Nordea

E-payment service

API Description

January 2022, version 0005

Table of contents

Revision history

S.No.	Date	Description	Version
1	August 2020	Service description and API description split-out to own documents. Payment Initiation Service -information and related field added	0005
2	January 2022	Refund improvements: - multiple partial refunds - time extended to 12 months	0005
For list of changes, please refer to section 7 ‘Migration from older API versions. Thank you.			

1 E-payment service

Please refer to the the E-payment Service Description document for more general description of the service.

2 Testing

Before concluding the agreement, e-payment can be tested in the production environment by using the Demo seller test codes.

The Demo seller's customer ID (RCV_ID) is 12345678 and the MAC key is LEHTI Test account is either FI7429501800000014 or FI3329501800008512

With the test seller, the seller can check the compatibility of its system with the bank's system. It is also possible to test the technical functionality of the refund and query functions at the bank. The test payments are not stored, and hence the refund and query test calls will return a 'Payment not found' -message.

3 E-payment interface

3.1 FORM data group for e-payment

<form	Initial e-payment data:
method="post"	Method=post
accept-charset="ISO-8859-1"	Form data in ISO-8859-1 encoding.
action="https://epmt.nordea.fi/cgi-bin/SOLOPM01">	Server: https://epmt.nordea.fi/...
<input name="...." type="..." value="...">	Actual e-payment data: Data name, type and value
</form>	End of e-payment

Field	Data	Data name INPUT NAME=	Value VALUE=	Form	MAC
1.	* Payment version	VERSION	“0005”	AN 4	x
2.	* Payment ID	STAMP	Payment specifier	AN 1-20	x
3.	* Seller ID	RCV_ID	Customer ID from the agreement form; entered without the hyphen	AN 8-15	x
4.	Seller’s account	RCV_ACCOUNT	Other than the default account	AN 8-35	x (v4+)
5.	Name of the seller	RCV_NAME	Other than the default name	AN 1-64	x (v4+)
6.	Payment language	LANGUAGE	1 = Finnish (default) 2 = Swedish 3 = English	N 1	
7.	* Payment amount	AMOUNT	Payment amount, e.g. 990.00 or 990,00	AN 4-13	x
8.	Payment reference	REF	Standard reference	AN 2-25	x
9.	* Payment due date	DATE	“EXPRESS” or “dd.MM.yyyy”, e.g. 15.12.2021	AN 4-10	x
10.	Payment message	MSG	Buyer’s message	AN 420	
11.	* Return link	RETURN	Return address for successful payment.	AN 1024	
12.	* Cancel link	CANCEL	Return address for cancelled payment.	AN 1024	
13.	* Reject link	REJECT	Return address for rejected payment	AN 1024	
14.	Payment confirmation	CONFIRM	YES (NO if the payment is checked from an account statement)	A 3	
15.	* Currency code	CUR	Payment currency, EUR is only supported value.	A 3	x
16.	** Account number of the ultimate beneficiary	ULT_BEN_ACCOUNT	Account number of the ultimate beneficiary	AN 35	x (v4+)
17.	** BIC of the ultimate beneficiary’s account	ULT_BEN_ACCOUNT_ BIC	BIC code of the ultimate beneficiary’s account	AN 35	x (v4+)
18.	** Name of the ultimate beneficiary	ULT_BEN_NAME	Name of the ultimate beneficiary	AN 64	x (v4+)
19.	** Business code of the ultimate beneficiary	ULT_BEN_BID	Business code of the ultimate beneficiary preceded by the country code (“FI12345678”)	AN 15	x (v4+)
20.	** Industry code of the ultimate beneficiary	ULT_BEN_IND_CODE	NACE (“64190”)	AN 10	x (v4+)
21.	Activation of Siirto	SIIRTO	Not in use	AN 1	x (v4+)
22.	* MAC key version	KEYVERS	Key version, e.g. 0001	N 4	x (v4+)
23.	* Algorithm	ALG	“01“ = MD5 “02” = SHA-512	N 2	x (v4+)
24.	* MAC authentication code of the payment	MAC	MAC authentication code of the payment	AN 128	x

25.	Customer's bank	BANK	nordea (default) op spankki danskebank aktia alandsbanken handelsbanken saastopankki omasp poppankki siirto all (show all options)	A 15	
26	Prefilled phone number	PREFILL_NUMBER	Prefill phone number for Siirto	AN 32	

Explanations

A/N = alphanumeric, i.e. data content is either letters or numbers. The length shows the field's maximum length.

