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Datasheet for the decision of 9 January 2020

Case Number: T 1734/14 - 3.4.01

Application Number: 04757422.3

Publication Number: 1656564

IPC: G01R31/28, G08C19/02

Language of the proceedings: EN

Title of invention:
PROCESS DEVICE WITH QUIESCENT CURRENT DIAGNOSTICS

Applicant:
Rosemount Inc.

Headword:
Quiescent current diagnostics device / Rosemount Inc.

Relevant legal provisions:
EPC Art. 123(2), 84, 83
RPBA Art. 13(1)

Keyword:
Amendments - main request, sixth and eighth auxiliary request - allowable (no)
Late-filed first, second and third auxiliary requests - admitted (no)
Claims - clarity - fourth, fifth, sixth, seventh, ninth auxiliary request (no)
Sufficiency of disclosure - sixth auxiliary request (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 1734/14 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 9 January 2020

Appellant: (Applicant)	Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 (US)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 2 January 2014 refusing European patent application No. 04757422.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	D. Rogers
Members:	T. Zinke
	T. Alecu

Summary of Facts and Submissions

I. The Examining Division refused European patent application 04 757 422.3 for added subject-matter, lack of clarity and lack of inventive step in the light of documents D1 (US-A-2002/121910) and D3 (US-6035421).

II. The applicant appealed the decision.

III. With the statement setting out the grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of sets of claims and amended description pages submitted together with the statement setting out the grounds of appeal as a main request and first to sixth auxiliary requests, respectively. Further, the appellant requested oral proceedings.

IV. The Board summoned the appellant to oral proceedings. In a communication under Article 15(1) RPBA, the appellant was informed of the Board's preliminary opinion. In particular, the Board expressed in detail its doubts relating to clarity (Article 84 EPC), sufficiency of disclosure and added matter (Articles 83 and 123(2) EPC).

V. In reply, the appellant filed claims for a new main request and a first to ninth auxiliary requests. Whereas the main request and the first to third auxiliary request were new, the fourth to ninth auxiliary requests were identical to the main request and the first to fifth auxiliary request as filed with the grounds of appeal. In addition, the appellant provided arguments with regard to the issues raised in the communication under Article 15(1) RPBA and provided

a basis in the original application for the new requests.

VI. During oral proceedings, the appellant confirmed that the sixth auxiliary request filed with the grounds of appeal was withdrawn.

VII. Claim 1 of the main request reads as follows:

A process device (12) for use in an industrial process control system (12) comprising:
an electrical connection configured to couple to a two-wire process control loop (18) of the industrial process control system;
output circuitry configured to transmit data on the two-wire process control loop (18);
a quiescent current sensor (62) configured to sense quiescent current draw of the process device (12),
wherein the process device is adapted to be powered from current received through the two-wire process control loop,
the process device characterised by being arranged to compare the sensed quiescent current with a baseline quiescent current value; and
diagnostic circuitry configured to determine a diagnostic condition of the process device based on the comparison of sensed quiescent current and the baseline value,
wherein the process device is adapted to compensate the sensed quiescent current draw based upon temperature and
a microprocessor programmed to control electronics in the process device to compensate for increased quiescent current draw by disconnecting circuitry responsible for the increased quiescent current draw.

Independent claim 25 is a correspondingly formulated method claim.

Claims 2 to 24 and claims 26 to 36 are dependent claims.

VIII. Independent claim 1 of the first auxiliary request differs from independent claim 1 of the main request by having replaced the term "process device" with "transmitter".

IX. Independent claim 1 of the second auxiliary request differs from independent claim 1 of the main request in that the process device is further characterized by

a memory arranged to store a baseline quiescent current value, said baseline quiescent current value characterized over a temperature range;
the quiescent current sensor arranged to infer quiescent current draw from multiple measurements of multiple components

X. Independent claim 1 of the third auxiliary request differs from claim 1 of the main request in that the process device further comprises:

wireless communication circuitry configured to communicate wirelessly,

that the
process device is adapted to be powered from current received through the two-wire process control loop and from power received through an internal power source,

(amendments emphasized by the Board)

that

the quiescent current sensor arranged to infer quiescent current draw from multiple measurements of multiple components

and in that the last feature describing the microprocessor is replaced by

a microprocessor programmed to control electronics in the process device to compensate for increased current draw by shutting down circuitry within the process device, other than the wireless communication circuitry, so that the wireless communication circuitry has sufficient power to communicate and provide an output indicating that a component has failed or is in the process of failing.

