

IEC 870-5 Maillist Archive File

www.TriangleMicroWorks.com/iec870-5

Current as of August 16, 2000

This file contains a collection of all messages posted to the IEC 870 -5 Maillist. The advantage of using an Adobe PDF file for the maillist archive is that it can be viewed online or downloaded for offline reading. It also has a very fast search feature to find previous discussions of a topic. The file is organized by date with bookmarks in the left window to track message threads. All web links are still active, even when viewing the downloaded document.

Instructions:

Click on a bookmark in the left window to view the corresponding message in the right window. Use the scroll bar on the right window to see additional pages. When reading several messages sequentially, leave mouse cursor on bookmarks in left hand column to mark you position in the list of messages to read. The window divider may be dragged to show more of either pane.

To search for a word or phrase, press controlF.

If you wish to download the file for offline reading, from the menu select /File/Save as...then select a directory. Later you can simply open the file with Acrobat Exchange or the free Adobe Reader .

Both Acrobat Exchange and the free Adobe Reader can be setup to load your web browser when you click on a web link. From the menu, select:

/File/Preferences/Weblink... then set browser used, for example:
C:\Program Files\Netscape\Communicator\Program\netscape.exe

To: jcoats@ntwrks.com
From: iec870-5-request@TriangleMicroWorks.com
Reply-To: iec870-5-request@TriangleMicroWorks.com
Subject: Welcome to IEC870-5
Date: Tue, 14 Jul 1998 00:10:12 -0400

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Greetings,

This message is to announce the creation of the IEC 870-5 maillist and web site discussed at the IEC Technical Committee 57 Working Group 03 meeting in Lucerne (April 1998). Please visit the web site <http://www.TriangleMicroWorks.com/iec870-5> for more information on the operation of the maillist.

Your name has been added to the new IEC 870-5 Maillist based on your past interest in the protocol. We hope that your membership in this maillist will provide more insight for your application of IEC 870-5 and that you will be able to share your understanding of the protocol with others.

If you feel this maillist is no longer of interest to you, please send me an email (jcoats@TriangleMicroWorks.com) asking to be removed from the list or complete the form at the web site.

If you know of anyone else that may be interested in being on this maillist, please ask them to visit the web site <http://www.TriangleMicroWorks.com/iec870-5> and join the maillist.

We welcome any suggestions you have for improving the IEC 870-5 maillist or web site.

Best Regards,
Jim Coats

X-Sender: jcoats#server1.electronaut.com@tmw_server1
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.0.1
Date: Tue, 14 Jul 1998 00:26:22 -0400
To: iec870-5@TriangleMicroWorks.com
From: jcoats@trianglemicroworks.com (J. Coats (TriangleMicroWorks))
Subject: IEC 870-5 Maillist Guidelines and FAQ
X-MIME-Autoconverted: from 8bit to quoted-printable by dewdrop2.mindspring.com id
AAA00816
Reply-To: iec870-5@TriangleMicroWorks.com

IEC 870-5 Maillist Guidelines and FAQ

This maillist was established as a result of discussions at the IEC Technical Committee 57 Working Group 03 meeting in Lucerne (April 1998) concerning the likely interoperability of products claiming to conform to IEC 870-5-101, the desire of users to obtain "plug and play" products, and how best to help users and suppliers interpret the standard in a consistent way. The objective of this maillist is to create a place implementors and users of IEC 870-5 can discuss different interpretations of the specifications in an effort to establish a consensus opinion on each topic.

This maillist is open to anyone with an interest in IEC 870-5 and there are no membership fees. Topics regarding any of the profiles (101, 102, 103, 104) may be submitted to the maillist. The maillist is administered by Jim Coats (jcoats@TriangleMicroWorks.com). We have adapted guidelines similar to the SCADA mailing list www.iinet.net.au/~ianw/mailst.html and would like to thank Ian Wiese for the use of these time tested procedures.

This maillist is NOT administered by or for the IEC. While many members of IEC Technical Committee 57 Working Group 03 may participate in this maillist, the opinions expressed are not representative of Working Group 03. Anyone subscribing to the maillist may respond to a message. The information provided is simply helpful advice and no liability for the correctness of the information is given by the author of each message or by the administrator of this maillist.

This maillist is supported by a web site www.TriangleMicroWorks.com/iec870-5. This site contains a form to join or quit the mailing list and more general information about IEC 870-5. If your company has implemented or uses the IEC 870-5 protocol, please make sure it is listed on the "Implementers & Users of IEC 870-5" page www.TriangleMicroWorks.com/iec870-5imp.htm. If you know of

additional information you would like to see posted on the web site, please notify Jim Coats <jcoats@TriangleMicroWorks.com> .

Guidelines

1. PLEASE POST MESSAGES! Only a small percentage of subscribers to any mailing list participate. Unless subscribers actively participate the maillist will become silent and pointless.

If you post a request for information, please try to give something back to the mailing list by summarizing all the replies and posting the summary back to the list.

2. Please post thoughtfully. A considered post or response will generate considered replies, and valuable discussion could follow.

3. Try to keep arguments on a technical or business level, not on a personal level.

4. Please sign your message.

5. You are encouraged to actively promote the existence of the maillist eg on USENET, amongst your colleagues, etc.

6. Remember <iec870-5@Triangle MicroWorks.com> is the entire list. When you receive mail from the list, you will find that you can reply to the mail in your email program by using the "reply" feature of your email program.

The IEC 870-5 mailing list is set up so that replies go back to the list (ie to <iec870-5@Triangle MicroWorks.com>) automatically. This is done to promote discussion on the list, rather than to have a posting generate a lot of private correspondence off the list. In this way everyone benefits from the discussion, and different points of view can be represented.

Sometimes this may not be what you intend. For example if someone posts a job opportunity on the list, and you responded with your CV, you may not want the entire list (including your employer) to be aware that you are looking for alternative employment. In these cases you must be careful to ensure that your email is sent to the address of the person who originally posted the message, rather than to <iec870-5@Triangle MicroWorks.com>.

Experienced Internet users will understand these concepts, but if anyone has any problem understanding, please feel free to contact

me directly at <jcoats@TriangleMicroWorks.com>

7. When you post a request for information, you will do better if you provide some background about your request. For example:

- A brief description of your project, eg scope, brief functional requirements etc.
- Your role in the project - customer, supplier, potential bidder etc.
- Whether this is a new or existing system.
- Some information about your firm and your role in the project.
- Any information about your country that is relevant.
- A description of the problem.
- What you would like from the mailing list.

FAQ (Frequently Asked Questions)

1. How do I post a message to the list?

Send your email message to <iec870-5@Triangle MicroWorks.com>. The list is unmoderated but only subscribers can post messages to the list.

2. How do I subscribe to the list?

Complete the form on the web site www.TriangleMicroWorks.com/iec870-5 and select the "join (subscribe)" checkbox.

3. How do I unsubscribe from the list?

Complete the form on the web site www.TriangleMicroWorks.com/iec870-5 and select the "quit (unsubscribe)" checkbox.

4. Who do I contact for help?

The list is administered by Jim Coats. You may contact him at <jcoats@TriangleMicroWorks.com> for help regarding the list, or on any (protocol-related?) topic, or just to say hello.

5. Who may join the list?

Anyone with an interest in the topics of the list may join. We invite and welcome members of all companies and academic institutions, including researchers, end users, integrators, and

suppliers, to join and actively participate.

6. I am getting two (or more) copies of all mail. Help.

This occurs because you have joined twice under different email addresses. If you have a work and a home email account, you may have joined under one email account at each. Examine the duplicates and note the email addresses. Unsubscribe one of them using the web site form www.TriangleMicroWorks.com/iec870-5.

7. If I note some postings that are inappropriate should I reply?

You could, but normally the administrator of the list will contact the offender in private (ie off the list). Better to contact <jcoats@TriangleMicroWorks.com> and let him know your concerns. This avoids "flame wars". Or email the offender directly if you wish.

8. How often are the Guidelines and FAQ posted to the list?

Approximately once a month.

9. Can I use the list for commercial purposes?

Blatant advertising is frowned on in most mailing lists as it is unsolicited, and the recipient has no choice but to receive the advertisement. However it is normal practice to include your company affiliation in your signature file (at the end of the message). The best advertising is to participate in the discussions and contribute.

This matter has been discussed on other maillists. The consensus has been that notice of tenders, job offers, and requests for consulting work are appropriate (a service to the subscribers). Commercial announcements are not.

10. Who is responsible for the content of my posting?

You are. The list is not moderated. Everything sent gets distributed. Please be responsible with your postings.

Jim F. Coats, Triangle MicroWorks Inc.
Solutions for Communication Protocol Development
2213 Middlefield Court Raleigh, North Carolina 27615 USA
Phone: +1 (919) 870-6615 Fax: +1 (919) 870-6692
Internet: jcoats@TriangleMicroWorks.com
Web Site: www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Sender: jcoats#server1.electronaut.com@tmw_server1
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.0.1
Date: Mon, 20 Jul 1998 21:13:16 -0400
To: iec870-5@TriangleMicroWorks.com
From: jcoats@trianglemicroworks.com (J. Coats (TriangleMicroWorks))
Subject: Electronic copies of the Interoperability documents
Reply-To: iec870-5@TriangleMicroWorks.com

Gentlemen:

I have created a "downloads" section on the IEC 870-5 web site www.TriangleMicroWorks.com/iec870-5 and posted an electronic copy of the IEC 60870-5-101 Interoperability document. It is provided so that each new implementer is not required to create an electronic version from the hardcopy. This file is in Rich Text Format and can be read by Microsoft Word or most any other popular word processor.

If anyone has an electronic copy of the IEC 60870-5-102 and IEC60870-5-103 Interoperability documents, please send them to me and I will post these documents in the downloads section also.

I would like for this maillist to create an unofficial addendum for each one of these Interoperability documents which includes the additional options we all know about, but are normally not discussed until system integration time.

Best regards,
Jim Coats

Jim F. Coats, Triangle MicroWorks Inc.
Solutions for Communication Protocol Development
2213 Middlefield Court Raleigh, North Carolina 27615 USA
Phone: +1 (919) 870-6615 Fax: +1 (919) 870-6692
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X-Sender: jcoats#server1.electronaut.com@tmw_server1
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.1
Date: Thu, 05 Aug 1999 15:49:28 -0400
To: iec870-5@TriangleMicroWorks.com
From: jcoats@trianglemicroworks.com (J. Coats (TriangleMicroWorks))
Subject: Maillist Guidelines and a few words
Reply-To: iec870-5@TriangleMicroWorks.com

Dear Colleagues,

The IEC 870-5 Maillist has now grown to over 250 subscribers!

Barry Cole has written a second tutorial paper entitled "An Introduction to the integrity considerations underlying the IEC 60870-5-101 communication protocol". It has been posted on the IEC 870-5 maillist website downloads page (go to www.trianglemicroworks.com/iec870-5 and select downloads). If anyone else would like to post papers, PowerPoint presentations, or other helpful information about IEC 870-5, please send the files directly to me.

The maillist archive has been posted on the website since April. It contains all messages from when the maillist was started through 2nd June, 1999. I will add the messages since 3rd June very soon and hope to keep it updated weekly. Using the Adobe Acrobat reader may take a little longer to get started on a slow internet connection, but moving around and searching for messages is then much quicker than an online archive.

IEC Technical Committee 57 Working Group 3 has a meeting scheduled in Berlin on September 21st and 22nd to wrap up discussion of the IEC 870-5-101 Supplementary Definitions. For more information on this meeting or the Supplementary Definitions, contact the IEC representative for your country.

Best regards,
Jim Coats
jcoats@TriangleMicroWorks.com

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Unsubscribe one of them using the web site form

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Web Site: www.TriangleMicroWorks.com

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: felix.s.mueller@ch.abb.com
X-Lotus-FromDomain: ABB_CH01@ABB_CH02
To: iec870-5@TriangleMicroWorks.com
Date: Wed, 12 Jan 2000 09:01:16 +0100
Subject: Must info object adres be unique for a given common ASDU address?
Reply-To: iec870-5@TriangleMicroWorks.com

Hello

Is the following statement true?

The information object address must be unique for a given common address of ASDU
and therefore cannot be duplicated across data types as is done with DNP 3.0.

Why this?

Thanks. Felix

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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Brian Richardson, 11:34 AM, 01/12/00 +0000, RE: Must info object address be unique fo

To: iec870-5@TriangleMicroWorks.com
From: Brian.Richardson@ngc.co.uk

Subject: RE: Must info object address be unique for a given common ASDU address?
Cc:
Bcc:
Attached:

The answer is yes. The reason is that some ASDUs can not be reflected with the same ASDU type. The READ command (ASDU 102) simply gives the address (common and IOA) and does not specify a data type. Therefore it is not allowed that data of different types can have the same address.

It's a pain, but that is the way it is.

Brian Richardson

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "ARAI, Kanehide" <arai@con.sdl.melco.co.jp>
To: <iec870-5@TriangleMicroWorks.com>
Subject: What is the meaning of smoothing factor?
Date: Wed, 12 Jan 2000 21:45:20 +0900
X-Mailer: Microsoft Outlook Express 5.00.2314.1300
Reply-To: iec870-5@TriangleMicroWorks.com

Hello everyone,

I have questions about the usage of "smoothing factor" in a KPA.

Parameter commands, <110>P_ME_NA_1 and <111>P_ME_NB_1, have
KPA(kind of parameter)in QPM(Qualifier of parameter of measured values) field.

According to the 7.2.6.24 in the IEC870-5-101 document,
KPA <2> := smoothing factor (filter time constant)"

But I could not find more definitions about this "smoothing factor".

What is the meaning of the NVA and SVA in the P_ME_NA_1 and P_ME_NB_1 with KPA=2 ?
What is the unit of the value (time(second), percent or others)?

Could anyone help me on this?

Thanks,

Kanehide Arai

Mitsubishi Electric Co.
E-mail: arai@con.sdl.melco.co.jp

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Sender: ehall#server1.electronaut.com@tmw_server1
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.2.2
Date: Thu, 20 Jan 2000 13:38:15 -0500
To: iec870-5@TriangleMicroWorks.com
From: Barry Cole <barry.cole@virgin.net> (by way of Jim Coats
<jcoats@TriangleMicroWorks.com>) (by way of Erin Hall
<ehall@TriangleMicroWorks.com>)
Subject: Revised version of GBC Report 030
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

A revised version (2000 JAN 20) of my GBC Report 030 has been posted to the IEC 870-5 maillist webpage. It has been brought up to date to include Rev 7 of Addendum A2.

Please visit the Download Documents page (www.TriangleMicroWorks.com/iec870-5) to review the modified file.

Best wishes for 2000
Barry Cole

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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Sender: jcoats#server1.electronaut.com@tmw_server1 (Unverified)
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.2.2
Date: Thu, 20 Jan 2000 14:39:01 -0500
To: iec870-5@TriangleMicroWorks.com
From: jcoats@trianglemicroworks.com (J. Coats (TriangleMicroWorks))
Subject: Maillist Update
Reply-To: iec870-5@TriangleMicroWorks.com

Hello Everyone,

I hope all of you had wonderful holidays and are now all safely back at work.

I would like to update everyone on the newest modification to our maillist.

Based on our recent IEC maillist errors and bounced messages, we have modified the maillist operation so that only subscribers can post messages. This prevents an automatic vacation message generated by a post office or gateway from being posted to the list.

If you try to post a message while unsubscribed, you should receive an error message from the maillist like the following:

```
>Subject: Mail System Error - Returned Mail  
>  
>The mail system on server1.electronaut.com encountered the following error:  
>Sorry, you aren't allowed to post to this mailing list.
```

Once you are resubscribed to the maillist, you will be able to send messages again. Please remember to subscribe all valid email accounts so you will be able to post messages even when you are traveling.

If you have not unsubscribed but receive this message, please contact me immediately and I will look into this for you.

Sincerely,

Jim

Jim F. Coats, Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
Raleigh, North Carolina USA
Phone: +1 (919) 870-6615 Fax: +1 (919) 870-6692
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To: iec870-5@TriangleMicroWorks.com
From: jcoats@trianglemicroworks.com (J. Coats (TriangleMicroWorks))
Subject: Fwd: Maillist Update
Cc:
Bcc:
Attached:

To all IEC 870-5 Maillist Subscribers:

I am very sorry for the confusion I caused by sending out this email.

Please note that no current members have been unsubscribed and will not be removed from the maillist unless you request this action from our webpage.

The attached message was just to alert you that we made a change to the IEC 870-5 Maillist posting operation. Due to recent activity including bounced messages from post offices and gateways, we decided to change our maillist requirements.

Previously, anyone could post messages and it was not a requirement for them to be a subscriber to the maillist. That is no longer the case. It is now necessary to be a subscriber on the maillist prior to the ability to post a message. Since you have received this message from the maillist, you are currently a subscriber and can post messages from any email addresses on which you received this message.

I apologize for not explaining our new maillist guidelines more clearly the first time.