* = mandatory

** = mandatory for payment service providers

x = information included in the MAC-calculation

x (v4+) = information included in the MAC-calculation starting from payment version 0004 or newer.

Field 1 Payment version: "0005".

Field 2 The payment specifier is a code given for the payment by the seller. The specifier may, for example, be a reference number or a combination of date, time and a running code. It must be unique and cannot be reused after payment is paid.

Field 3 The seller ID is a code given to the seller by Nordea in its customer data register (= "Customer ID" on the agreement form). The ID is used to retrieve the beneficiary's name and account number to the payment from the bank's register. The ID is stated on the agreement form and it is entered without a hyphen.

Field 4 Seller's account: the seller may also transmit an IBAN account related to a payment in a payment message.

Field 6 By entering the language code, the seller can direct the payer to the Finnish (1), Swedish (2) or English (3) language page of e-payment.

Field 7 Both comma "," and dot "." decimal separators are supported.

Field 8 comprises the Payment reference. The reference is presented without the grouping and spaces used in the standard reference.

The reference can be formed from the payment specifier, for example 1234567, by calculating a check digit, i.e. The last digit of the reference number, by using multipliers 7-3-1. The specifier's digits are multiplied from right to left, and the products are added up. The sum is then subtracted from the next highest ten, and the remainder is the check digit added to the specifier.

Specifier	1	2	3	4	5	6	7				
Multiplier	7	1	3	7	1	3	7				
Product	7	2	9	28	5	18	49	=	118		
Check digit							120	-	118	=	2

The reference number is 12345672.

The mandatory use of a reference number in an e-payment depends on the definitions of the account for payment linked to the agreement. For the Payment Initiation service payments, the reference number is mandatory.

The seller can, if it wishes, transmit the global Structured Creditor Reference (RF reference) related to a payment in a payment message. The website of Finance Finland (FFI) includes information on the structure and calculation of the RF reference at finanssiala.fi (with the search word “RF reference”).

Field 9 shows the payment date. If the due date is indicated as “EXPRESS” or the current date, the credit transfer from the buyer to the seller is effective immediately after the buyer has accepted the payment. If the e-payment has a due date, it is transferred under Due payments and transfers in the buyer's Netbank after it has been accepted and the payment is made on the due date. Please note that if the payment has a due date, the buyer can, for example, change the amount due or the due date or the payment can be rejected for insufficient cover.

Due date payments are supported only in Nordea epayment.

Field 10 If the e-payment has no reference number, the message data is mandatory. Having both message and reference are supported only in Nordea epayment.

Field 11 Return link is a checkpoint in the seller’s service if the buyer has confirmed the payment. The data must comprise a complete link in HTML which begins with either http:// or https://. The seller may have attached a so-called query string or parameter data to the link.

Examples:

VALUE=”http://tuote.kauppa.fi/order/thankyou.htm” or
VALUE=”https://tuote.kauppa.fi/cgi-bin/thankyou?orderno=1234”

Field 12 Cancel link is a checkpoint in the seller’s service if the buyer has cancelled the e-payment. The data must comprise the complete URL address in HTML format, for example:

VALUE=http://tuote.kauppa.fi/order/invoice.htm

Field 13 Return link to cancelled payment.

Field 14 When the value is “YES”, the seller receives information on the payment processing through all return links (payment OK, cancelled, rejected).

Field 15 contains the transaction's currency. EUR must always be stated in this field.

The fields 16–20 below are mandatory for service providers:

Field 16 states the ultimate beneficiary’s account number.

Field 17 states the BIC code of the ultimate beneficiary’s account number.

Field 18 states the ultimate beneficiary’s name without any special characters, including the Scandic characters.

Field 19 states the ultimate beneficiary’s business code preceded by the 2-character country code (ISO 3166-1 Alpha-2 code).

Field 20 states the NACE industry code of the ultimate beneficiary at the most accurate level. (Nomenclature of Economic Activities (NACE) Rev. 2.2008)

Field 22 states the MAC key's 4-digit version number. The key version can be found in the MAC key envelope, which is posted to the seller after the agreement has been concluded. The version number is mandatory information.

Field 24 The MAC authentication code of the payment (section 4.3 in the Service Description is calculated from the protected data of the payment and from the seller's MAC key. The MAC authentication code of the payment is saved in CAPITAL letters.

3.2 Response codes

If the request is invalid a response with 400 Bad Request status is returned with explanation of which fields were invalid.

