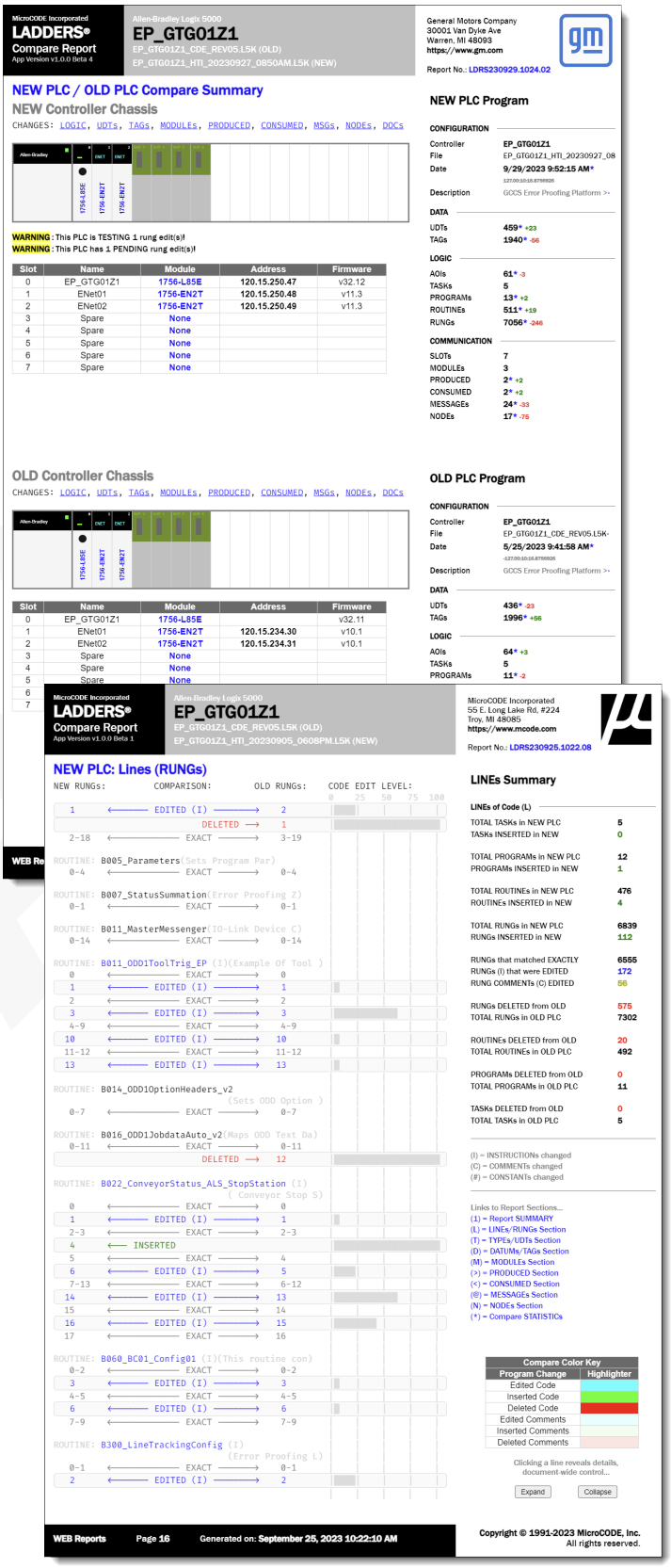
LADDERS® Compare Reports
Release Notes Release: 1.0.0a4

Overview

MicroCODE LADDERS® is family of Programmable Logic Controller (PLC) support tools, including:

- **Compare** – a near instantaneous look at the differences between two PLC programs with an interactive HTML Report
- **Batch Compare** – a tool to schedule compares on uploaded files against known good production logic and email a summary and compare reports on change
- **Active Compare** – a tool monitors live PLCs, detect logic changes, upload, and generate compare reports on change – directly to an email list

The heart of the LADDERS products is the Compare Report itself. See 'Quick Start' on page 4 for more information.



Hardware Requirements

The LADDERS products are offering in various ways to suit the user's requirements:

- **Cloud Service** – ad hoc compare at any time. (An open internet connection and web browser for file uploads, and email, and viewing the compare report).
- **User Hosted Server** – for supporting a production facility. (Windows or Linux Server or VM).
- **Desktop App** – for Controls Engineers doing development and deployment work. (Windows 10+).

Software Requirements

The **LADDERS** App requires the following software for proper execution:

- **Web Browser** – for viewing all Compare reports or using the Cloud-based compares
- **Windows 10+** – for **LADDERS® Desktop** (optional)
- **Windows 10+** or **Linux** – for **LADDERS® Server** (optional)

The LADDERS® does ***not*** require any additional software licenses, this is a MicroCODE owned application licensed directly to our end users:

- No Rockwell Automation software required
- No 3rd Party OPC Server
- No 3rd Party Communication Software

MicroCODE Incorporated
LADDERS®
LAdder Design and Documentation Effort Reducing System

LADDERS® App Software

Application Architecture

The MicroCODE App Framework under LADDERS:

- **.NET 6+** – supports our core code, whether in the Cloud, on the Server, or on your Desktop. The new .NET 6 'Core' is designed to run on Windows, Linux, or MacOS.

- **C#** – our language of choice for the intense backend work that provides the LADDERS services. This is the key to our speed, sub-10 second compares of large Logix 5000 programs, including the generation of the HTML5 interactive compare report!

- **Docker** – the de facto standard for deploying modern web applications, and for virtualization on any hardware. Our Cloud offerings are built on this technology from the ground up.

- **CSS 3** – the LADDERS Compare Report leverages the latest web browser technology, and CSS lets us control the appearance… precisely.

- **JavaScript 5/ES6** – tightly integrated code in the interactive HTML Report that working hand-in-hand with the C# code that generated it. This is key to using the LADDERS compare report to update a PLC to the latest version of template logic.

- **HTML 5** – state-of-the-art visualization of the PLC changes, folding reports, and connected JavaScript interactivity… all inside a file that can be easily viewed on any browser with no other software required.

- **LADDERS (ABCLX5)** for the **Allen-Bradley Logix 5000** – our first product after bringing LADDERS back from the demise of Digital Equipment Corporation, a 25 year sabbatical!