Sincerely,

Jim

Jim F. Coats, Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
Raleigh, North Carolina USA
Phone: +1 (919) 870-6615 Fax: +1 (919) 870-6692
Web Site: www.TriangleMicroWorks.com

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Date: Mon, 24 Jan 2000 10:07:43 +0000
From: Barry Cole <barry.cole@virgin.net>
X-Mailer: Mozilla 3.01C-VN711-003 (Win95; I)
To: iec870-5@trianglemicroworks.com
CC: barry.cole@virgin.net
Subject: Class 1/Clas 2 data transmission
Reply-To: iec870-5@TriangleMicroWorks.com

Please see the attachment on the above subject.
Barry Cole



[GBC Report 045.rtf](#)

CLASS 1/CLASS 2 DATA TRANSMISSION

I suggested in GBC Report 037, sent to the mail list last October, that low polling efficiency for outstations having predominantly spontaneous data could be avoided. If "A new spontaneous ASDU is assigned to be Class 2 data (not Class 1 as normal) when there are no other Class 2 data waiting to be polled and when there are also no Class 1 data waiting to be polled".

I now withdraw this suggestion because the latest Revision 7 of Addendum A2 states: "In response to a Class 2 poll, a Controlled station may respond with Class 1 data when there is no Class 2 data available".

Please note that the provisions of Addendum A2 to IEC 60870-5-101 are at present provisional, because A2 is still under consideration by the IEC. It does not become an International standard until it has been published according to IEC procedures.

G B COLE

From: "Ramió Solé, Joan" <JRamio@enher.es>
To: iec870-5@TriangleMicroWorks.com
Subject: APCI 104
Date: Mon, 20 Dec 1999 09:58:39 +0100
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Hello everyone,

I have some questions about how to implement the APCI 104.

START/STOP mechanism:

To avoid the loss of I APDUs when stopping a connection, I think that the following rules have to be implemented:

- 1- The controlling station must validate all the received information APDUs before sending a 'STOP act'.
- 2- The controlled station must validate all the received information APDUs before sending a 'STOP con'.
- 3- The controlling station must close the connection if receives an 'STOP con' and it has outgoing I APDUs not yet validated.
- 4- The controlled station must close the connection if receives an 'STOP act' and it has outgoing I APDUs not yet validated.

The draft does not explicitly explain that. What have done the first implementations ?

Another question is:

When a connection is in the STOP state, can we use the Test procedures ?

Regards,

Joan Ramió
Endesa Servicios
E-mail: JRamio@enher.es
Tel: 93.214.40.00 ext 323173
Fax: 93.436.38.96

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5-request@TriangleMicroWorks.com
From: Philibert Perusse <pperusse@cybectec.com>

Subject: Re: APCI 104
Cc:
Bcc:
Attached:

Dear Mr Ramio,

We have implemented a 104 primary and secondary. While developping it, we had found some contradictions in the draft about the START/STOP mechanism.

In the draft it is said that the START/STOP mechanism could be used for a primary station to manage multiple connexions to a secondary station. In fact, I think this is not that simple! The STOPping of a link and the STARTing of another link is not an ATOMIC operation! So it is important to define: "What a secondary station that its 104 link is in STOP state do with outgoing events". Does it buffers them so when the START state arrived it will send them? Does it drops them assuming that another "link" must be in START state reporting them? In one case you could have EVENT duplication and in the other EVENT loss. To prevent that, the secondary 104 "links" involved must synchronize themselves. So, they are no more "independent" links. There is a lot of difficulties not mentionned in the draft related to the usage of the START/STOP mechanism. And you are right we must be aware of that!

I will now answer to your specific questions.

I'm not sure of what you are meaning by "validate all the received information". So I will not answer what could be a non-pertinent answer.

In our system, the START/STOP mechanism is only used for the I APDUs. So, a secondary or a primary can send S or U APDUs. Moreover, in our system, the primary station is allowed to send and receive I APDUs while in STOP state. The mechanism is most of all implemented in the secondary station where it cannot send I APDUs while in STOP state but can received I APDUs (if an answer is requiered, no answer will be sent back).

So, when a STOP ACT arrives, a STOP CON is returned and a STOP.IND is sent to the application so it can deal with that. Thereafter, the slave's 104 "link" is requiered to "block" any outgoing I frame. However, since were using only one LINK, this is not "supposed" to happened! The mechanism is only used after a connexion (where the slave is in STOP state and must be in START state before beginning to send ASDUs).

I think that you can used U frames TEST_FR procedures. But, of course the C_TS_TA_1 procedures could not be used!

I will end my answer with a remark about the station initialisation and the M_EI_NA_1 (I have already noticed it in a previous e-mail sent to the list).

To: iec870-5@TriangleMicroWorks.com
From: John Jansen van der Sligte <jjvds@compuserve.com>
Subject: RE: APCI 104
Cc:
Bcc:
Attached:

Hello Ramio,
This is a good point. We make a note and use this in the pilot project CS104 for the Dutch Utilities. The current situation is that we are getting in touch with suppliers for possible participation. The projectplan is downloadable from www.kemaconnect.nl.

John.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
+-----
| WWW.KEMACONNECT.COM

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: J.Starrenburg@kema.nl
X-Lotus-FromDomain: KEMA
To: iec870-5@TriangleMicroWorks.com
cc: pperusse@cybectec.com
Date: Tue, 25 Jan 2000 11:20:21 +0100
Subject: RE: 60870-5-104 (Questions and comments)
Reply-To: iec870-5@TriangleMicroWorks.com

It seems my previous reply never made it to the list (we had some email problems over here...). Here is my retry:

> 1) The 870-5-104 defines what is called an "Extended time
> tag". All the
> 101 ASDUs that were using CP24Time2a (M_SP_TA_1, ...) are replaced by
> new ASDUs with CP56Time2a time tags. These time tags included: year,
> month, day, hour, min, milli, dst (daylight saving time). My question
> is which time should be used? The LOCAL time of the emitter
> of the ASDU
> or the UTC time?

I recommend to use the time that is defined for your whole configuration, whether UTC, local or Tora-Tora time. Your *complete* network configuration must agree on the *same* time zone (if there is more than one in that network) to avoid any problems in re-calculation, as you are well aware of.

>
> 2) When a command with time tag defined in 104 (C_SC_TA_1, ACT,
> EXECUTE) is sent. The primary station fills the CP56Time2a field with
> its time. Then, the secondary station may received it few seconds
> later, process it and finally answer it with C_SC_TA_1
> ACTCON, EXECUTE
> a M_SP_xx_1 and a C_SC_TA_1, ACTTERM, EXECUTE. The two C_SC_TA_1
> answered contains the CP56Time2a time tag. Which time must it
> contains?
> It could be the time of the ACT received first or the time at which
> these ASDUs were sent back. There could be a few seconds difference
> between those time.

> Here again, I have some thoughts that I can share:

> i) Returning back the original time of the ACT could be
> interesting for
> the primary station since it can IDENTIFY the answer with the
> time tag.
> ii) Returning back the actual time of the secondary station
> can also be
> interesting since the primary station could use it to
> diagnose problems
> (congestion, delays) and maybe prevent more severe problems.
> iii) Is this point again open to all implementations?

I think it is (point iii), so you have a point here. I do not recommend however to use the time label as an identification mechanism, but as this point is not defined in the 104 standard you may run into some interoperability risks here. Your suggestion ii may come in handy indeed and seems the plausible interpretation that can be read "in between the lines".

>
> 3) When a secondary station receives a time tagged command, it should
> validate that the command is not older than a certain system treshold
> (lets say 15 seconds). If the command received is older what the
> secondary should do?
> a- Answer back with a Negative ACTCON or Negative DEACTCON
> (depends if
> a ACT or DEACT was received)
> b- Answer back with a Negative ACT or DEACT (like in 102)
> c- Simply drop the ASDU and answer nothing assuming if the
> time is too
> long, this could lead that any answer may be received by the primary
> station AFTER it has deteted a timeout.
>
> Why not sharing some thoughts:
> i) Depending of the value of the timetag sent back (see
> question 2). A
> primary station could make a great job or not with points a and b.
> ii) I think that a Negative ACTCON must mean the the specific
> point is
> NOT AVAILABLE whatever the reason for this (hardware error, security
> reason, etc.) but not that the protocol fails for its system delay
> parameters. But, this is an opinion and we do not have a field "cause
> of failure".
> iii) Also, I think that a Negative CON must mean that the
> specific ASDU
> is not supported.
Point iii is covered by adding a new COT (ASDU type not supported), coming from
the Supplementary Defs..
Point ii would mean a deviation from the 101 basic application function
(always an command ACTCON after an ACT), implying point i is my
recommendation, with a possible more intelligent controlling command
function looking at the return time value (see your question 2) to inform
the operator about the failure cause.

>
>
> 4) Now the technical question related to 104.
> The connection establishment sequence is not very clear in the draft.
> It is said (par 5.3)that the state of the secondary further to a
> connection is STOPDT. And that:
> "In this state [STOPDT] the controlled station does not send any data
> via
> this connection" (the secondary must be in STARTDT state to
> send data).
> This paragraph is very clear.
> But, a further analysis of the figure 19 "Local initialisation of the
> controlled station" section 7.1 shows that after the first connection
> establishment following the initialisation of the controlled
> station, a
> M_EI_NA_1 should be sent. And this, without a prior reception of a
> STARTDT ACT. So, here the rule of section 5.3 is broken!
>
> My thoughts:
> i) Is the 5.3 rule should be ALWAYS respected? My opinion is YES. A
> STOPDT state means REALLY STOP!

> ii) Is the reception by the primary of the M_EI_NA_1 before
> any STARTDT
> ACT transmission really necessary? My opinion is NO. The M_EI_NA_1
> reception tells nothing particular to the MASTER about the current
> state of the controlled station. In fact, if the controlled stations
> allows a connexion establishment, it should means that is initialisa
> tion is terminated. So, a controlled station SHOULD wait the
> end of its
> initialisation before a performing PASSIVE OPEN from its side.
I agree with your opinion. However, in one of your later emails you indicate that U en S frames are allowed even in STOPDT state. Recent discussions in WG03 tend towards allowing only U frames on connections in STOPDT state and no I frames or their acknowledgements (S frames), but there is no final decision on this matter yet.

This should address Joan Ramio Sole's recent comment about 104 APCI also.

Best regards,

```
+-----+  
| John Starrenburg          email : J.Starrenburg@kema.nl  
| Consultant                Web   : www.kemaconnect.nl  
| KEMA Connect             Phone : +31 26 3 56 39 51  
| P.O. Box 9035            Fax   : +31 26 3 51 54 56  
| 6800 ET Arnhem  
| THE NETHERLANDS  
+-----+
```

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+++ and other useful IEC 870-5 information.

From: "Richardson, Brian" <Brian.Richardson@ngc.co.uk>
To: "'iec870-5@TriangleMicroWorks.com'" <iec870-5@TriangleMicroWorks.com>
Subject: Parameter Loading and Activation
Date: Tue, 25 Jan 2000 16:31:44 -0000
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

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The 101 Standard only gives ASDUs for parameter loading (110,111 & 112) and parameter activation (113) as containing a single object, with VSQ_N=1. This means that each parameter must be set individually and then activated individually.

Is it reasonable to implement the same facility with VSQ_N>1 so that a block of parameters may be sent in the same ASDU. This would allow, for example, all of the parameters associated with a circuit to be updated at once.

This may also need the VSQ_SQ bit to be used (but not necessarily).

Regards,
Brian Richardson

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Date: Tue, 25 Jan 2000 19:29:35 -0800 (PST)
From: aziz sait <azizsait@yahoo.com>
Subject: testing the IEC-870-5
To: "'iec870-5@TriangleMicroWorks.com'" <iec870-5@TriangleMicroWorks.com>
Reply-To: iec870-5@TriangleMicroWorks.com

hi every body
I am looking for the best program to test the IEC-870
protocol,
I heard a bout a program called "Vink" -if I spill it
correctly.
Can I get help,!

Do You Yahoo!?
Talk to your friends online with Yahoo! Messenger.
<http://im.yahoo.com>

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
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+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: John Jansen van der Sligte <jjvds@compuserve.com>

Subject: RE: testing the IEC-870-5
Cc:
Bcc:
Attached:

Hello Aziz,

What is the best program to test the IEC 60870-5 protocol is your question. A similar question is "what is the best car for you?" If you have children a MPV is the best but if you are with 2 persons only a sportscar may be the best. I depends on what you want to do with it.

Sorry for my spontaneous reaction but it is ment quite serious. Testing is very important. Detecting configuration or development faults before real implementation is costeffective. Detecting and solving a problem in an operational system costs a multiple of solving it before the implementation. Proper testing before implementation also improves your product quality.

There are several ways of testing the protocol and the following questions may be important and answered.

1. What companion standard do you want to test?
2. Do you want or does your customer require to test Conformance to the IEC 608705-10? specification? In that case you need a program to simulate a Controlling and/or Controlled station.
3. Or a interoperability test ? In that case you need a Controlling and Controlled Station.
4. Is a third party test certification important for you or is it required by your customers? Having a third party test certificate is improving your competitive position.
5. Is the test for a specific project with private (NON conformant) options ?

With all this we can help you. KEMA is an independant party for protocol (quality assurance) services:

- 1.COACHING & CONSULTANCY during development
- 2.TYPE CERTIFICATION after development
3. LIFE-CYCLE SUPPORT after development
4. TEST SOFTWARE
5. For which Protocols?
 - IEC 870-5 general
 - IEC 870-5-101, IEC 870-5-102, IEC 870-5-103
 - IEC 870-5-104 (IEC 870-5-101 using TCP/IP)
 - ELCOM
 - DNP-3
 - TASE 2
 - GOMSFE
 - DLMS

- UCA

6. Attention: visit our website www.kemaconnect.nl.

We do have for the IEC60870-5-101, 102, 103 and 104 Companion Standards Protocol tools as SIMULATOR and ANALYZER. I attached the user list of the KEMA tools. As you see we also use these tools for you certification services. I am not in the office now and able to send it now to you, but I also do have a description about testing procedures.

It is quite a coincidence that we do have a special campaign now for all of our protocol tools. I send it to you separately.

I recommend you to look at www.kemaconnect.nl for additional information and to download a demo version of the analyser and datasheets of the simulator and analyser. Please contact me or mr. Starrenburg (j.starrenburg@kema.nl) for additional information. May be it is better to discuss this matter by telephone to gain a better insight in your needs (me or mr. J. Starrenburg tel.nr. +31 26 356 3951).

Kind regards,
John Jansen van der Sligte

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
+-----
| WWW.KEMACONNECT.COM

Herbert Eichhorn, 10:36 AM, 1/26/00 +0100, Re: testing the IEC-870-5

To: iec870-5@TriangleMicroWorks.com
From: herbert.eichhorn@de.abb.com

Subject: Re: testing the IEC-870-5
Cc:
Bcc:
Attached: c:\program files\qualcomm\eudora mail\attach\pic19451.pcx;

Hello,

the tool you heard about might be the "Fink"-Tool "PP870 Test Program",
distributed by

Ingenieurbuero R.Fink
Karwendelstrasse 4

D-86932 Pürgen / Germany

E-Mail: finkr@t-online.de

This tool requires a DOS-based PC (the DOS-Window in Win95/98/NT does not
work
perfectly).

Mr. Fink only sells his product inside the European Community.

We generally have positive experiences using the tool in our projects.

/Herbert Eichhorn

ABB Utility Automation GmbH

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+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: Grant Meadows <grantm@optimumenergy.com>
Subject: Re: testing the IEC-870-5
Cc:
Bcc:
Attached:

Hello,

Another alternative to IEC test tools is Protocol Technologies Inc. "PTI Plus" (dual serial channel PCMCIA based unit) or "PTI Serial" a single channel serial port software product. PTI Serial is the most economical test set product in the market. Both types work on Windows 95, 98 and NT. Both are currently for standard 101, others to follow in the near future.

You can download a free trial version from the PTI web site <http://www.pti-plus.com>.

Contact me direct if you would like pricing or have other questions

Thank you

--

Grant Meadows
Protocol Technologies Inc.
<http://www.pti-plus.com>
Phone: 403-256-3636
Cellular: 403-630-7181
Fax: 403-256-3431

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
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+++ and other useful IEC 870-5 information.

From: felix.s.mueller@ch.abb.com
X-Lotus-FromDomain: ABB_CH01@ABB_CH02
To: iec870-5@TriangleMicroWorks.com
Date: Wed, 26 Jan 2000 17:57:38 +0100
Subject: Generic Object Model for Telecontrol Protocols
Reply-To: iec870-5@TriangleMicroWorks.com

Hello Everybody

I am interested in obtaining information on a generic object model that can be used for mapping several telecontrol protocols (such as IEC870-5-101, DNP3, RP570, TASE2, etc) on a common data-base. I took a look at GOMSFE but it doesn't seem to be adequate as it lacks a lot of attributes that are used for example in IEC870-5-101.

Can you help me?

Thank's a lot. Felix

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From: rubens.asano@tde.alstom.com
X-Lotus-FromDomain: GA
To: iec870-5@TriangleMicroWorks.com
Date: Wed, 26 Jan 2000 16:37:34 -0300
Subject: Re: testing the IEC-870-5
Reply-To: iec870-5@TriangleMicroWorks.com

Hi

I use the program "ASE2000 Communication Test Set " , for to test IEC870-5-101.