XI. Independent claim 1 of the fourth auxiliary request differs from claim 1 of the main request in that the last feature defining the microprocessor is replaced by

a microprocessor programmed to control electronics in the process device to compensate for increased quiescent current draw by removing power supplied to certain components so that the process device can continue to function despite other component failure

XII. Independent claim 1 of the fifth auxiliary request differs from claim 1 of the main request in that the last feature defining the microprocessor is replaced by:

a microprocessor programmed to control electronics in the process device to compensate for increased quiescent current draw by removing power supplied to

certain electronic circuitry so that the process device can continue to function despite an impending failure of other electronic circuitry

XIII. Independent claim 1 of the sixth auxiliary request differs from claim 1 of the main request in that the last feature defining the microprocessor is replaced by:

a microprocessor programmed to control electronics in the process device to compensate for increased quiescent current draw by removing power supplied to certain electronic circuitry so that the process device can continue to communicate despite an impending failure of other electronic circuitry

[Emphasis by the board]

XIV. Independent claim 1 of the seventh auxiliary request differs from claim 1 of the main request by combining the amendments made for claims 1 of the second and the fourth auxiliary request and by replacing the penultimate feature regarding the compensation of the sensed quiescent current draw by

wherein the process device is adapted to compensate the sensed quiescent current draw based upon temperature or mode of operation

[Emphasis by the Board]

XV. Independent claim 1 of the eighth auxiliary request differs from claim 1 of the second auxiliary request in that the penultimate feature regarding the compensation of the sensed quiescent current draw is replaced by

wherein the process device is adapted to compensate the sensed quiescent current draw based upon temperature or mode of operation

[Emphasis by the Board]

XVI. Independent claim 1 of the ninth auxiliary request differs from claim 1 of the seventh auxiliary request in that an additional feature is added:

the diagnostic circuitry configured to predict impending communication failure due to insufficient headroom carried on the two-wire process control loop

Reasons for the Decision

Main Request

1. The main request was submitted in response to the communication under Article 15(1) RPBA 2007. Since the amendments made are considered to respond to the preliminary objections raised in the communication, the main request was admitted into the appeal proceedings (Article 13(1) RPBA 2020).

2. The last feature of claim 1 "*a microprocessor programmed to control electronics in the process device to compensate for increased quiescent current draw by disconnecting circuitry responsible for the increased quiescent current draw*" is not originally disclosed (Article 123(2) EPC).

3. In particular, it is not originally disclosed that the microprocessor is programmed to control electronics *"by disconnecting circuitry responsible for the increased quiescent current draw".*

4. The function of the microprocessor is originally disclosed in the paragraph bridging original pages 12 and 13. Therein it is only stated "In some embodiments, the microprocessor may control electronics, within the transmitter to compensate for the increased quiescent current draw. For example, power can be removed from certain electronic components such that the transmitter can continue to function despite the occurrence of a component failure." This passage does not provide a basis for concluding that the mentioned *"certain electronic components"*, from which power is removed are actually the claimed *"circuitry responsible for the increased current draw"*. As is apparent from other passages of the description (cf. e.g. page 23, lines 12 to 14) the electronic components or electronic circuitry that should receive less power (or should be disconnected) are not automatically those that are responsible for the increased current draw, but might be components or circuitry that are less important for the functioning of the process device.

5. The appellant cited a passage of the original description mentioning "disconnecting circuitry responsible for the increased quiescent current draw" (page 23, lines 12 to 14). However, this passage does not mention the microprocessor at all. It remains unclear from this passage, who or which part of the process device is actually disconnecting the circuitry. For instance, line 10 mentions an "operator" to whom a visual indication is provided, so that the "operator" might be the instance who disconnects the circuitry. The microprocessor 246 depicted in Fig.4 is described as providing a diagnostic output (i.e. it "can monitor the quiescent current output circuitry 278 and provide an indication of a failure or impending failure", page

21, lines 23 to 26) but not unambiguously that it also controls electronic circuitry to "disconnect circuitry responsible for the increased quiescent current draw".

6. Hence, the claimed subject-matter extends beyond the content of the application as originally filed and, thus, the main request is not allowable (Article 123(2) EPC).

First and Second Auxiliary Requests

7. The independent claims 1 of the first and the second auxiliary request include the same feature with regard to the microprocessor programmed to disconnect the circuitry as claim 1 of the main request. Hence, the same objection under Article 123(2) EPC equally applies. Since these requests were filed in response to the communication under Article 15(1) RPBA, and cannot overcome the objection, they are not admitted into the appeal proceedings (Article 13(1) RPBA 2020).

Third Auxiliary Request

8. Independent claim 1 of the third auxiliary request is differently formulated with regard to the functions of the microprocessor. However, the formulation used, i.e. "a microprocessor programmed to control electronics in the process device [...] by shutting down circuitry within the process device [...], other than the wireless communication circuitry, [...]" also implies an active role of the microprocessor in "shutting down circuitry" that is not originally disclosed unambiguously. Whereas the passage on page 13, lines 4 to 12 mentions the role of microprocessor in removing

power from components such that the transmitter can continue functioning, there is no indication that such transmission is wireless. On the other hand, the passage of the description dealing with wireless transmission (page 23, lines 2 to 7) does not mention that it is the microprocessor, which is controlling electronic circuitry that shuts down other circuitry. As discussed above, the description mentions other options, for instance an operator.