The LADDERS® Compare Report

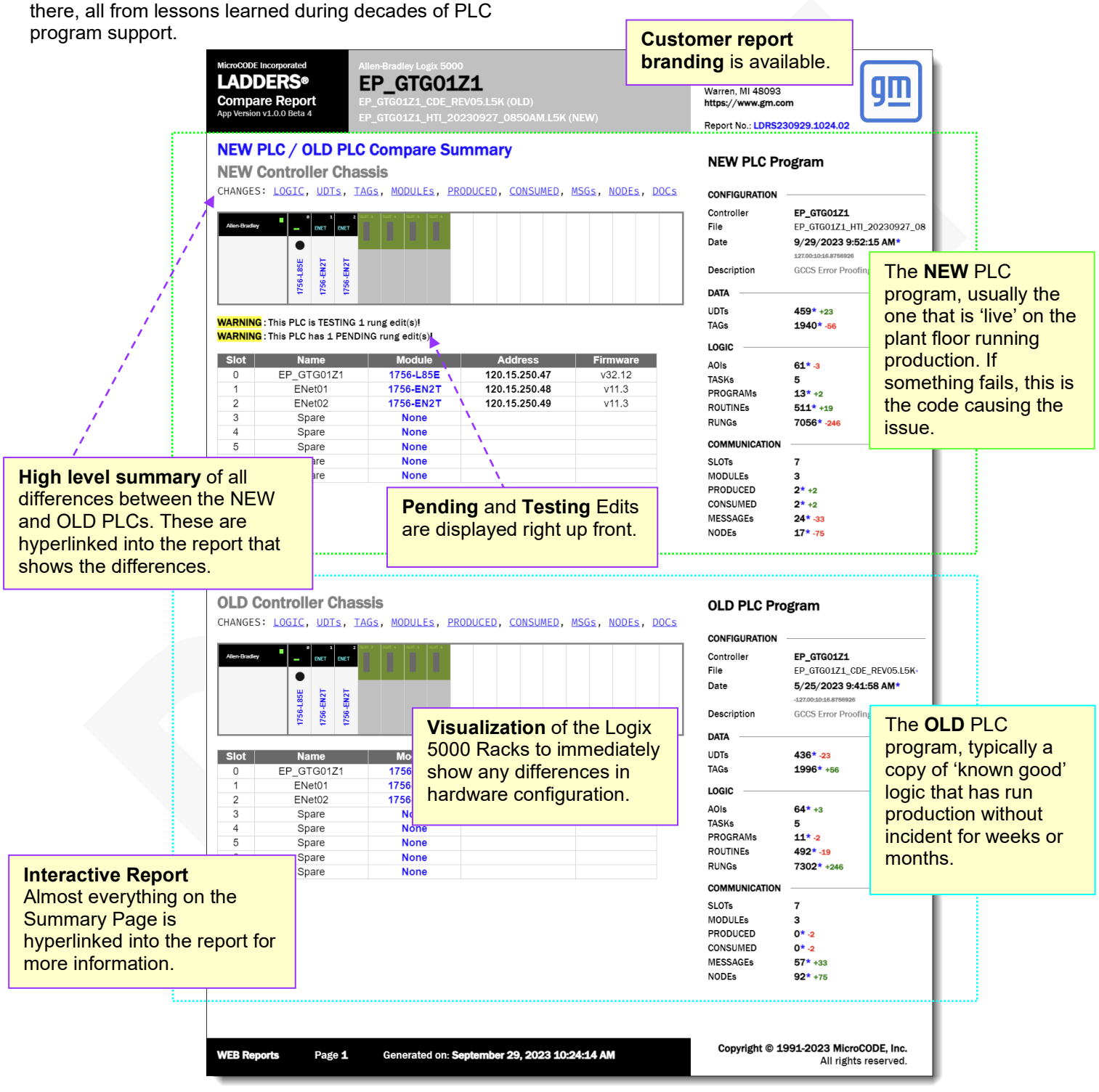
Summary Page (1st Page of the Report)

The first page of the report gives an at-a-glance view of how the two PLC programs compare to one another. The report may seem 'dense' at first glance, but everything you see on each page has a reason for being there, all from lessons learned during decades of PLC program support.

Live Report

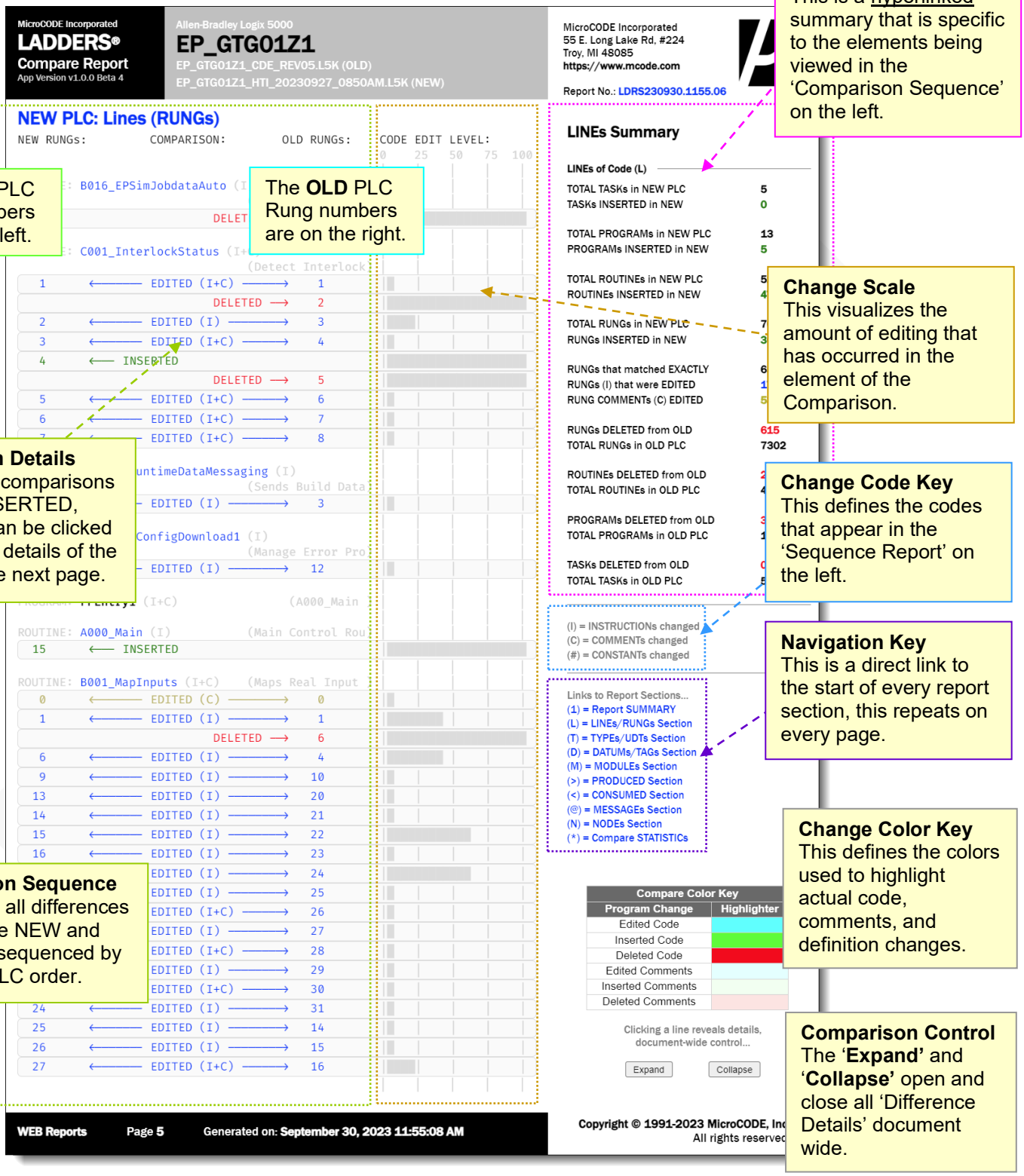
You can follow along with this guide with a real LADDERS Compare Report at this link:

https://www.mcode.com/assets/documents/example-ladders-differences.html



NAVIGTION (Finding your way around the Report)

Every page after the Summary Page includes the following elements for quick navigation to anything else in the PLCs…



Section Summary
This is a hyperlinked summary that is specific to the elements being viewed in the 'Comparison Sequence' on the left.