The WEB site is "www.applsyseng.com"

Rubens Asano

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
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Jack Verson, 04:19 PM, 01/28/00 -0800, RE: testing the IEC-870-5

To: iec870-5@TriangleMicroWorks.com
From: "Jack Verson" <JackV@applsysteng.com>

Subject: RE: testing the IEC-870-5
Cc:
Bcc:
Attached:

Applied Systems Engineering has a Windows based test program for IEC 870-5-101 and 103. A Trial version is available at:

<http://www.applsysteng.com/vase2000download.html>

This will need a password and license code. The password is ASE. The license code is:

WTRCQ - NDYW2 - FU91W - HU6LZ - NZUXL - J

Please contact me for other information.

Jack Verson
Applied Systems Engineering

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Alex Austin" <AAustin@serck-controls.co.uk>
 To: "IEC870-5" <iec870-5@trianglemicroworks.com>
 Subject: Timetag in 101 standard ASDUs
 Date: Wed, 2 Feb 2000 11:13:03 -0000
 X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
 Importance: Normal
 X-Server: VPOP3 Enterprise V1.3.5 - Registered to: Serck Controls Ltd
 X-Organisation: Serck Controls Ltd
 Reply-To: iec870-5@TriangleMicroWorks.com

A little while ago there was some discussion on this list regarding the usefulness of having only the short time tag implemented in 101. The comments at the time suggested that 101 would soon be updated to include longer time tags - has this happened yet ?

Thanks,

Alexander Austin
 (Embedded Software Team Leader)

Serck Controls Ltd.
 Rowley Drive
 Coventry
 CV3 4FH
 UK

Tel: (UK) 01203 305050
 FAX: (UK) 01203 302437
 Email: aaustin@serck-controls.co.uk
 Web: www.serck.demon.co.uk

 Serck Controls Ltd, Rowley Drive, Coventry, CV3 4FH, UK
 Tel: 44 (0) 24 76305050 Fax: 44 (0) 24 76302437
 Web: www.serck.demon.co.uk

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 +++ and other useful IEC 870-5 information.

From: "Richardson, Brian" <Brian.Richardson@ngc.co.uk>
To: "'iec870-5@TriangleMicroWorks.com'" <iec870-5@TriangleMicroWorks.com>
Subject: RE: Timetag in 101 standard ASDUs
Date: Wed, 2 Feb 2000 14:00:35 -0000
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

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Alexander,

Your question was:

A little while ago there was some discussion on this list regarding the usefulness of having only the short time tag implemented in 101. The comments at the time suggested that 101 would soon be updated to include longer time tags - has this happened yet ?

The standard document EN 60870-5-101 is unlikely to be updated in the near future. What has happened is that two further documents have been produced, neither having yet made it to public availability as EN standards.

60870-5-104 Network Access for IEC 60870-5-101 using standard transport profiles

60870-5-101 A2: Supplementary Definitions to IEC 60870-5-101

These both have an alternative to the ASDUs defined in 101, as below:

<30> := Single-point information with time tag CP56Time2a
M_SP_TB_1
<31> := Double-point information with time tag CP56Time2a
M_DP_TB_1
<32> := Step position information with time tag CP56Time2a
M_ST_TB_1
<33> := Bitstring of 32 bit with time tag CP56Time2a
M_BO_TB_1
<34> := Measured value, normalised value with time tag CP56Time2a
M_ME_TD_1
<35> := Measured value, scaled value with time tag CP56Time2a
M_ME_TE_1
<36> := Measured value, short floating point value with time tag CP56Time2a
M_ME_TF_1
<37> := Integrated totals with time tag CP56Time2a
M_IT_TB_1
<38> := Event of protection equipment with time tag CP56Time2a
M_EP_TD_1
<39> := Packed start events of protection equipment with time tag CP56Time2a

M_EP_TE_1

<40> := Packed output circuit information of protection equipment
with time tag CP56Time2a

M_EP_TF_1

Either ASDUs of the set <2>, <4>, <6>, <8>, <10>, <12>, <14>, <16>, <17>, <18>, <19> or of the set <30 -40> are used.

60870-5-104 also defines control ASDUs with time tags:

CON <58>:= single command with time tag CP56Time2a

C_SC_TA_1

CON <59>:= double command with time tag CP56Time2a

C_DC_TA_1

CON <60>:= regulating step command with time tag CP56Time2a

C_RC_TA_1

CON <61>:= set point command, normalised value with time tag CP56Time2a

C_SE_TA_1

CON <62>:= set point command, scaled value with time tag CP56Time2a

C_SE_TB_1

CON <63>:= set point command, short floating point number
with time tag CP56Time2a

C_SE_TC_1

CON <64>:= bitstring of 32 bit with time tag CP56Time2a

C_BO_TA_1

But these don't seem to be in the A2 supplementary definitions.

The 104 document is currently at the FDIS stage and will (hopefully) soon be available. A2 has just been passed to Geneva to begin the CDV stage.

Regards,
Brian Richardson

+++ Visit the IEC 870-5 Maillist Web Site
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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: barry_shephard@schneider.co.uk

Subject: Re: Timetag in 101 standard ASDUs
Cc:
Bcc:
Attached:

Further to the info from Brian, it's my understanding that this list of ASDUs with the extended timetags (CP56Time2a) are documented in the IEC publication "Amendment 1 to IEC 60870-5-101". This document was available as FDIS at the end of last year, voting has just closed (31 Jan 2000) - with the document getting a positive vote from 17 member countries.

We can expect the document as an IS (International Standard) in the near future.

Barry Shephard
Schneider Electric - Power Management
Chippenham, Wilts, UK

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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: John Jansen van der Sligte <jjvds@compuserve.com>
Subject: re: 870-5
Cc:
Bcc:
Attached:

Alexander,
In the cs101 standard only short time tags, 3 octet binary time, are defined but there is an official draft (july 1997) by WG03 Addendum to Section 101 "Extension of time tags (57/311/NP)" which defines ASDU 30 to 40 which corresponds with ASDU 1, 3, 5,7,9,11,13,15,17,18,19 of cs101 but with the 7 octet time tag.

The cs104 only uses without of with 7 octet time tag.

Does this answer your question?

John.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.COM
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Filipe Campos <fcampos@se.efacec.pt>
To: "Triangle exploder (E-mail)" <iec870-5@TriangleMicroWorks.com>
Subject: newbie question
Date: Wed, 2 Feb 2000 17:02:08 -0000
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

Hi all.

I'm not familiarized with the term "bitstring" . What is it ?
bye.

Filipe Campos (fcampos@se.efacec.pt)
Portugal

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: awest@TriangleMicroWorks.com (Andrew West)
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: newbie question
Date: Wed, 2 Feb 2000 12:53:53 -0500
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
X-MIME-Autoconverted: from 8bit to quoted-printable by fb01.eng00.mindspring.net
id MAA26256
Reply-To: iec870-5@TriangleMicroWorks.com

Refer to IEC 870-5-4, clause 4.1 Data Types

A bitstring is defined as an "Assembly of independent bits".

For example: a bitstring of 5 bits could represent 5 individual boolean values.

The clause further states that the data type BOOLEAN is a bitstring of size 1.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Filipe Campos, 06:08 PM, 2/2/00 +0000, RE: newbie question

To: iec870-5@TriangleMicroWorks.com
From: Filipe Campos <fcampos@se.efacec.pt>

Subject: RE: newbie question

Cc:

Bcc:

Attached:

I see .

Thanks.

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
Subject: Packed single-point
X-Mailer: Mew version 1.92.4 on Emacs 19.34 / Mule 2.3 (SUETSUMUHANA)
Date: Tue, 08 Feb 2000 17:39:31 +0900
From: ARAI Kanehide <arai@con.sdl.melco.co.jp>
X-Dispatcher: imput version 980905(IM100)
Lines: 22
Reply-To: iec870-5@TriangleMicroWorks.com

Hi,

I'm not familiarized with the usage of M_PS_NA_1
(<20> Packed single-point information with status change detection).

My understanding for M_PS_NA_1 is as following;

- 1) It packs 16 single points into one Information Object.
- 2) Information Object Address of the points must be continuous.
- 3) All of the Quality Descriptor of them must be same.

But I think these are rare cases.

Is my understanding right?

If so, is this M_PS_NA_1 usually used?

Regards,
Kanehide Arai,

Mitsubishi Electric Corporation
arai@con.sdl.melco.co.jp

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: Philibert Perusse <pperusse@cybectec.com>
Subject: RE: Packed single-point
Cc:
Bcc:
Attached:

Mr Kanehide ,

I many systems, digital input/output points are grouped in 8 or 16 bit wide I/O registers. And if a point is in error or topical or any else, this is because of the state of the I/O register. So, this state applied to all bits in this register. More over, while creating the configuration of the Secondary station, it is frequent to choose continuous IOAs for these points.

So, to resume my comment, M_PS_NA_1 is not used for compacting non-related SP to use less bandwidth. The use of M_PS_NA_1 must be planned at the configuration step for logically binded SPs.

Philibert P russe, ing. stag.
pperusse@cybectec.com

Cybectec Inc.
1290, rue St-Denis, bureau 803
Montr al, Qu bec, H2X 3J7
T l: (514) 845-6195 x 22 Fax: (514) 845-3145
Venez nous visiter   <http://www.cybectec.com>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: "Iec870-5 (E-mail)" <iec870-5@TriangleMicroWorks.com>
Subject: Counter overflow...

Dear IEC870 users,

What happens when a counter had reached a value of 0x7FFFFFFF (CY=0).
What will be its value after the next increment?

- 1) VAL=0, CY=1.
- 2) VAL=0x80000000, CY=0
- 3) VAL=0x80000000, CY=1

The 870-5-101 document specifies that the Counter reading is a signed number (I32[1..32]<-2³¹..+2³¹ - 1>

According this statement the answer (2) and (3) should not be valid because this solution use the counter reading as an Unsigned number.

But I wonder if it is the way it is implemented in most systems? Is there some systems using the counter reading as an unsigned number (thus being non-IEC compliant) and setting the CY flag on a transition from 0xFFFFFFFF to 0?

Because, the real question is: "What is the count value of the CY flag?"

Regards,

Philibert

Philibert Pérusse, ing. stag.
pperusse@cybectec.com

Cybectec Inc.
1290, rue St-Denis, bureau 803
Montréal, Québec, H2X 3J7
Tél: (514) 845-6195 x 22 Fax: (514) 845-3145
Venez nous visiter à <http://www.cybectec.com>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Goertz Bernd <Bernd.Goertz@nbg6.siemens.de>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: AW: Counter overflow...
Date: Thu, 10 Feb 2000 20:54:19 +0100
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

Bernd Goertz' comment:

-----Ursprüngliche Nachricht -----

Von: Philibert Perusse [SMTP:pperusse@cybectec.com]
Gesendet am: Donnerstag, 10. Februar 2000 18:00
An: Iec870-5 (E-mail)
Betreff: Counter overflow...

Dear IEC870 users,

What happens when a counter had reached a value of 0x7FFFFFFF (CY=0).

What will be its value after the next increment?

- 1) VAL=0, CY=1.
- 2) VAL=0x80000000, CY=0
- 3) VAL=0x80000000, CY=1

The 870-5-101 document specifies that the Counter reading is a signed number I32[1..32]<-231..+231 - 1>

According this statement the answer (2) and (3) should not be valid because this solution use the counter reading as an Unsigned number.

Alternative 1 is valid. It was decided in the WG03 to use a signed integer. The reason is quite simple: This definition allows the counting of positive and negative pulses using a single information element only.

But I wonder if it is the way it is implemented in most systems? Is there some systems using the counter reading as an unsigned number (thus being non-IEC compliant) and setting the CY flag on a transition from 0xFFFFFFFF to 0?

IEC 60870-5-102 uses a different ranges of values: I32[1..32]<-108+1..+108-1> which results values between -99 999 999...+99 999 999.

In this case the CY is also set to 1 when the next pulse causes an overflow and the value is set to zero.

I do not know which implementations hurt the compatibility in this matter.

Because, the real question is: "What is the count value of the CY flag?"

In all cases of an overflow (exceeding of the defined range) which occurred in the corresponding integration period the Carry flag is set to "1". Note: If negative pulses decrease a value < limit which had temporarily exceeded the range, the CY has to be reset to zero.

Please, see the presentation of the alternatives in IEC 60870-5-4, table at the bottom of page 39. There are three alternatives. The Bipolar Binary Counter Reading was selected for 101 to have only a single format for all cases.

Regards,

Philibert

Philibert P érusse, ing. stag.
pperusse@cybectec.com

Cybectec Inc.
1290, rue St-Denis, bureau 803
Montréal, Québec, H2X 3J7
Tél: (514) 845-6195 x 22 Fax: (514) 845-3145
Venez nous visiter à <http://www.cybectec.com>

X-Sender: ehall#server1.electronaut.com@tmw_server1
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.2.2
Date: Mon, 14 Feb 2000 09:01:09 -0500
To: iec870-5@TriangleMicroWorks.com
From: Barry Cole <barry.cole@virgin.net>

Subject: Examples of the use of "101" protocol
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

A new document has been posted to the IEC maillist webpage. The Document name is GBC Report 046.rtf and it outlines some examples of the use of the IEC 60870-5-101 Protocol Standard.

Please visit the Download Documents page (www.TriangleMicroWorks.com/iec870-5) to review this file.

Regards,

Barry Cole



[GBC Report 0461.rtf](#)

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)

Subject: RE: Packed single-point
Cc:
Bcc:
Attached:

The M_PS_NA_1 is a packed group of 16 binary inputs with 16 parallel "Change Detection" flags. This data type corresponds to the MCD type C data format (Momentary Change Detect) that has historically been used in RTUs from the pre-microprocessor era. The MCD-C format permits the following input transition sequences (between consecutive data polls) to be detected:

No change, 0-1, 1-0, 0-1-0, 1-0-1, 0-1-0-1, 1-0-1-0

This type is useful for systems that are unable to generate a sequence of events stream (i.e. use the type IDs M_SP_NA_1, M_SP_TA_1 with Cause of Transmission <3> spontaneous) to indicate every change of state of a single binary input. The M_SP types provide much more detailed information that includes every transition of every input.

M_PS_NA_1 is rarely used. I think it would not be used in any device that could generate M_SP_NA_1 or M_SP_TA_1 data to report binary changes. It is probably suitable for very simple devices with very limited hardware or processing capability.

As you suggest, if M_PS_NA_1 is used, the Information Object Address that appears before each 40-bit data object refers to the first single binary information object in the structure, and 16 consecutive addresses are represented in each 40-bit data object (e.g. if the IOA value was 10, then the object contains the 16 single binary objects with addresses 10 through 25).

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)
Subject: RE: What is the meaning of smoothing factor?
Cc:
Bcc:
Attached:

The parameters defined in the IEC 60870-5-101 protocol (Threshold, Smoothing Factor, Low and High Transmission Limits) are all optional. Many devices do not support the Type IDs <110> - <113>.

Smoothing factor is a parameter used in some devices to perform an averaging of a measured quantity over time, to reduce the response to sudden transient variations in the quantity. The protocol does not define the exact meaning of the parameter, and it is up to the individual vendor how (and even if) they will use this parameter to modify the way in which this filtering is performed. The important aspect is that if the parameter is used, it has a numeric value, and the data type (scaled, normalized or floating point) corresponds to the measurand with which it is associated.

My personal recommendation is to ignore this parameter unless you have a specific purpose for it. Relatively few devices implement this parameter.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
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2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "ARAI, Kanehide" <arai@con.sdl.melco.co.jp>
To: <iec870-5@TriangleMicroWorks.com>
Subject: Re: Packed single-point
Date: Wed, 16 Feb 2000 14:48:11 +0900
X-Mailer: Microsoft Outlook Express 5.00.2314.1300
X-MIME-Autoconverted: from 8bit to quoted-printable by florida.melco.co.jp id OAA03170
Reply-To: iec870-5@TriangleMicroWorks.com

Thanks for comments.

I understood that M_SP is not usually used for just compacting M_SP.

Pérusse>So, to resume my comment, M_PS_NA_1 is not used for compacting
Pérusse>non-related SP to use less bandwidth. The use of M_PS_NA_1 must be
Pérusse>planned at the configuration step for logically binded SPs.

West>I think it would not be used in any device that
West> could generate M_SP_NA_1 or M_SP_TA_1 data to report binary changes.
West> It is probably suitable for very simple devices with very limited hardware or
West> processing capability.

Thanks a lot.

