Accord Relay

User Guide

Document: **Accord Relay User Guide V1.6.Docx**

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1 Introduction

Accord Relay provides a configurable method for transfer of values between controllers. The Transfer takes place using Accord Server, which reads from the Source controller and writes to registers in the Target controller.

1.1 List of Accord Platform Modules

Designer	Application for configuring Process Model and HMI screens
PLC Library	PLC Runtime Library to implement control of the process in standard PLC.
Server	For management of PLC communications including download to PLC, Data for HMI's and modules, Logging, Redundancy, Security, Recipes and MES functions.
HMI	A runtime application showing the plant and providing device and program control. The screens are set-up and configured in Designer.
Recipe Manager	For generation and management of recipes of Setpoints, Selection Decisions and Step Times.
Plan / MES	This provides scheduling of program starts or other required actions in sequence and at selectable times.
Process Audit	For query of the Server Database to generate time or event based reports, with export to various formats.
Security Audit	For query of all interaction with the control system.
Relay	This provides transfer of Data to and from networked PLC's.
Emulation	This module provides PLC Emulation for multiple PLC's
Simulation	This module provides simulation of Inputs to PLC for Emulated PLC's

1.2 General Definitions

Plant	The process plant or machine to be modelled and controlled.
Database	The information for configuration and documentation of the control system project is contained in a SQL Server Database.
Controller	A container for the setup information for the Controller – either an Emulator or PLC - and the process model information. When a Process Model is deployed to PLC the PLC then controls the Plant using Process Model data and PLC Library. The library is downloaded to the PLC using the standard PLC editor.
Process Model	The configuration of data representing the Equipment and the Programs contained in the Controller container.

1.3 PLC Control and Accord Process Model Terms

These explanations are meant to reflect common industry understanding. These signals may be either electrical or on a bus system.

PLC Control

Digital Output	A Signal, having two states (On/Off, 1/0, True/False) sent from PLC to control a device.
Digital Input	A Signal, having two states (On/Off, 1/0, True/False) received from digital device or instrument.
Analog Output	A Signal from PLC to a modulating item, usually to control the item.
Analog Input	A Signal received from analog instrument.

Process Model Equipment

Valve	Allows material to flow from one part of plant to another. Always has a PLC Digital Output and may have one or more Feedbacks.
Motor (Pump)	Causes material to be transported. Always has a PLC Digital Output and may have one or more Feedbacks.
Digital Output	An Output from the PLC without Feedback, for a Lamp or Signal.
Analog Device - Control Valve	A Valve whose opening is dependent on an PLC analog output.
Analog Device - Variable Speed Drive	A Motor whose rotation speed depends on PLC Analog Output.
Digital Input – Switch	An indication that a physical state has been achieved.
Analog Input – Transmitter	An indication of the value of a physical state. This is a PLC Analog Input.
PID Controller	PID (Proportional, Integral, Derivative) This is a controller for an analog device, which uses common PID characteristics and terminology. Example - Flow Control loop using Variable Speed pump
Unit	This is a group of devices and instruments which form a logical section of plant. Examples; Water Supply Tank, Reactor, Conveyor, CIP Supply Line

