## DESCRIPTION

The Store/Restore feature is intended to save installation costs and reduce installation time. This feature is also intended to protect meter configuration and assure the operator that the meter is properly configured. Over time and handling of the meter, the meter configuration could change. The Store/Restore feature allows the meter to be quickly set to the operator's original configuration.

## IMPORTANT

*The Store/Restore feature requires firmware version 1.11 or later. Reference Badger Meter P/N 67354-003 to obtain a firmware upgrade kit.*

## PERFORMANCE

The Store/Restore feature provides the ability to save meter configuration to a memory token. The memory token can be placed into alternate meters so that each meter in the system has the same configuration. The memory token can also be stored in a safe place and later used to restore meter configuration if the configuration of the meter is in question. The operator has the option to select which groups of configuration parameters are stored to the memory token, providing additional flexibility for system installation.

## OPERATION

The means to enable and configure the Store/Restore feature are found under the *Advanced* menu of the menu manager located in the *Token Copy* submenu. The menu items of *Token Copy* are:

- Configuration
  - ◊ Token Properties
  - ◊ Parameter Selection
- Store to Token
- Restore to Token

The *Configuration* submenu allows the operator to configure token properties and select the groups of parameters that are to be stored to the token. Token properties and the parameter selection configurations should be configured first, prior to copying meter information to the memory token.

Token properties allow the token to be configured in a way that the behavior of the token can be defined. Such properties include:

- *Write Protect* – Protects the token from being overwritten

- *Power on Load* – Requests the meter to load the contents of the token into the meter at power on.

- *One Time Load* – Requests the meter to erase the token after the contents of the token have been stored to the meter.

Write protect cannot be undone by the operator. Caution should be used when configuring the token for write-protect mode.

The chart below lists the categories of parameters that can be individually selected for storing to the memory token.

| Parameter Categories | |
|---|---|
| **Calibration** | Pipe diameter |
| | Detector factor |
| | Detector offset |
| **Communication port A/B** | Interface (for port A only) |
| | Node address |
| | Baud rate |
| | Parity |
| | Date bits |
| | Stop bits |
| | Extended node address (for port B, Profibus DP only) |
| **Security** | Admin pin |
| | Service pin |
| | User pin |
| **User** | All other meter parameters including measurement and I/O settings |

Nontransferable parameters include:

- Serial Number

- Excitation Frequency

- Scale Factor

- Analog output calibration factors (including custom offsets)

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The *Parameter Selection* submenu allows the operator to choose the groups of parameters to be stored to the token. Currently, there are six groups as identified by the submenu. The table below defines each group.

| Menu Designation | Group Description |
|---|---|
| Group 0 (ALL) | All meter parameters are stored to the token. |
| Group 1 (USER) | Only user parameters are stored to token. |
| Group 2 (PRV) | Reserved. |
| Group 3 (FACT)* | Only detector calibration parameters are stored to the token. |
| Group 4 (PRT A) | Only Port A communication parameters are stored to the token. |
| Group 5 (PRT B) | Only Port B communication parameters are stored to the token. |
| Group 6 (SEC) | Only security pins are stored to the token. |

**\*** The amplifier calibration parameters are specific to each amplifier and are not allowed to be copied from one meter to the next.

## Storing Configuration to a Token

1. Insert the token.
2. Navigate to the *Advanced > Token Copy* menu and configure the token properties and group selections.
3. Navigate to the *Advanced > Store to Token* menu.
4. Move the arrow to *Confirm* and press **E**.
5. Move the arrow to *Exit With Save* and press **E**.

The token copy process may take up to 30 seconds to complete. During this time a status dialog window displays.

6. Once the status dialog window is no longer displayed, remove the token.
7. Label the token for future use.

## Restoring Meter Configuration from the Token

1. Insert the token.
   If the token is configured for power-on-load, reset the meter with the reset button on the electronics. After the meter has been reset for 10 seconds, proceed to Step 6.
2. Navigate to the *Advanced > Restore From Token* menu.
3. Move the arrow to *Confirm* and press **E**.
4. Move the arrow to *Exit With Save* and press **E**.
5. Exit the main menu by navigating back to the home display (flow rate/totalizer display). This step is important because it copies the restored volatile configuration to non-volatile memory (EEPROM). Power cycles or resets that occur before this step is completed will invalidate the restore request. The power cycles or resets must be performed again.
6. Remove the token.

# STORE/RESTORE AND SECURITY

Security must also be considered when using the Store/Restore feature. Tokens can be used to secure meters. However, updating a secured meter with contents on a memory token requires extra consideration.

## Storing to a Token with a Secured Meter

During the store-to-token operation, the token is created and the admin level pin is saved to the token. The admin level pin is recorded on the token regardless of the Group 6 (SEC) parameter selection. The recorded pin is not restored to the meter, but is verified when the token is used to update secured meters with the power-on-load feature.

## Restoring a Secured Meter

Restoring a secured meter with the contents of the memory token requires the operator to login with the Admin level pin in order to gain access to the token configuration menus.

The Group 6 (SEC) security pins on the token will overwrite the security pins on the meter if they are different.

The power-on-load feature of the memory token requires the Admin level pin of the token to match the Admin level pin of the meter, otherwise, the power-on-load restore operation will not be successful. The admin level pin stored to the token is the same admin pin of the meter used to create the token.

## Restoring an Unsecured Meter

Restoring an unsecured meter has no limitations. However, it is important to consider the security pins residing in the token. In this case, the unsecured meter can become secured with the pins residing in the token. The pins residing in the token should be recorded and associated with the programmed token.

If the pins of the token are unknown, it is recommended to immediately navigate to the security menu and record the pins.

An alternate option is to create a token that does not contain security pins (like Group 6 (SEC)). This will allow programming an unsecured meter with a token generated by a secured meter leaving the unsecured meter unsecured.

# TROUBLESHOOTING

| Display Message | Description | Recommended Action |
|---|---|---|
| TOKEN NOT SUPPORTED | Token is not supported. | Token is previously formatted for an alternate feature (for instance, data logging). New token is required. |
| TOKEN NOT INSERTED | Token operation cannot be performed because no memory token is detected. | Please ensure the memory token is seated firmly into the socket located on the amplifier. |
| TOKEN IS PROTECTED | Token is write protected. Re-programming the token is not allowed. | Token must be replaced or re-initialized. Re-initializing token requires special access over MODBUS interface. Contact tech support for details. |
| TOKEN IS CORRUPTED | Bad checksum found within the memory token. | Token is not usable in current state. Operator must follow steps to re-program the token. |

| Symptom | Recommended Action |
|---|---|
| Meter is not being restored with contents on token during power on load. | If meter is secured, un-secure the meter, then retry the restore operation. The restore operation will re-enable security only if the security pins are stored to the token. Otherwise, operator must manually re-enable security. |
| Meter is not being restored with contents. | Ensure meter firmware is at firmware revision v1.11 or later. |
| Token errors are reported in the Error List. | Parameter stored in token is corrupted. Token must be re-programmed. |
| | Parameter on token does not exist in meter. Can be ignored if programming a meter with older firmware. |