Kanehide ARAI
Mitsubishi Electric Corporation
arai@con.sdl.melco.co.jp

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Maurizio.Caporaletti@netit.alcatel.it
X-OpenMail-Hops: 1
Priority: Urgent
Subject: Existing Products implementing the IEC 870-5 101protocol
TO: iec870-5@TriangleMicroWorks.com
CC: Claudio.Micheli@netit.alcatel.it
Date: Thu, 17 Feb 2000 15:32:20 +0100
Reply-To: iec870-5@TriangleMicroWorks.com

Dear sir,
since we need to deliver a SCADA system, We are looking for:
- existing products (PLC or RTU) implementing the IEC 870-5 101 SLAVE protocol
- existing products (driver) implementing the IEC 870-5 101 MASTER
protocol in a Windows NT environment (possibly integrated in CIMPLICITY
from GE FANUC).
Looking forward to receive your information.
Best regards
M.Caporaletti C.Micheli

ALCATEL TAS - ITALY
Via Salaria, 68
02010 Cittaducale (RIETI)
ITALY

Tel. +39-0746-600613
Fax +39-0746-600513

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Sergio Costa" <scosta@bigfoot.com>
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: Existing Products implementing the IEC 870-5 101protocol
Date: Thu, 17 Feb 2000 12:18:19 -0500
X-Mailer: Microsoft Outlook CWS, Build 9.0.2416 (9.0.2910.0)
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

Dear Mr. Caporaletti

IEC 870-5-101 slave protocol:

Cybectec offers the SMP2 platform
(<http://www.cybectec.com/SMP/Cybectec%20SMP%20ENG.pdf>)
that could be used to communicate to devices that don't support the IEC 870-5 directly. The SMP2 can be equipped with 4 or 8 universal serial ports and one or two fast Ethernet (can be expanded up to 40 serial ports). It supports various protocols simultaneously, including the IEC 870-5 profiles 101 and 104
(http://www.cybectec.com/IEC_870_5/Cybectec%20Server%20IEC%20870-5.pdf)
(There are over 400 SMPs running the IEC protocol). One advantage is that you can broaden your choices for RTUs or PLCs and still use the IEC protocol to communicate to the master(s). Another advantage is that you can also connect at the same time to other equipment using different protocols like protection relays, or any devices with communication capabilities. Optionally the SMP2 could be equipped with a full featured Soft PLC supporting all the 5 programming languages defined in the IEC 1131-3 standard.

IEC 870-5-101 master protocol:

Cybectec offers an IEC 870-5-101 OPC server running under Windows NT that you could use to communicate to the SMP2 or any other device supporting IEC 870-5. All the data from the IEC 870-5-101 would be available to GE Cimplicity using its native OPC client.

All protocol parameters are easily configurable and commissioned using a Windows 95/NT toolset connected locally or remotely.

Sergio Costa
Manager, Automation Products
Cybectec Inc.
Real-Time Computer Systems
1290 St-Denis #803
Montreal, QC, Canada
H2X 3J7
Cell.: (514) 386-7870
Tel.: (514) 845-6195 ext.32
<http://www.cybectec.com>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: John Jansen van der Sligte <jjvds@compuserve.com>
Subject: RE: Existing Products implementing the IEC 870-5 101protocol
Cc:
Bcc:
Attached:

Hello M.Caporaletti and C.Micheli,

A question to you. Are you looking for real products that implemented the IEC 60870-5-101 unbalanced mode Master and Slave protocol or Test tools that are able to simulate a Master and/or a Slave to assist with e.g. the development?

Look at our website for IEC 60870-5-101 conformance tested products and also in case option 2 to the test tools at the same web site.

Greetings and available for further questions,
John.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.COM
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: "Grant Gilchrist" <grantg@hdap.com>
Subject: Re: Existing Products implementing the IEC 870-5
Cc:
Bcc:
Attached:

The D20 RTU, the D25 Multi-function IED and the D200 Substation Automation Platform all support the IEC 870-5-101 protocol. See our web site at www.strongthinking.com!

Grant Gilchrist, P.Eng.
GE HARRIS Energy Control Systems Tel: (403) 214-4519
grantg@hdap.com <http://www.geharris-ecs.com> Fax: (403) 287-7946
4525 Manilla Rd. S.E. Calgary, Alberta, CANADA T2G 4B6
"Any sufficiently advanced technology is indistinguishable from magic" - Clarke

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: Klüber Wolfgang <KlueberW@aat.de>
Subject: WG: Existing Products implementing the IEC 870-5
Cc:
Bcc:
Attached:

Dear Sirs,

following product recommendations for your SCADA solution

RTU Supplier with IEC870-5-101:

Schneider Automation (former AEG company)
Modicon Compact PLC with KOS260 communication module (=Compact RTU) and
IEC870-5-101 slave procedure, programmable with Concept (IEC1131
compatible), a Windows based programming tool

Address:
Schneider Electric,
Telemetry Systems Geadat
Sales Mr. Husemann, Tel. +49-6182-81-2347, Fax -2860
Steinheimer Straße 117
D-63500 Seligenstadt

SCADA Drivers:

kema (Standardisation Organisation in the Netherlands)
Support for development, implementation and testing (also on NT basis)

Address:
kema connect
Contact: H. Milatz <<...>> Tel: +31 26 356 39 12

Utrechtseweg 310,
NL-6812 AR Arnhem
P.O.Box: 9035
NL-6800 ET Arnhem, the Netherlands
Telephone: +31 26 3 56 91 11
Telefax: +31 26 3 51 56 06

Complete IEC870-5-101 Scope for SCADA and RTUs:

ALSTOM Automation Germany (former AEG company)
Viewstar 750 SCADS System based on Sun Sparc technology or Viewstar NT based
on Windows NT
Viewstar 750 Front End Processor (PC based) for various telemetry protocols

Modicon Compact RTU systems as mentioned above

Complete IEC870-5-101 implementation including file transfer

Supported transmission Systems: Leased line, dial up lines, X.25, radio links (micro wave, VHF and GSM), and others

Contact:

ALSTOM Automation GmbH
SCADA Systems for Oil/Gas/Water
Sales Mr. Peter Fritz
Lyoner Str. 9
D-60528 Frankfurt
Germany

I hope I could help you with the information above. Good luck.

Best Regards

Wolfgang Klüber

Wolfgang Klueber
ALSTOM Automation GmbH
SCADA SYstems for Oil/Gas/Water
Engineering and Communication SOGW A-F
Lyonerstr. 9, D-60528 Frankfurt/Main
Telefon +49-69-6649-3196 Telefax +49-69-6649-3072
Mobile +49-172-6352293
e-mail klueberw@aat.de

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Comments: Routed through UUCP Mailserver, Mailcoach V2.25
From: "zulhelmi abdullah" <zulhelmi@viscon.po.my>
To: <iec870-5@TriangleMicroWorks.com>
Subject: double point
Date: Mon, 28 Feb 2000 14:54:30 +0800
X-Mailer: Microsoft Outlook Express 4.72.3110.5
Reply-To: iec870-5@TriangleMicroWorks.com

hai everybody,

I would like to get more information on the double point. Does the "double point" refers to the two physical points that generates the operational equipment states?

thanks.

-zul-
design engineer
pdsb

To: iec870-5@TriangleMicroWorks.com
From: M Srinivas <Srinivas.Medida@scada.cmcltd.com>

Subject: Re: double point
Cc:
Bcc:
Attached:

Double point indications are used for Discrete devices with OPEN/CLOSE status. They are two input points into the RTU or whatever field equipment you are using. The indication typically has three states as following

- 1) 0, 1 -- Open
- 2) 1, 0 -- Close
- 3) 0,0 or 1,1 -- Error state when the device is stuck in transition.

So, the state shown in the system/MMI should consider both these states and display its status.

MS

Srinivas Medida	Ph : 91-40-3000508
Project Manager-SCADA Systems	Res : 91-40-6506751
ASDC-SCADA	Fax : 91-40-3000509
CMC Limited	ms@scada.cmcltd.com
India - 500019	http://scada.cmcltd.com
For Information on our Products/Activities	info@scada.cmcltd.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Schossig Thomas <SCHO@sat-automation.com>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: Raw Values
Date: Fri, 3 Mar 2000 16:43:20 +0100
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

Hi,

in the iec870-5-103 you will find in the description of the ASDU27 the
Referce Factor F, defined as Raw Values/Secondary Value (for each channel).
The disturbance value will be distrituted as "Raw Values". But what means
"Raw Value" for one channel (and not for the single disturbance value)?
Thank you.

> Thomas Schossig
>
> VA TECH SAT GmbH
> Ziegeleistr. 5
> D-99880 Waltershausen
>
> Phone: (+49/36 22) 65 06 463
> Fax: (+49/36 22) 65 06 815
> E-Mail: SCHO@sat-automation.com
> Internet: <http://www.sat-automation.com>
>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

zulhelmi abdullah, 11:47 AM, 3/14/00 +0800, SOE data with 7 byte time-tag

To: iec870-5@TriangleMicroWorks.com
From: "zulhelmi abdullah" <zulhelmi@viscon.po.my>
Subject: SOE data with 7 byte time-tag
Cc:
Bcc:
Attached:

hi all,

Our customer requires our RTU (controlled station) to have SOE data with 7 bytes time-tag.

For this, I have created user defined typeids namely "SOE Interrogation Command" under System Information In Control Direction and "SOE Point information" under Process Information in Monitor Direction. Whenever requested, the controlling station will execute the SOE Interrogation Command (this follow the common procedures of System Information In Control Direction) and the reply will be SOE Point Information (this follow the common procedures of System Information In Control Direction).

Is this implementation correct? or is there any standard "Common Procedure" to obtained the SOE data with 7 bytes time-tag from the RTU.

-zul-
pdsb

Goertz Bernd, 9:29 AM, 3/14/00 +0100, AW: SOE data with 7 byte time-tag

To: iec870-5@TriangleMicroWorks.com
From: Goertz Bernd <Bernd.Goertz@nbg6.siemens.de>
Subject: AW: SOE data with 7 byte time-tag
Cc:
Bcc:
Attached:

There are two amendments of IEC 60870-5-101 to the mentioned item.
Amendment 1: Extension of time tags, available as FDIS
Amendment 2: Supplementary definitions to IEC 60870-5-101, will be available
as CDV in April
Ask your national committee for both.
Bernd Goertz

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Mehdi Kavousian" <mkavousian@nri.ac.ir>
Sender: mkavousian@nri.ac.ir
To: iec870-5@TriangleMicroWorks.com
Date: Tue, 14 Mar 2000 13:14:27 +350
Subject: S/E bit in QOC for A_BREAK
X-Mailer: CWMail Web to Mail Gateway 1.8s, http://netwinsite.com/top_mail.htm
X-User-Info: 194.225.100.250
Reply-To: iec870-5@TriangleMicroWorks.com

Hi co-maillist,

We are implementing IEC 60870-5-101. For implementing A_BREAK.req in Command Transmission Procedure, we didn't find anything particular in the companion document (IEC 60870-5-101) to clarify what the S/E bit in QOC should be set to.

I think this should be exactly noted in definition of the related ASDU (C_SC_NA_1) in 7.3.2.1, or in definition of Qualifier of Command (QOC) in 7.2.6.26.

Regards,

Mehdi Kavousian, Research Assistant.
Dispatching Research Department,
Niroo Research Institute, IRAN.
P.O.BOX: 15745/448
Tel: +98 (21) 807 9386
Fax: +98 (21) 809 4774
Email: mkavousian@nri.ac.ir
Web: <http://www.nri.ac.ir>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Richardson, Brian" <Brian.Richardson@ngc.co.uk>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: RE: S/E bit in QOC for A_BREAK
Date: Tue, 14 Mar 2000 15:58:09 -0000
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Mehdi,

So far as I can tell you are correct that there is nothing in the Standard to say how to set the S/E in an A_Break.req.

In the example of figure 16 in 60870-5-5 the previous command was a select activation (CoT = 6, S/E = 1), so it is right that the deactivation would also have the select bit set (CoT = 8, S/E = 1).

In some instances it may be possible to attempt a break after the execute, but this would be unpredictable and would only be of use if the controlled end did not send an expected ACTCON response. In this case S/E = 0, CoT = 8 would be valid.

The safe implementation would be to simply react to the DEACT whenever it is received by clearing down the command BAF and ignore the S/E bit.

Any other ideas anyone?

Brian Richardson

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@trianglemicroworks.com
From: Goertz Bernd <Bernd.Goertz@nbg6.siemens.de>

Subject: AW: S/E bit in QOC for A _BREAK
Cc:
Bcc:
Attached:

I agree to that what Brian proposes. The "Break" is only used in combination with the select and execute procedure and never with the direct command procedure. The "Break" is neither a "select" nor an "execute". Therefore the distinction between select and execute is not a necessary definition. However, to make the standard quite clear, I propose an additional remark to this in the "supplementary definitions": "In case of cause of transmission = 8 (deact) and 9 (deactcon) the S/E-Bit is not relevant".
Other proposals?
Bernd Goertz

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Brodt Wolfgang, 05:11 PM, 3/15/00 +0100, RE: S/E bit in QOC for A _BREAK

To: iec870-5@trianglemicroworks.com
From: Brodt Wolfgang <BRW@sat-automation.com>
Subject: RE: S/E bit in QOC for A _BREAK
Cc:
Bcc:
Attached:

Hallo Bernd,
ich stimme Deinem Vorschlag zu !

Liebe Gruesse,
Wolfgang

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

"zulhelmi abdullah" <zulhelmi@viscon.po.my>, 10:07 AM, 3/24/00 +0800, SOE with 7 bytes time tag

To: iec870-5@TriangleMicroWorks.com
From: "zulhelmi abdullah" <zulhelmi@viscon.po.my>
Subject: SOE with 7 bytes time tag
Cc:
Bcc:
Attached:

hi all,

Our customer requires our RTU (controlled station) to have SOE data with 7 bytes time-tag.

For this, I have created user defined typeids namely "SOE Interrogation Command" under System Information In Control Direction and "SOE Point information" under Process Information in Monitor Direction. Whenever requested, the controlling station will execute the SOE Interrogation Command (this follow the common procedures of System Information In Control Direction) and the reply will be SOE Point Information (this follow the common procedures of System Information In Control Direction).

Is this implementation correct? or is there any standard "Common Procedure" to obtained the SOE data with 7 bytes time-tag from the RTU.

-zul-
pdsb

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)
Subject: RE: SOE with 7 bytes time tag
Cc:
Bcc:
Attached:

The longtimestamp data types in IEC 60870-5-101 have been published in the first addendum to 101 that has just been released. Each monitor data type that exists with a 24-bitmetag is also available with a 56-bitmetag. These are the new TypeIDs <30> to <40>

When configuring a system, the same type of time tag (3 octet or 7 octet) should be used for all time tagged data.

To see the correspondence of Type ID numbers and TypeIDs, download the interoperability document template from:
<http://www.trianglemicroworks.com/iec870-5/> and select the "Download Documents" link, and download the file "i1_inter.rtf".

Regards,
Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5/>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

"Zulhelmi Abdullah", 10:07 AM, 4/11/00 +0800, pulse duration in regulating step command

To: iec870-5@TriangleMicroWorks.com
From: "Zulhelmi Abdullah" <zulhelmi@viscon.po.my>
Subject: pulse duration in regulating step command
Cc:
Bcc:
Attached:

hai,

Does anybody know if IEC specifies the "actual duration" (the time in msec for example) for Short, Long, or Persistent pulse type in Regulating step command.

thanks.

From: Goertz Bernd <Bernd.Goertz@nbg6.siemens.de>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: AW: pulse duration in regulating step command
Date: Tue, 11 Apr 2000 10:11:03 +0200
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

That are system-specific parameters which have to be defined in the outstation and which depend on the switching times of the used disconnectors, circuit breakers etc., i.e. that parameters cannot be standardized by IEC TC57.

-----Ursprüngliche Nachricht -----

Von: Zulhelmi Abdullah [SMTP:zulhelmi@viscon.po.my]
Gesendet am: Dienstag, 11. April 2000 04:07
An: iec870-5@TriangleMicroWorks.com
Betreff: pulse duration in regulating step command

hai,

Does anybody know if IEC specifies the "actual duration" (the time in msec for example) for Short, Long, or Persistent pulse type in Regulating step command.

thanks.

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Yves Martinot <yves.martinot@technotrade.be>
To: iec870-5@TriangleMicroWorks.com
Subject: 870-5-101 : How can a secondary station call a primary station ?
Date: Tue, 25 Apr 2000 14:38:02 +0200
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

I want to use the IEC 870-5-101 in unbalanced transmission mode with a PSTN modem.

- > Can a secondary station (slave) call a primary station (master) ?
- > How can a secondary station initiate the communication with the primary station ?
- > How can the primary station get the 'link address' of the calling secondary station ?

Thanks in advance.

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

John Jansen van der Sligte, 4:00 PM, 4/25/00 +0200, RE: 870-5-101 : How can a secondary station call a primary station ?

To: iec870-5@TriangleMicroWorks.com
From: John Jansen van der Sligte <jjvds@compuserve.com>
Subject: RE: 870-5-101 : How can a secondary station call a primary station ?
Cc:
Bcc:
Attached:

You wrote

>I want to use the IEC 870-5-101 in unbalanced transmission mode with a
>PSTN
>modem.

>

>>> Can a secondary station (slave) call a primary station (master) ?
No, The unbalanced means an unbalanced interchange circuit and
configuration, so Master-Slave behaviour The Master is polling the slave
and the slave is NOT allowed to take initiative.

>>> How can a secondary station initiate the communication with the primary
>station ?
Use the balanced IEC 60870-5-101 configuration.

Regards and success,

John Jansen vander Sligte

+-----
| John Jansen vander Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)

Subject: RE: 870-5-101 : How can a secondary station call a primary station ?
Cc:
Bcc:
Attached:

As JohnJansen vander Sligte has already pointed out, this works best if you use balanced transmission procedures.

You have stated that you specifically want to use unbalanced transmission procedures. For this to work, the slave could dial the PSTN to connect to the master, but the master is responsible for initiating the link to the slave and controlling the message transactions. The slave does not initiate the message transactions.

This could work if (for example) the master had a list of all stations that could connect to the port that has been dialed up, and tries each possible link address after the connection is established. The master should probably go through a normal link initialization procedure (end-of-initialization, station interrogation, etc.) once the correct link address was determined.