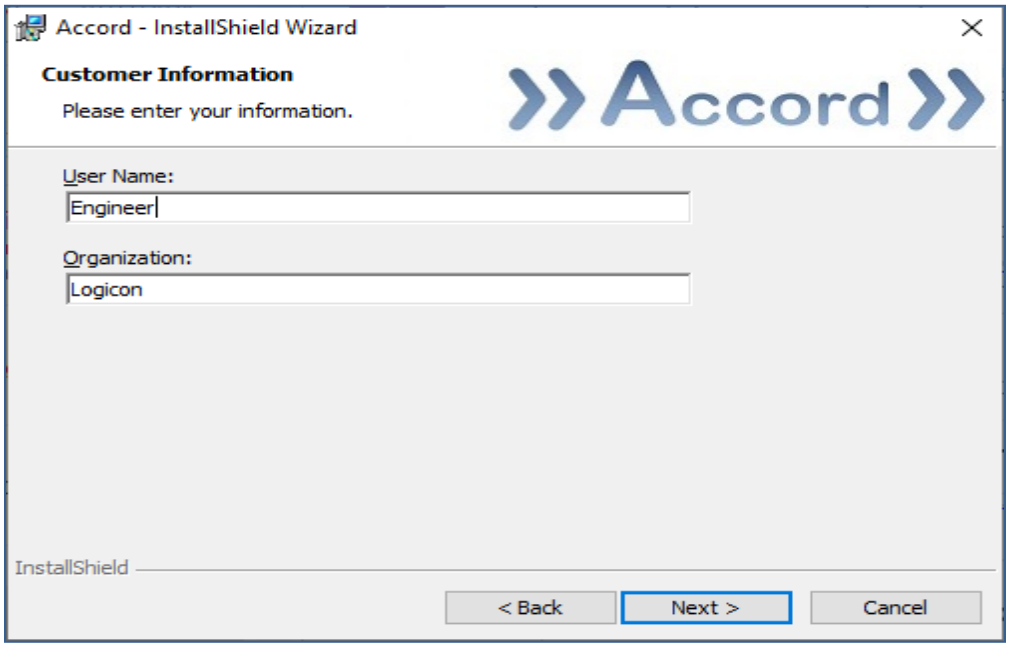
Process Model Program

Program	This is a set of items forming a distinct part of the process. It is also known as a program or sequence, as it may consist of a sequence of steps. Example - A Sequential Program to clean a part of plant
Step	This is an individual program stage performing a specific section of the program. This consists of step components. Example - An Initial Rinse step at start of Cleaning Program
Setpoint	This is a value written in Recipe or HMI or which is examined to determine if a condition is met. It is part of the default Recipe for the Program. Example – Rinse Temperature Setpoint
Activation	This is a signal activate a digital device or digital output.
Operation	This is a function for changing a value or a program status or step. Example – Supply Control Valve to Feed Setpoint.
Comparison	This is a test for status of a single item at a particular point. Example –Water Supply Tank below Empty Level.
Delay	A Wait time for an Event, which goes True when the Event is True for a configured time.
Combination	This allows combined Boolean logic to be applied to items. Example - High Pressure Level Switch AND Pressure High-High Alarm
Alarm	This is a fault in a program due to an operational failure. It may be configured to cause the program to go into Alarm and Hold. Example – Water Supply at Low Level.
Recipe	• Step Times : Time for steps in the Program. • Setpoints : List of setpoints for the program. • Decisions: List of On/Off Selections for the program.
Variable	This value is written by the PLC, usually as mathematical Operation result. Example – Water Volume used in Rinse.
Constant	This value is written only at configuration in Accord Builder for common time and setpoint values.

2 Installation

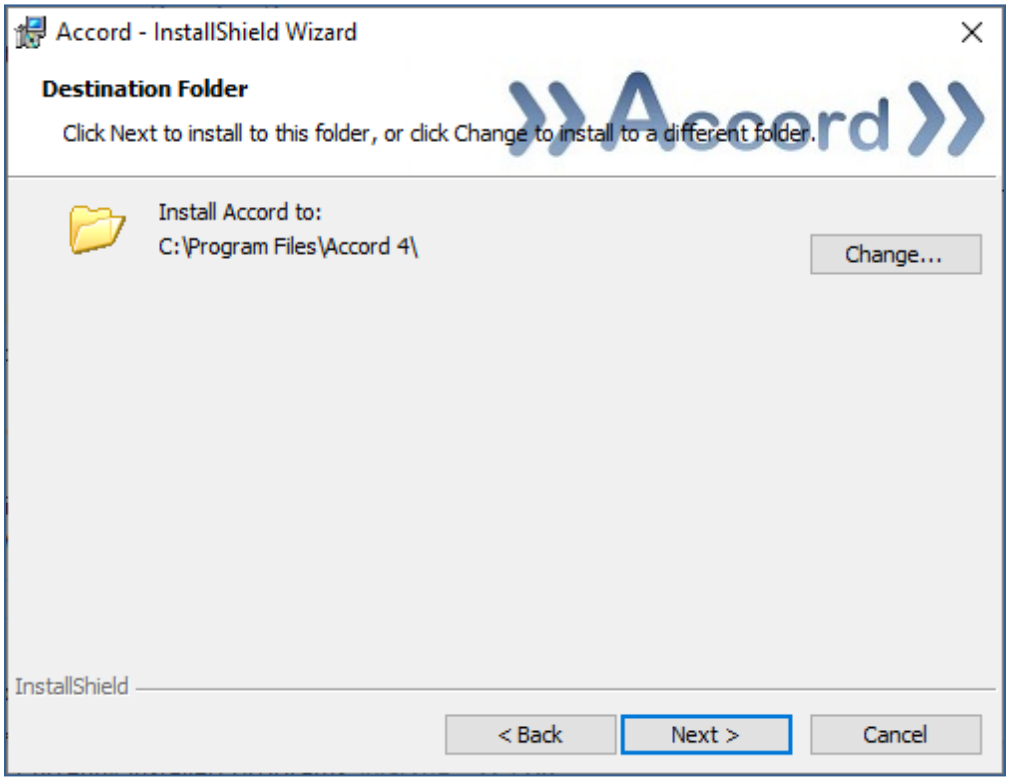
Accord HMI requires a standard PC. Accord Server may require a high performance PC, depending on applications sizes and system requirements.