The **NEW** PLC Rung numbers are on the left.

The **OLD** PLC Rung numbers are on the right.

Change Scale
This visualizes the amount of editing that has occurred in the element of the Comparison.

Comparison Details
All colorized comparisons EDITED, INSERTED, DELETED can be clicked to toggle the details of the changes, see next page.

Change Code Key
This defines the codes that appear in the 'Sequence Report' on the left.

Navigation Key
This is a direct link to the start of every report section, this repeats on every page.

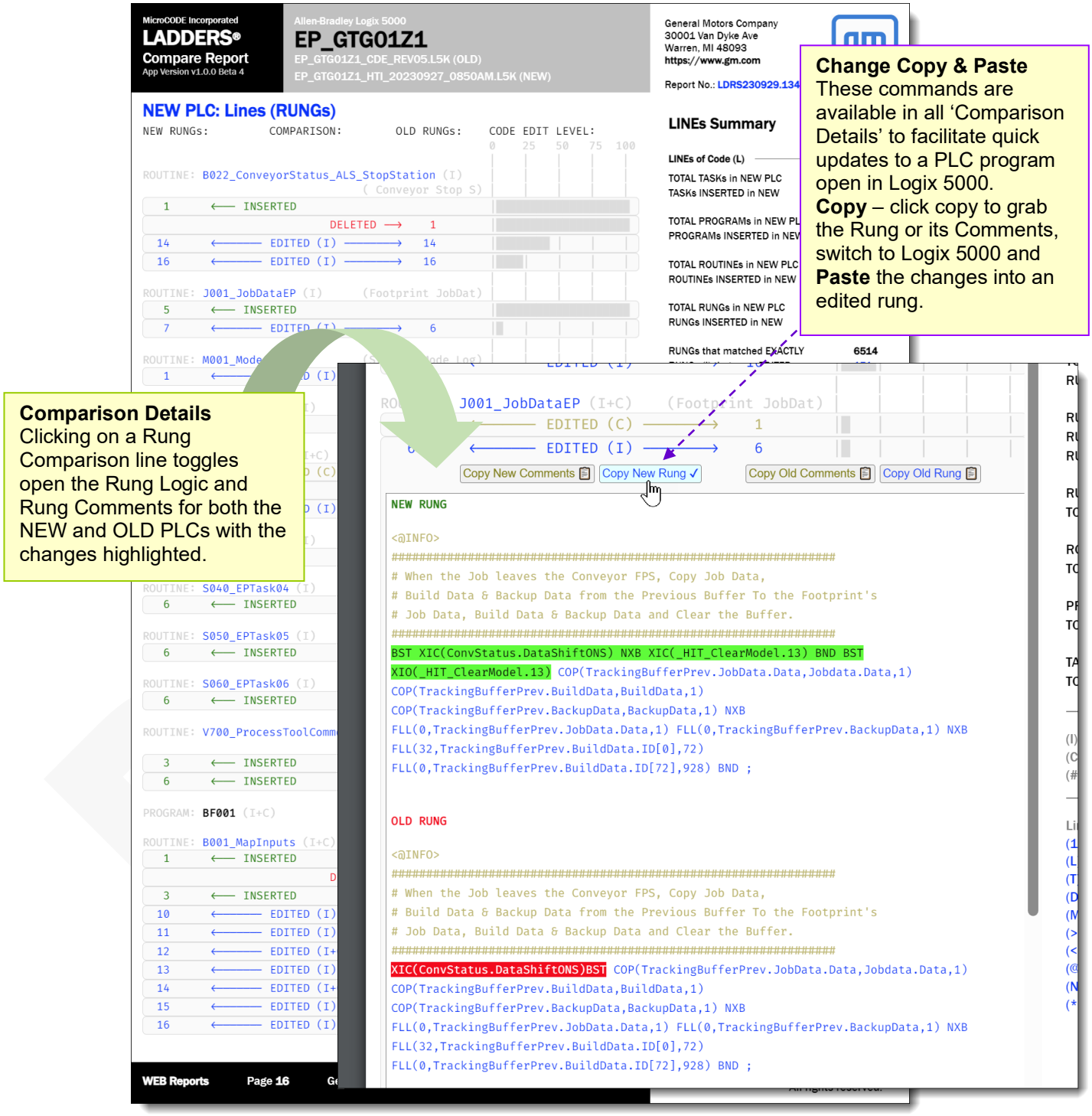
Change Color Key
This defines the colors used to highlight actual code, comments, and definition changes.

Comparison Sequence
This shows all differences between the NEW and OLD PLC, sequenced by the NEW PLC order.

Comparison Control
The '**Expand**' and '**Collapse**' open and close all 'Difference Details' document wide.

LINEs (of Code / RUNGs) Pages

The comparison of the PLC logic immediately follows the summary page. This details all the changes made to the actual code—AOIs, Rungs, etc.—between the NEW and OLD programs.



Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the Rung or its Comments, switch to Logix 5000 and **Paste** the changes into an edited rung.

Comparison Details
Clicking on a Rung Comparison line toggles open the Rung Logic and Rung Comments for both the NEW and OLD PLCs with the changes highlighted.