In case successful payment request, the browser is redirected to payment page with 302 Redirect HTTP status.

3.3 MAC authentication code of e-payment

The payment authentication code is calculated as follows:

1. A character string is generated out of the following fields; please note the fields that are mandatory for service providers.

VERSION&
STAMP&
RCV_ID&
AMOUNT&
REF&
DATE&
CUR&
RCV_ACCOUNT&
RCV_NAME&
ULT_BEN_ACCOUNT&
ULT_BEN_ACCOUNT_BIC&
ULT_BEN_NAME&
ULT_BEN_BID&
ULT_BEN_IND_CODE&
SIIRTO&
KEYVERS&
ALG&
Seller's MAC key&

The character string contains no spaces; & characters must be included only if the value for parameter is provided except for REF, where it is always included.

Note! The data must be presented in the order stated above.

Example 1:
0005&1998052212254471&12345678&570,00&55&EXPRESS&EUR&0001&01&LEHTI&

0005 = version (M)
1998052212254471 = payment specifier (M)

12345678 = seller ID (M)
570,00 = amount (M)
55 = reference number
EXPRESS = express payment (M)
EUR = currency code (M)
0001 = MAC key version (M)
01 = algorithm (M)
LEHTI = seller's MAC key (M)

Example 2 for payment service providers:
0005&1998052212254471&12345678&100,00&1232&EXPRESS&EUR&FI31
20601800002009&NDEAFIHH&TEST
BENEFICIARY&FI12345671&12345&0001&01&LEHTI&

0005 = version (M)
1998052212254471 = payment specifier (M)
12345678 = seller ID (M)
100,00 = amount (M)
1232 = reference number
EXPRESS = express payment (M)
EUR = currency code (M)
FI3120601800002009 = Account number of the ultimate beneficiary (M)
NDEAFIHH = BIC of the ultimate beneficiary's account (M)
TEST BENEFICIARY = Name of the ultimate beneficiary (M)
FI12345671 = Business code of the ultimate beneficiary (M)
12345 = Industry code of the ultimate beneficiary (M)
0001 = MAC key version (M)
01 = algorithm (M)
LEHTI =sellers MAC-key (M)

M = mandatory

The character string should be encoded using ISO-8859-1.

Example 3, without reference (REF):
0005&1638882202&12345678&1,0&&EXPRESS&EUR&0001&01&LEHTI&

0005 = version (M)
1638882202 = payment specifier (M)
12345678 = seller ID (M)
1,0 = amount (M)
 = reference number
EXPRESS = express payment (M)
EUR = currency code (M)
0001 = MAC key version (M)
01 = algorithm (M)
LEHTI = seller's MAC key (M)

Example 4, with DUEDATE and ALG = 02:
0005&1638884117&12345678&1,0&33333333333333333331&15.12.2021&E
UR&0001&02&LEHTI&

0005 = version (M)

1638884117 = payment specifier (M)
12345678 = seller ID (M)
1,0 = amount (M)
33333333333333333331 = reference number
15.12.2021 = due date payment (M)
EUR = currency code (M)
0001 = MAC key version (M)
02 = algorithm (M)
LEHTI = seller's MAC key (M)

2. Using the MD5 or SHA-512 algorithm, a hash value is calculated from the above character string and converted into a hexadecimal presentation format, the maximum length of which is 128 characters.

The result of the calculation for Example 1 is
B2F55E4FC27E8F64C68607B3EE1B4DB8

The result of the calculation for Example 2 is
67B7E6E6986E536FB40F8EDC4245B597

The result of the calculation for Example 3 is
1DF53A946DA261795A56ADADF021A326

The result of the calculation for Example 4 is

44B8ECB49CC2F1AFB3488F38DEC4A050C347EF8B4B670481925AD76C
AD56A59DACB41A90AB3A8D324B4792C2196C71724136F309E21543F726
05B8AF3FD7E787

3. The resulting MAC is entered in the payment MAC field.

The seller's MAC key is a key provided by the bank and is as follows:

- 32–64 characters long
- Seller-specific
- The key is delivered by post after theagreement has been concluded.

3.4 E-payment return data

Note! The seller receives confirmation of the final money transfer from the reference data records or from the account statement, or by making a separate query.

If the customer generates an automatic payment confirmation, the value of the field "CONFIRM" must be YES or empty.