HMI is installed from Accord Setup Installer. Server should be installed, either on this or a networked PC, to provide Database management.

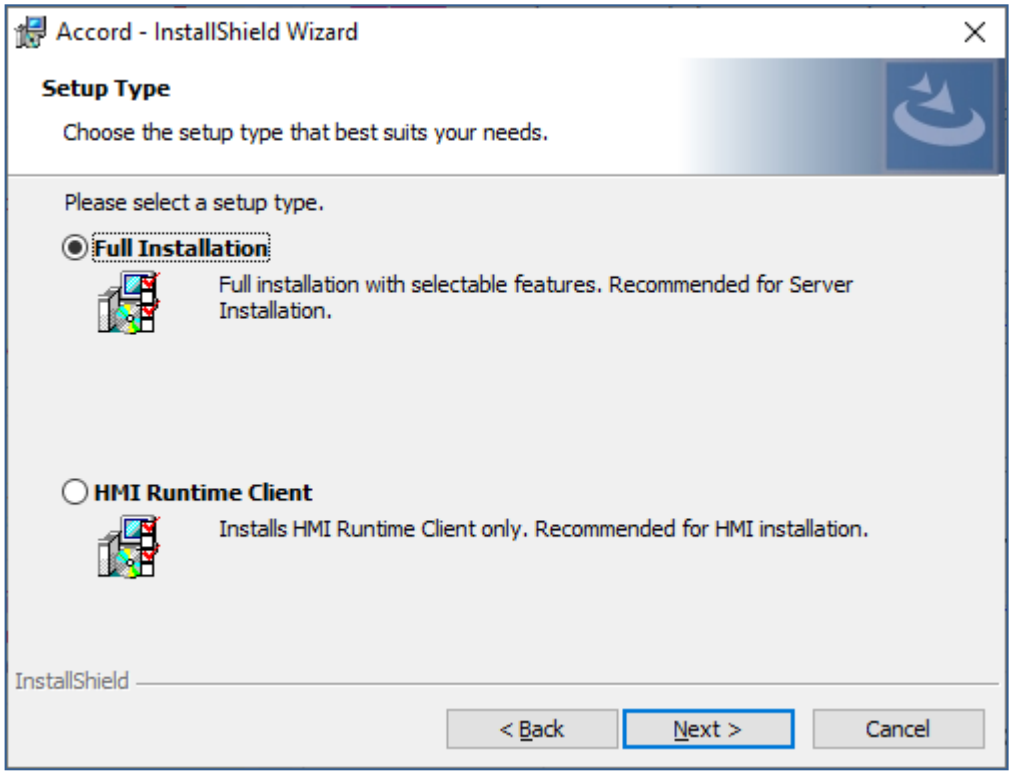


Accord Setup.exe

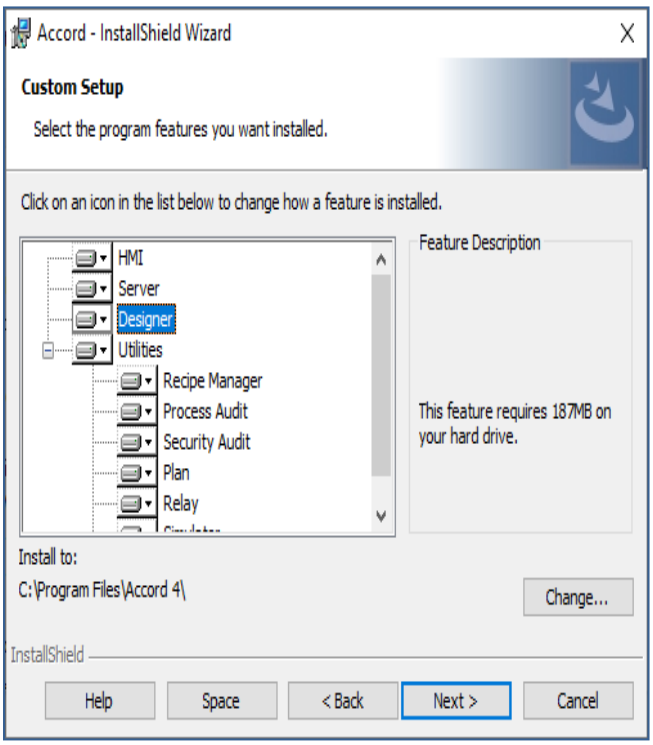
1. Entry of User Name and Organisation

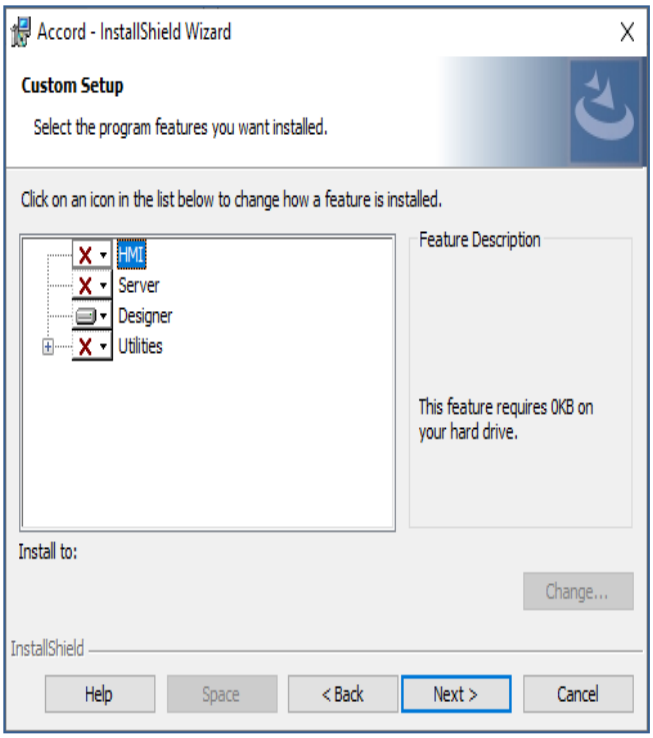