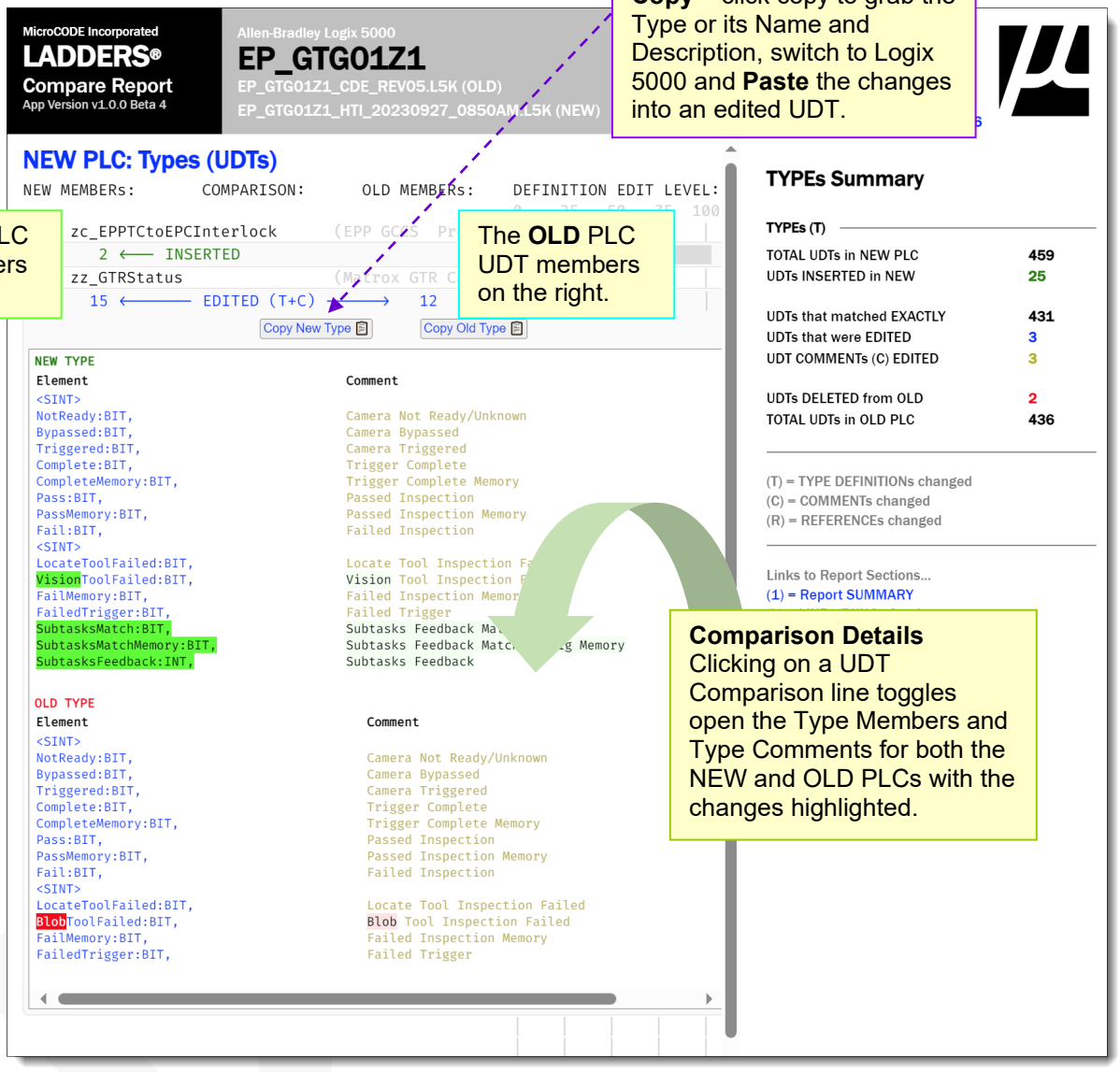
TYPEs (UDTs / Datatypes) Pages

Next are all the changes to the User Defined Datatype (UDTs) between the NEW and OLD PLCs.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the Type or its Name and Description, switch to Logix 5000 and **Paste** the changes into an edited UDT.

The **NEW** PLC UDT members on the left.

The **OLD** PLC UDT members on the right.

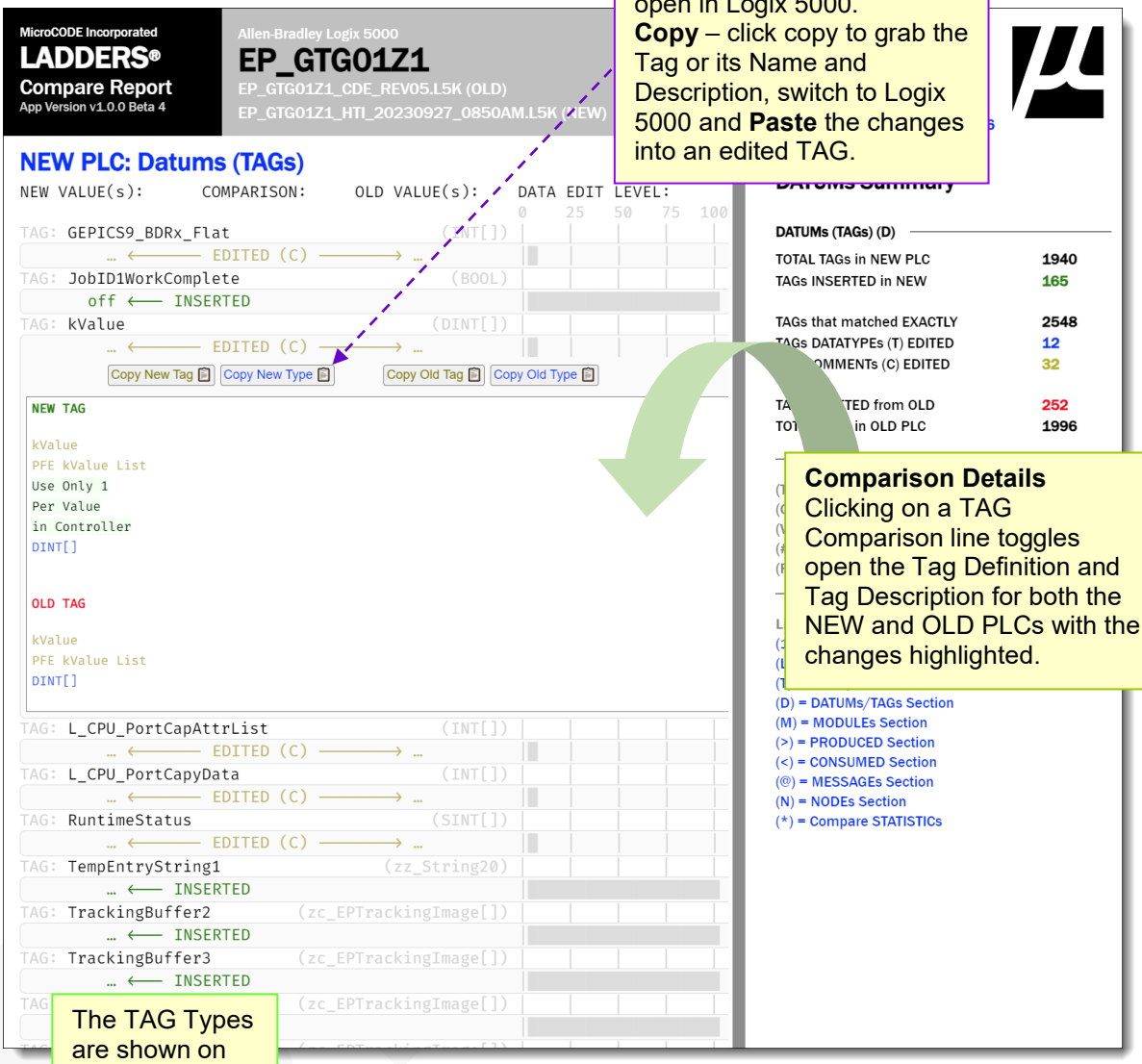


Comparison Details
Clicking on a UDT Comparison line toggles open the Type Members and Type Comments for both the NEW and OLD PLCs with the changes highlighted.

