 The respondent argued that the term "building block-type" was well understood in the art, but did not comment on the other issues raised by the board.

6.3 Given that the request was filed at an advanced stage in the oral proceedings and gave rise to several prima facie objections, the board held the request to be inadmissible (Article 13(1) RPBA).

7. Auxiliary request 3 - admissibility

7.1 Auxiliary request 3 was filed during the oral proceedings in response to the discussion on the admissibility of auxiliary request 2. Claim 1 of auxiliary request 3 is based on claim 1 of auxiliary request 1 and is essentially further limited to claim a building block-type programmable-controller remote terminal apparatus, whereby the claim specifies that the communication unit and the I/O units are blocks which are mechanically coupled to each other.

7.2 The respondent argued that the amendments were based on paragraph [0028] of the description. The board however notes that paragraph [0028] states that the units are mechanically coupled to one another and attached to a
DIN rail 7 located behind the units. In addition, paragraph [0028] mentions that the remote terminal apparatus includes an END unit. There is consequently a doubt as to whether this claim complies with Article 123(2) EPC by dint of claiming an unallowable intermediate generalisation.

7.3 This aspect notwithstanding, the board also notes that the amendments are based on a feature taken from the description which is included in claim 1 for the first time, namely the feature that the apparatus comprises blocks mechanically coupled. Consequently, the board doubts that this aspect has been properly searched. The appellant requested remittal of the case should the board admit the request. Remittal would however be entirely contrary to the need for procedural efficiency. In addition, the board notes that the amendments are apparently aimed at distinguishing the claimed subject-matter over E2 having regard to the board's broad interpretation of the term "remote terminal apparatus". However, the respondent had been made aware of the board's view that this term was to be interpreted broadly in the communication accompanying the summons to oral proceedings (cf. point 1.2 of the communication under "Feature a"), which also concurred with the view of the opposition division (cf. the impugned decision, point 4.2). Consequently, it is evident that the respondent could, and indeed should, have filed auxiliary request 3 at a much earlier stage, either with the response to the statement of grounds of appeal, since in accordance with Article 12(2) RPBA this should contain the respondent's complete case, or at the very latest in response to the board's communication.
7.4 As claim 1 of auxiliary request 3 does not clearly comply with Article 123(2) EPC, and in view of the procedural issues discussed above, the board holds auxiliary request 3 to be inadmissible (Article 13(1) RPBA).

8. Conclusion

As there is no allowable request, it follows that the patent must be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman: 

G. Rauh F. van der Voort

Decision electronically authenticated