2. Installation Folder selection



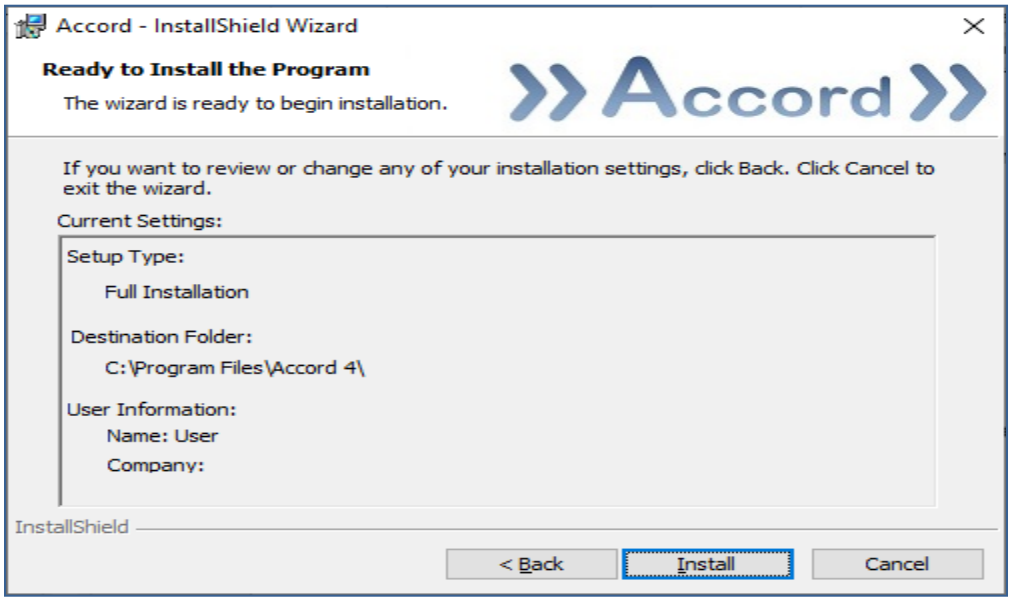
3. Installation selection





4. Selection of **Relay** and any other required modules. The installation is to a ProgramFiles folder but may be changed. Server must be installed on this PC or on a networked PC.