DATUMs (TAGs / Variables) Pages

After the TYPEs any changes to PLC variables, tags, parameters, are all shown in the DATUM pages.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the Tag or its Name and Description, switch to Logix 5000 and **Paste** the changes into an edited TAG.



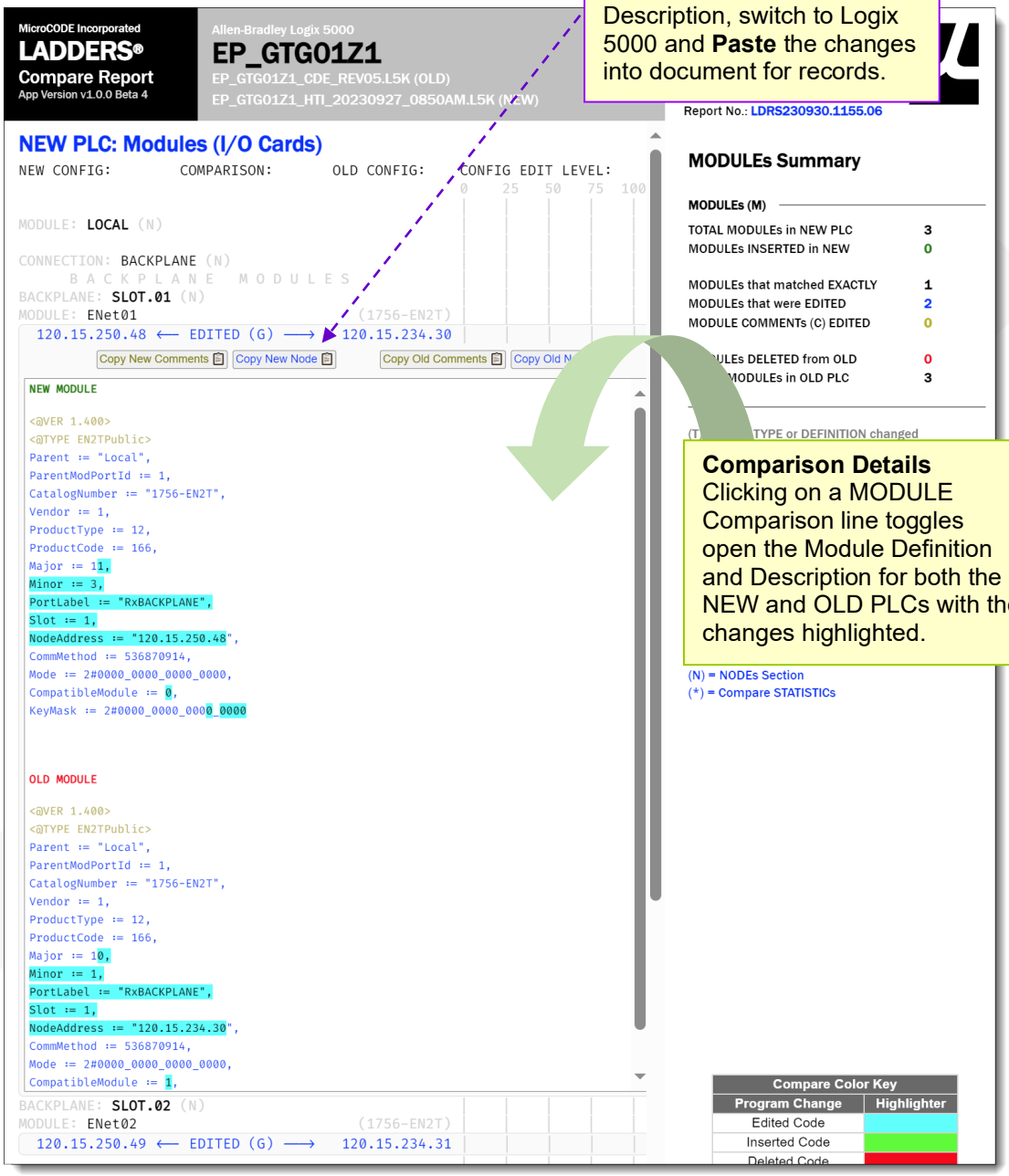
Comparison Details
Clicking on a TAG Comparison line toggles open the Tag Definition and Tag Description for both the NEW and OLD PLCs with the changes highlighted.

The TAG Types are shown on the right in gray.

MODULEs (PLC Hardware) Pages

These pages detail any differences in the PLC hardware, local to the PLC processor, between the NEW and OLD configurations.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the Module Definition or its Description, switch to Logix 5000 and **Paste** the changes into document for records.

