

Auto-Validation System - Master Documentation

Project: VBA Excel Auto-Validation Framework

Version: 2.5 (Testing & Bug Fixes)

Last Updated: 2026-01-20





Status: Phase 2 Complete - Active Bug Fixing

Change Log

[2.5.0] - 2026-01-20 - Testing & Bug Fixes

Status: In Progress

Fixes Applied:

-  Fixed `SetLMenuValCompletedCB` → `SetLegacyMenuValidationCompleted` method name mismatch
-  Validation now runs on correct row range (16-2009)
-  All 9 header mappings verified working
-  150 rows processed successfully

Known Issues Being Addressed:

Issue	Priority	Status	Description
Worksheet_Change Cascade	HIGH	Pending	Events re-triggering during bulk validation, causing 74s runtime for 150 rows
Simple Validation False Positives	HIGH	Pending	Valid values (Ontario, Canada, etc.) flagged as invalid
Pair Validation Inconsistencies	MEDIUM	Pending	Electricity/Plumbing pairs showing incorrect results
Heat Metered Column	LOW	Pending	Column not found during validation despite passing diagnostics

Performance Baseline:

- 150 rows: 74.17 seconds (target: <10 seconds)
- Worksheet_Change events: Thousands (target: 0 during bulk)

[2.4.0] - 2026-01-20 - Version Tracking & Diagnostics

Status: Complete

Major Changes:

- Added `MODULE_VERSION = "2.4"` constant for verification
- Enhanced diagnostic output in validation startup
- Fixed row range detection to use actual table bounds
- Created Test4_v24_Diagnostics module

Key Fix: Row range now correctly derived from `ListObject.DataBodyRange` instead of legacy cell references (B4/D4).

[2.3.0] - 2026-01-19 - Fully Table-Based Architecture

Status: Superseded

- Removed ALL legacy cell references
 - Added ValidationTargets table support
 - Auto-detects table row range from ListObject
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[2.2.0] - 2026-01-16 - Phase 2 Complete

Status: Superseded

- AV_Constants, AV_DataAccess modules created
 - Table caching implemented
 - Multiple target support added
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[2.0.0] - 2026-01-16 - Architecture Consolidation

Status: Superseded

- Consolidated 15-20 modules into 6 core modules
 - Split validation logic into Routing and Rules
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Project Vision & Goals

Primary Objectives

1. **Maintain Functionality:** All existing validations work correctly
2. **Table-Based Configuration:** No hardcoded cell references
3. **Performance:** <10 seconds for 150 rows
4. **Reusability:** Support multiple validation targets

Current Focus (v2.5)

- Fix Worksheet_Change cascade during bulk validation
 - Correct Simple Validation lookup logic
 - Ensure pair validations work correctly
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Architecture (v2.5)

Module Inventory

Module	Version	Status	Purpose
AV_Constants	2.1	✓ Stable	All constants centralized
AV_DataAccess	2.3	✓ Stable	Table operations layer
AV_Core	2.1	✓ Stable	Config, state, caching
AV_Engine	2.4.1	🔧 Fixed	Orchestration (method name fix)
AV_Format	2.3	⚠ Review	Formatting & feedback

Module	Version	Status	Purpose
AV_Validators	2.3	⚠️ Review	Routing layer
AV_ValidationRules	2.1	⚠️ Review	Business logic
AV_UI	2.1	✅ Stable	User interface
Test4_v24_Diagnostics	2.4	✅ Stable	Testing module

Module Flow

```

RunFullValidationMaster()
|
|→ Application.EnableEvents = False ← CRITICAL for performance
|→ Load ValidationTargets table
|→ Find target table (ListObject)
|→ Auto-detect row range from DataBodyRange
|
|→ FOR EACH row:
|   ↳ ValidateSingleRow()
|       ↳ FOR EACH validation function:
|           ↳ Application.Run("Validate_Column_X")
|               ↳ AddValidationFeedback()
|                   ↳ WriteSystemTagToDropColumn()
|
|→ RunAutoCheckDataValidation() ← Simple dropdown checks
|
|→ Application.EnableEvents = True ← Re-enable at end only

```

1. ValidationTargets

Purpose: Defines which tables to validate

Column	Description
TableName	Name of Excel Table (ListObject)
Enabled	TRUE/FALSE
Mode	Both, Trigger, or Bulk
Key Column (Header Name)	Header name of ID column

Current Configuration:

	TableName		Enabled		Mode		Key Column	
	-----		-----		-----		-----	
	REP2DSMDraft_Buildings		TRUE		Both		AO ID	
	REP2DSMDraft_Works		TRUE		Both		AO ID	
	REP2DSMDraft_Other		TRUE		Both		AO ID	

2. AutoValidationCommentPrefixMappingTable

Purpose: Maps advanced validation functions to columns

Column	Description
Dev Function Names	Function identifier (e.g., "Electricity")
ReviewSheet Column Header	Header name in target table
Drop in Column	Header for messages column
Prefix to message	English message prefix
(FR) Prefix to message	French message prefix
AutoValidate	TRUE to enable
RuleTableName	Optional rule table name

Current Mappings (9 functions):

- GIWQuantity → Gender Inclusive Washrooms - Quantity
- GIWIncluded → Gender Inclusive Washrooms - Included
- Electricity → Electricity
- Electricity_Metered → Electricity Metered
- Plumbing → Plumbing
- Water_Metered → Water Metered
- Heat_Source → Heat Source
- Heat_Metered → Heat Metered
- Construction_Date → Construction Date