Note: Modules are selected to be installed by default. Right-click to deselect installation of a module.

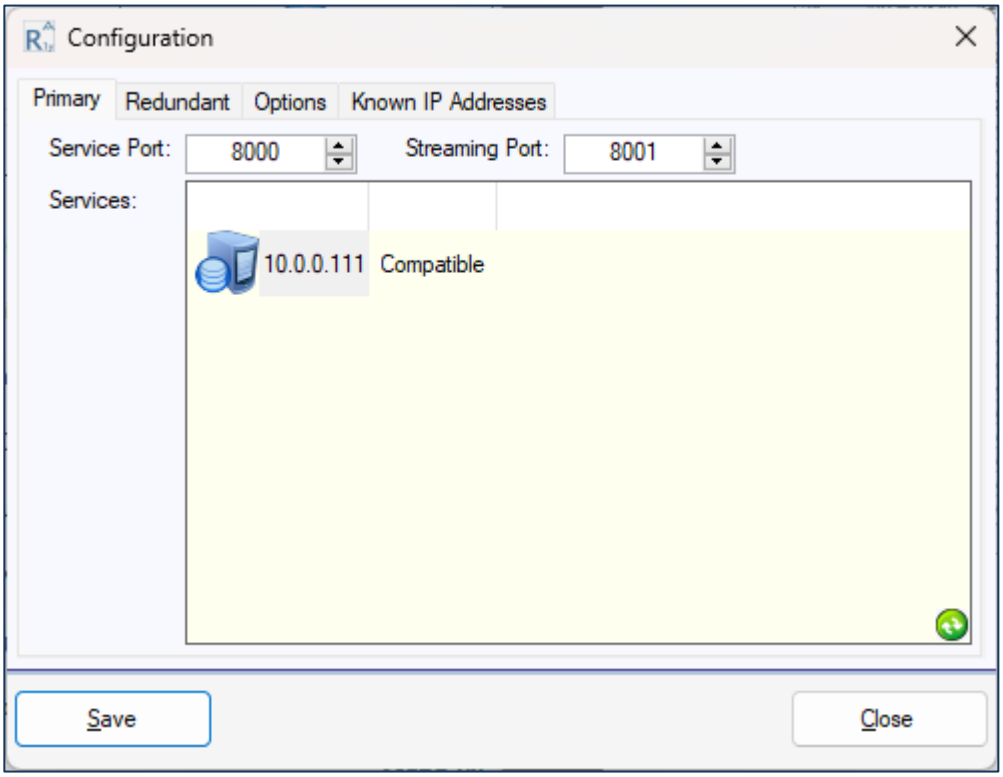


5. Installation is completed on pressing Install.

3. Relay Module Configuration

3.1 Relay Server Connection

Starting Relay for first time will cause Server selection configuration popup to appear with Green Refresh button at the Bottom. Connections are selected from the list. If the required IP address is not available it may be obtained by clicking Refresh button.



Primary Connection Selection

A Redundant server may be selected also if there is a Redundant system server installed.

The selection is made by pressing Save.

3.2 Options - Idle Timeout

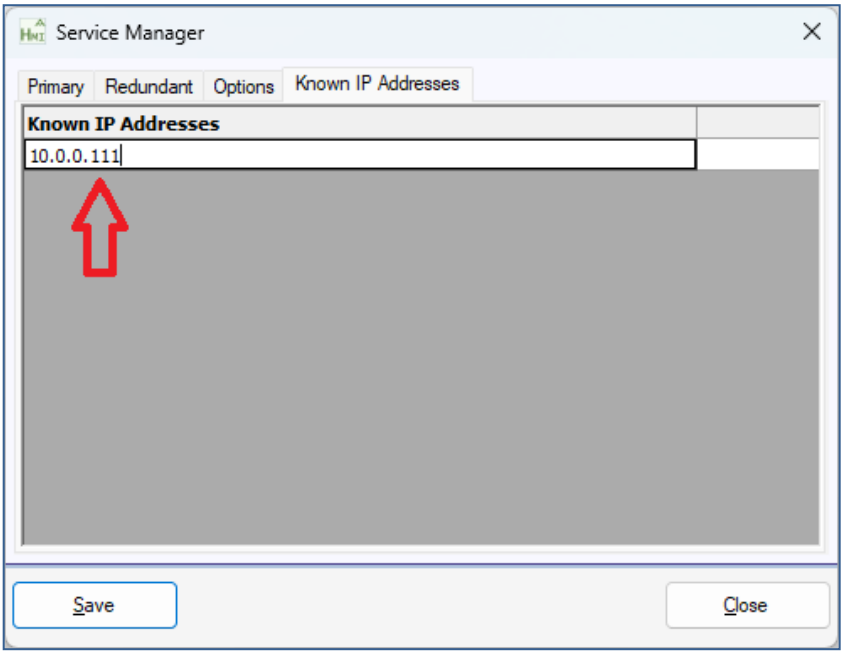
This is a timeout to automatically log users out of the Relay application. The log out occurs when no user actions are taken in the selected time (in minutes). The value can be set to 0 if no idle timeout is required. This does not affect operation of the Relay functions already configured.