Using balanced transmission would be less cumbersome.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Jan Wubs" <j.wubs@datawatt.nl>
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: 870-5-101 : How can a secondary station call a primary station ?
Date: Wed, 26 Apr 2000 11:29:36 +0200
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

You wrote

I want to use the IEC 870-5-101 in unbalanced transmission mode with a PSTN modem.

- > Can a secondary station (slave) call a primary station (master) ?
- > How can a secondary station initiate the communication with the primary station ?
- > How can the primary station get the 'link address' of the calling secondary station ?

Thanks in advance.

We had the same problem using PSTN-RTU's and unbalanced transmission and are using the procedure as described in our PID, chapter 6. We also added some private ASDU for this purpose.

Jan Wubs
Datawatt Telecontrol Systems
Phone: +31 (0)561 617205
Fax: +31 (0)561 617948
E-mail: j.wubs@datawatt.nl
Web: www.datawatt.nl

6 LINK LAYER

The following international standards are valid:

- IEC 870-5-1: Transmission Frame Formats
- IEC 870-5-2: Link Transmission Procedures

6.1 Selection from IEC 870-5-1: Transmission Frame Formats

As in IEC 870-5-101 exclusively the FT 1.2 frame format is allowed. Formats with fixed and variable block length are admitted. The single control character I transmission is admitted.

6.2 Selection from IEC 870-5-2: Link Transmission Procedures

The maximum length of link frames is set as a fixed system parameter. If required the maximum length for each direction may be different.

The frame with fixed length has no link user data.

The transmission procedures SEND/NO REPLY, SEND/CONFIRM and REQUEST/RESPOND have to be used as required. The interface between the link layer and the service user is not defined in this specification.

Unbalanced transmission will be used exclusively. The substations are always secondary (slaves) and the central control station is always primary (master).

Note that the systems connected via a switched circuit follow these rule as well although a secondary (slave) system may initiate a connection. In this case the secondary system initializes the local communication equipment, the primary system sends out a broadcast using Service function ARequest status of link@ (Function code 9) and the secondary system responds, sending it's address in the address field of the reply, with the Service function AStatus of link@ (Function code 11).

The control field is specified in IEC 870-5-2: Link Transmission Procedures, section 5.1.2.

The address field A of the link is two octets. The address number of the broadcast command is 65535. Broadcast may be SEND/CONFIRM on dial-up lines, on fixed lines broadcast is always SEND/NO REPLY.

Note that, in order to indicate the secondary address when initiating dial-up lines, the CONFIRM on a broadcast should be a fixed frame, with the secondary station address filled in, and not a single character.

Note also that the broadcast procedure in not conform the current IEC 870-5 specifications.

The contents of the address field specify the station address. The address transmitted in a frame from primary stations to secondary stations specifies the destination address. The address transmitted in a frame from secondary stations to primary stations specifies the source address.

The Request/Respond polling procedure to scan data of class 2 is the basic procedure. If data of class 1 is available, this will be indicated as defined in the standard by means of the ACD bit.

7.3.1 Type Ident 136

136 (C_HU_NA_P): Hang up dialled line

1	0	0	0	1	0	0	0	Type Identification
0	0	0	0	0	0	0	1	Variable Structure Qualifier
								Cause of Transmission
								(2 octets)
								Common Address of ASDU
								(2 octets)

	Information Object Address
	(2 octets)

Cause of Transmission:

In control direction <6> activation

In monitor direction <7> activation conformation

The controlling station will send ASDU-136 to indicate the termination of a dialled connection.

The controlled station may optionally confirm the termination.

The controlling station will terminate the connection directly after sending. The controlled station should terminate after receiving (optionally after a rather useless confirmation).

7.3.2 Type Ident 137

137 (C_LD_NA_P): Login Data

1	0	0	0	1	0	0	1	Type Identification
0	0	0	0	0	0	0	1	Variable Structure Qualifier
								Cause of Transmission
								(2 octets)
								Common Address of ASDU
								(2 octets)
								Information Object Address = 0

	(2 octets)
	Login password
	(8 octets)

Cause of Transmission:

in control direction <5> Request access

in monitor direction <5> Access granted/denied (P/N ack in bit 7)

This ident may be sent by a controlling station in order to get access to a restricted controlled station.

The ident is sent directly after a link initialization procedure. The identification (password) should be maximum 8 octets. If a controlled station receives a matching identification, it is confirmed with a positive acknowledge and further communication may proceed. The password structure is an OS8iASCII type (ref 870-5-4 section 6.7). Password length cannot exceed 8 characters. Application exchanging passwords should verify the maximum length. Passwords length may be less than 8 characters. The space character (dec 32, hex 20, octal 40) is used as filler character.

If a controlled station receives an unknown identification, it is confirmed with a negative acknowledge and the controlled station terminates the connection (immediately).

The usage of this ASDU is optionally on a per link (station) basis.

From: "Jacek na ONET" <jgron@wr.onet.pl>
To: <iec870-5@TriangleMicroWorks.com>
Subject: DNP3 Absolute Time Issue
Date: Fri, 5 May 2000 10:55:35 +0200
X-Mailer: Microsoft Outlook Express 5.50.3825.400
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

DNP V3.00 Data Object Library (P009-OBL) Document defines in Chapter 9 Time and Date Object OG/OV=50/01 as follows:
"The time and date object is an information object that represents the **absolute time** of day and date. This object should be used for time-synchronisation."

So far, for many years it was obvious for me that meaning of words "absolute time" is equivalent to GMT (Greenwich Mean Time) but It has changed.

In my latest project our system sends data via DNP3.00 L2 channel to SCADA systems from well-known manufactures. To my surprise it occurred that:

- 1) Manufacturer A is coding time using GMT as a reference,
- 2) Manufacturer B is coding time using Local Time.

As a result time data sent from our system are interpreted in different way (fixed time shift). Manufacturer B states that coding time as a GMT is "project specific" and does not seeks from any official DNP resources.

Could anyone definitely solve this issue. The best would be to point to appropriate "official" DNP resource.

Regards

Jacek Gronowski

From: awest@TriangleMicroWorks.com (Andrew West)
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: DNP3 Absolute Time Issue
Date: Fri, 5 May 2000 11:36:39 -0400
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

> In my latest project our system sends data to SCADA systems
> from well-known manufactures. To my surprise it occurred that:
>
> 1) Manufacturer A is coding time using GMT as a reference,
> 2) Manufacturer B is coding time using Local Time.
>
> As a result time data sent from our system are interpreted in
> different way (fixed time shift). Manufacturer B states that
> coding time as a GMT is "project specific"

Choice of timebase for system time in a SCADA system is a system design issue. It could be local, GMT, and if using local time it could change or not change with summertime, etc.

Some protocols have mechanisms that indicate the use of summertime some do not. Systems that have non-homogenous protocol mixtures have the added difficulty of coping with this.

My personal choice is to disable summertime changes, so the timebase never moves, otherwise there is potential for mis-sorting of event times during the time transitions.

The problem Jacek Gronowski reports is not protocol-dependent, it is a system design issue. He seems to be saying that he has a mixture of devices that expect different timebases. This is not going to work well.

Set all the devices to the same timebase. I suspect in this system that means using GMT and telling the device that uses local time that it is in the GMT timezone and does not use summertime.

FWIW, I also prefer to use GMT, especially for systems that span timezones.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Date: Sun, 14 May 2000 20:27:57 +0200
From: Michael Mann <michael.mann@upcnet.es>
X-Mailer: Mozilla 4.5 [es]C-UPCNET (Win98; I)
X-Accept-Language: es-ES, es, en
To: iec870-5@TriangleMicroWorks.com
Subject: Request for Information: IEC 870-5-102
X-Infomail-Id: 958329253.452C010A811066.9253
Reply-To: iec870-5@TriangleMicroWorks.com

I'd like to know if where I can find background information concerning the IEC 870-5 set of standards. My company, Schlumberger Industries, is currently developing a data concentrator to be used in the new spanish liberalized electricity market, in which we are implementing IEC 870-5-102 for remote meter reading.

thank you,
Michael Mann

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: J.A.W.JansenvanderSligte@kema.nl
X-Lotus-FromDomain: KEMA
To: iec870-5@TriangleMicroWorks.com
Date: Mon, 15 May 2000 12:24:04 +0200
Subject: IEC 60870-5-101 gateway
Reply-To: iec870-5@TriangleMicroWorks.com

Members,
Does someone know if a Gateway IEC 60870-5-101 from unbalanced <--> Balanced in exists ? or in operation?

Or is there a supplier who is able to supply a IEC 60870-5-101 Unbalanced/Balanced Gateway.

Appreciate your quick respond.

Regards,
John Jansen van der Sligte.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: Brodt Wolfgang <BRW@sat-automation.com>
Subject: RE: IEC 60870-5-101 gateway
Cc:
Bcc:
Attached:

Hallo John,

VA TECH SAT is able to supply a IEC 60870-5-101 unbalanced/balanced GATEWAY.
On Your visit to VA TECH SAT we can talk about that possibility.
Maybe Han Jauw can give You quickly some details about our Automation System
AK 1703.

Best Regards,

> Wolfgang Brodt
>
> VA TECH SAT GmbH & Co
> Ruthnergasse 1
> A-1210 Wien
>
> Phone (+43/1) 29129 4621
> Fax (+43/1) 29 28 838
> e-mail: brw@sat-automation.com
> Internet: <http://www.sat-automation.com>
>
>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@trianglemicroworks.com
From: dr. Horváth Péter <horvath-p@prolan.hu>
Subject: RE: IEC 60870-5-101 gateway
Cc:
Bcc:
Attached:

Dear Mr. John Jansen van der Sligte,

The Prolan Co. has an RTU (so called ProField-B RTU) witch can be applicable for this gateway function.

The central part of this RTU is a head unit witch consists of mainly intelligent communication modules. These modules realises different protocols (IEC 101, Siemens 8FW, Modbus, S3964, ...). We have both balanced and unbalanced 101 modules and have programs for both side of communication: controlled and controlling side. The intelligent communication modules have RS232 or RS485 interface.

This RTU is used in Hungary very widely in the electric power industry, and some of them really do the needed function.

Péter Horváth

dr. Horváth Péter
horvath-p@prolan.hu
Prolan Co.
H-1034 Hungary, Budapest Seregély 24.
Tel : (+36 1) 367-79-59/112
Fax : (+36 1) 436-00-80

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: "Jan Wubs" <j.wubs@datawatt.nl>
Subject: RE: IEC 60870-5-101 gateway
Cc:
Bcc:
Attached:

Hallo John,

Datawatt is now developing a IEC 60870-5-101 unbalanced/balanced GATEWAY for the CARS of the GASUNIE. This Gateway is connecting then CARS (balanced) to our telecontrol system (unbalanced).

The Gateway is based on the D15-EMAC platform that is already used as IEC 60870-5-101 RTU and as MODBUS/IEC 60870-5-101 GATEWAY.

We would like to discuss this possibility with you.

Best Regards,

Jan Wubs
Datawatt Telecontrol Systems
Phone: +31 (0)561 617205
Fax: +31 (0)561 617948
E-mail: j.wubs@datawatt.nl
Web: www.datawatt.nl

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: awest@TriangleMicroWorks.com (Andrew West)
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: IEC 60870-5-101 gateway
Date: Mon, 15 May 2000 11:13:25 -0400
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

John Jansen van der Sligte asks:

> Does someone know if a Gateway IEC 60870-5-101 from
> unbalanced <--> Balanced in exists ? or in operation?
>
> Or is there a supplier who is able to supply a IEC 60870-5-101
> Unbalanced/Balanced Gateway.

Triangle MicroWorks has a software-only solution for this: A gateway product running on a generic Windows 95/98/2000/NT platform.

This acts as a gateway, data concentrator and protocol convertor between any combination of masters and slaves (controlling and controlled stations) using IEC 60870-5-101, 60870-5-103 or DNP3, and also provides an OPC Server. IEC -101 balanced and unbalanced transmission modes are both supported.

The product also allows data to be mapped between multiple slaves and multiple masters.

Contact Erin Hall [<mailto:ehall@TriangleMicroWorks.com>] for more information.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: zs@cc.cednet.gov.cn
To: iec870-5@TriangleMicroWorks.com
Subject: Asking for help
Date: Wed, 17 May 2000 11:04:42 +0800
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Members,

I have worked in a power automation department for 5 years, having experience in using and developing telecontrol devices and system, especial in protocol such as IEC, DNP, Polling. Now I am losing my job. I am looking for a chance to continue in my field. hanks for any help.

zhang sheng
2000.5.17

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

manoj ranaweera, 1:45 PM, 5/17/00 +0400, Re: Asking for help

To: iec870-5@TriangleMicroWorks.com
From: manoj ranaweera <pbkdsc@emirates.net.ae>
Subject: Re: Asking for help
Cc:
Bcc:
Attached:

Zhang

Please send your CV stating your country of residence. I might be able to forward your CV to a potential employee.

Regards

Manoj Ranaweera
Senior SCADA Engineer
PB KDSC

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Igor Jarc" <igor.jarc@email.si>
To: "IEC870-5 MAILLIST" <iec870-5@TriangleMicroWorks.com>
Subject: IEC 104 duplication of messages?
Date: Fri, 19 May 2000 08:07:56 +0100
X-Mailer: Microsoft Outlook Express 5.00.2014.211
Reply-To: iec870-5@TriangleMicroWorks.com

HomeHello everyone,

I have some questions about how to implement the IEC 870-5-104 standard.

In standard is defined that data are correctly transmitted if transmitter get correct N(R) and then it may delete the correctly transmitted ADPUs from the buffer.

My question is how I know which data are correctly received. One method for detecting errors is correct sequence of N(S) in I frame. If N(S) sequence is wrong then station close/open connection clear V(S) and V(R) state variable and opposite station resend ADPUs.

I suppose that ADPUs are correctly received if N(S) sequence is correct and receive

station(station A) send back S (or I) format frame to opposite station(station B) (Figure 10 in standard). The problem is when station A transmit S format and station B doesn't receive this telegram. Then station B after timeout close/open connection clear V(S) and V(R) state variable and resend ADPUs. ADPUs on station A are duplicated. How to solve this problem?

Igor

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Lotus-FromDomain: ABB_CN01@ABB_NOTES@INTERNET
From: bob-bo.liu@cn.abb.com
To: iec870-5@TriangleMicroWorks.com
Date: Wed, 24 May 2000 16:37:27 +0800
Subject: IEC-870-5-x
Reply-To: iec870-5@TriangleMicroWorks.com

Dear Members,

I have the IEC60870-5-1xx documentations, but I want to find some information from IEC60870-x-x, such as the IEC60870-5-3, IEC60870-5-4, IEC60870-5-5, files. How can I get it? Or who can send me some of it!

I do appreciate your help.

Thanks a lot and best regards,

Bob Liu/ ABB China Ltd.

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: J.A.W.JansenvanderSligte@kema.nl
Subject: Re: IEC-870-5-x
Cc:
Bcc:
Attached:

- For the specification of the standard look at www.iec.ch for your local representative who is able to deliver you the documents.
- look at the triangle site for more information
- also on www.kemaconnect.nl is info available and downloadable.

In case you need more information, you'r welcome,

John Jansen van der Sligte.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte @kema.nl
| ph. +31 26 356 6106
|
| KEMA, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
+-----

++++
A general description of KEMA's protocol (quality assurance) services is:

- 1.COACHING & CONSULTANCY during development
- 2.TYPE CERTIFICATION (conformance testing) after development
3. LIFE-CYCLE SUPPORT after development
4. TEST SOFTWARE
5. For which Protocols?
 - IEC 870-5 general
 - IEC 870-5-101
 - IEC 870-5-102
 - IEC 870-5-103
 - IEC 870-5-104 (IEC 870-5-101 usingTCP/IP)
 - ELCOM
 - DNP 3.0
 - ICCP (IEC 870-6, TASE.2)
 - UCA2CASM/GOMSFE
 - DLMS
6. Attention: visit our website www.kemaconnect.nl.

++++
+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: Patricio Asensio <masensio@teleline.es>
Subject: RE: IEC-870-5-x
Cc:
Bcc:
Attached:

Dear Bob,

There should exist an official bureau for normalization in your Country from which you can get the booklets you ask for.

You can address the IEC directly too:

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe, Geneve, Suisse.

Best Regards ,

P. Asensio (IRTA)

+++ Visit the IEC 870-5 Maillist Web Site

+++ <http://www.TriangleMicroWorks.com/iec870-5>

+++ for guidelines of this maillist, FAQ,

+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)
Subject: RE: IEC 104 duplication of messages?
Cc:
Bcc:
Attached:

This is a normal SCADA issue. A slave device may have buffered information that can only be cleared when the master confirms that it was received.

If the slave does not receive the confirmation, it may send the same data two (or more) times. The master therefore can receive the same information several times.

This problem exists for most (if not all) event-reporting protocols. It is not specific to 104.

The application in the master must be able to accept repeated data and process it in a reasonable manner so as to achieve a correct image of the field data.

The protocol can provide mechanisms that allow the system to verify that data has been received. It does not dictate how the master should handle possible repeated data. That is an application implementation issue.

