

# LF Command: Read Field Definitions

The LF command reads the characteristics of all fields in a file.

This chapter covers the following topics:

- Function and Use
  - Command: LF
  - Control Block
  - Record Buffer
  - Example
- 

## Function and Use

The LF command is used to read the field definition information for a file. This command is used primarily by Adabas subsystems; it is normally not used by an application program.

The user specifies the file number for which the field definitions are to be returned.

Adabas provides the field information in the record buffer in one of three formats, according to the setting of the command option 2 field.

## Command: LF

### User Control Block

Field	Position	Format	Before Adabas Call	After Adabas Call
	1-2	--	--	--
COMMAND CODE	3-4	alphanumeric	F	U
	5-8	--	--	--
FILE NUMBER	9-10	binary	F	U
RESPONSE CODE	11-12	binary	--	A
	13-26	--	--	--
RECORD BUFFER LENGTH	27-28	binary	F	U
	29-35	--	--	--
COMMAND OPTION 2	36	alphanumeric	F	U
	37-48	--	--	--
ADDITIONS 3	49-56	alphanumeric	F	A
	57-72	--	--	--
COMMAND TIME	73-76	binary	--	A
USER AREA	77-80	--	--	U

### User Buffer Areas

Buffer	Before Adabas Call	After Adabas Call
FORMAT BUFFER	*	--
RECORD BUFFER	--	A

where:

- F Filled in by user before Adabas Call
- A Filled in by Adabas
- U Unchanged after Adabas call
- \* Not used but must be included in parameter list of call statement
- Not used

## Control Block

### Command Code

LF

**File Number**

The number of the file for which the field definition information is to be returned.

**Note:**

When using two-byte file numbers and database IDs, a X'30' must be coded in the first byte of the control block.

**Response Code**

Adabas returns the response code for the command in this field. Response code 0 indicates that the command was executed successfully. If the LF command returns a nonzero response code, the rightmost two bytes of Adabas control block bytes 45-48 (additions 2 field) may contain a subcode defining the exact response code meaning. Response codes and their subcodes are defined in the *Adabas Messages and Codes* documentation.

**Record Buffer Length**

The record buffer length (in bytes). The length specified must be large enough to contain all field definition information for the file, but not larger than the size of the record buffer area defined in the user program. If you specify the internal format (I) command option, the maximum possible output is four Associator blocks.

**Command Option 2: Type of Information to Be Displayed**

The setting of the command option 2 field determines the format and type of field information to be returned in the record buffer.

Option	Description
S	returns all field information, including collation descriptor, subfield and superfield, subdescriptor, superdescriptor, hyperdescriptor, and phonetic descriptor information.
I	returns all field information in Adabas internal format.

If this field is left blank or contains binary zero, the LF command returns field information *excluding* sub-/super-/hyper-/phonetic or collation descriptor information. This is the same format as provided in Adabas version 4.

**Additions 3: Password**

This field is used to provide a security password. If the file to be used is not security-protected, this field should be set to blanks. If the file is security-protected, the user must provide a valid password.

If the accessed file is password-protected, Adabas replaces the password with blanks during command processing to protect password integrity.

## Record Buffer

All field definition information is returned in the record buffer.

### Command Option 2 is Set to "S"

If the command option 2 field is set to "S", all field information, including collation descriptor, subdescriptor, superdescriptor, hyperdescriptor, and phonetic descriptor and sub-/superfield information is returned in the following format:

Bytes	Usage
1-2	total length of information
3-4	number of fields in the FDT (including SDTs, as described below)
5-n	field definitions: each entry is 8 bytes, maximum number of entries is 926
(n+1) - m	<p>special descriptor table (SDT) including</p> <ul style="list-style-type: none"> <li>● sub-/superdescriptors (or sub-/superfields)</li> <li>● phonetic descriptors</li> <li>● hyperdescriptors</li> <li>● collation descriptors</li> </ul> <p>The length of a sub-/phonetic/collation descriptor element is eight bytes. Superdescriptor or hyperdescriptor elements are two or more 8-byte entries long.</p>

### FDT Field Definitions

`'F' field-name option level length format`

Notation	Bytes	Usage
'F'	1	'F' indicates FDT field definition
field-name	2-3	field name

Notation	Bytes	Usage
option	4	definition options:
		bit 1=1      descriptor
		bit 2=1      fixed length
		bit 3=1      multiple-value field
		bit 4=1      null suppression
		bit 5=1      periodic-group field
		bit 6=1      parent of phonetic descriptor
		bit 7=1      parent of sub-/superdescriptor
		bit 8=1      unique descriptor
level	5	level number (in binary)
length	6	length

Notation	Bytes	Usage														
format	7	type of data:														
		<table border="0"> <tr><td>A</td><td>alphanumeric</td></tr> <tr><td>B</td><td>binary</td></tr> <tr><td>F</td><td>fixed point</td></tr> <tr><td>G</td><td>floating point</td></tr> <tr><td>P</td><td>packed decimal</td></tr> <tr><td>U</td><td>unpacked decimal</td></tr> <tr><td>W</td><td>wide-character</td></tr> </table>	A	alphanumeric	B	binary	F	fixed point	G	floating point	P	packed decimal	U	unpacked decimal	W	wide-character
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B	binary															
F	fixed point															
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P	packed decimal															
U	unpacked decimal															
W	wide-character															
	8	options (continued)														
		<table border="0"> <tr><td>bit 1</td><td>(unused)</td></tr> <tr><td>bit 2=1</td><td>NV (not converted) option</td></tr> <tr><td>bit 3</td><td>(unused)</td></tr> <tr><td>bit 4=1</td><td>XI (exclude PE occurrence number from UQ) option</td></tr> <tr><td>bit 5=1</td><td>LA (long alpha) option</td></tr> <tr><td>bit 6</td><td>(unused)</td></tr> <tr><td>bit 7=1</td><td>NN option</td></tr> <tr><td>bit 8=1</td><td>NC option</td></tr> </table>	bit 1	(unused)	bit 2=1	NV (not converted) option	bit 3	(unused)	bit 4=1	XI (exclude PE occurrence number from UQ) option	bit 5=1	LA (long alpha) option	bit 6	(unused)	bit 7=1	NN option
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bit 8=1	NC option															

**Note:**

A field within a periodic group has the following characteristics: - an option field (byte 4) with bit 5=1; and - a level field (byte 5) with level number *greater than* 1. The periodic group field itself always has option bit 5=1 and a level number of 1.

**SDT Field Definitions**

X SDT-definition
------------------

where X is one of the following:

'C'	collation descriptor, see the section <i>Collation Descriptor Definition</i>
'H'	hyperdescriptor, see the section <i>Hyperdescriptor Definition</i>
'P'	phonetic descriptor, see the section <i>Phonetic Descriptor Definition</i>
'S'	subfield/descriptor, see the section <i>Subfield/Subdescriptor Definition</i>
'T'	superfield/descriptor, see the section <i>Superdescriptor/Superfield Definition</i>
X'00'	element continuation

### Collation Descriptor Definition

```
'C' name option exit length p-field-name
```

Notation	Bytes	Usage
'C'	1	'C' indicates collation descriptor
name	2-3	collation descriptor name
option	4	definition options: bit 1=1      descriptor bit 2=1      exclude PE occurrence number from UQ bit 3=1      multiple-value format bit 4=1      null-value suppression bit 5=1      periodic-group field bits 6-7      (unused) bit 8=1      unique descriptor
exit	5	collation exit number (binary, values 1-8 permitted)
length	6	length
p-field-name	7-8	parent-field name

### Hyperdescriptor Definition

```
'H' name option exit length format X'00'  
X'00' X'00' p-fieldname-list ...
```

Notation	Bytes	Usage
'H'	1	'H' indicates a hyperdescriptor definition
name	2-3	hyperdescriptor name
option	4	definition options: bit 1            (unused) bit 2=1        fixed length bit 3=1        multiple value bit 4=1        null-value suppression bit 5=1        periodic group bit 6-7        (unused) bit 8=1        unique descriptor
level	5	hyperexit number (binary; values 1-31 permitted)
length	6	length
format	7	format: A            alphanumeric B            binary F            fixed point G            floating point P            packed decimal U            unpacked decimal
X'00'	8	options (continued) bits 1-3        (unused) bit 4=1        XI (exclude PE occurrence number from UQ) option bits 5-8        (unused)

A hyperdescriptor parent-field name list is an extension of a hyperdescriptor definition. It has the following format for all eight-byte groups after the first:



Notation	Bytes	Explanation
X'00'	1	X'00' indicates continuation
X'00'	2	(unused)
p-fieldname-list...	3-8	parent-field name list: each name is two bytes; six bytes total (that is, three names. If fewer than three names are provided, the additional bytes are filled with X'00').

### Phonetic Descriptor Definition

```
'P' desc-name option p-field-name X'0000'
```

Notation	Bytes	Explanation
'P'	1	'P' indicates phonetic descriptor
desc-name	2-3	phonetic descriptor name
option	4	(unused)
p-field-name	5-6	parent-field name
X'0000'	7-8	(unused; set to nulls)

### Subfield/Subdescriptor Definition

```
'S's-name option p-field-name from to
```



Notation	Bytes	Usage
'T'	1	'T' indicates superdescriptor/superfield
sup-name	2-3	superdescriptor name
option	4	definition options: bit 1=1            descriptor bit 2=1            exclude PE occurrence number from UQ bit 3=1            multiple-value format bit 4=1            null-value suppression bit 5=1            periodic-group field bit 6-7            (unused) bit 8=1            unique descriptor
p-field-name	5-6	parent-field name
from	7	starting (inclusive) byte
to	8	ending (inclusive) byte

Extension of a superdescriptor or superfield definition has the following format on all eight-byte groups after the first:

Notation	Bytes	Explanation
X'00'	1	indicates continuation
X'000000'	2-4	(unused)
p-field-name	5-6	parent-field name
from	7	starting (inclusive) byte
to	8	ending (inclusive) byte

## Command Option 2 is Set to "I"

If "I" is set for command option 2, field information is returned in Adabas internal format:

Bytes	Contents
1	X'80'
2	B'00000xyz' where xyz are ciphering bits: 1=yes; 0=no x user y new z old
3-4	total length of FDT, FDT upper index (UI), and SDT (length bytes included)
5-6	FDT length, in bytes (length bytes included)
7-n	FDT field descriptor elements (10 bytes per element; see the following description)
n+1 & n+2	length of FDT upper index (UI) structure (including length bytes)
n+3 to n+3+(n+1/n+2)	upper index (UI)
UI & UI+1	SDT table length (including length bytes)
UI+2 to UI+2 + (UI/UI+1)	SDT table structure

FDT elements beginning in byte 7 each have the format of the FDTE DSECT:

Element Byte	Format
0	level definition
1 - 2	field name
3	field length
4	field format
5	descriptor definition
6	periodic group descriptor
7	security control byte
8 - 9	FDT element pointer

The meaning of FDT elements is described in the Adabas architecture training information.

The FDT is stored in up to four Associator blocks. Therefore, the maximum possible record buffer length is the length of four Associator blocks.

## Command Option 2 is Set to Neither S Nor I

**Note:**

Command option 2 may be set to values other than "I" or "S" to support older programs; these values do not support newer features. Software AG recommends "I" or "S" for new programs.

If the command option 2 field contains neither "I" nor "S", the field information returned *excludes* collation descriptor and sub-/super-/hyper-/phonetic descriptor information. The information is provided in the same format as provided in Adabas version 4:

```
n field-def
```

where:

- n is the number of fields in the file. The number is provided as a four-byte binary number in the first four bytes of the record buffer.
- field-def is the field definition information for each field within the file. The information for each field is provided in six bytes according to the following format:

Bytes	Usage
1	level number (binary)
2 - 3	name (alphanumeric)
4	standard length (binary)
5	standard format (alphanumeric): A        alphanumeric B        binary F        fixed point G        floating point P        packed decimal U        unpacked decimal W        wide-character
6	definition options: bit 1=1    descriptor bit 2=1    fixed storage bit 3=1    multiple-value field bit 4=1    null-value suppression bit 5=1    periodic group field bit 6=1    phonetic source field bit 7=1    sub-/superdescriptor source field bit 8=1    unique descriptor

The information for the next field immediately follows the information for the preceding field with no intervening spaces.

## Example

The field definition information for file 1 is to be read.

**Control Block**

<b>Command Code</b>	LF	
<b>File Number</b>	1	field definitions requested for file 1
<b>Record Buffer Length</b>	100	
<b>Command Option 2</b>	S	information for all types of descriptors and sub/superfields is to be returned
<b>Additions 3</b>	bbbbbbb	file is not security-protected