The bank's system inserts the following parameter data in query-string format at the end of the return link:

RETURN_VERSION=0005
RETURN_STAMP=payment specifier
RETURN_REF=payment's reference number
RETURN_PAID=transaction's archiving ID in the bank's system
RETURN_MAC=MAC of the return data

The return data format and content are the same as the corresponding fields in the original payment.

The return message check must always include two phases:

1) MAC check

2) RETURN_PAID field check;

- If the field is blank, no payment has been made
- If the field has a value, the payment has been made.

RETURN_PAID is return data for EXPRESS payments and it shows the archive ID of a successful Nordea transaction. Its maximum length is 20 characters. For PSD2 banks archive ID is not always available and max 64 character long submission ID is returned here. For payments with a due date and rejected or cancelled payments, the data is not included in the return link.

RETURN_MAC is calculated in the same way as in the original e-payment by generating a character string from the content of the return data:

RETURN_VERSION&
RETURN_STAMP&
RETURN_REF&
RETURN_PAID& (not with payments with a due date)
seller's MAC&

Note! The character string contains no spaces; all the & characters must be included. Using the MD5 or SHA-512 algorithm, a hash value is calculated from the above character string and converted into a hexadecimal presentation format, the maximum length of which is 128 characters. This is returned to the seller in the return parameter RETURN_MAC.

Example of the use of the return link and MAC:

- Original return link: VALUE="http://tuote.kauppa.fi/cgi-bin/thankyou?orderno=1234"
- On return to the seller, the return URL is as follows: http://tuote.kauppa.fi/cgi-bin/thankyou?orderno=1234&RETURN_VERSION=0005&RETURN_STAMP=19980522122544 71&RETURN_REF=57834465&RETURN_PAID=960531258874B85991&RETURN_MAC=FF8AEF75CA24C2B854C4F82AFDFC1F72

4 E-payment query

4.1 E-payment query data and format

The e-payment query is in the form format and it must include the following data:

Form action: https://epmt.nordea.fi/cgi-bin/SOLOPM10
Form method: post
Form accept-charset: ISO-8859-1

Field	Data	Data name	Value	Form	MAC
1.	* Query version	VERSION	“0005”	AN 4	x
2.	* Time of query	TIMESTMP	In format “YYYYMMDDHHMMSSnnnn”, in which nnnn is the ordinal number if needed e.g., 202112071504560000	N 18	x
3.	* Seller ID	RCV_ID	Seller ID from the agreement form; entered without a hyphen	AN 15	x
4.	Language code	LANGUAGE	1= Finnish 2= Swedish 3= English	N 1	x
5.	Response type	RESPTYPE	"xml" => Response returned in the machine readable XML format "html" => Response returned in the human readable HTML format	A 4	x
6.	Additional data in the response	RESPDATA	html: If the response should include a form data group, enter the full action address of the form data group here. If the field is blank, no form data group will be linked to the response. xml: If you want another mime type than “text/html” for a response in the XML format, specify it in this field.	AN 120	x
7.	Displaying of program-format data	RESPDETL	“ “ No program-format data to the visible HTML “Y” Program-format data is displayed	A 1	x
8.	Code specifying the original e-payment, which is queried (either stamp or ref mandatory)	STAMP	Code of the original payment given by the merchant	AN 20	x
9.	Reference specifying the original e-payment, which is queried (either stamp or ref mandatory)	REF	Standard reference	AN 25	x
10	Payment amount	AMOUNT	Not in use	AN 13	x
11.	Payment currency	CUR	Not in use	A 3	x
12.	* MAC key version	KEYVERS	Key version, e.g. 0001	N 4	x
13.	* Algorithm used	ALG	“01“ = MD5 “02” = SHA-512	N 2	x
14.	* MAC authentication code of the query	MAC	The MAC authentication code of the query is formed from the data included in the query. If a field is left out (e.g. REF), the field in question and the & character are excluded from the MAC calculation.	AN 128	x

* = mandatory

x = information included in the MAC-calculation

4.2 MAC authentication code for query

The MAC authentication code is calculated as follows:

1. A character string is prepared from the values of query request parameters that are separated by & and presented in the same order as shown below:

VERSION&TIMESTMP&RCV_ID&LANGUAGE&RESPTYPE&RESPDATA&RESPDETL&STAMP&REF&AMOUNT&CUR&KEYVERS&ALG&Seller's MAC key&

2. Don't include the & character in case of an empty parameter value.
3. The character string should be encoded using ISO-8859-1.