Regards,
Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: J.A.W.JansenvanderSligte@kema.nl
Subject: Re: IEC-870-5-x
Cc:
Bcc:
Attached: c:\program files\qualcomm\eutora mail\attach\Mime.822;

Hello Bob,
The documents are available for you at:

CHINA / CHINE
China Standards Information Center
Zhi Chun Street 4
PO Box 8084
Haidian District
CN-Beijing 100088
TP: +86 10 6202 2794
TF: +86 10 6237 7213
E-mail: csiclib@public.fhnet.cn.net

Success,
John.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: manoj ranaweera <pbkdsc@emirates.net.ae>
Subject: Re: (Fwd) RE: True Digital SCADA
Cc:
Bcc:
Attached:

Philip

We are currently designing a project which will be based on fibre to RTU. I can't tell too much at present as it has not been tendered out yet. I will let the members know the details once a contractor is chosen.

I just wanted to find out whether we are the first to do such a system.

The system will have two control centers and 65-70 RTUs. SDH backbone will connect the control centers. SDH nodes will be placed at some of the transmission substations. RTU can communicate at 64 kbps or higher.

regards

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Date: Fri, 02 Jun 2000 09:00:15 +0400
From: manoj ranaweera <pbkdsc@emirates.net.ae>
Subject: SCADA - Unix
X-Sender: pbkdsc@emirates.net.ae
To: scada@gospel.iinet.net.au, iec870-5@TriangleMicroWorks.com
X-Mailer: QUALCOMM Windows Eudora Light Version 3.0.6 (32)
Reply-To: iec870-5@TriangleMicroWorks.com

Dear members

Have you ever come across unix based viruses?

Have you ever heard of Unix based SCADA systems hacked by unauthorised personnel?

I suppose if its MS Windows based and connected to corporate LAN or dial-up modem, all above two cases are possible.

regards

Manoj Ranaweera
Senior SCADA Engineer
PB Kennedy & Donkin - Systems & Communications
+971 (0)50 6173871
pbkdsc@emirates.net.ae

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: "andrew" <ovlov@ihug.com.au>
Subject: Re: SCADA - Unix
Cc:
Bcc:
Attached:

Greetings,

Unix worm is one virus i have heard of. You might say it was the original. I believe it wrote a cyclic 1 or 0 pattern through data. Kind of like a zig zag bit pattern.

Unix based servers on the net are compromised regularly. This is a very big topic. Many denial of service attacks use multiple compromised unix machines across the web.

Its possible to compromise any system with access from the outside world. It is of course possible to run completely isolated system or have excellent security on your access points. This naturally makes it harder.

Ironically the best place to research this is to visit newsgroups in the alt.2600 style, or hacker web sites. They have info and tools on these sites that can give you a decent list of vulnerability points to UNIX and Windows systems.

MS windows based system as you correctly state would be more vulnerable particularly if connected to a net gateway. MS windows exploits are many and widely circulated

Isolation and protecting information regarding access methods is one excellent way to reduce risk. There are also surveys that state that the majority of attacks to such systems come from disgruntled employees or ex-employees with detailed knowledge of the system in question.

this is my 0.02c worth
Regards

Andrew Baluk

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: "Frances M. Cleveland" <fcleve@ix.netcom.com>

Subject: Re: (Fwd) RE: True Digital SCADA
Cc:
Bcc:
Attached:

City Public Service of San Antonio installed an all-fibre demonstration project, with fiber not only to substation RTUs, but also on two distribution feeders for distribution automation. H&L Instruments of New Hampshire provided the interfaces from the fiber optic cables to the Intelligent Electronic Devices. The system demonstrated the use of UCA protocol to RTUs, LTC controllers, voltage regulators, and automated switches. The demonstration has been successfully completed. Fiber optic cables have been installed (or will be) to all substations, but spread spectrum radio will be used to reach IEDs on the feeders. CPS is installing about 200 automated switches a year.

Frances Cleveland

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Frances M. Cleveland, 09:45 AM, 6/2/00 -0700, Re: SCADA - Unix

To: iec870-5@TriangleMicroWorks.com
From: "Frances M. Cleveland" <fcleve@ix.netcom.com>

Subject: Re: SCADA - Unix

Cc:

Bcc:

Attached:

Security of SCADA systems is a big topic in the US. Now that Y2K is over, security is the next big topic, and is involving the FBI, NERC, EPRI, and others.

There are many good books on security and network hacking. One good one is "Hacking Exposed" by McClure, Scambray, & Kurtz. Another is "Mastering Network Security" by Brenton. You can get these through Amazon.com as one source.

Frances

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Date: Sun, 04 Jun 2000 17:35:27 +0400
From: manoj ranaweera <pbkdsc@emirates.net.ae>
Subject: SCADA/DCS
X-Sender: pbkdsc@emirates.net.ae
To: scada@gospel.iinet.net.au, iec870-5@TriangleMicroWorks.com
X-Mailer: QUALCOMM Windows Eudora Light Version 3.0.6 (32)
Reply-To: iec870-5@TriangleMicroWorks.com

Dear members

I have one more query to ask. What are your views on extending a DCS system (for example, Yokogawa) to cover a sewerage/drainage telemetry SCADA system?

For the argument, let's say include 100 RTUs of moderate size (pump stations) and use mixture of communications (radio, dial-up lines, etc) and have a SCADA master station in addition to DCS (sewerage treatment plant) control centre. I assume there will be a problem of communications routing and management as DCS (Yokogawa, as an example!!) packages are not designed with this in mind.

Obviously, the DCS supplier will try to convince its manageable prior to order, but might find himself/herself (is company a he or she, and does it matter in the middle east, anyway) in difficulty once he has to implement it.

Would your suggestion be "stop" before getting too deep, and go for traditional WAN based SCADA or take a chance with the DCS approach?

regards

Manoj Ranaweera
Senior SCADA Engineer
PB Kennedy & Donkin - Systems & Communications
+971 (0)50 6173871
pbkdsc@emirates.net.ae

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: manoj ranaweera <pbkdsc@emirates.net.ae>
Subject: True Digital SCADA
Cc:
Bcc:
Attached:

Dear members

Thanks for all those who commented. I hope there will be few more responses on true digital SCADA. By the way, who are the main players in supply of SDH and PDH equipment? I know of Marconi and Nortel Networks, both products are promoted in the middle east. I wouldn't mind receiving some catalogues, if any vendor's are listening.

regards

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: manoj ranaweera <pbkdsc@emirates.net.ae>
Subject: Re: SCADA - Unix
Cc:
Bcc:
Attached:

Dear members

Thanks for all your comments. Are there any listeners out there whose Unix based SCADA system had virus infections or assaults from hackers before? If so, what actions did you take to safeguard your network from further attacks other than to isolate your network?

regards

Manoj Ranaweera
Senior SCADA Engineer
PB Kennedy & Donkin - Systems & Communications
+971 (0)50 6173871
pbkdsc@emirates.net.ae

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Nuijs, G.W." <W.Nuijs@tennet.org>
To: "'iec870-5@TriangleMicroWorks.com'" <iec870-5@TriangleMicroWorks.com>
Subject: RE: True Digital SCADA
Date: Mon, 5 Jun 2000 16:55:22 +0200
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Dear Manoj,

TenneT is the national grid operator of the Netherlands, operating a grid consisting of 220 kV and 380 kV lines. The total grid length is about 2500 km, the number of stations is 25. For the telecommunication between the stations and from the central operations centre to the stations we use a SDH-network at STM-1 level, with two Add-Drop Multiplexers at every station (for redundancy). The fibres are located in the lines, using Optical Ground Wires (OPGW). In the SDH-network 2 Mb-circuits are routed between the stations and from the stations to the central operations centre. The 2 Mb-circuits are (de)multiplexed in PDH-muxes tot 64 kb/s or analogue circuits. These circuits are used for speech, modemconnections, RTU-circuits, lineprotection, etc.

The supplier of our telecom-network is Alcatel, chosen amongst other criteria because they could prove that their equipment did satisfy our EMC-requirements and had little differential delay, which was a demand from the lineprotection-equipment.

Regards,

G.W. Nuijs

e-mail: W.Nuijs@tennet.org
fax: 026 373 1213
tel: 026 373 1609

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Originating-IP: [194.225.100.250]
From: "Mehdi Kavousian" <mkavous@hotmail.com>
To: iec870-5@trianglemicroworks.com
Subject: Unbalanced or Balanced
Date: Sat, 10 Jun 2000 08:39:44 IRST
Reply-To: iec870-5@TriangleMicroWorks.com

Hi,

According to IEC 870-5-2 section 6, in balanced mode each station may initiate message transfers, Also acquisition of events is in direct in balanced mode but in unbalanced it must wait until request (IEC 870-5-5 section 6.4).

I think these two sentence state the most important differences between balanced and unbalanced mode. But if we assume that communication speed is high enough (9.6 kbps) and Data Request 1 frame will be available properly then response time of these two modes will be the same. In this regard, I would like to know what is best suited application for balanced mode and which type (balanced/unbalanced) are used more in the SCADA systems?

Best regards
Soufi

Get Your Private, Free E-mail from MSN Hotmail at <http://www.hotmail.com>

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)

Subject: RE: Unbalanced or Balanced
Cc:
Bcc:
Attached:

One of the primary differences between balanced and unbalanced operation in IEC 60870-5-101 is that in balanced transmission, the communication interface on a master (controlling station) can only be attached to a single slave (controlled station). Unbalanced transmission allows multiple slaves to share a single communication channel, and the master controls access to the channel by issuing data link requests.

In balanced transmission, the slave can send data to the master as soon as the data becomes available, meaning that the latency between the field event and notification to the master is often very short. Balanced transmission requires the master to continuously or periodically poll the slave device(s).

Both modes are in common use. Either may be more suitable for a particular installation depending on the frequency with which data is generated, the communications media and the communications network topology. The decision to use one or the other is usually driven by cost once the above conditions are considered.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Patricio Asensio <masensio@teleline.es>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: IEC 870 5 references on Building Automation Supervision and Control
Date: Sun, 11 Jun 2000 06:20:02 +0200
X-Mailer: Microsoft Internet E-mail/MAPI - 8.0.0.4211
Reply-To: iec870-5@TriangleMicroWorks.com

Dear Coleages,
Could somebody provide us with references of use of IEC 870 5 as transmission protocol, to remotely supervise and control Building technical devices such as Air Conditioning Equipments, Uninterrupted Power Supplies, Emergency Electro Generators, Elevators, and similar devices.? Many thanks in advance.
IRTA, Patricio Asensio

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Richardson, Brian" <Brian.Richardson@uk.ngrid.com>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: Use of 3 octet Time-tags in CS101
Date: Wed, 21 Jun 2000 13:46:28 +0100
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Experience from testing a vendor's implementation...

The normal 3 octet time tag only provides up to one hour (working on the assumption that a SCADA system which doesn't collect the data within the hour isn't worth buying).

One of our suppliers uses the invalid bit in the object time-tag to indicate that the data is more than one hour old. This seems to be a good idea, but it is outside of the standard (which does not define the reasons why the bit should be set).

Is this used anywhere else? Does any one have a different method? Should it be supported by the IEC committee? (no, I am not suggesting Addendum 2 is re-worked).

Regards,
Brian Richardson

NOTE: This E-mail is private and confidential to the named recipients. Any information provided is given in good faith. However, unless specifically stated to the contrary, National Grid accepts no liability for the content of this E-mail, or for the consequences of any actions taken on the basis of the information provided, unless that information is subsequently confirmed in writing. The unauthorised copying of any information contained in this E-mail to persons other than the named recipients is strictly forbidden.

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)

Subject: RE: Use of 3 octet Time-tags in CS101
Cc:
Bcc:
Attached:

Look at IEC 60870-5-101 Clause 7.3.4.4 (the description of Type ID 103, C_CS_NA_1, the clock synchronization command). It shows that the clock time can be sent in the monitor direction with cause of transmission <3> Spontaneous, and states:

"In addition to the procedure shown in 6.7 of IEC 870-5-5, C_CS_NA_1 may be used in monitor direction for spontaneous transmission of the clock time. For example to indicate the change of hour at an outstation, thus enabling messages to be stored for more than 1 h in an outstation without ambiguity."

The procedure is to send C_CS_NA_1 in the monitor direction to establish a time base for subsequent 3-octet timestamps. When a timestamp is to be sent that is more than 1 hour later than the previously reported timebase (sent with C_CS_NA_1), issue a new C_CS_NA_1 to establish a new timebase for subsequent timestamps. An alternative is to issue a spontaneous C_CS_NA_1 for the same purpose on the roll-over of the hour. This procedure allows the correct timestamp value to be reported, regardless of the time elapsed between the time of the event and the time of reporting.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: "Campbell, John" <John.Campbell@let-it-be-thus.com>

Subject: RE: Use of 3 octet Time-tags in CS101
Cc:
Bcc:
Attached:

Brian,

Certainly when the SCADA system is fully functional one would expect data to be recovered within one hour - although two events milliseconds apart can still cross an hour boundary. The real problem is if there is a communications failure which causes an RTU to be incommunicado for some hours. The ability to recover data which spans at least 12 and preferably 24 hours is valuable.

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: J.A.W.JansenvanderSligte@kema.nl
Subject: Re: Use of 3 octet Time-tags in CS101
Cc:
Bcc:
Attached: c:\program files\qualcomm\eudora mail\attach\Mime8.822;

Brian,

In addition to the already supplied comments, the IV-bit in the time stamp is used to indicate that the time stamp itself is invalid. Using it to indicate that the DATA itself is more than one hour old is in my opinion indeed outside the standard and therefore increases the interoperability risk. Data quality should use the Quality Descriptors for that purpose, by the way. My recommendation is: only use the time IV-bit to indicate clock skew, and send a spontaneous clock message, either on the hour or before new events after an hour change.

Our test experience:

The following statement is part of our IEC 60870-5-101 conformance testplan:

"The Controlled station sends a spontaneous clock synchronisation message to indicate the date and hour of subsequent ASDUs with short time tag and with COT=3 that contain events"

During every test of a slave system we test this item even if this is a recommendation in the cs101 standard (par.7.3.4.4). Not every supplier is using this feature, but about 50% of the tested equipment by KEMA is sending a SPONT clock sync message after hour shift. The test report of the equipment is available via the supplier of the equipment if it is registered in the IEC 60870-5-10x Type Conformance Test Register.

Regards,
John Starrenburg
John Jansen van der Sligte

+-----+
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
|
| Unicom@kema.nl
| ph. +31 26 356 6142
+-----+

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Sender: Ian@winproxy
X-Mailer: QUALCOMM Windows Eudora Light Version 3.0.6 (32)
Date: Thu, 22 Jun 2000 10:57:58
To: iec870-5@TriangleMicroWorks.com
From: Ian Caddy <ianc@systemcorp.iinet.net.au>
Subject: Re: Use of 3 octet Time-tags in CS101
Reply-To: iec870-5@TriangleMicroWorks.com

Hi,

It is common practise to use the invalid bit in the 3-byte time stamp of an event to indicate that the RTU is not confident of the accuracy of the timestamp.

Normally the master station is set to update the time in an RTU every x minutes. If this is not fulfilled the RTU has no way of knowing it is in synch with the master and hence marks the time as invalid.

The same can apply if using a GPS clock and it goes offline, then the invalid bit is also used.

We also use the method described by Andrew West for an hour rollover by sending a spontaneous 103 with the current hour, date etc.

Ian Caddy

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Juan Arrecubieta, 01:17 AM, 6/27/00 +0200, Initializing on 870-5-102

To: iec870-5@TriangleMicroWorks.com
From: "Juan Arrecubieta" <juan-arrecubieta@ctv.es>
Subject: Initializing on 870-5-102
Cc:
Bcc:
Attached:

I'm trying to develop an application to get readings from an energy meter using companion standard 870-5-102 and through the optical interface.

I understand it begins with a repeated request status of link, then a reset status of link and then... a new request status of link or a general interrogation? and if so, ASDU is ? when must I send the access password and which would the answer be? Could I get any example anywhere?

Thank for this wonderful mail-list and for the answer.

From: J.A.W.JansenvanderSligte@kema.nl
X-Lotus-FromDomain: KEMA
To: iec870-5@TriangleMicroWorks.com
Date: Thu, 29 Jun 2000 08:55:42 +0200
Subject: Dutch IEC 60870-5-101 User Conventions
Reply-To: iec870-5@TriangleMicroWorks.com

Hello members,

Just for information and in case someone is interested.

The "Dutch IEC 60870-5-101 User Conventions" are available and to be obtained through the IEC representative in the Netherlands in the English language.

SPE 6757:2000 EN

Dutch user conventions on IEC 60870-5-101 - Specification of the standard Transmission Protocol on behalf of the Dutch utilities - Conventions for Basic Telecontrol Tasks

Price NLG 110.50 excl. btw (onder voorbehoud)

Pagina's 191

Publicatiedatum 2000-04-01

Status Geldig

www.nni.nl

Best regards,

John Jansen van der Sligte

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte@kema.nl
| ph. +31 26 356 6106
|

| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Date: Thu, 29 Jun 2000 09:58:03 +0200
From: "Yuriy A. Golovatenko" <uee@givc-2.energy.gov.ua>
X-Mailer: The Bat! (v1.41)
Organization: GPUUEE
To: Juan Arrecubieta <iec870-5@TriangleMicroWorks.com>
Subject: Re: Initializing on 870-5-102
Reply-To: iec870-5@TriangleMicroWorks.com

Dear Juan,

I read your message:

JA> I'm trying to develop an application to get readings from an energy meter using companion standard 870-5-102 and through the optical interface.

