

# Disturbance file upload via SPA

## 670 series

<b>1</b>	<b>Uploading disturbance file data</b> .....	<b>2</b>
1.1	Uploading disturbance data file (data and header) .....	2
1.2	Uploading disturbance header file (only header info) .....	3
<b>2</b>	<b>Decoding each encoded file-data-packet and assembling to a file.</b> .....	<b>3</b>

Following is a description of how to upload compressed (zip) disturbance files containing disturbance records in COMTRADE format from 670 series IEDs.

Disturbance upload SPA codes for 670 series IEDs ver. 1.1 differs from SPA codes for older versions. The SPA codes for older 670 series IEDs are given in parenthesis after the current SPA codes for 670 series ver. 1.1.

SPA codes are given abbreviated without starting and ending parts (without start/end characters, slave number, checksum).

## 1 Uploading disturbance file data

### 1.1 Uploading disturbance data file (data and header)

1. Select disturbance with one of:

oldest disturbance: SPA: W7I6051:1 (W0V20:1)

newest disturbance: SPA: W7I6052:1 (W0V21:1)

next disturbance: SPA: W7I6049:1 (W0V18:1)

previous disturbance: SPA: W7I6050:1 (W0V19:1)

Answer: A ; Ack.

2. Check current disturbance index:

SPA: 7I6037 (R7I505)

Answer: D: *integer* ; Index: 0 – 200, -1 if no disturbance

3. Start file upload:

SPA: R7I6026 (R0M30)

Answer: D: *Integer > 0* ; File size in bytes.

Answer: D:0 ; File does not exist.

4. Read file data:

SPA: R7I6028 (R0M31)

Answer: D: *file-data-packet* ; Encoded block of file data.

If corrupt message or no answer is received, then a retransmit-data-message shall be sent to avoid loss of packet:

SPA: R7I6030 (R0M32)

Answer: D: *file-data-packet* ; Retransmitted data packet.

5. Repeat step 4 until empty answer received.

SPA: R7I6028 (R0M31)

Answer: D: ; Empty SPA data, upload complete.

## 1.2 Uploading disturbance header file (only header info)

1. Select disturbance with one of:

oldest disturbance: SPA: W7I6051:1 (W0V20:1)

newest disturbance: SPA: W7I6052:1 (W0V21:1)

next disturbance: SPA: W7I6049:1 (W0V18:1)

previous disturbance: SPA: W7I6050:1 (W0V19:1)

Answer: A ; Ack.

2. Check current disturbance index:

SPA: 7I6037 (R7I505)

Answer: D: integer ; Index: 0 – 200, -1 if no disturbance

3. Start file upload:

SPA: R7I6027 (R0M33)

Answer: D: Integer > 0 ; File size in bytes.

Answer: D:0 ; File does not exist.

4. Read file data:

SPA: R7I6029 (R0M34)

Answer: D:*file-data-packet* ; Encoded block of file data.

If corrupt message or no answer is received, then a retransmit-data-message shall be sent to avoid loss of packet:

SPA: R7I6031 (R0M35)

Answer: D:*file-data-packet* ; Retransmitted data packet.

5. Repeat step 4 until empty answer received.

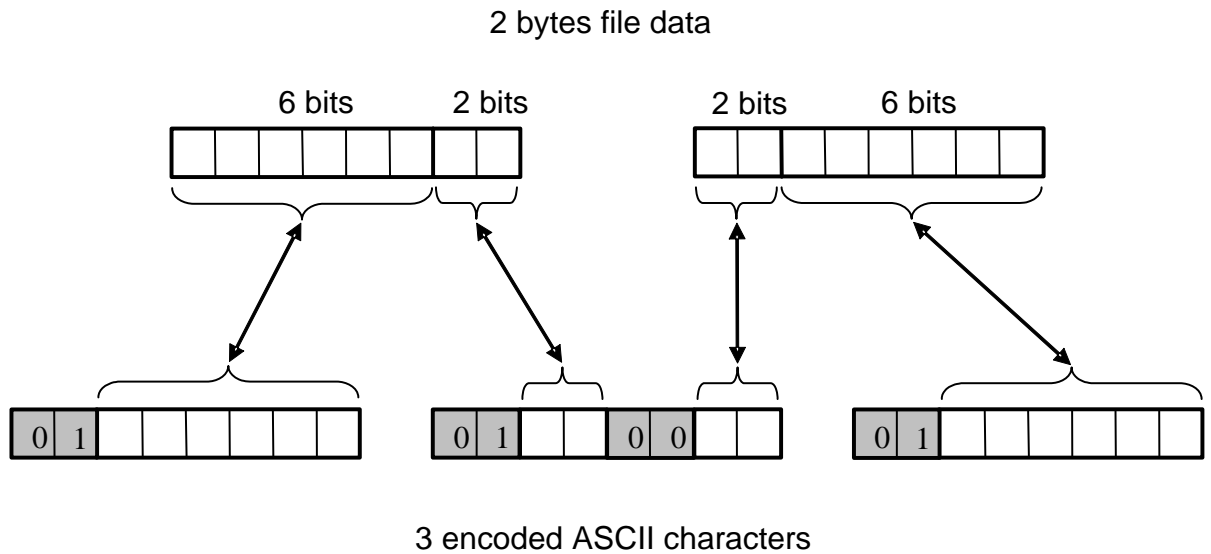
SPA: R7I6029 (R0M34)

Answer: D: ; Empty SPA data, upload complete.

## 2 Decoding each encoded file-data-packet and assembling to a file.

The first two characters of the *file-data-packet* are a two digit sequence number (plain ASCII characters), this number starts with 01 for the first packet and then increments for every packet up to 99, and then it starts over from 00. The number shall be checked against expected number, if not correct then something has gone wrong and transfer should be aborted / restarted.

Rest of *file-data-packet* consists of encoded file data according to a 2-byte to 3-ASCII-character encoding scheme described as follows:



To assemble the file, the character data after the sequence number must be processed in groups of three characters at the time. Decode 3 characters to 2 bytes according to the figure above, and add the two bytes to the file (left byte first).

**Note:** The last data group in the *file-data-packet* can be just two characters, then the two characters shall be decoded to one byte according to the left byte encoding in the figure above (the two least significant bits in the last character are discarded).

When last file-data-packet has been received, decoded and added to file then the size of the assembled file should be equal to the file size received in uploading step 3 above.



Document Title

Disturbance file upload via SPA

Document No.

1MRK511220-WEN

Date & Rev. Ind.

-

No. of Pages

4

Page

4