3.3 Known IP Addresses

The Known IP Addresses tab can be used to add to or remove from a list of known IP addresses for Accord Servers. The entered IP addresses will then appear in the search regardless of the availability of the Server. This is used for the case that the Accord Server is on a network or PC that does not support IP discovery protocols.

The Known IP Addresses are entered manually by typing into the row and clicking to store. An Entered address can be removed by selecting Delete.

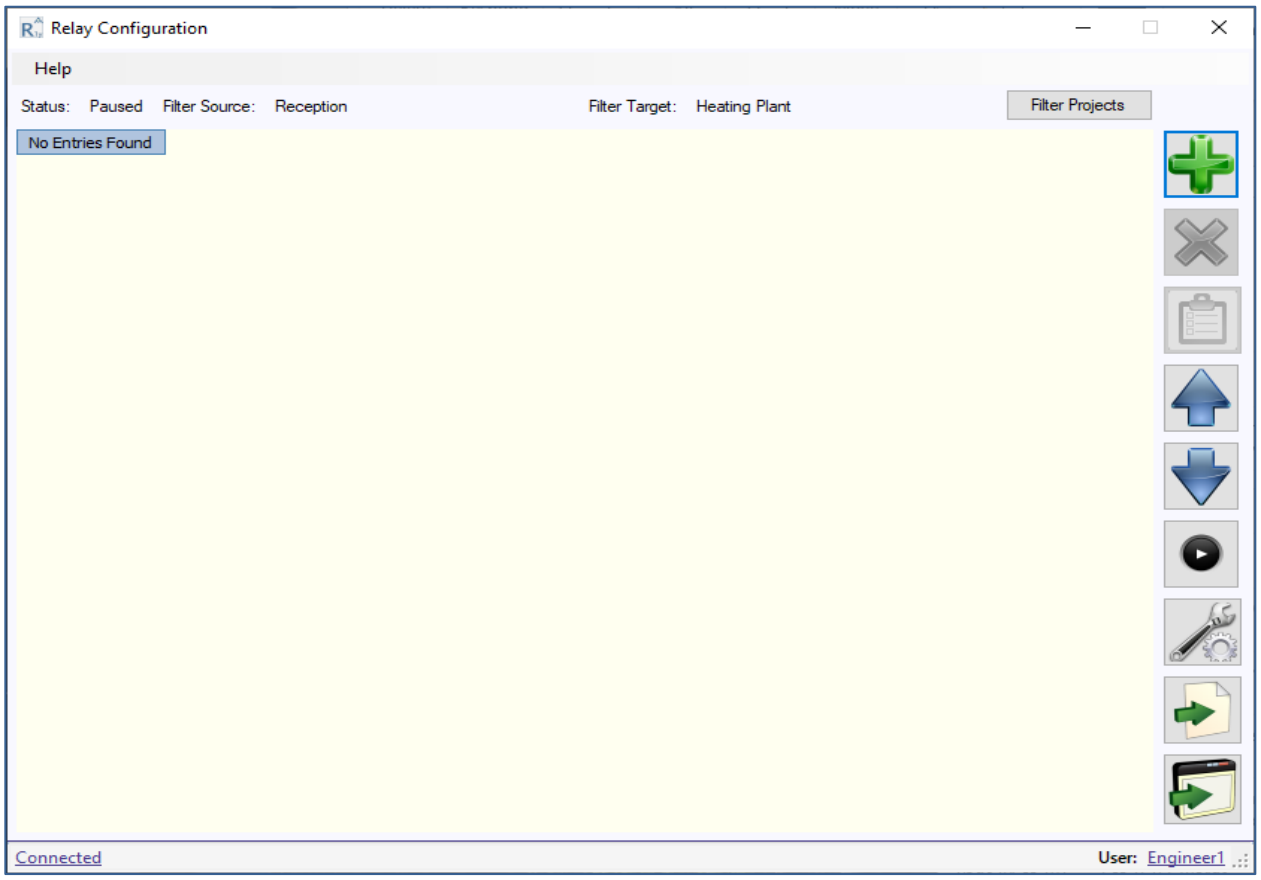
The list will only accept valid IPv4 addresses.