JA> I understand it begins with a repeated request status of link, then a reset status of link and then... a new request status of link or a general interrogation? and if so, ASDU is? when must I

JA> send the access password and which would the answer be? Could I get any example anywhere?

JA> Thank for this wonderful mail-list and for the answer.

I don't know IEC870-5-102 I'm using IEC870-5-101 but I suppose that procedures is same in both protocols.

In unbalanced mode after request status of link and reset status you should cyclically send Request of Data of Class 2 (FCB= 11) to retrieve changed data from a remote device. If you need to retrieve all data you should at first time send General Interrogation Command and then cyclically send Request of Data of Class 2.

I suggest read standard IEC870-5-5 where all application functions have described.

If an information in remote device is structured you can use

ASDU - address for access to different parts of the data.

Best regards, Yuriy Golovatenko.

<mailto:uee@givc-2.energy.gov.ua>

+++ Visit the IEC 870-5 Maillist Web Site

+++ <http://www.TriangleMicroWorks.com/iec870-5>

+++ for guidelines of this maillist, FAQ,

+++ and other useful IEC 870-5 information.

X-Sender: GSP/bacenetti/roberto.bacenetti@gspsvr
X-Mailer: QUALCOMM Windows Eudora Light Version 3.0.6 (32)
Date: Thu, 29 Jun 2000 10:27:36 +0200
To: iec870-5@TriangleMicroWorks.com
From: roberto bacenetti <roberto.bacenetti@elsag.it>
Subject: Single and Double Commands
Reply-To: iec870-5@TriangleMicroWorks.com

What is the difference, in terms of relays and circuitry, between a single and a double command in IEC 870-5-101 ?

Roberto Bacenetti
ELSAG BAILEY
Via C. Colombo 49
20090 Trezzano S/N (MI)
TEL. + 39 2 48419.243/295
FAX + 39 2 48403.483
e-mail address roberto.bacenetti@elsag.it

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: J.A.W.JansenvanderSligte@kema.nl
Subject: Re: Single and Double Commands
Cc:
Bcc:
Attached:

-The single command is defined in ASDU (telegram) 45 and is able to send commands with 2 states defined in 1 bit (0=off, 1=on).
- The double command is defined in ASDU (telegram) 46 and is able to send commands with 4 states defined in 2 bit (0=not permitted, 1=OFF, 2=ON, 3=not permitted).
-These are the differences in the ASDU's, but both are only able to activate 2 statuses. This is funny but I'll try to explain this.
-The main reason are the statuses, single/double/step. A single status has only 2 positions but a double status could have 4 statuses (in cs101 defined as 0= indeterminate or intermediate state, 1=OFF, 2=ON, 3=indeterminate state) e.g. a disconnecter. So, the philosophy is that a single point status change is activated by a single command, a double point status change is activated by a double command, a step position change is activate by a regulating step command. This is also clear and make sense and my advise is to use it like it is ment to be used.

As far as I know is this the background, but may be someone else has other input.

Success and best regards,
John.

+-----
| John Jansen van der Sligte
| j.a.w.jansenvandersligte @kema.nl
| ph. +31 26 356 6106
|
| KEMA Connect, P.O. Box 9035
| 6800 ET Arnhem, The Netherlands
| fax +31 26 351 5456
| WWW.KEMACONNECT.NL
+-----

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: awest@TriangleMicroWorks.com (Andrew West)
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: Single and Double Commands
Date: Thu, 29 Jun 2000 10:19:22 -0400
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

John Jansen van der Sligte has already explained some of the rationale, so I will just give you a simple rule:

Both commands only permit an "On" or "Off" control. The command type does not dictate anything about how your hardware implements the control, it only dictates the format of the command.

If the object under control returns its status using single point information, use single command to control it. If the object under control returns its status using double point information, use double command.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Richardson, Brian" <Brian.Richardson@uk.ngrid.com>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: RE: Single and Double Commands
Date: Thu, 29 Jun 2000 15:51:30 +0100
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

What is the difference, in terms of relays and circuitry, between a single and a double command in IEC 870-5-101 ?

In terms of the hardware the double command drives a pair of relays. One activates the drive in one direction (Open) and the other activates the drive in the other direction (Close).

The single command activates (on) or deactivates (off) a single relay.

In our case all relays use double throw contacts (two sets of contacts in parallel) for each output, to allow for failures.

These are usually fed back to the Substation Control System from the plant as a pair of digital inputs for the double point or a single digital input for the single point.

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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: "Sandro Poloni Sobrinho" <poloni@sulenge.com.br>
To: <iec870-5@TriangleMicroWorks.com>
Subject: CS101 frame delimiter
Date: Tue, 4 Jul 2000 18:42:12 -0300
Organization: Sul Engenharia e Sistemas Ltda.
X-Mailer: Microsoft Outlook Express 5.00.2615.200
Reply-To: iec870-5@TriangleMicroWorks.com

Hello.

The following two questions are about an unbalanced CS101 based communication link:

1. We are dealing with a secondary station system that requires a minimum of 1 octet idle time between the end of a just received frame and the beginning of the next frame to be received. Is it correct to require an idle time to delimit link level frames?
2. That same system does not admit any dummy octets attached to the end of a frame. If there is any extra octets after the message, the system rejects the frame, even if it is correctly formatted until the last valid frame octet. (Probably this occurs because the system is expecting an idle period to stop receiving the frame!). Is it allowed to attach extra dummy octets to the frames?

Sandro Poloni Sobrinho

From: awest@TriangleMicroWorks.com (Andrew West)
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: CS101 frame delimiter
Date: Tue, 4 Jul 2000 19:35:19 -0400
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

Sandro Poloni Sobrinho [<mailto:poloni@sulenge.com.br>] asked:

- > The following two questions are about an unbalanced CS101 based
- > communication link:
- >
- > 1. We are dealing with a secondary station system that requires
- > a minimum of 1 octet idle time between the end of a just received
- > frame and the beginning of the next frame to be received. Is it
- > correct to require an idle time to delimit link level frames?

An idle period between frames is permitted but not required, unless the frame contained an error.

If the frame contained an error, an inter-message idle period is required. See the Transmission Rules in IEC 60870-5-1 Clause 6.2.4.2.

- > 2. That same system does not admit any dummy octets attached to
- > the end of a frame. If there is any extra octets after the
- > message, the system rejects the frame, even if it is correctly
- > formatted until the last valid frame octet. (Probably this
- > occurs because the system is expecting an idle period to stop
- > receiving the frame!). Is it allowed to attach extra dummy
- > octets to the frames?

A valid frame should not be rejected because there was "something else" following the frame, but I would suggest that nothing other than an idle line or a new message should follow immediately after a valid message. No device should add dummy characters to the end of a message where these characters do not themselves form a valid message. In normal unbalanced transmission usage, the line should be released (go idle) immediately after the end of message to allow another station to respond or the master to send a new poll.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Goertz Bernd <Bernd.Goertz@ev.siemens.de>
To: "'iec870-5@TriangleMicroWorks.com'" <iec870-5@TriangleMicroWorks.com>
Subject: AW: CS101 frame delimiter
Date: Thu, 6 Jul 2000 21:51:00 +0200
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

>> Sandro Poloni Sobrinho [<mailto:poloni@sulenge.com.br>] asked:
>>
>>> The following two questions are about an unbalanced CS101 based
>>> communication link:
>>>
>>> 1. We are dealing with a secondary station system that requires
>>> a minimum of 1 octet idle time between the end of a just received
>>> frame and the beginning of the next frame to be received. Is it
>>> correct to require an idle time to delimit link level frames?
>>
>> An idle period between frames is permitted but not required, unless the
>> frame contained an error.
>>
>> If the frame contained an error, an inter-message idle period is
> required.
>> See the Transmission Rules in IEC 60870-5-1 Clause 6.2.4.2.
> [Goertz Bernd] This is true, but it should be noted, that the
> system is unbalanced and window size is "1"!!
> In this case each polling request has to wait for the respond before
> the primary station may continue with the next request.
> This causes automatically gaps (the length of a gap is as long as
> the
> secondary frame, at least one octet) between the primary frames.
> In case of using the send/no reply service the idle time between the
> primary frames has to be 3 octets!
>
>
>>> 2. That same system does not admit any dummy octets attached to
>>> the end of a frame. If there is any extra octets after the
>>> message, the system rejects the frame, even if it is correctly
>>> formatted until the last valid frame octet. (Probably this
>>> occurs because the system is expecting an idle period to stop
>>> receiving the frame!). Is it allowed to attach extra dummy
>>> octets to the frames?
> [Goertz Bernd]
> It is definitely not allowed to add "dummy"-octets directly to the
> primary or secondary frames!
> The last octet is the "end-character 16H" in any case.
>
>> A valid frame should not be rejected because there was "something else"
>> following the frame, but I would suggest that nothing other than an idle
>> line or a new message should follow immediately after a valid message.
> No
>> device should add dummy characters to the end of a message where these
>> characters do not themselves form a valid message. In normal unbalanced
>> transmission usage, the line should be released (go idle) immediately
>> after
>> the end of message to allow another station to respond or the master to
>> send
>> a new poll.
>>
>> Andrew West

X-Originating-IP: [212.187.15.139]
From: "Ramon de Beijer" <rdebeijer@hotmail.com>
To: "IEC" <iec870-5@TriangleMicroWorks.com>
Subject: Questions about 870-5-102
Date: Tue, 11 Jul 2000 12:16:14 +0200
X-Mailer: Microsoft Outlook Express 5.00.2314.1300
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

I am having problems with implementing the 870-5-102 protocol.
I find the document hard to read and its pointing to several other
documents like the 870-5-2, 870-5-3 etc. does that means that i have
to buy the other documents as well??

regards,

ing. R.G.M.E. de Beijer, Netherlands

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)

Subject: RE: Questions about 870-5-102

Cc:

Bcc:

Attached:

Each "worked example of a protocol" specified by the IEC 60870-5-10x standards relies on information already explained in other parts of the IEC 60870 series. Some parts make reference to formats and procedures already described in earlier parts.

Consider the IEC 60870-5 standards as a set of documents that specify a protocol, rather than thinking of section 102 as being the complete description. I do not see how you could be able to implement 102 without being able to refer to the information in the other parts of the standard. I expect that 60870-5-2 and 60870-5-5 are probably the most important parts to help you continue with your implementation.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

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+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: "Ramon de Beijer" <rdebeijer@hotmail.com>
Subject: Re: Questions about 870-5-102
Cc:
Bcc:
Attached:

Well they sure know how to make easy money then at the IEC,

thanks for the advice

Ramon

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Yue Zong Bin <benjamin.yue@cem-macau.com>
To: "'iec870-5@TriangleMicroWorks.com'" <iec870-5@TriangleMicroWorks.com>
Subject: Transmission of integrated totals
Date: Fri, 14 Jul 2000 13:29:56 +0800
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

I am preparing an RTU tender and not sure whether the application of transmission of integrated totals is needed.

We have already pulse counter to collect the data of meters, so, I think, maybe we do not need calculate and transmit integrated totals. Right?

Further question is: Under what situation shall this application be needed?

Thanks in advance.

~~~~~  
Benjamin Yue  
Email: Benjamin.yue@cem-macau.com  
~~~~~

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)
Subject: RE: Transmission of integrated totals
Cc:
Bcc:
Attached:

It sounds as if you already collect the meter data as a "running value".

The integrated total is a "snapshot" or "frozen" value. The normal usage is to periodically capture the pulse counter value, and report this captured value. You can cause the capture by a local process (e.g. a local clock freezes the new counter value every half hour) or by issuing a freeze command from the controlling station (see IEC 60870-5-101 clauses 7.3.4.2 and 7.2.6.23 describing the counter interrogation command). This command can be issued by a broadcast, so all stations capture their counters at the same time.

When the new value is captured the counters can either be reset (so that the new value is the count since the previous reset command) or not reset, so that the value read should be subtracted from the value in the next capture period to determine the difference.

The purpose of collecting integrated totals is usually to determine energy transfer per unit time for billing purposes or to help determine line losses.

It is up to you to decide if you need integrated totals or not.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Originating-IP: [194.216.54.43]
From: "abdolhossein Saadabadi" <asaadabadi@hotmail.com>
To: iec870-5@TriangleMicroWorks.com
Subject: Asea RTU protocol !
Date: Tue, 18 Jul 2000 08:46:19 IRST
Reply-To: iec870-5@TriangleMicroWorks.com

dear friends:

I'm developing a software for connecting to RTUs from Asea. But I have few documents about it. Where can I find more informations about this RTUs and its connection protocols?

So thanks for your help.
A.Saadabadi
MATN_NIROO Co.
Tehran, Iran.

Get Your Private, Free E-mail from MSN Hotmail at <http://www.hotmail.com>

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+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

X-Originating-IP: [194.216.54.43]
From: "abdolhossein Saadabadi" <asaadabadi@hotmail.com>
To: iec870-5@TriangleMicroWorks.com
Subject: ADLP protocol !
Date: Sat, 22 Jul 2000 08:51:23 IRST
Reply-To: iec870-5@TriangleMicroWorks.com

dear friends:

I'm developoing a software for connecting to RTUs from ABB. But I have few documents about it. Where can I find more informations about ADLP 80&180 protocols?

So thanks for your help.
A.Saadabadi
MATN_NIROO Co.
Tehran,Iran.

Get Your Private, Free E-mail from MSN Hotmail at <http://www.hotmail.com>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

Frank Pfattheicher, 09:23 AM, 7/22/00 +0200, AW: ADLP protocol !

To: iec870-5@TriangleMicroWorks.com
From: "Frank Pfattheicher" <fpf@informel.de>
Subject: AW: ADLP protocol !
Cc:
Bcc:
Attached:

Try <http://www.applsyseng.com/vgptover.html>

Mit freundlichen Grüßen
Regards

Frank Pfattheicher
informel GmbH
Seboldstraße 9
D-76227 Karlsruhe

internet www.informel.de
email <mailto:fpf@informel.de>

+++ Visit the IEC 870-5 Maillist Web Site
+++ <http://www.TriangleMicroWorks.com/iec870-5>
+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: Smith Gary <smithg@instem.com>
To: "iec870-5@trianglemicroworks.com" <iec870-5@trianglemicroworks.com>
Cc: Payne Martin <paynem@instem.com>
Subject: Variable Structure Qualifier Query
Date: Wed, 26 Jul 2000 12:25:45 +0100
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

Can anyone please provide some assistance with the following points.

With regard to the Variable Structure Qualifier, I believe bit 8 is if for the SQ (Sequence). If this is the case then bits 7 to 1 should give the number of elements, and therefore the maximum amount of elements possible would be 127. This would mean that bit 8 is never included in calculating the number of elements.

1. Is my interpretation of this correct and is 127 the maximum number of elements that can be included in one packet?
2. Bit 8 is never included in the number of elements calculation, is this correct?

If I have a Variable Structure Qualifier of F3, then I believe this to mean 115 elements and SQ=1 because there is a sequence of addresses and only the first Information Object Address will be displayed.

3. Is my interpretation of this correct?

Thank you in anticipation of your replies

Regards

Gary Smith

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+++ for guidelines of this maillist, FAQ,
+++ and other useful IEC 870-5 information.

From: =?iso-8859-2?B?ZHIuIEhvcnbhdGggUOl0ZXI=?= <horvath-p@prolan.hu>
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: Variable Structure Qualifier Query
Date: Wed, 26 Jul 2000 14:03:27 +0200
X-Mailer: Microsoft Outlook IMO, Build 9.0.2416 (9.0.2910.0)
Importance: Normal
Reply-To: iec870-5@TriangleMicroWorks.com

>
> With regard to the Variable Structure Qualifier, I believe bit 8 is if for
> the SQ (Sequence). If this is the case then bits 7 to 1 should give the
> number of elements, and therefore the maximum amount of elements possible
> would be 127. This would mean that bit 8 is never included in calculating
> the number of elements.

>
> 1. Is my interpretation of this correct and is 127 the maximum number
> of elements that can be included in one packet?
Yes

> 2. Bit 8 is never included in the number of elements calculation, is
> this correct?
Yes

>
> If I have a Variable Structure Qualifier of F3, then I believe this
> to mean 115 elements and SQ=1 because there is a sequence of addresses and
> only the first Information Object Address will be displayed.

>
> 3. Is my interpretation of this correct?
Yes

>
> Thank you in anticipation of your replies

>
> Regards
>
> Gary Smith
>

dr. Horváth Péter
horvath-p@prolan.hu
Prolan Co.
H-1034 Hungary, Budapest Seregély 24.
Tel : (+36 1) 367-79-59/112
Fax : (+36 1) 436-00-80

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+++ and other useful IEC 870-5 information.

From: Goertz Bernd <Bernd.Goertz@ev.siemens.de>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: AW: Variable Structure Qualifier Query
Date: Wed, 26 Jul 2000 15:51:00 +0200
X-Mailer: Internet Mail Service (5.5.2650.21)
Reply-To: iec870-5@TriangleMicroWorks.com

> -----Ursprüngliche Nachricht -----
> Von: Smith Gary [SMTP:smithg@instem.com]
> Gesendet am: Mittwoch, 26. Juli 2000 13:26
> An: 'iec870-5@trianglemicroworks.com'
> Cc: Payne Martin
> Betreff: Variable Structure Qualifier Query

>
> Can anyone please provide some assistance with the following points.
>
> With regard to the Variable Structure Qualifier, I believe bit 8 is if for
> the SQ (Sequence). If this is the case then bits 7 to 1 should give the
> number of elements, and therefore the maximum amount of elements possible
> would be 127. This would mean that bit 8 is never included in calculating
> the number of elements.