Example 1:

0005&20211207144723000&12345678&3&xml&Y&1638882202&0001&01&LEHTI&

0005 = version (M)
20211207144723000 = timestamp (M)
12345678 = seller ID (M)
3 = language
xml = response type
Y = response detail
1638882202 = payment specifier
0001 = MAC key version
01 = algorithm
LEHTI = seller's MAC key

The result of the calculation for Example 1 is
B9E44EAE039341D9B1CE7F62416DD593

Example 2 (with all the request fields):

0005&20211207150456000&12345678&3&html&https://epayment.test.nordea.com/eshop/callback/query&Y&1638889422&33333333333333333331&1,0&EUR&0001&01&LEHTI&

0005 = version (M)
20211207150456000 = timestamp (M)
12345678 = seller ID (M)
3 = language
html = response type
https://epayment.test.nordea.com/eshop/callback/query = response data
Y = response detail
1638889422 = payment specifier
33333333333333333331 = reference
1,0 = payment amount
EUR = currency
0001 = MAC key version
01 = algorithm
LEHTI = seller's MAC key

The result of the calculation for Example 2 is

CA400457AE1B210249E8ACF1A490B4FD

Example 3 (ALG = 02):

0005&202112071504560000&12345678&3&xml&Y&1638889422&33333333333333333331&0001&02&LEHTI&

0005 = version (M)
202112071504560000 = timestamp (M)
12345678 = seller ID (M)
3 = language
xml = response type
Y = response detail
1638889422 = payment specifier
33333333333333333331 = reference
0001 = MAC key version
02 = algorithm
LEHTI = seller's MAC key

The result of the calculation for Example 3 is
661DBE26B693E6176B15E3150986396DC0D0FA36F1E7BC82DC70C3EF33DFAFDB8BA2F0A1BEC40E8A9740AC973A1F93A4C04724EC8270D87978559D83F90E90B7

4.3 E-payment query, response data

The response contains the following data:

Field	Data	Data name	Value	Form	MAC
1.	Query version	VERSION	"0005"	AN 4	x
2.	Time of query	TIMESTMP	In format "YYYYMMDDHHMMSSnnnn", in which nnnn is the ordinal number if needed e.g., 202112071504560000	N 18	x
3.	Seller ID	RCV_ID	Merchant ID	AN 15	x
4.	Return data	RESPCODE	"OK" if the payment is found and accepted (with EXPRESS payments it must also be checked that the response message includes the bank's archive ID in field PAID). "Notfound" if the payment is not found "Error" if the payment is unclear (contact the bank)	A 8	x
5.	Code of the original payment	STAMP	Code of the original payment given by the merchant	AN 20	x
6.	Seller's account	RCV_ACCOUNT	Other than the default account	AN 42	x
7.	Payment reference	REF	Standard reference	AN 25	x
8.	Payment date	DATE	In format "yyyyMMdd"	AN 10	x
9.	Payment amount	AMOUNT	e.g. 0000000009900 (= EUR 99)	AN 13	x
10.	Payment currency	CUR	Payment currency, EUR is only supported value.	A 3	x

11.	Payment archive ID for express payments	PAID	Bank's archive ID	AN 16	x
12.	Payment status	STATUS	“Prod”= production payment, ”Demo”= demo payment	A 4	x
13.	Payer’s account number	PAYER_ACCOUNT	Payer’s account number	AN 35	x (PSPs)
14.	Payer’s account name	PAYER_NAME	Payer’s name	AN 35	x (PSPs)
15.	Payer’s bank	PAYER_BANK	Payer’s bank nordea op spankki danskebank aktia alandsbanken handelsbanken saastopankki omasp poppankki siirto nettiluotto	A 15	
16.	MAC key version	KEYVERS	As in e-payment, key version, e.g. 0001	N 4	x
17.	Algorithm used	ALG	“01” = MD5 “02” = SHA-512	N 2	x
18.	MAC authentication code of the query response	MAC	Query MAC	AN 128	x

x = information included in the MAC-calculation

MAC authentication code is calculated generated out of the following fields as described in Section 3.3:

VERSION&TIMESTMP&RCV_ID&RESPCODE&STAMP&RCV_ACCOUNT&REF&DATE&AMOUNT&CUR&PAID&STATUS&KEYVERS&ALG&Seller’s MAC key&

Example 1 of MAC calculation:
0005&20200622105825000 1&12345678&OK&1471517136707&FI3120601800002009&248587880709&20160818&0000000000875&EUR&18082588INW10002&Demo&0001&01&LEHTI&

Result of the calculation: B3240DAE0FDC477F79EB885F5CB16DE6

Example 2 of MAC calculation for payment service providers:
VERSION&TIMESTMP&RCV_ID&RESPCODE&STAMP&RCV_ACCOUNT&REF&DATE&AMOUNT&CUR&PAID&STATUS&PAYER_ACCOUNT&PAYER_NAME&KEYVERS&ALG&Seller’s MAC key&

0005&20200622105825000 1&12345678&OK&1471517136707&FI3120601800002009&248587880709&20160818&0000000000875&EUR&18082588INW10002&Prod&FI11223344&Nimi&0001&01&LEHTI&

Result of the calculation: A037EC049B2A365909231D06DD59B223

The character string should be encoded using ISO-8859-1. Previous version (0004 or below) did support only 7-bit characters. Here is a list of string replaments used by MAC calculation (Ä=[, ä={, Ö=\, ö=|, Å=], å=}, ü=~).

4.4 Response format in different situations

If the query does not pass the MAC security check, the response will be the error message “MAC does not correspond to the bank’s calculation” and the RESPCODE data gets the value “Error”.

If the payment cannot be found or several payments have been made under the same reference, the payment data will not be returned. Instead, the error message “Payment not found” is delivered as a response. The query data will be shown in the program format part (upon request).

XML responses (RESPTYPE="xml") should be used when the response is handled programmatically. It will stay backward compatible on future versions.

HTML responses (RESPTYPE="html"):

- Plain HTML response: RESPDATA not included
- Plain payment template: RESPDETL not included
- Payment template and program-format data: RESPDETL="Y"

Button (“Register”) for transmitting payment data automatically: RESPDATA included.

4.5 Recommendations on how to use Query

Query API can be used to fetch payment status for example in case the user never returns using return URLs.

The user has 30 minutes to complete the payment starting from incoming payment request. After that “Notfound” status does not change. In case payment is unclear (“Error”) the status can still change which will be reflected in the result from query API. After 60 minutes the result from query API does not change.

5 Refunding an e-payment

5.1 E-payment refund data and format

The e-payment refund is in the form format and it must include the following data:

Form action: https://epmt.nordea.fi/cgi-bin/SOLOPM09
Form method: post
Form accept-charset: ISO-8859-1

Field	Data	Data name	Value	Form	MAC
1.	* Refund version	VERSION	“0005”	AN 4	x
2.	* Time of refund request	TIMESTMP	In format “YYYYMMDDHHMMSSnnnn”, in which nnnn is the ordinal number if needed e.g., 202112071504560000	N 18	x
3.	* Seller ID	RCV_ID	Merchant ID	AN 15	x
4.	Payment language	LANGUAGE	1= Finnish 2= Swedish 3= English	N 1	x
5.	Response type	RESPTYPE	"xml" => Response returned in the machine readable XML format "html" => Response returned in the human readable HTML format	A 4	x
6.	Additional data in the response	RESPDATA	HTML: If the response should include a form data group, enter the full action address of the form data group here. If the field is blank, no form data group will be linked to the response. XML: If you want another mime type than “text/html” for a response in the XML format, specify it in this field.	AN 120	x
7.	Displaying of program-format data	RESPDETL	“ “ No program-format data to the visible HTML “Y” Program-format data is displayed	A 1	x
8.	Code specifying the original e-payment, which is refunded (either stamp or ref mandatory)	STAMP	Code of the original payment given by the merchant	AN 20	x
9.	Reference specifying the original e-payment, which is refunded (either stamp or ref mandatory)	REF	Standard reference	AN 25	x
10.	* Refunded amount	AMOUNT	Amount to be refunded e.g. 990.00 or 990,00Please note that the amount may not exceed the amount of the original e-payment.	AN 13	x
11.	* Currency code	CUR	EUR The value of the currency code is included in the MAC field of the refund after the amount field.	A 3	x
12.	Refund reference	REF2	Payment’s refund reference	AN 25	x
13.	* MAC key version	KEYVERS	Key version, e.g. 0001	N 4	x
14.	* Algorithm used	ALG	“01” = MD5	N 2	x

			“02” = SHA-512		
15.	* MAC authentication code of the refund	MAC	The MAC authentication code of the refund is formed from the data included in the refund. If a field is left out (e.g. REF), the field in question and the & character are excluded from the MAC calculation.	AN 128	x

* = mandatory

x = information included in the MAC-calculation

5.2 MAC calculation for refund

The MAC authentication code is calculated as follows:

1. A character string is prepared from the values of refund request parameters that are separated by & and presented in the same order as shown below:

VERSION&TIMESTMP&RCV_ID&LANGUAGE&RESPTYPE&RESPDATA&RESPDETL&STAMP&REF&AMOUNT&CUR&REF2&KEYVERS&ALG&Seller’s MAC key&

2. Don't include the & character in case of an empty parameter value.
3. The character string should be encoded using ISO-8859-1.

Example 1 (with all request fields):

0005&202112071504560000&12345678&3&xml&test response data&Y&1638889422&33333333333333333331&0,50&EUR&9898989898989898996&0001&01&LEHTI&

0005 = version (M)
202112071504560000 = timestamp (M)
12345678 = seller ID (M)
3 = language
xml = response type
test response data = response data
Y = response detail
1638889422 = payment specifier
33333333333333333331 = original payment reference
0,50 = amount to be refunded
EUR = currency
98989898989898989896 = refund reference
0001 = MAC key version
01 = algorithm
LEHTI = seller’s MAC key

The result of the calculation for Example 1 is
9668A2C2211D352FF058FD6A14B19B55

Example 2 (without reference):

0005&202112071504560000&12345678&3&html&test&Y&1638889422&0,10&EUR&0001&01&LEHTI&

0005 = version (M)
202112071504560000 = timestamp (M)
12345678 = seller ID (M)
3 = language
html = response type
test = response data
Y = response detail
1638889422 = payment specifier
0,10 = amount to be refunded
EUR = currency
0001 = MAC key version
01 = algorithm
LEHTI = seller's MAC key

The result of the calculation for Example 2 is
E9808A1AEE70E266F1558ACDADD9B09E

Example 3 (ALG = 02):

0005&202112071504560000&12345678&3&html&test&Y&1638889422&0,10
&EUR&0001&02&LEHTI&

0005 = version (M)
202112071504560000 = timestamp (M)
12345678 = seller ID (M)
3 = language
html = response type
test = response data
Y = response detail
1638889422 = payment specifier
0,10 = amount to be refunded
EUR = currency
0001 = MAC key version
02 = algorithm
LEHTI = seller's MAC key

The result of the calculation for Example 3 is

0C88BAB74F3C32387632E65841425E280611B4C508EB8E44D84131E036
6869866BC2EC26D6EC5A8D720E6ABB599997940209BC744044B6D901363971D
1CA86EF

5.3 Refund request response data

The response contains the following data:

Field	Data	Data name	Value	Format	MAC
1.	Refund version	VERSION	"0005"	AN 4	x
2.	Time of refund request	TIMESTMP	In format "YYYYMMDDHHMMSSnnnn", in which nnnn is the ordinal number if needed e.g., 202112071504560000	N 18	x
3.	Seller ID	RCV_ID	Merchant ID	AN 15	x
4.	Return data	RESPCODE	"OK" Refund successful "Notfound" if the payment is not found	A 8	x

			“Error” Refund not made		
5.	Code of the original payment	STAMP	Code of the original payment given by the merchant	AN 20	x
6.	Merchant’s account number	RCV_ACCOUNT	Account from which the refund is made	AN 42	x
7.	Refund reference	REF	Standard reference	AN 25	x
8.	Refund payment date	DATE	“yyyyMMdd”	AN 10	x
9.	Refunded amount	AMOUNT	FOR EXAMPLE: 0000000009900 (= EUR 99)	AN 13	x
10.	Refund archive ID	PAID	Archive ID of refunded payment	AN 16	x
11.	Payment currency	CUR	EUR	A 3	x
12.	Payment status	STATUS	Prod=production payment, Test=test payment	A 4	x
13.	MAC key version	KEYVERS	As in e-payment, key version, e.g. 0001	N 4	x
14.	Algorithm used	ALG	“01” = MD5 “02” = SHA-512	N 2	x
15.	MAC authentication code of the refund response	MAC	The MAC authentication code of the refund is formed from the fields included in the refund response. If a field is left out, the field in question and the & character are excluded from the MAC calculation. In addition, the field REF and the & character are excluded from the MAC calculation if the field has not been included in the field REF2 of the refund request.	AN 128	x

x = information included in the MAC-calculation

MAC authentication code is calculated generated out of the following fields as described in Section 3.3:

VERSION&TIMESTMP&RCV_ID&RESPCODE&STAMP&RCV_ACCOUNT&REF&DATE&AMOUNT&CUR&PAID&STATUS&KEYVERS&ALG&Seller’s MAC key&

An example of MAC calculation:

0005&20200622105825001&12345678&OK&501&FI7429501800000014&248587880709&20200622&0000000009900&EUR&19082588INWXTEST&Prod&0001&01&LEHTI&

Result of the calculation: D24B30F173BC650A340817EF2A121ED7

5.4 Response format in different situations

Invalid MAC value in the refund request results in an error message - "The security control digit does not match the one calculated by the bank" whereas the response field - RESPCODE contains "Error".