3. AutoCheckDataValidationTable

Purpose: Simple dropdown validations (menu field checks)

Column	Description
Column Name	English name
Column Name (FR)	French name
ReviewSheet Column Name	Header in target table
MenuField Column (EN)	Header in ENMenuSelectionMenuFields
MenuField Column (FR)	Header in FRMenuSelectionMenuFields
AutoCheck	TRUE to enable
AutoComment Column	Header for comment output

Current Mappings (11 fields):

- Building Type
- Main Usage Type
- Region (Province)
- Country
- Det/Sec (Detachment/Section)
- RP Ops Unit
- Asbestos Present (disabled)
- APS/UPS
- Steam Metered
- Barrier Free - Access - Mobility Access

4. Validation Rule Tables

Table	Purpose
GIWValidationTable	GIW Included/Quantity rules
ElectricityPairValidation	Electricity/Metered valid pairs
PlumbingPairValidation	Plumbing/Water Metered pairs
HeatSourcePairValidation	Heat Source/Metered pairs
HeatSourceANYRefTable	Heat ANY mapping

Known Issues & Fixes

Issue 1: Worksheet_Change Cascade

Symptom: Thousands of change events fire during bulk validation **Impact:** 74 seconds for 150 rows (should be <10s) **Root Cause:** Writing to drop columns triggers Worksheet_Change events **Solution:** Ensure `Application.EnableEvents = False` throughout validation

Status: Pending fix

Issue 2: Simple Validation False Positives

Symptom: Valid values like "Ontario", "Canada" flagged as invalid **Impact:** Incorrect error messages in drop columns

Diagnostic Questions:

1. Is GetDDMValidationColumns loading the valid value lists correctly?
2. Are the MenuField Column headers matching the actual headers in ENMenuSelectionMenuFields?
3. Is the comparison case-sensitive when it shouldn't be?

Status: Pending investigation

Issue 3: Pair Validation Inconsistencies

Symptom: Electricity/Plumbing pairs showing alternating errors **Impact:** Incorrect validation results

Likely Cause: The pair validation writes to both cells, and if events are enabled, it triggers re-validation which clears/re-adds errors.

Status: Likely related to Issue 1

Issue 4: Heat Metered Column Not Found

Symptom: Diagnostic says OK, but validation says "not found" **Impact:** Heat validation skipped

Possible Causes:

- Subtle character difference in column name
- Caching issue between diagnostic and validation
- Column exists in mapping but not in actual table

Status: Low priority - investigate after Issues 1-3 fixed

Testing

Test Module: Test4_v24_Diagnostics.bas

Test	Purpose	Status
Test4_RunAll	Complete diagnostic suite	✓ Pass
Test4_Step1_VersionCheck	Verify AV_Engine v2.4	✓ Pass
Test4_Step2_ValidationTargets	Check config table	✓ Pass
Test4_Step3_TargetTableAnalysis	Analyze target table	✓ Pass
Test4_Step4_HeaderMappingCheck	Compare headers	✓ Pass
Test4_RunValidation	Execute validation	⚠ Runs but with issues

Test Results Summary (2026-01-20)

Diagnostic Results:

- AV_Engine version: 2.4 ✓
- ValidationTargets: 3 targets, all enabled ✓
- Target table: REP2DSMDraft_Buildings ✓
- Table range: Row 16 to 2009 ✓
- Key column: AO ID (150 rows with values) ✓
- Header mappings: 9/9 found ✓

Validation Results:

- Rows processed: 150 ✓

- Runtime: 74.17 seconds ⚠️ (too slow)
 - Worksheet_Change events: Thousands ❌
 - False positives: Many ❌
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🔧 Fix Plan

Phase 2.5.1: Worksheet_Change Fix

Goal: Eliminate event cascade during bulk validation **Approach:**

1. Add validation mode flag to distinguish bulk vs trigger
2. Ensure EnableEvents = False is maintained
3. Add toggle for Worksheet_Change handler

Phase 2.5.2: Simple Validation Fix

Goal: Correct the dropdown value lookup **Approach:**

1. Debug GetDDMValidationColumns to verify value loading
2. Check ENMenuSelectionMenuFields table structure
3. Verify column name matching

Phase 2.5.3: Pair Validation Fix

Goal: Consistent pair validation results **Approach:**

1. Review ValidatePairedFields logic
 2. Ensure both cells validated together
 3. Test after event cascade fixed
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Developer Notes

Adding Worksheet_Change Toggle

Proposed approach:

```
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' In AV_Core or AV_Engine
Public BulkValidationInProgress As Boolean

' In Worksheet code
Private Sub Worksheet_Change(ByVal Target As Range)
    ' Skip if bulk validation is running
    If AV_Core.BulkValidationInProgress Then Exit Sub

    ' Normal trigger logic...
End Sub

' In RunFullValidationMaster
AV_Core.BulkValidationInProgress = True
' ... validation code ...
AV_Core.BulkValidationInProgress = False
```

Key Principle

The bulk validation (`RunFullValidationMaster`) and trigger validation (`Worksheet_Change`) should not interfere with each other. During bulk validation:

- All events should be disabled
- No triggers should fire
- Only explicit validation calls should execute

Version Verification

vba

```
Sub CheckVersions()  
    Debug.Print "AV_Engine: " & AV_Engine.MODULE_VERSION  
    ' Should print: 2.4  
End Sub
```

Support

Documentation Version: 2.5

Last Updated: 2026-01-20

Status: Active Development

END OF MASTER DOCUMENTATION v2.5