[Goertz Bernd] Be carefully! 1 to 7 is either the number of information elements of a single object or the number of information objects!
In case of SQ=0 1 to 7 represents the number of information objects of the same type
In case of SQ=1 1 to 7 represents the number of elements

> 1. Is my interpretation of this correct and is 127 the maximum number
> of elements that can be included in one packet?
[Goertz Bernd] Yes, if SQ=1
> 2. Bit 8 is never included in the number of elements calculation, is
> this correct?
[Goertz Bernd] Yes

> If I have a Variable Structure Qualifier of F3, then I believe this
> to mean 115 elements and SQ=1 because there is a sequence of addresses and
> only the first Information Object Address will be displayed.
[Goertz Bernd] Yes, F3=11110011 where the first bit SQ=1 and the following bits represent 01110011=115 i.e.the bits 1 to 7 are only included in the calculation of the number. In this case a sequence of information elements of a single object is existing. The first element is addressed by the information object address (offset). The following elements are identified by numbers incrementing continuously by +1 from this object (see page 35 of IEC 60870-5-101).

> 3. Is my interpretation of this correct?
[Goertz Bernd] Almost correct.

> Thank you in anticipation of your replies
>
> Regards
>
> Gary Smith

> *****
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> on +44 (0)1785 812131 (phone) or +44 (0)1785 812460 (fax).

> *****
>
>
>

From: miguel-angel.pantoja@es.abb.com
X-Lotus-FromDomain: ABB_ESABB@ABB_NOTES@SE_INTERNET
To: iec870-5@TriangleMicroWorks.com
Date: Mon, 31 Jul 2000 09:20:19 +0200
Subject: IEC 870-5 protocols' success
Reply-To: iec870-5@TriangleMicroWorks.com

Dear List,

I would like to know your opinions about IEC 870-5 protocols' success in the World market. Are they really so widespread as it could be expected from "de iure" world standards?

As far as I know, the answer to that question heavily depends on what IEC 870-5 protocol you are considering. For example, even though 101 and 102 have different application fields, one could say that 101 is far more successful than 102.

But, how can that really be proved? Is there any official record of IEC protocols applications? How could we know IEC prot's "market share"?

Thank you, and best regards,

Miguel Angel Pantoja
ABB Sistemas Industriales
Madrid (Spain)

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From: "Kars de Jong" <dejong@locamation.nl>
To: "mailing list" <iec870-5@TriangleMicroWorks.com>
Subject: C_RD_NA_1 command
Date: Fri, 4 Aug 2000 11:46:55 +0200
Organization: Locamation Control Systems
X-Mailer: Microsoft Outlook Express 5.50.4133.2400
Reply-To: iec870-5@TriangleMicroWorks.com

Hello,

I have a question about the Read command (ASDU 102, C_RD_NA_1). We use the IEC 870-5-101 Slave Software Library from Triangle Microworks, which returns a negative activation confirmation (COT=7) in ASDU 102, when trying to read a point number which doesn't exist.

We are testing this system with the KEMA UnIECim software, which doesn't accept this. It flags 2 errors:

- 1) ASDU type 102 not valid in monitor direction.
- 2) Invalid cause of transmission.

My question is, what SHOULD be returned? I've looked through the 870-5-5 and 870-5-101 specs, but I can't find anything. My idea would be to return ASDU type 102 with negative confirm requested (COT=5).

Thanks,

Kars.

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To: iec870-5@TriangleMicroWorks.com
From: "Philibert P russe" <pperusse@cybectec.com>
Subject: RE: C_RD_NA_1 command
Cc:
Bcc:
Attached:

Hello Mr de Jong,

As you can see at the paragraph 7.3.4.3, the only COT that is allowed for C_RD_NA_1 is <5>:Request. What is confusing in this paragraph, is that no direction is specified! If you look at the others paragraphs (for example 7.2.4.2), it is always said which COT in each direction should be used.

From this lack of information one could suppose that COT=5 could be used in both direction. An other could suppose that it could be used only in the Control Direction. That is not clear in the 101. But if you look at de 870-5-5 you could find more interesting information.

If you look at paragraph 6.2.1 you could see that the C_RD_NA_1 is kind of asynchronous command. First, the master SEND is C_RD command. Then, it polls with DATA_CLASS 1 or 2 until it receives the response data as a Monitor direction object (M_XX_XX_1). Thus, no C_RD is allowed in Monitor direction.

According to that, the slave is wrong since it uses COT=7. Now for KEMA UnIECim, it chooses the second interpretation that this ASDU is only available in Control direction.

The case where the object does not exists on the Slave side could be handled by the controlling station with a TIMEOUT upon no reception of the M_XX_XX_1 data requested.

The use of C_RD_NA_1 in Monitor direction is not standard and you may not used it. I think that this is a lack of the standard not to allow this kind of answer.

Moreover to your concerns you could look at the Supplementary definitions for the 101 (870-5-101 A2). It introduces 4 new COT that are:

- 44: Unknown type identification
- 45: Unknown COT
- 46: Unknown common address of ASDU
- 47: Unknown Information object address

However, the addendum doesn't specify which ADSUs could use those COT (not in my version that is revision 7). The best choice would be to use COT 47 in Monitor direction with C_RD_NA_1. However, the problem is still that C_RD_NA_1 should not be used in monitor direction.

Moreover, the introduction of the Addendum into a 870-5-101 Protocol Stack could be causing interoperability problems with old devices not yet supporting this fonctionnality. Such a device implementing the A2 would

allow (by configuration) to step back to 101.

As an 870-5 developer I was face with the same concerns about the C_RD_NA_1 and I choose not to use C_RD_NA_1 in Monitor direction. I was faced with the following question:

Would it be better to respond an invalid answer so that an error occurred letting user see a configuration synchronization problem or not to answer anything that would be far more difficulty to find out the problem and resulting in possibly long timeouts? I choose to stay on the standard.

I was also faced with the implementation or not of the Addendum and I also choose not to implemented it yet. And if I implement it, I will offer the possibility to deactivate those new features.

To get gack to your question that was: "What is the correct way to use C_RD_NA_1?". I think that KEMA's OK. May it be easier to implement the Triangle solution (at least for a master device), we should not "enhance" on a standard this way. It would be interesting to have some feedback from IEC members about this question.

I hope I did not bored you with all those considerations in such a long answer. I also hop this will help you.

Regards,

Philibert

Philibert P érusse, ing. stag.
pperusse@cybectec.com

Cybectec Inc.
1290, rue St-Denis, bureau 803
Montréal, Québec, H2X 3J7
Tél: (514) 845-6195 x 22 Fax: (514) 845-3145
Venez nous visiter à <http://www.cybectec.com>

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From: awest@TriangleMicroWorks.com (Andrew West)
To: <iec870-5@TriangleMicroWorks.com>
Subject: RE: C_RD_NA_1 command
Date: Fri, 4 Aug 2000 14:15:49 -0400
X-Mailer: Microsoft Outlook 8.5, Build 4.71.2173.0
Importance: Normal
X-MIME-Autoconverted: from 8bit to quoted-printable by mario.zyan.com id LAA59447
Reply-To: iec870-5@TriangleMicroWorks.com

Kars de Jong asks:

- > I have a question about the Read command (ASDU 102, C_RD_NA_1).
- > We use the IEC 870-5-101 Slave Software Library from Triangle Microworks,
- > which returns a negative activation confirmation (COT=7) in ASDU
- > 102, when trying to read a point number which doesn't exist.
- >
- > My question is, what SHOULD be returned? I've looked through the
- > 870-5-5 and 870-5-101 specs, but I can't find anything. My idea
- > would be to return ASDU type 102 with negative confirm requested
- > (COT=5).

The initial edition of IEC 60870 -5-101 did not explicitly define the behaviour under the conditions above, therefore vendors may have implemented a variety of responses.

The Supplementary Definitions to IEC 60870 -5-101 (currently a CDV, published in May this year, voting ends in September) contains a new clause 7.4.14 (Read procedure) explaining this command. It states:

"If the values in the data unit identifier (except the variable structure qualifier) and the information object address of the read command are unknown (not defined) in the controlled station, the mirrored C_RD_NA_1 with the cause of transmission <44 47> is returned (see clause 7.2.3.1)."

Clause 7.2.3.1 states:

"Add to the end of table 9 on page 39:

- <44> := unknown type identification
- <45> := unknown cause of transmission
- <46> := unknown common address of ASDU
- <47> := unknown information object address

Add, after table 9 on page 39 the following text:

ASDUs in control direction with undefined values in the data unit identifier (except the variable structure qualifier) and the information object address are mirrored by the controlled station with bit "P/N := <1> negative confirm" and the following causes of transmission:

Unknown	Cause of transmission
type identification	44
cause of transmission	45
common address of ASDU	46
information object address	47"

Hence, when the addendum is published (and if it is not altered during the review process), the correct response to the case where the IOA is unknown will be C_RD_NA_1 with COT <47> and the <P/N> negative confirm flag set.

The Triangle MicroWorks Source Code Libraries for IEC 60870-5-101 will be updated to reflect this change once it is ratified.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

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To: iec870-5@TriangleMicroWorks.com
From: "Sandro Poloni Sobrinho" <poloni@sulenge.com.br>
Subject: Link level functions usage.
Cc:
Bcc:
Attached:

Hello.

I have some questions about the unbalanced CS101 link level functions usage:

1. Clause 6.2 of CS101 states that "Outstations that have no data of data class 2 have to respond to the class 2 request with the function code 9 to indicate that the requested data are not available".

Is it correct to assume that "have no data of data class 2" means that no configured class 2 data are scheduled to be sent by the outstation, i.e.:

- no application level procedure is in course (interrogation, command, ...);
- no data programmed to be spontaneously sent periodically are ready to be sent (is not the moment to be sent).

The alternative is to assume that "have no data of data class 2" means that there is no configured class 2 data in the outstation.

2. Is it defined somewhere in the 870-5 documents what is the basic link function to be used by a master station in background, when no application level procedure is in course? If it is not defined, is there consensus between implementers about which function to use (I mean between 9 - Request status of link, 10 - Request user data class 1 and 11 - Request user data class 2)?

Sandro Poloni Sobrinho

Mehdi Kavousian, 08:43 AM, 8/9/00 +0430, Re: Link level functions usage.

To: iec870-5@TriangleMicroWorks.com
From: "Mehdi Kavousian" <mkavousian@nri.ac.ir>
Subject: Re: Link level functions usage.
Cc:
Bcc:
Attached:

I think the first extraction is correct. "have no data of data class 2" means there's no scheduled data class 2 (for example any cyclic data) is ready to be sent. If there's some data class 1 theNACK should be sent with ACD=1, so that the controlling station be aware to ask for data class 1.

The procedure is set up to controlling station manufacturer. For example we scheduled to ask for data class 1 ten times then ask for data class 2 one time. The Request status of link is sent when the number of link layer time-outs exceeds some limit or when outstations does not response for some predefined time.

Mehdi Kavousian

Mehdi Kavousian
Dispatching Research Department,
Niroo Research Institute, IRAN.
P.O.BOX: 14155/1655
Tel: +98 (21) 807 93 86
Fax: +98 (21) 807 82 96
Email: mkavousian@nri.ac.ir
Web: <http://www.nri.ac.ir>

To: iec870-5@TriangleMicroWorks.com
From: awest@TriangleMicroWorks.com (Andrew West)

Subject: RE: Link level functions usage.
Cc:
Bcc:
Attached:

The IEC 60870-5-101 protocol uses the concept that data "becomes available" in a device for some reason (see below). The data will be assigned to either Class 1 or Class 2. When the master issues a Class 1 or Class 2 poll, the corresponding data is returned.

Data may "become available" because of a field event (generating data with cause of transmission = spontaneous), a master request (such as a control command or a general interrogation command) or on a periodic basis, such as all analog inputs being sampled once every second.

If it happens that there is no unreported data from class 2 that is ready to be sent, then the response to a class 2 request would be function code 9: requested data not available. This could occur because there is no data configured for Class 2, or because no new Class 2 data has "become available" and all previously-available Class 2 data has been collected.

The second addendum to 101 (currently in draft for vote stage) also permits the following: If (and only if) a device receives a Class 2 poll request when it has no pending Class 2 data, but does have pending Class 1 data, it may send the Class 1 data in response to the request. The purpose of this is to permit the device to report more efficiently: the Class 1 data is sent instead of sending an empty message with the ACD bit set which then requires the controlling station to issue a Class 1 poll request before sending the data.

A master station is permitted to issue any request. Normally the Request status of link is only used at link establishment (startup or after link restoration following an error). A master will generally issue Class 2 requests until it receives a response having the ACD bit set, after which it issues Class 1 requests until the ACD flag is returned clear, and then returns to issuing Class 2 requests.

Andrew West

Triangle MicroWorks, Inc.
Solutions for Communication Protocol Development
voice: (919) 781-7133, fax: (919) 870-6692
2840 Plaza Place, Suite 205
Raleigh, North Carolina 27612-6343 USA

www.TriangleMicroWorks.com

From: "Greg LaMarre" <gregl@hdap.com>
Organization: GE HARRIS Energy Control Systems
To: Iec870-5@TriangleMicroWorks.com
Date: Tue, 15 Aug 2000 15:52:57 MDT
Subject: Time Tag Validity
Priority: normal
X-mailer: Pegasus Mail for Win32 (v3.12b)
Reply-To: Iec870-5@TriangleMicroWorks.com

Hi everyone,

The following describes an interpretation issue I am having with the IEC 60870-5-101 protocol. If anyone could shed some light, it would be appreciated.

At startup, an RTU typically initializes the state of its database by scanning the sources of the database values (e.g. sensors). Typically, these sources do not supply a time tag, so the RTU sets the time tags of the database values to the time of initialization.

In general, if a time tag is accurate with respect to the master's clock, but it represents the time of initialization rather than the time of last change, should the time tag be marked invalid when reported in response to a general interrogation? In other words, did the IEC intend that the time tag invalid flag (e.g. Invalid in CP24Time2a) to mean both that the time is valid with respect to the master's clock and that the time accurately depicts the time of last change?

Regards,
Greg

--

Greg LaMarre
gregl@hdap.com
G.E. Harris Energy Control Systems Canada, Inc
4525 Manilla Road S.E.
Calgary, AB T2G 4B6
Ph: 403-214-4549 Fax: 403-243-1815

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From: "Greg LaMarre" <gregl@hdap.com>
Organization: GE HARRIS Energy Control Systems
To: Iec870-5@TriangleMicroWorks.com
Date: Tue, 15 Aug 2000 15:52:57 MDT
Subject: Time Tag Validity
Priority: normal
X-mailer: Pegasus Mail for Win32 (v3.12b)
Reply-To: Iec870-5@TriangleMicroWorks.com

Hi everyone,

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At startup, an RTU typically initializes the state of its database by scanning the sources of the database values (e.g. sensors). Typically, these sources do not supply a time tag, so the RTU sets the time tags of the database values to the time of initialization.

In general, if a time tag is accurate with respect to the master's clock, but it represents the time of initialization rather than the time of last change, should the time tag be marked invalid when reported in response to a general interrogation? In other words, did the IEC intend that the time tag invalid flag (e.g. Invalid in CP24Time2a) to mean both that the time is valid with respect to the master's clock and that the time accurately depicts the time of last change?

Regards,
Greg

--

Greg LaMarre
gregl@hdap.com
G.E. Harris Energy Control Systems Canada, Inc
4525 Manilla Road S.E.
Calgary, AB T2G 4B6
Ph: 403-214-4549 Fax: 403-243-1815

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From: "Richardson, Brian" <Brian.Richardson@uk.ngrid.com>
To: "iec870-5@TriangleMicroWorks.com" <iec870-5@TriangleMicroWorks.com>
Subject: RE: Time Tag Validity
Date: Wed, 16 Aug 2000 10:02:06 +0100
X-Mailer: Internet Mail Service (5.5.2448.0)
Reply-To: iec870-5@TriangleMicroWorks.com

Greg, and others,

The question was:

At startup, an RTU typically initializes the state of its database by scanning the sources of the database values (e.g. sensors). Typically, these sources do not supply a time tag, so the RTU sets the time tags of the database values to the time of initialization.

In general, if a time tag is accurate with respect to the master's clock, but it represents the time of initialization rather than the time of last change, should the time tag be marked invalid when reported in response to a general interrogation? In other words, did the IEC intend that the time tag invalid flag (e.g. Invalid in CP24Time2a) to mean both that the time is valid with respect to the master's clock and that the time accurately depicts the time of last change?

Reply:

Mehdi Kavasian is correct that the data on start-up should be returned using a GI without time tags. When the RTU has finished its start-up it should generate a (Class 1) signal ENDINIT to inform the controlling station that its data is available. The controlling station should then send a GI request (no time tags in the response) and a clock sync (if required). Any data received before this should be regarded as suspicious. Normal data transfer is only regarded as available when all of these actions have been performed. See IEC 60870-5-5 clause 6.1 for initialisation.

Regards,
Brian Richardson

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