If an attempt is made to refund the same e-payment twice, the message “Already refunded” will appear.If the amount to be refunded exceeds the amount of the original payment, the message “Amount exceeds the allowable limit” will appear.

If the refund is requested after twelve (12) months from the original payment date, the message “Not possible to refund” will appear.

If the refund is requested after original payment amount is already refunded in full, the

message “Already refunded” will appear.

“Several payments found" message appears when refund is requested without stamp.

XML responses (RESPTYPE="xml") should be used when the response is handled programmatically. It will stay backward compatible on future versions.

HTML responses (RESPTYPE="html"):

- Plain HTML response: RESPDATA not included
- Plain payment template: RESPDETL not included
- Payment template and program-format data: RESPDETL="Y"
- Button (“Register”) for transmitting payment data automatically: RESPDATA included.

6 Status endpoint

Status endpoint can be used to check status of e-payment services. Requests to SOLOPM01 should not be used to check uptime of the services.

Http GET: https://epmt.nordea.fi/status

Expected http status code: 200

7 Migration from older API versions

7.1 Changes in version 0005 August 2020 and January 2022

It’s recommended to migrate to version 0005 and switch MAC algorithm to SHA-512 instead of using outdated and insecure MD5. Set ALG field to “02”.

Added new status endpoint.

SOLOPMT -prefix no longer supported for field names.

New payment request fields: BANK, SIIRTO_NUMBER

Deprecated payment request fields: SIIRTO

Deprecated query request fields: AMOUNT, CUR

New query response fields: PAYER_BANK

Refunds: added support for multiple partial refunds. (January 2022)

Refunds: allowed timelimit extended to twelve (12) months (January 2022)

Refunds: RESPDATA field length corrected (AN20 to AN120). (January 2022)

MAC calculations: added examples (January 2022)

Minor updates to request- and response field descriptions, with examples (January 2022)

7.2 Changes in version 0004

New payment request fields: ALG, KEYVERSION, SIIRTO

New payment request fields for payment service providers: ULT_BEN_ACCOUNT, ULT_BEN_ACCOUNT_BIC, ULT_BEN_NAME, ULT_BEN_BID

All above fields are part of MAC calculation including MERCHANT_IBAN, MERCHANT_NAME.

Query response fields PAYER_ACCOUNT and PAYER_NAME are part of MAC calculation for PSPs.

8 Terms used

Seller	An online merchant that offers products or services for purchase in its own online store or an online store built by an online store supplier
PSP	Payment service provider
Buyer	A customer of an online store who orders products or services and pays for his or her purchases with e-payment
Testing/test seller	It is possible to test the functionality of e-payment with test merchant test codes of a test merchant provided in section 2 “Testing” of this Service Description before concluding the agreement or the adoption date of the service. • Seller ID (RCV ID) 12345678 and MAC key LEHTI
Testing/test buyer	Test buyer access codes that have been pre-entered when testing e-payment
TLS (Transport Layer Security) / SSL (Secure Socket Layer) encryption technology	Encryption technology used for exchanging information between the buyer and Nordea, which makes it impossible for third parties to read or change the transmitted information
MAC key	A 32-character code delivered by the bank by post in an envelope and used for calculating the MAC
MAC key version	A 4-digit version number indicated in the MAC key envelope delivered by the bank by post Note! The version number changes only when a new MAC key has to be ordered.
MAC authentication code	A string of 32 characters produced by the system when the information required for forming the MAC has been entered The received value is taken to the Payment MAC field.
MD5 algorithm	MD5 is a so-called message digest algorithm which is used for revealing whether the content of a file has changed (e.g. deliberate forgery or data transfer error). It has been found to suffer from extensive vulnerabilities and should not be used anymore.
SHA-512 algorithm	SHA-2 is set of cryptographic hash functions and SHA-512 has digest length of 512 bits. This is the preferred algorithm.