Known IP Addresses

4. Information Relays

4.1 Relay Rows and Menu



Initial Relays Screen

The Buttons at the right hand side are for

Adding a Relay Row
Deleting a Row
Editing a Row
Moving a Row Up
Moving a Row Down
Starting, and Pausing, the Relay transfer operation
Settings
Export and Import of the Relays rows setups. The export and import allows the rows to be generated or modified in Excel.

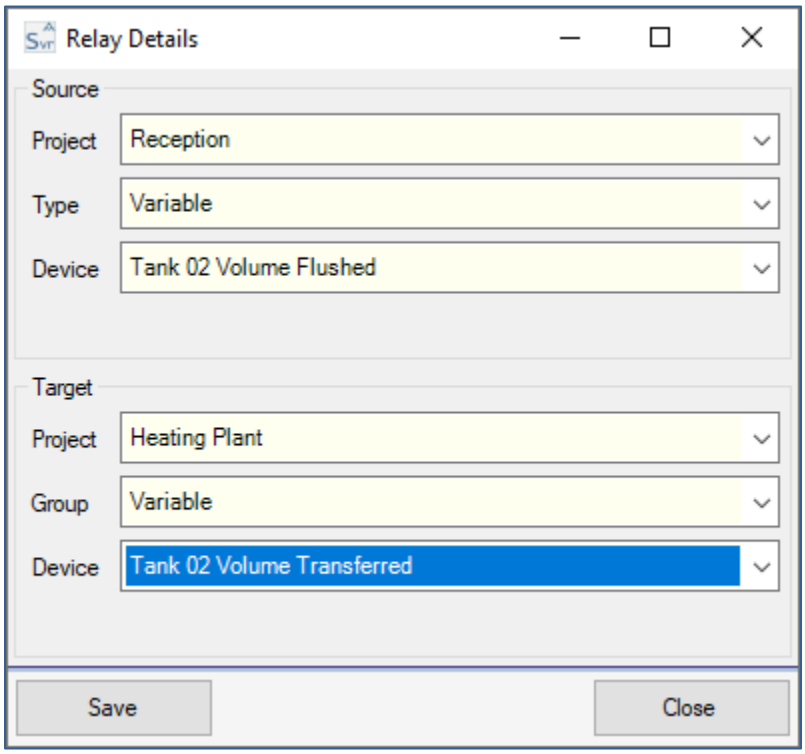
4.2 Selection of Items

Values can be mapped from registers in one PLC to registers in another using drop down menus. Pressing the Add Button displays a configuration popup for a Row.

Source PLC	Target PLC
Digital Type	
Valve Active	Decision
Valve Alarm	
Motor Active	
Motor Alarm	
Digital Output Active	
Digital Input Result	
Decision	
Comparison	
Combination	
Delay	
Program Active	
Program Running	
Program Hold	
Program Alarm	
Program TimeHold	
Unit Error	
Unit Selected	
Analog Type	
Analog Input Value	Variable
Analog Device Value	
Setpoint	
Variable	
Lifebyte	
Program Step Nr	

4.3 Setup of a Relay

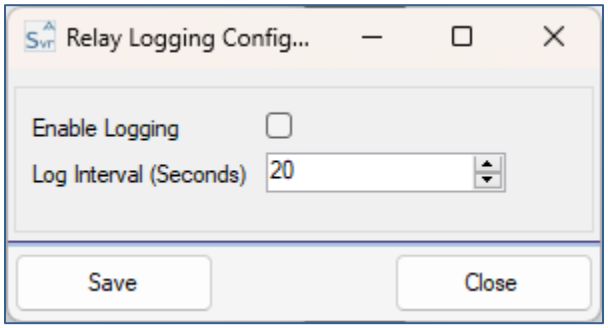
The Setup of a Relay is carried out by Drop Down, where the Project (Controller), Type and Device is selected for the Source Item and then for the Target Item. The Target Item can only be of type Decision for a Digital Type and Variable for an Analog Type.