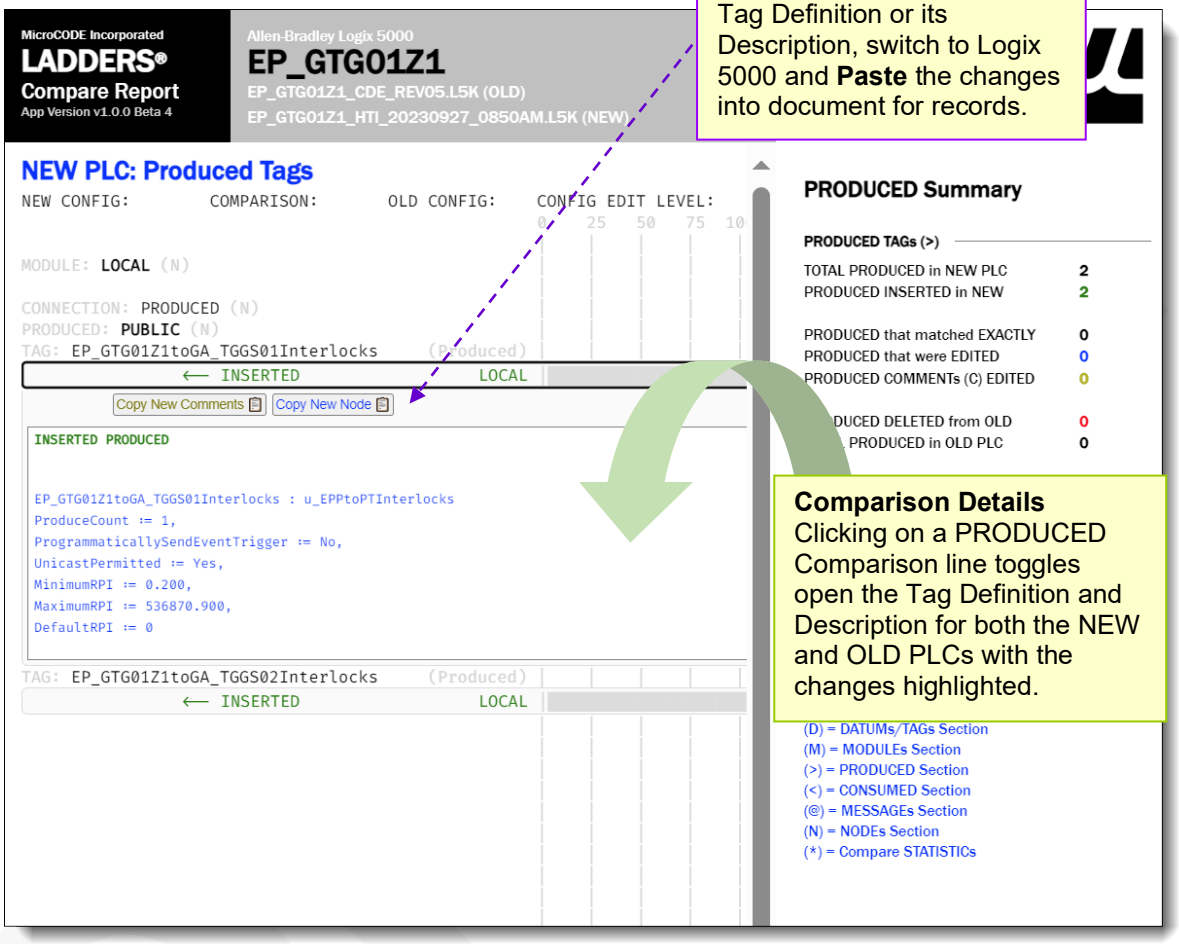


Comparison Details
Clicking on a MODULE Comparison line toggles open the Module Definition and Description for both the NEW and OLD PLCs with the changes highlighted.

PRODUCED (Communication TAG) Pages

These pages detail any differences in the Produced communication tags (those sending data from the PLC), between the NEW and OLD configurations.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the Tag Definition or its Description, switch to Logix 5000 and **Paste** the changes into document for records.

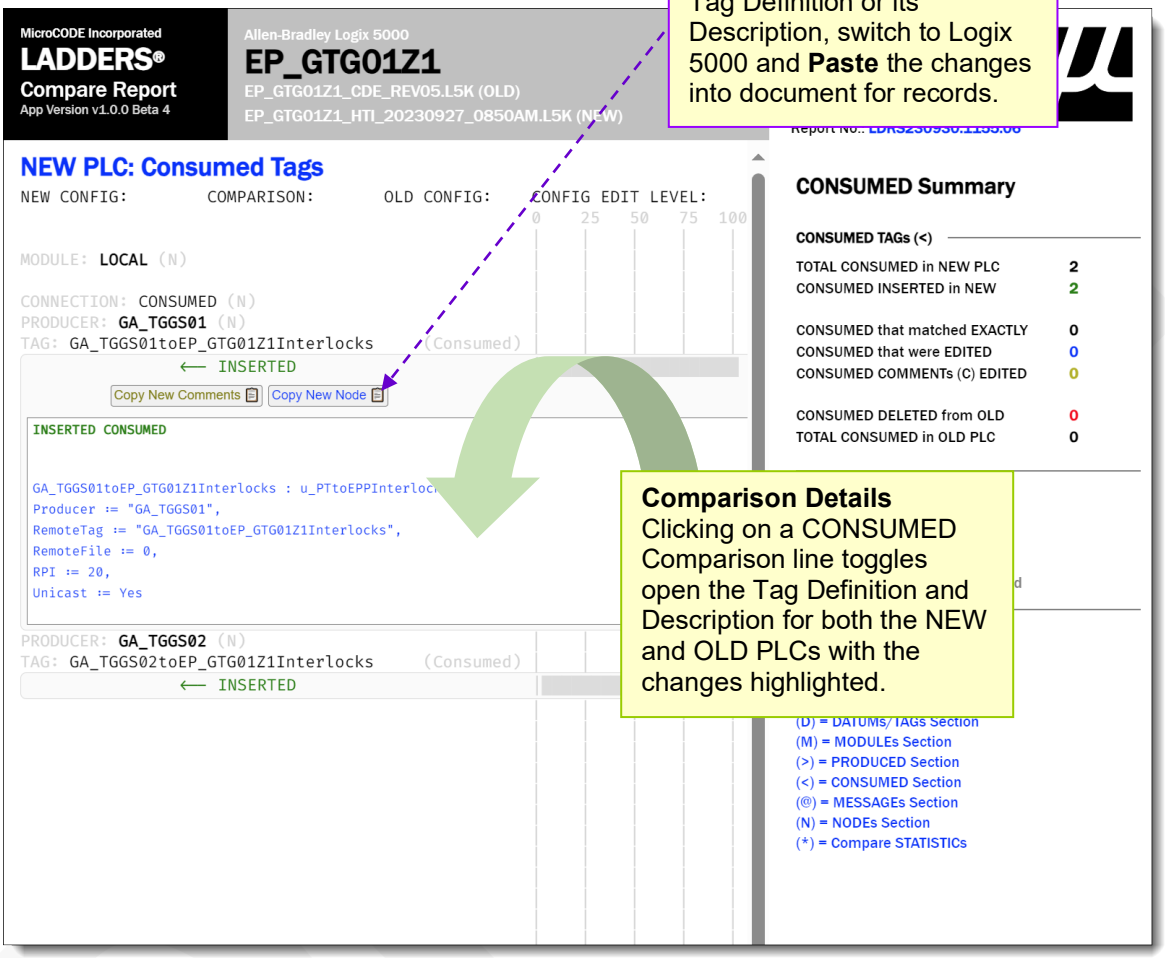


Comparison Details
Clicking on a PRODUCED Comparison line toggles open the Tag Definition and Description for both the NEW and OLD PLCs with the changes highlighted.

CONSUMED (Communication TAG) Pages

These pages detail any differences in the Consumed communication tags (those bringing data into the PLC), between the NEW and OLD configurations.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the Tag Definition or its Description, switch to Logix 5000 and **Paste** the changes into document for records.

