International Forecourt Standards Forum

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1. INTRODUCTION

1.1 Background

This is an International Forecourt Standards Forum (IFSF) Engineering Bulletin. Its purpose is to help IFSF Technical Interested Parties (TIPs) to develop and implement IFSF standards.

An Engineering Bulletin collects all the available technical information about a single subject into one document to assist development and implementation of the IFSF communication specification over LONWORKS and TCP/IP protocols in the service station environment. The information is provided by TIPs, third party organisations such as CECOD, PCATS, LonMark and NRF, and the IFSF member oil companies,

Any comments or contribution to this or any other Engineering Bulletin is welcome. Please e-mail any comments or contribution to techsupport@ifsf.org.. The IFSF is particularly anxious that any known errors or omissions are reported promptly so that the document can be updated and reissued and remain a useful and working practical publication.

1.2 Scope

The scope of this Engineering Bulletin is the handling of common field formats used in IFSF standards.

1.3 Definitions

IFSF	International Forecourt Standards Forum
TIP	IFSF Technical Interested Party

1.4 Acknowledgements

The IFSF gratefully acknowledge the contribution of the following persons in preparation of this publication:

Name	Organisation
John Carrier	Shell Europe Oil Products, UK
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2. COMMON FIELD FORMATS

2.1 Field Formats

Please see below for a list of common field formats. After each of the fields there are some examples.

Field	Format	Description
binX	-	X = number of binary bits. X can be 8 for one byte, 16 for two bytes, 24 for three bytes, 32 for 3 bytes, 40 for 5 bytes or 48 for 6 bytes. The bit numbering is bit1 - bit8 (where bit1 is the lowest bit).
maxbinX	-	X = maximum number of binary bits. X can be 8 for one byte, 16 for two bytes, 24 for three bytes, 32 for 3 bytes, 40 for 5 bytes or 48 for 6 bytes. The bit numbering is bit1 - bit8 (where bit1 is the lowest bit). This field format differs from binX in as much as binX is a fixed length and maxbinX is a variable length.
bcdX	-	X = number of bcd digits. X is an even number because two bcd digits are one byte (e.g. bcd4 are four bcd digits in two bytes).
ascX	-	X = number of ascii bytes
hexX	-	X = number of hexadecimal bytes
CMD	-	Command with no data
LNIB	bit1 to bit4	The low nibble (LNIB) is bit1 - bit4 from a byte.
HNIB	bit5 to bit8	The high nibble (HNIB) is bit5 - bit8 from a byte.
VOLUME	bin8 + bcd8	Volume value (used for fuelling transaction data).
AMOUNT	bin8 + bcd8	Amount value (used for fuelling transaction data).
ELEMENT_MASK	bit64	Washing Elements. Each bit represents a different service for a wash (used for car wash programmes and options).
METER	bcd6	Meter value (used for car wash programmes and options).

UNIT_PRICE	bin8 + bcd6	Unit price value (used for fuelling transaction data).
TEMP	bin8 + bcd4	Temperature value (used for fuelling transaction data).
LONG_TEMP	bin8 + bcd6	Temperature value (used for fuelling transaction data).
LONG_VOLUME	bin8 + bcd12	Volume value (used for totals).
LONG_AMOUNT	Bin8 + bcd12	Amount value (used for totals).
LONG_NUMBER	Bin8 + bcd12	Number value (used for totals).
DATE	Bcd8	CCYYMMDD Example: 19930512 = 12 May 1993
TIME	Bcd6	HHMMSS Example: 152348 = 15:23:48h or 03:23:48h pm
LEVEL	Bcd8	Level value (as used for level readings by tank level gauges). This is an integer value of increments of the resolution detailed in the following table, according to the Units of Measurement used, eg: Metric level would be reported in 0.001 mm (one thousandth of a mm). US or Imperial level would be reported in 0.0001 inch (one ten thousandth of an inch).

2.2 Values and Totals

In the table above a common definition is used for values and totals, i.e. bin8 + (bcd4, bcd6, bcd8 or bcd12). These Common field types are defined belows:

bin8 = Sign and decimal point position from left:

bit8 : 0 = positive value, 1 = negative value

bit7-1 : decimal point position from left (0-127)

bcdx =value using bcd digits (2 digits per byte).

Floating Point Examples:

06,12,34,56,78	=	123456.78
0B,12,34,56,78	=	12345678000
06,00,12,34	=	1234
03,00,00	=	000.0
82,12,34	=	- 12.34

2.3 Units of Measurement

In the data descriptions that follow, the Units of Measurement should be interpreted as follows:

	METRIC		US		IMPERIAL	
Field	units	resolution	units	resolution	units	resolution
Level	mm	0.001	inches	0.0001	inches	0.0001
Temp	deg C	0.01	deg F	0.01	deg F	0.01
Volume	litres	0.01	Galls (US)	0.01	Galls (UK)	0.01

The default Units of Measurement should be METRIC.