Setup of a Single Relay Item

4.4 Logging Setting

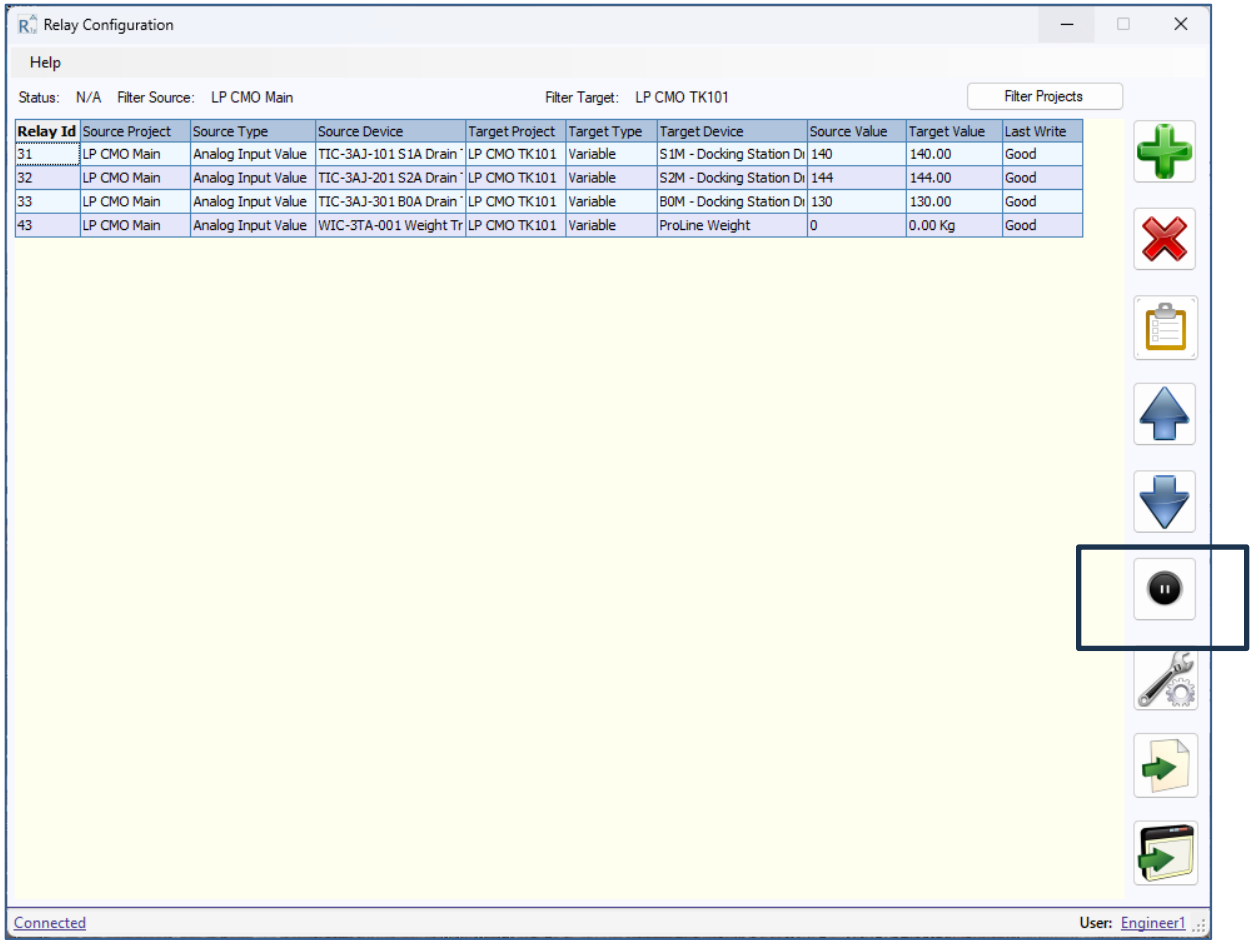
The Data Transfers, whereby can be logged. This is carried out in the Settings button. The Source and Target values will be logged at each interval.



Relay Logging Settings

The logging is enabled if the Enable Logging is selected. The Log interval may also be selected.

5. Data Transfer



Relay Rows Setup in Transfer

When rows have been configured it is possible to start a data transfer by pressing the Start / Pause button in the right hand side menu.

Source and Target values are shown when the transfer is active