9. Hence, the amendment to claim 1 of the third auxiliary request does not overcome the Article 123(2) EPC objection raised against the main request. Therefore, the third auxiliary request, which was filed in response to the communication under Article 15(1) RPBA 2007 was not admitted into the appeal proceedings (Article 13(1) RPBA 2020).

Fourth Auxiliary Request

10. The last feature of claim 1 of the fourth auxiliary request distinguishes between "certain components" (from which power is removed) and "other components" (which fail). However, it is unclear, when the process device would still be considered to function, when some of the components that still receive power ("other components") do not work? Further, it is unclear what the relationship between the "other" components' failure, the "certain" components and the function of the process device is.

11. During oral proceedings the appellant argued that the distinction between "certain" and "other" components should reflect that some of the components are essential for keeping up the communication in the

process control loop and others are not. This, however, is not mentioned in the claim.

12. Hence, the fourth auxiliary request is not allowable due to lack of clarity (Article 84 EPC).

Fifth Auxiliary Request

13. The last feature of claim 1 of the fifth auxiliary request also uses the unclear distinction between "certain" and "other" (here related to "electronic circuitry" instead of "components" as for the fourth auxiliary request) discussed above.

14. Hence, the fifth auxiliary request is not allowable due to lack of clarity (Article 84 EPC).

Sixth Auxiliary Request

15. In claim 1 of the sixth auxiliary request it has been specified that the process device can continue to "communicate" despite an impending failure of other electronic circuitry.

16. However, the issue mentioned above with regard to "other", defined in distinction to "certain" electronic circuitry is not resolved. In particular, there is still missing an explanation as to why the power is removed from "certain" electronic circuitry, when "other" electronic circuitry is about to fail. This is at least a lack of clarity (Article 84 EPC), but also a lack of enabling disclosure (Article 83 EPC), since it is not disclosed, how the device can continue to transmit, with power removed from "certain" electronic

circuitry whilst "other" electronic circuitry is about to fail.

17. Further, the amendment made extends beyond the content of the application as originally filed (Article 123(2) EPC). The passage on original page 23, lines 2 to 16 dealing with continued transmission, refers to a wireless device and not to any process device in a two-wire process control loop as claimed.

18. The appellant argued that throughout the original specification it was made clear that it is an important aspect of the claimed invention that the communication should continue in order to get alarm conditions and alarm predictions transmitted even if the quiescent current on the two-wire control loop increases (page 6, lines 16 to 24 in combination with page 7, lines 13 to 16 and lines 24 to 26, page 8, line 10 to page 9, line 14). However, whereas this problem could be derived from the application as originally filed, the claimed solution is not originally disclosed. As stated above, the only passage in the originally filed documents disclosing how a continued transmission could work deals with wireless communication (page 23, lines 2 to 16) (Article 123(2) EPC). There is no solution in the application as originally filed as to how the communication over the two-wire process control loop (which is the only communication mentioned in claim 1 of the sixth auxiliary request) can continue with "certain" electronic circuitry being removed from power despite an impending failure of "other" electronic circuitry. In particular, it is not disclosed, whether the circuitry that is intended to be used for continued communication belongs to the "other" electronic circuitry (which are "impending to failure"), or to a further (neither "certain" nor "other") group of

"unaffected" circuitry. Since it is not originally disclosed, to which group the communication circuitry belongs, the person skilled in the art cannot carry out the claimed invention (Article 83 EPC).

19. Hence, the sixth auxiliary request is not allowable due to lack of clarity (Article 84 EPC), lack of enabling disclosure (Article 83 EPC) and unallowable amendments (Article 123(2) EPC).

Seventh Auxiliary Request

20. In claim 1 of the seventh auxiliary request the issue of removing power from "certain" components, whereas "other" components fail, is present as well, so that the above-mentioned objections under Article 84 EPC as regards the fourth auxiliary request equally apply.

21. Hence, the seventh auxiliary request is not allowable due to lack of clarity (Article 84 EPC).

Eighth Auxiliary Request

22. Claim 1 of the eighth auxiliary request uses the same wording as claim 1 of the main request, i.e. that the microprocessor is programmed to disconnect the circuitry responsible for the increased current draw, which was objected to under Article 123(2) EPC. Hence, the same objection made against the main request under Article 123(2) EPC equally applies.

23. Therefore, the eighth auxiliary request is not allowable due to extension beyond the content of the application as originally filed (Article 123(2) EPC).

Ninth Auxiliary Request

24. Claim 1 of the ninth auxiliary request includes an amendment specifying in more detail, how an impending communication failure could be predicted. However, the wording used for the feature describing the microprocessor still includes the distinction between "certain" and "other" components, which was already considered unclear for the fourth to seventh auxiliary request. The additional feature about the prediction of the impending failure does not help in clarifying this distinction, since it remains open, when the process device is considered to function with removed power from "certain" components and "other" components that are about to fail.

25. Consequently, the ninth auxiliary request is not allowable due to lack of clarity (Article 84 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Meyfarth D. Rogers

Decision electronically authenticated