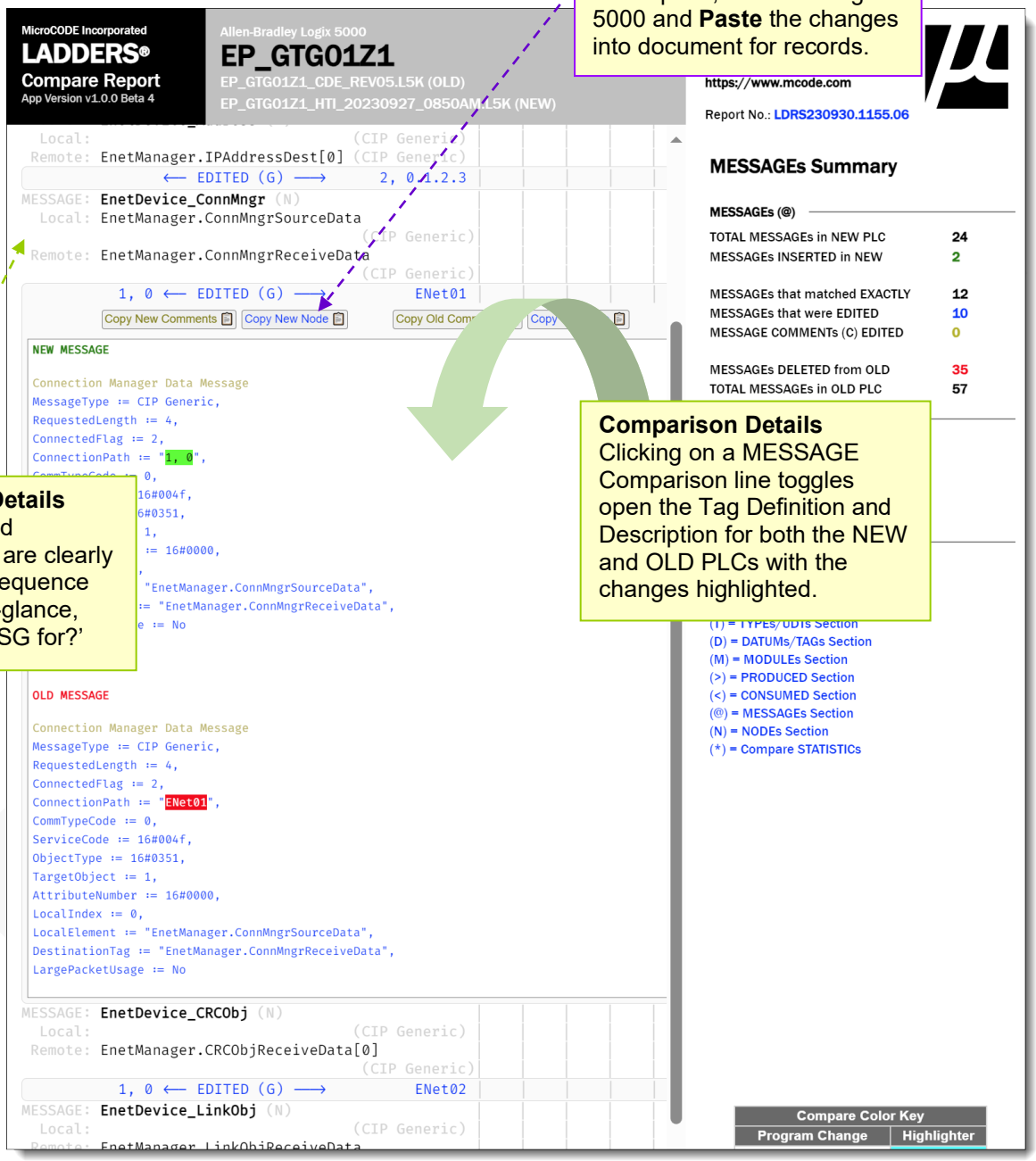


Comparison Details
Clicking on a CONSUMED Comparison line toggles open the Tag Definition and Description for both the NEW and OLD PLCs with the changes highlighted.

MESSAGEs (Communication TAG) Pages

These pages detail any differences in the Message Instructions and their communication tags (those reading or writing data into or out of the PLC), between the NEW and OLD configurations.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the MSG Definition or its Description, switch to Logix 5000 and **Paste** the changes into document for records.



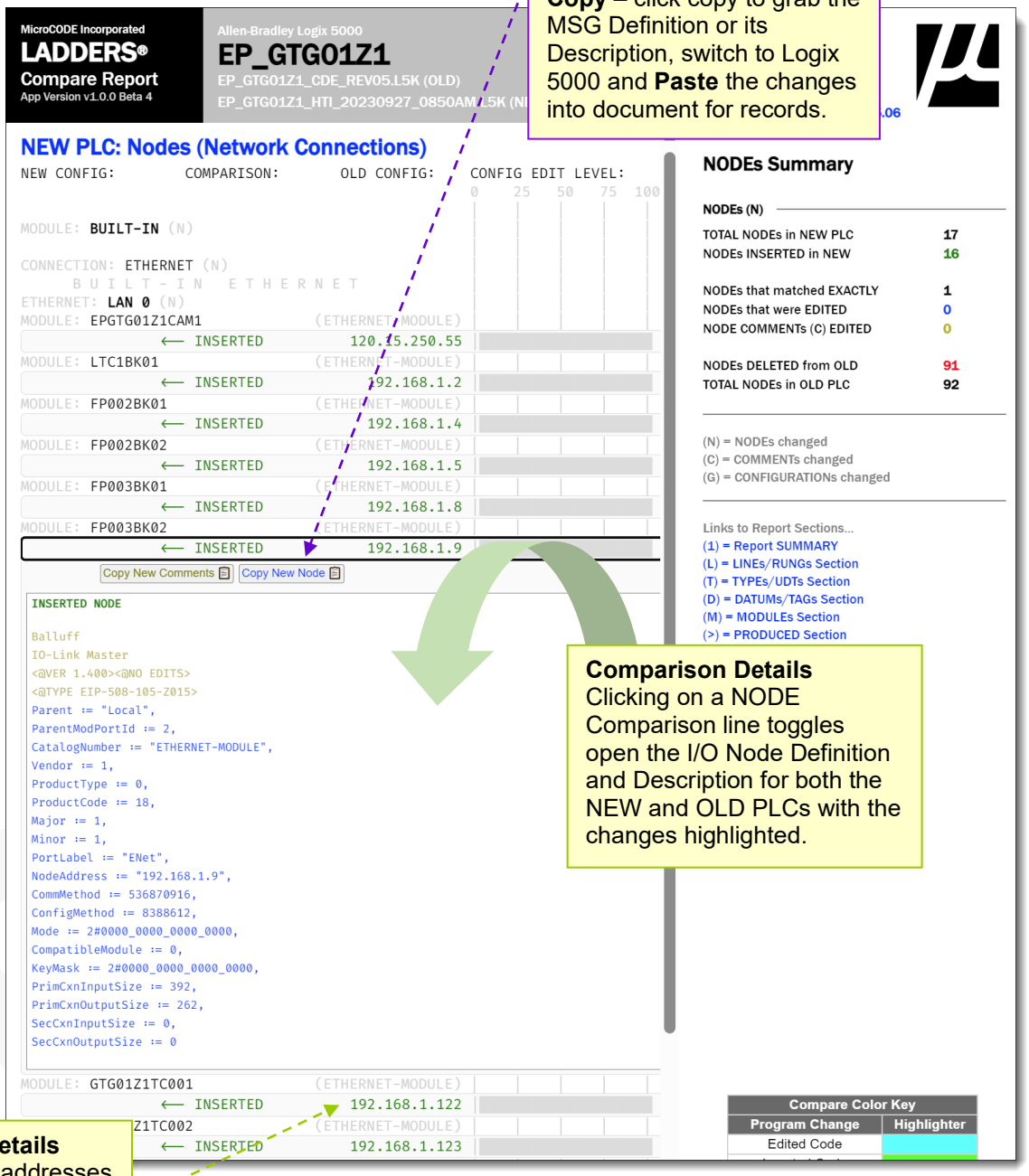
Comparison Details
The LOCAL and REMOTE data are clearly shown in the Sequence line for an at-a-glance, 'What is this MSG for?'

