



# UND File Specification

Urban Network Datafile for MOUSE



## 1. INTRODUCTION

The UND in-data file for MOUSE includes data from former SWF, BSF, PWF, RTC, PID, ADP and CBF-files. The extension UND denotes Urban Network Data.

The format of the file is the DHI pfs-file format. This type of syntax is also used for the other in-data files for MOUSE, i.e. HGF, DWF, MPR, RPF, RSF, ERS. The pfs-file format is a text format.

Generally, the best way to work with the in-data is using the MOUSE editor, which subsequently saves the in-data in the UND file. Advanced user may wish to edit the file directly. This can be done by using either a standard text editor like Notepad or by using a spreadsheet program like Excel. If using Excel the file must be opened as an comma delimited file and after editing the file saved as such again. Excel will often add trailing commas after some of the lines. This entails problems only at lines with target and section headers, i.e. all lines ending with a right bracket ']'. Commas in such lines will have to be removed before using the file in MOUSE.

A third option of how to edit in-data files outside the MOUSE editor is to establish an ODBC link between your database and MOUSE. Please refer to the MOUSE User Guide for information about this subject.

The rest of this document describes the content of the UND-file, facilitating editing of the file manually.

## 2. STRING SENSITIVITY AND LENGTH

All strings in the UND file are encompassed by ' , e.g. 'MyNodeName'. MOUSE is **case sensitive**, which is a change compared to older versions of MOUSE. The case sensitivity is needed in order to be able to support language versions (that do not use Arabic letters) in a better way. If case sensitivity presents problems it is recommended to switch on the Caps Lock on the keyboard when entering data in MOUSE.

*MOUSE will operate **with** ('NODENAME' <> 'NodeName' <> 'nodename'). **Blank spaces** in all string identifiers are allowed.*

*Strings written by the MOUSE editor has a maximum length of 25 characters.*

### 3. MOUSE TARGETS

The UND file contains a number of targets that describe the type of data within that section of the file.

MOUSE targets:

[MOUSE\_NODES]

[MOUSE\_LINKS]

[MOUSE\_PUMPS]

[MOUSE\_WEIRS]

[MOUSE\_ORIFICES]

[MOUSE\_PASSIVE\_CONTROL]

[MOUSE\_HYDRAULIC\_PARAMETERS]

[MOUSE\_TABULAR\_DATA]

[MOUSE\_CROSS\_SECTIONS]

[MOUSE\_TOPOGRAPHY]

[MOUSE\_BOUNDARY\_CONNECTIONS]

[MOUSE\_COMMENTS]

[MOUSE\_RTC\_SENSORS]

[MOUSE\_RTC\_LOGIC\_CONDITIONS]

[MOUSE\_RTC\_CONTROL\_FUNCTIONS]

[MOUSE\_RTC\_PID\_SET]

[MOUSE\_RTC\_CONTROLLED\_DEVICES]

## 4. [MOUSE\_NODES]

### Definition:

```

SYNTAX_VERSION = 2.0
MANNING_TYPE = 1 // 1 = Manning M, 2 = Manning n=1/M
UNIT_TYPE = 1 // 1 = SI, 2 = US
NODE = 'NodeID', TypeNo, X, Y, Diameter, InvertLevel, GroundLevel,
WaterLevel, CriticalLevel, OutletShapeNo, 'DataSetID', RMNodeType,
RMPressureLevel, TopType, BufferPressLevel, RelWeirCoeff

```

### Description:

Target: [MOUSE\_NODES]

Section: -

Keyword: Node

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	NodeID	-	-	Max. length in interface is 25 ch.
2	Integer	TypeNo	-	-	1=Manhole, 2=Basin, 3=Outlet, 4=Storage Node
3	Double	X	m	ft	X-coordinate
4	Double	Y	m	ft	Y-coordinate
5	Double	Diameter	m	ft	Manhole diameter
6	Double	InvertLevel	m	ft	Bottom of the manhole
7	Double	GroundLevel	m	ft	Top of the manhole
8	Double	Waterlevel	m	ft	Water level in outlets
9	Double	CriticalLevel	m	ft	Critical level
10	Integer	OutletShapeNo	-	-	1=Round Edged, 2=Sharp Edged, 3=Orifice, 4=NoCRS1, 5=EnergyLoss, 6=NoCRS2, 7=Effective flow area1, 8= Effective flow area2, 9= Mean Energy approach
11	String	DataSetID	-	-	ID for data holding basin geometry
12	Integer	RMNodeType	-	-	1=Pressure main node 2=Pressure main receiving manhole
13	Double	RMPressureLevel	m	Ft	Pressure level. Optional parameter for a pressure main node.
14	Integer	TopType	-	-	1=Normal 2=Sealed 3=Spilling
15	Double	BufferPressLevel	m	Ft	Optional parameter for spilling nodes. If omitted def. value = 0.0 is used.
16	Double	RelWeirCoeff	-	-	Relative weir coefficient. Optional parameter for spilling nodes. If omitted def. value = 1.0 is used.

## 5. [MOUSE\_LINKS]

### Definition:

```

SYNTAX_VERSION = 3.0
MANNING_TYPE = 1           // 1 = Manning M, 2 = Manning n=1/M
UNIT_TYPE = 1             // 1 = SI, 2 = US
LENGTH_TYPE = 1          // 1 = Center, 2 = Edge
LINK = 'LinkID', 'FromNode', 'ToNode', TypeNo, 'CRSID',
ScalingTypeNo, Diameter, ScaleOrWidth, Height, MaterialNo, UpLevel,
DwLevel, Infiltration, SpecifiedLength, RMApproach, TopographyID,
MaxDx

```

### Description:

Target: [MOUSE\_LINKS]

Section: -

Keyword: LINK

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	LinkID	-	-	Link identifier, max 25 characters
2	String	FromNode	-	-	Upstream node
3	String	ToNode	-	-	Downstream node
4	Integer	TypeNo	-	-	1 = Circular, 2 = CRS, 3 = Rectangular, 4 = O-shaped, 5 = Egg-shaped, 6 = Square 7 = Natural Channel
5	String	CRSID	-	-	Cross section name
6	Integer	ScalingTypeNo	-	-	1 = Scale, 2 = Height&Width
7	Double	Diameter	m	ft	Diameter of circular pipes
8	Double	ScaleOrWidth	-/m	-/ft	Scale factor or width
9	Double	Height	m	ft	Height
10	Integer	MaterialNo	-	-	1 = Smooth Concrete, 2 = Normal Concrete, 3 = Rough Concrete, 4 = Plastic, 5 = Iron, 6 = Ceramics, 7 = Stone, 8 = Other
11	Double	UpLevel	m	ft	Upstream specified invert level
12	Double	DwLevel	m	ft	Downstream specified invertlevel
13	Double	Infiltration	m <sup>3</sup> /s/m	cfs/ft *	Infiltration per length
14	Double	SpecifiedLength	m	ft	Specified length (curved pipes)
15	Integer	RMApproach	-	-	1=Normal link 2=RM Link, Approach 2
16	String	TopographyID	-	-	Topography name
16	Double	MaxDx	m	ft	Maximum between cross sections

\* cfs/ft equals cubic feet per second per feet

## 6. [MOUSE\_PUMPS]

Definition:

```
SYNTAX_VERSION = 2.0
UNIT_TYPE = 1 // 1 = SI, 2 = US
PUMP = 'PumpID', 'Location', 'FlowTo', TypeNo, 'DataSetID1',
OffsetLevel, StartLevel, StopLevel,
ControlTypeNo, AccTime, DecTime, MinTimePumpOff, MinTimePumpOn,
MaxStartLevel, MinStopLevel, 'DataSetID2', WetWellSetpoint
```

Description:

Target: [MOUSE\_PUMPS]

Section: -

Keyword: PUMP

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	PumpID	-	-	Pump name max. 25 characters
2	String	Location	-	-	NodeID where pump is placed
3	String	FlowTo	-	-	NodeID where flow is diverted to
4	Integer	TypeNo	-	-	1 = Screw (H - Q), 2 = Differential Head (dH - Q)
5	String	DataSetID1	-	-	Name of pump characteristic
6	Double	OffsetLevel	m	ft	Value added to characteristic
7	Double	StartLevel	m	ft	Start water level for pump
8	Double	StopLevel	m	ft	Stop water level for pump
9	Integer	ControlTypeNo	-	-	1 = No Control, 2 = RTC Control 3 = Variable Speed Pump
10	Integer	AccTime	Sec	Sec	Acceleration time for pump
11	Integer	DecTime	Sec	Sec	Deceleration time for pump
12	Integer	MinTimePumpOff	Min	Min	Minimum time the pump has to be off
13	Integer	MinTimePumpOn	Min	Min	Minimum time the pump has to run
14	Double	MaxStartLevel	m	ft	Maximum Start water level for pump
15	Double	MinStopLevel	m	ft	Minimum Stop water level for pump
16	String	DataSetID2	-	-	Acceleration Curve
17	Double	WetWellSetpoint	m	ft	Setpoint in the wet well

## 7. [MOUSE\_WEIRS]

### Definition:

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1    // 1 = SI, 2 = US
WEIR = 'WeirID', 'Location', 'FlowTo', CrestLevel, MethodNo,
'DataSetID', CrestTypeNo, CrestWidth, WeirFlowAngle,
WeirCoefficient, ControlTypeNo, MaxSpeedUp, MaxSpeedDown, MaxLevel,
MinLevel
  
```

### Description:

Target: [MOUSE\_WEIRS]

Section: -

Keyword: WEIR

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	WeirID	-	-	Weir name max. 25 characters
2	String	Location	-	-	NodeID where weir is placed
3	String	FlowTo	-	-	NodeID where flow is diverted to
4	Double	CrestLevel	m	ft	Crest level
5	Integer	MethodNo	-	-	1 = Q-H, 2 = Weir formula
6	String	DataSetID	-	-	Name of Data set
7	Integer	CrestTypeNo	-	-	1=Sharp crested, 2=Broad crested
8	Double	CrestWidth	m	ft	Crest width
9	Double	WeirFlowAngle	°	°	0° or 90°
10	Double	WeirCoefficient	-	-	Dimensionless head loss coef.
11	Integer	ControlTypeNo			1=NoControl, 2=RTCControl.
12	Double	MaxSpeedUp	m/s	Cfs	Maximum speed upward
13	Double	MaxSpeedDwn	m/s	Cfs	Maximum speed downward
14	Double	MaxLevel	m	ft	Maximum Level of weir
15	Double	MinxLevel	m	ft	Minimum Level of weir

## 8. [MOUSE\_ORIFICES]

### Definition:

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1 // 1 = SI, 2 = US
ORIFICE = 'OrificeID', 'FromNode', 'ToNode', TypeNo, 'CRSID',
ScalingTypeNo, Diameter, ScaleOrWidth, Height, InvertLevel,
ControlTypeNo, MaxSpeedUp, MaxSpeedDown, MaxLevel, MinLevel

```

### Description:

Target: [MOUSE\_ORIFICES]

Keyword: ORIFICE

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	OrificeID	-	-	Link identifier, max 25 characters
2	String	FromNode	-	-	Upstream node
3	String	ToNode	-	-	Downstream node
4	Integer	TypeNo	-	-	1 = Circular, 2 = CRS, 3 = Rectangular
5	String	CRSID	-	-	Cross section name
6	Integer	ScalingTypeNo	-	-	1 = Scale, 2 = Height&Width
7	Double	Diameter	m	ft	Diameter of circular pipes
8	Double	ScaleOrWidth	-/m	-/ft	Scale factor or width
9	Double	Height	m	ft	Height
10	Double	InvertLevel	m	ft	Specified invert level
11	Integer	ControlTypeNo			1=NoControl, 2=RTCControl.
12	Double	MaxSpeedUp	m/s	Cfs	Maximum speed upward
13	Double	MaxSpeedDwn	m/s	Cfs	Maximum speed downward
14	Double	MaxLevel	m	ft	Maximum Level of weir
15	Double	MinxLevel	m	ft	Minimum Level of weir

## 9. [MOUSE\_PASSIVE\_CONTROL]

This target hold information from the menus:

Passive flow regulation...  
 Emptying storage nodes  
 Q-H relations in outflow nodes

### Definition:

```
SYNTAX_VERSION = 1.0
UNIT_TYPE = 1    // 1 = SI, 2 = US
PASSIVE_CONTROL = 'LinkID', TypeNo, 'ControlNodeA', 'ControlNodeB',
'DataSetID'
EMPTY_STORAGE_NODE = 'NodeID', 'FlowTo', 'ControlNodeID',
'DataSetID'
OUTLET_QH = 'NodeID', 'DataSetID'
```

### Description:

Target: [MOUSE\_PASSIVE\_CONTROL]

Section: -

Keyword: Passive\_Control

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	LinkID	-	-	Link name max. 25 characters
2	Integer	TypeNo	-	-	1 = Non return valve, 2 = Non return valve + regulation, 3 = Regulation H-Qmax, 4 = Regulation dH-Qmax
3	String	ControlNodeA	-	-	NodeID for control node A
4	String	ControlNodeB	-	-	NodeID for control node B
5	String	DataSetID	-	-	Name of data set

Target: [MOUSE\_PASSIVE\_CONTROL]

Section: -

Keyword: Empty\_Storage\_Node

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	NodeID	-	-	Node name max. 25 characters
2	String	FlowTo	-	-	Node name for receiving node
3	String	ControlNodeID	-	-	NodeID for control node
4	String	DataSetID	-	-	Name of data set



Target: [MOUSE\_PASSIVE\_CONTROL]

Section: -

Keyword: Outlet\_QH

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	NodeID	-	-	Node name max. 25 characters
2	String	DataSetID	-	-	Name of data set

## 10. [MOUSE\_HYDRAULIC\_PARAMETERS]

```
SYNTAX_VERSION = 1.0
MANNING_TYPE = 1          // 1 = Manning M, 2 = Manning n=1/M
UNIT_TYPE = 1            // 1 = SI, 2 = US
```

```
[Default_Head_Loss]
  DHLC = NameNo, TypeNo, HLcoef
  ...
EndSect // Default_Head_Loss

[Default_Friction_Loss]
  DFLC = NameNo, Manning
  ...
EndSect // Default_Friction_Loss

[Specific_Head_Loss]
  SHLC = NodeID, TypeNo, HLcoef
  ...
EndSect // Specific_Head_Loss

[Specific_Friction_Loss]
  SFLC = LinkID, Manning
  ...
EndSect // Specific_Friction_Loss
```

### Description:

Target: [MOUSE\_HYDRAULIC\_PARAMETERS]

Section: [Default\_Head\_Loss]

Keyword: DHLC

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Integer	NameNo	-	-	1 = Round Edged, 2 = Sharp Edged, 3 = Orifice, 4 = NoCRS1, 5 = NoCRS2, 6 = EnergyLoss
2	Integer	TypeNo	-	-	1 = Km, 2 = Contraction, 3 = Total
3	Double	Hlcoef	TypeNo	TypeNo	Head loss coefficient

Target: [MOUSE\_HYDRAULIC\_PARAMETERS]

Section: [Default\_Friction\_Loss]

Keyword: DFLLC

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Integer	NameNo	-	-	1 = Smooth Concrete, 2 = Normal Concrete, 3 = Rough Concrete, 4 = Plastic, 5 = Iron, 6 = Ceramics, 7 = Stone, 8 = Other
2	Double	Manning	-	-	Manning number

Target: [MOUSE\_HYDRAULIC\_PARAMETERS]

Section: [Specific\_Head\_Loss]

Keyword: SHLC

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	NodeID	-	-	Node name
2	Integer	TypeNo	-	-	1 = Km, 2 = Contraction, 3 = Total
3	Double	Hlcoef	TypeNo	TypeNO	Head loss coefficient

Target: [MOUSE\_HYDRAULIC\_PARAMETERS]

Section: [Specific\_Friction\_Loss]

Keyword: SFLC

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	LinkID	-	-	Link ID string
2	Double	Manning	-	-	Manning number

## 11. [MOUSE\_TABULAR\_DATA]

The [MOUSE\_TABULAR\_DATA] holds sets of data connected to pump characteristics, weirs, passive flow control, emptying storage nodes, QH-relations and other tabular types of data. Each data set has its own section.

Definition :

```
[MOUSE_TABULAR_DATA]
```

```
SYNTAX_VERSION = 1.0  
UNIT_TYPE = 1 // 1 = SI, 2 = US
```

```
[DataSet]  
  DataSetID = 'Pump S1'  
  TypeNo = DataType  
  Data = 0.00, 0.015  
  Data = 1.03, 0.050  
  Data = ...  
EndSect //DataSet
```

```
[DataSet]  
  DataSetID = 'Pump S2'  
  TypeNo = DataType  
  Data = ...  
EndSect //DataSet
```

```
[DataSet]  
  DataSetID = 'BasinB4.1480'  
  TypeNo = DataType  
  Data = 16.25, 0.00, 10.0  
  Data = 17.10, 0.90, 10.0  
  Data = 18.50, 2.40, 10.0  
  Data = ....  
EndSect //DataSet
```

```
[DataSet]  
  DataSetID = 'BasinB4.1510'  
  TypeNo = DataType  
  Data = 14.20, 0.00, 20.0  
  Data = 19.20, 1.50, 20.0  
EndSect //DataSet
```

```
EndSect // MOUSE_TABULAR_DATA
```

Description:

Target: [ MOUSE\_TABULAR\_DATA]

Section: [DataSet]

Keyword: DataSetID

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	DataSetID	-	-	ID String with data-set name
2	Integer	TypeNo	-	-	Type of data in table (see below)

Target: [ MOUSE\_TABULAR\_DATA]

Section: [DataSet]

Keyword: Data

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	Data	any	any	Data
2 and 3	Double	Data	any	any	Data

TypeNo:

(2 Columns):

TypeNo	Datatype	Parameters	Units	Used on menu
1 :	Capacity Curve QH	H-Q	[m] – [m3/sec]	Pumps
2 :	Capacity Curve QdH	dH-Q	[m] – [m3/sec]	Pumps
3 :	Pump Acceleration Curve	Q–dQ/dt	[m3/sec] – [m3/sec2]	Pumps (with PID control)
4 :	Regulation H-Qmax	H-Qmax	[m] – [m3/sec]	Passive Flow regulation
5 :	Regulation dH-Qmax	dH-Qmax	[m] – [m3/sec]	Passive Flow regulation
6 :	QH-relation	H-Q	[m] – [m3/sec]	Weirs, Emptying Storage Nodes and QH-relations in outlets

(3 Columns):

31 :	Basin geometry	H–Ac–As	[m] – [m2] – [m2]	-
------	----------------	---------	-------------------	---

## 12. [MOUSE\_CROSS\_SECTIONS]

Definition :

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1 // 1 = SI, 2 = US

[Cross_Section]
  CRSID = 'CrossSectionNameID'
  TypeNo = Datatype
Description = 'Description of CRS'
  Data = 0.0, 2.0
  Data = 1.0, 4.0
  Data = 2.0, 7.0
  ...
  ProcessData = 0.1959183673, 0.8, 0.1467388588, 0.1365419793
  ProcessData = 0.2285714286, 1.4, 0.1924531445, 0.1106061728
  ProcessData = 0.2612244898, 1.4, 0.2381674302, 0.131927395
  ...
EndSect // Cross_Section

```

Description:

Target: [MOUSE\_CROSS\_SECTIONS]

Section: [Cross\_Section]

Keyword: CRSID

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	CRSID	-	-	ID with cross section name

Target: [MOUSE\_CROSS\_SECTIONS]

Section: [Cross\_Section]

Keyword: TypeNo

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Integer	TypeNo	-	-	1 = HWclosed, 2 = HWopen, 3 = XZclosed, 4 = XZopen, 5 = ProcClosed, 6 = ProcOpen, 7 = ProcSloth

Target: [MOUSE\_CROSS\_SECTIONS]

Section: [Cross\_Section]

Keyword: Description

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	Description	-	-	String describing the cross-section, Max. length 255 characters.

Target: [MOUSE\_CROSS\_SECTIONS]

Section: [Cross\_Section]

Keyword: Data

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	Data	m	ft	Raw data describing geometry (H or X)
2	Double	Data	m	ft	Raw data describing geometry (W or Z)

Target: [MOUSE\_CROSS\_SECTIONS]

Section: [Cross\_Section]

Keyword: ProcessedData

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	ProcessedData	m	ft	Data – Height
2	Double	ProcessedData	m	ft	Data – Width
3	Double	ProcessedData	m	ft	Data – Area
4	Double	ProcessedData	m	ft	Data – Hydraulic radius

### 13. [MOUSE\_TOPOGRAPHY]

Definition :

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1          // 1 = SI, 2 = US
MANNING_TYPE = 1      // 1 = Manning M, 2 = Manning n=1/M
TOPOGRAPHY = 'CRSID', Chainage, BottomLev, ManningTop,
ManningBottom, ManningExp
  
```

Description:

Target: [MOUSE\_TOPOGRAPHY]

Section: -

Keyword: TOPOGRAPHYParameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	CRSID	-	-	Cross section ID
2	Double	Chainage	m	ft	Location of grid point
3	Double	BottomLevel	m	ft	Bottom Level of the grid point
4	Double	ManningTop	-	-	Manning number in top of link
5	Double	ManningBottom	-	-	Manning number in bottom of link
6	Double	ManningExp	-	-	Exponential coefficient for manning number

## 14. [MOUSE\_BOUNDARY\_CONNECTIONS]

Definition:

SYNTAX\_VERSION = 2.0

MBC = 'DataBaseID', 'TimeSeriesID', 'Node1ID', 'Node2ID', TypeNo, ConnectNo, Bctypeno, C\_Startfrom, C\_Starttime, C\_ValueComp\_frac\_id

Description:

Target: [MOUSE\_BOUNDARY\_CONNECTIONS]

Section: -

Keyword: MBC

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	DataBaseID	-	-	Database name (folder name)
2	String	TimeSeriesID	-	-	Time series name
3	String	Node1ID	-	-	Node ID
4	String	Node2ID	-	-	NodeID
5	Integer	TypeNo	-	-	Record type number
6	Integer	ConnectNo	-	-	Type number see MOUSE help
7	Integer	Bctypeno	-	-	= 1, Time Series Boundary = 2, Constant Boundary
8	Double	C_Startfrom	*	*	Start from value
9	Double	C_Starttime	s	s	Startup time
10	Double	C_Value	*	*	The constant boundary value
11	String	Comp_frac_id	-	-	Component/fraction ID

\* the unit is dependent on the type of constant boundary applied

## 15. [MOUSE\_COMMENTS]

This target contains comments made through the editor for all individual elements. However, the target does not hold comments made to the different files in MOUSE.

Definition:

SYNTAX\_VERSION = 1

Comment = 'MenuConnection', 'IDType', 'IDStr', 'Here is the comment'

Description:

Target: [MOUSE\_COMMENTS]

Section: -

Keyword: Comment

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	MenuConnection	-	-	The menu where the comment were made.
2	String	IDType	-	-	Type of element
3	String	IDStr	-	-	Identifier
4	String	The comment	-	-	Text line with some or all of the comment.

## 16. [MOUSE\_RTC\_SENSORS]

### Definition:

SYNTAX\_VERSION = 1.0

UNIT\_TYPE = 1 // 1 = SI, 2 = US

Sensor = 'SensorID', SensorType, ComponentID, LocationType, 'LocationID', Frequency, Delay

### Description:

Target: [MOUSE\_RTC\_SENSORS]

Section: -

Keyword: Sensor

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	SensorID	-	-	Sensor ID. Max 25 characters
2	Integer	SensorType	-	-	1 = Level, 2 = Discharge, 3 = Surface Runoff, 4 = Concentration, 5 = MassFlux, 6 = Weir/Gate position, 7 = Pump on/of, 8 = Pump Capacity, 9 = Time since Simulation Start. (SensorType 7 and 8 are not implementet yet)
3	Integer	ComponentID	-	-	Number in sequence from component definitions (Only used for SensorType 4 and 5)
4	Integer	LocationType	-	-	1 = Node, 2 = Link, 3 = Weir, 4 = Gate, 5 = Pump, 6 = System (Type 1 for SensorType 1, 3, 4 or 5 Type 2 for SensorType 2, 4 or 5 Type 3 for SensorType 4, 5 or 6 Type 4 for SensorType 4, 5 or 6 Type 5 for SensorType 2, 4, 5, 7 or 8 Type 6 for SensorType 9 )
5	String	LocationID	-	-	NodeID / LinkID / WeirID / GateID / Pump ID / - (depending of LocationType)
6	Double	Frequency	Min	Min	Frequency for update of sensor value – usage not implemented yet
7	Double	Delay	Min	Min	Delay for update of sensor value – usage not implemented yet

## 17. [MOUSE\_RTC\_LOGIC\_CONDITIONS]

### Definition:

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1          // 1 = SI, 2 = US

[LogicCondition]
  ConditionInfo= 'LogicConditionID'
  Condition=SourceType, 'SourceID1', 'SourceID2', Operator, LimitValue
  .
  .
  .
EndSect // LogicCondition

```

### Description:

Target: [MOUSE\_RTC\_LOGIC\_CONDITIONS]

Section:[LogicCondition]

Keyword: ConditionInfo

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	LogicCondition ID	-	-	LogicCondition ID. Max 25 characters

Target: [MOUSE\_RTC\_LOGIC\_CONDITIONS]

Section:[LogicCondition]

Keyword: Condition

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Integer	SourceType	-	-	1 = Sensor Value, (All SensorTypes except 9) 2 = Change in Sensor Value, (Only SensorType 1) 3 = Diff. of 2 Sensor Values, (Only SensorType 1, 2 or 4) 4 = Sum of 2 Sensor Values, (Only SensorType 2) 5 = Pump Active, 6 = Function Active, 7 = Accumulated Value (Only SensorType 5)
2	String	SourceID1	-	-	SensorID / PumpID / ControlFunctionID (Depending of SourceType)
3	String	SourceID2	-	-	SensorID (Only used for SourceType 2 and 3)
4	Integer	Operator	-	-	1 = '<', 2 = '>', 3 = '=' (1 or 2 only used for SourceType 1,2,3,4 and 7. 3 only used for SourceType 5 and 6)
5	Double	LimitValue	Depend ing of	Depen ding of	Value of Limit (For SourceType 5 and 6 the value

			sensor type	sensor type	should be 'True' or 'False' – saved on the file as 1=True, 2=False)
--	--	--	----------------	----------------	--

## 18. [MOUSE\_RTC\_CONTROL\_FUNCTIONS]

### Definition:

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1          // 1 = SI, 2 = US

[ControlFunction]
  FunctionInfo= 'ControlFunctionID', DeviceTypeNo, FunctionTypeNo

  SettingInput=InputTypeNo, 'SensorID1', 'SensorID2'
  SettingConstant=StartLevel, StopLevel, Position
  . . .

  SettingInput=InputTypeNo, 'SensorID1', 'SensorID2'
  SettingValues=InputValue, StartLevel, StopLevel, Position
  . . .

  SetPointInput=InputTypeNo, 'SensorID1', 'SensorID2', 'SetPointSensor'
  SetPointConstant=Level, Discharge
  . . .

  SetPointInput=InputTypeNo, 'SensorID1', 'SensorID2', 'SetPointSensor'
  SetPointValues=InputValue, Level, Discharge
  . . .

EndSect // ControlFunction

```

### Description:

Target: [MOUSE\_RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: FunctionInfo

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	ControlFunctionID	-	-	Control Function ID. Max 25 characters
2	Integer	DeviceTypeNo	-	-	1 = Pump, 2 = Weir, 3 = Gate
3	Integer	FunctionTypeNo	-	-	1 = Setting of Start-/Stop levels, (Only for DeviceTypeNo 1) 2 = Setting of weir-/gate position, (Only for DeviceTypeNo 2 or 3) 3=PID-control of level, 4=PID-control of discharge (For FunctionType 1 and 2 Next Keyword must be SettingInput For FunctionType 3 and 4 Next Keyword must be SetPointInput)

Target: [MOUSE\_ RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: SettingInput

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Integer	InputTypeNo	-	-	1 = Constant, (Next Keyword must be SettingConstant) 2 = Sensor Value, (Next Keyword must be SettingValues) 3 = Diff. of 2 Sensor Values (Only SensorType 1, 2 or 4) (Next Keyword must be SettingValues)
2	String	SensorID1	-	-	SensorID (Not used for InputTypeNo 1)
3	String	SensorID2	-	-	SensorID (Only used for InputTypeNo 3)

Target: [MOUSE\_ RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: SettingConstant

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	StartLevel	m	ft	Start level for pump
2	Double	StopLevel	m	ft	Stop level for pump
3	Double	Position	m	ft	Position for weir or gate

Target: [MOUSE\_ RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: SettingValues

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	InputValue	Depend ing of sensor type	Depen ding of sensor type	Input value for sensor (specified in keyword SettingInput)
2	Double	StartLevel	m	ft	Start level for pump
3	Double	StopLevel	m	ft	Stop level for pump
4	Double	Position	m	ft	Position for weir or gate

Target: [MOUSE\_ RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: SetPointInput

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Integer	InputTypeNo	-	-	1 = Constant, (Next Keyword must be SetPointConstant) 2 = Sensor Value, (Next Keyword must be SetPointValues) 3 = Diff. Of 2 Sensor Values (Only SensorType 1, 2 or 4) (Next Keyword must be SetPointValues)
2	String	SensorID1	-	-	SensorID (Not used for InputTypeNo 1)
3	String	SensorID2	-	-	SensorID (Only used for InputTypeNo 3)
4	String	SetPointSensor	-	-	SensorID – specifies the parameter for PID-setpoint (SensorType=1 if FunctionType=3) (SensorType=2 if FunctionType=4)

Target: [MOUSE\_ RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: SetPointConstant

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	Level	m	ft	Setpoint value for PID control of level
2	Double	Discharge	m <sup>3</sup> /s	cfs	Setpoint value for PID control of discharge

Target: [MOUSE\_ RTC\_CONTROL\_FUNCTIONS]

Section:[ControlFunction]

Keyword: SetPointValues

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	Double	InputValue	Depend ing of sensor type	Depen ding of sensor type	Input value for sensor (specified in keyword SettingInput)
2	Double	Level	M	ft	Setpoint value for PID control of level
3	Double	Discharge	m <sup>3</sup> /s	cfs	Setpoint value for PID control of discharge

## 19. [MOUSE\_RTC\_PID\_SET]

Definition:

SYNTAX\_VERSION = 1.0

UNIT\_TYPE = 1 // 1 = SI, 2 = US

PID = 'PIDID', P\_Factor, I\_Time, D\_Time, Alpha\_1, Alpha\_2, Alpha\_3

Description:

Target: [MOUSE\_RTC\_PID\_SET]

Section: -

Keyword: PID

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	PIDID	-	-	PID parameter set ID. Max 25 characters
2	Double	P_Factor	-	-	Proportionality factor for PID control
3	Double	I_Time	Sec	sec	Integration time for PID control
4	Double	D_Time	Sec	sec	Derivation time for PID control
5	Double	Alpha_1	-	-	Alpha-1 weighting factor for PID control
6	Double	Alpha_2	-	-	Alpha-2 weighting factor for PID control
7	Double	Alpha_3	-	-	Alpha-3 weighting factor for PID control

## 20. [MOUSE\_RTC\_CONTROLLED\_DEVICES]

### Definition:

```

SYNTAX_VERSION = 1.0
UNIT_TYPE = 1          // 1 = SI, 2 = US

[ControlledDevice]
  DeviceInfo = 'DeviceID', DeviceTypeNo, ControlTypeNo, PIDID
  ControlRule = 'LogicConditionID', 'FunctionID', BlockingTime
  .
  .
  .
EndSect // ControlledDevice

```

### Description:

Target: [MOUSE\_RTC\_CONTROLLED\_DEVICES]

Section:[ControlledDevice]

Keyword: DeviceInfo

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	DeviceID	-	-	PumpID / WeirID / OrificeID
2	Integer	DeviceTypeNo	-	-	1=Pump, 2=Weir, 3=Gate in Orifice
3	Integer	ControlTypeNo	-	-	1=Static (No control), 2=Setting direct, 3=Setpoint – PID
4	String	PIDID	-	-	PIDID

Target: [MOUSE\_RTC\_CONTROLLED\_DEVICES]

Section:[ControlledDevice]

Keyword: ControlRule

Parameters

Number	Type	Short name	Unit, metric	Unit, US	Comments / Range / etc.
1	String	LogicConditionID	-	-	LogicConditionID
2	String	ControlFunctionID	-	-	ControlFunctionID
3	Double	BlockingTime	min	min	Time the function should be used before re-evaluation of the control rules