Comparison Details
Clicking on a MESSAGE Comparison line toggles open the Tag Definition and Description for both the NEW and OLD PLCs with the changes highlighted.

NODEs (I/O Devices) Pages

These pages detail any differences in the physical I/O devices—both local and remote—that are connected to this PLC, between the NEW and OLD configurations.

Change Copy & Paste
These commands are available in all 'Comparison Details' to facilitate quick updates to a PLC program open in Logix 5000.
Copy – click copy to grab the MSG Definition or its Description, switch to Logix 5000 and **Paste** the changes into document for records.

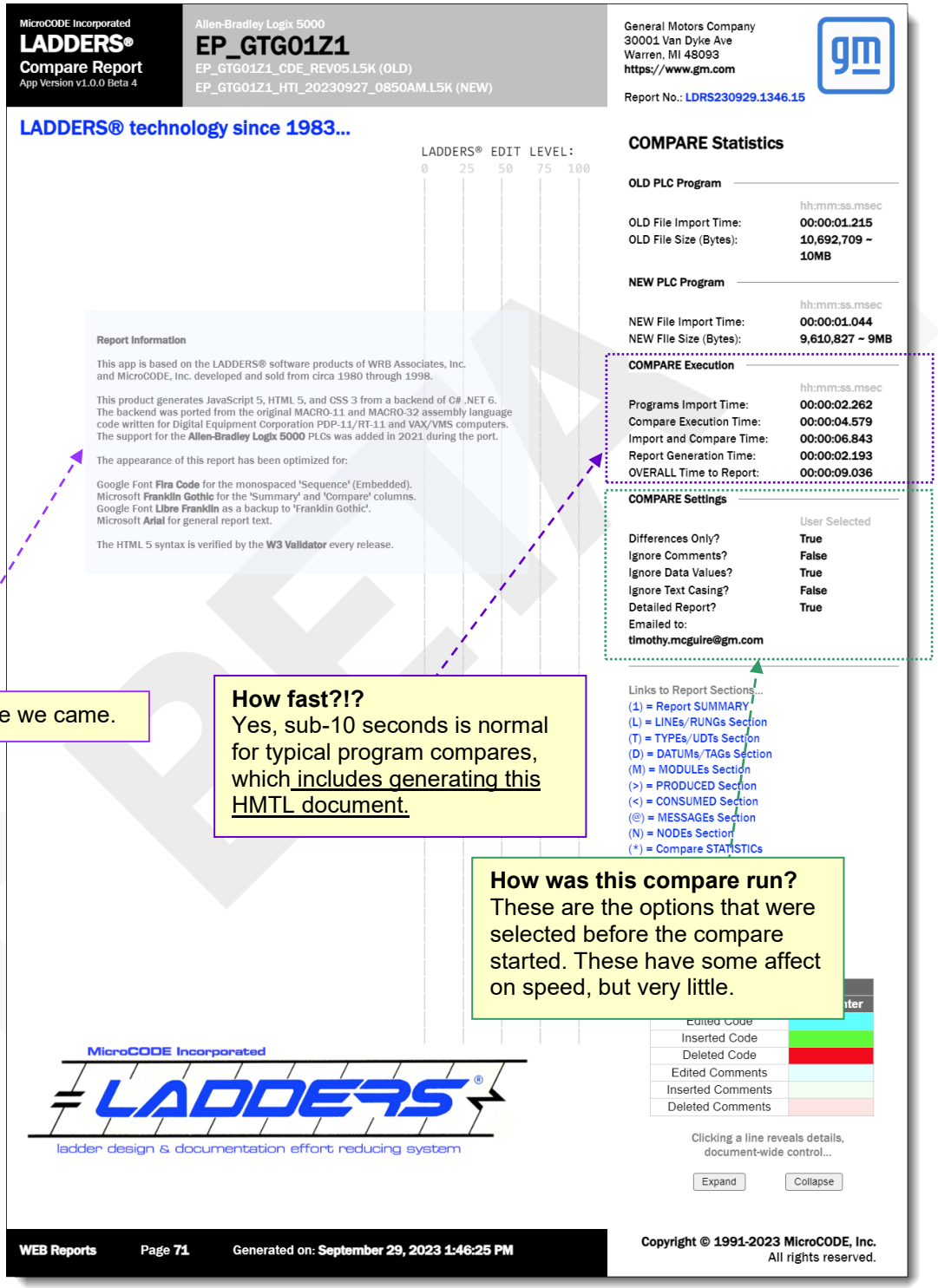


Comparison Details
Clicking on a NODE Comparison line toggles open the I/O Node Definition and Description for both the NEW and OLD PLCs with the changes highlighted.

Comparison Details
The I/O Device addresses are shown in the Sequence report for a quick look at the network set-up.

Compare Statistics (Last Page of Report)

This page wraps up the report with information about how it was run, which options, and how fast LADDERS did the import of the L5K files, compared them, and generated the HTML5 report.



LADDERS® Software Version Numbers

The SEP/GEP CE application software version numbers follow this convention…

vM.m.R c (B)

M = Major software version; represents application architecture, underlying technology, etc. Incrementing this number is associated with a '**Major Release**'.

m = Minor software version; represents new components within the application. Incrementing this number is associated with a '**Component Support Release**'.

R = Incremental Release Number; represents collections of new features within the application. Incrementing this number is associated with a '**New Feature Release**'.

c = Development Cycle as in ALPHA/DEMO, BETA/PILOT, or PRODUCTION. In the case of PRODUCTION, the Cycle label is removed. Changing this label is associated with a '**Code Cycle Promotion**', i.e.: Internal Build Promotion. This is a rebuild/relabeling only no code is changed. e.g.: v2.0.0 Beta (017), vs. v2.0.0 (001).

B = Build Number. This is the internal build number of the application from within the development group; any time code is changed and released into the Support Staff this number must be incremented, no matter how small the change. Incrementing this number is associated with a '**Defect Correction Release**'.

Current MicroCODE LADDERS® Version

This is the highest currently released version of the MicroCODE LADDERS application:

v1.0.0b4

For More Information

See the LADDERS documentation on the software distribution **MicroCODE** Site:

https://www.mcode.com/products-ladders-dec.html

Version Compatibility Matrix

This table explains our LADDERS App compatibilities…

Version	MicroCODE LADDERS – Build Matrix			
System	**Win 10+**	**.NET**	**Logix 5000**	**5000 FW**
v1.0.0a4	Any	6	Up to **L8x**	Any up to v34

NOTE: *This release of the App now supports Logix 5000 PLCs up to the **L8x** Series.*

This **application** was designed, developed, and is owned by:

