

EZY SWITCH



SMS-4/2-TR **Tank and Reservoir** **Level Management System**

Installation Manual

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SMS-4/2-TR Tank and Reservoir Level Management System

The **EZY Switch SMS-42TR** is a complete system solution for maintaining the level in a tank or at a reservoir when the source of water is a pump located thousands of feet or miles away.



The system uses a pair of *EZY Switch* text control units exchanging SMS messages to automatically maintain the water level in a tank or reservoir from a remote pumping source that can be 1000 feet or 100 miles away. The system can be applied for any tank/reservoir and pump station location where cellular service is available.

One unit, the *EZY Switch* model **SMS-T4** is located at the tank or reservoir and monitors two float switches – one “high float” which indicates the reservoir is full, and the other a “low float”, indicating the reservoir has reached its low level and needs to be refilled.



The other unit, an *EZY Switch* model **SMS-2**, is located at the Pumping Station. The SMS-2 controls the well pump via an integral relay contact output.

In operation, the SMS-T4 sends a text command to the SMS-2 unit at the pumping station to start the pump when the level reaches a low level, and to stop the pump when full.

Model SMS-T4

The SMS-T4 allows monitoring of up to four (4) contact closure inputs – two being reserved for the high and low float inputs. Input1 is disabled in the float mode. Input4 is unused inputs can be assigned to monitor door positions, for example, for alarming intruder access to an enclosure or building. Control of up to four (4) devices is provided via outputs rated at 3 amp and could be used to control lighting or siren to alarm an intruder incursion.

Inputs:

- Input 1: Disabled
- Input 2: **Low Float**
- Input 3: **High Float**
- Input 4: Spare

Outputs:

- Output 1: Spare
- Output 2: Spare
- Output 3: Spare
- Output 4: Spare

Model SMS-2

The SMS-2 allows monitoring of up to two (2) contact closure inputs and control of up to two (2) devices via outputs rated at 3 amp. One output is reserved for pump control. Typically, this output would power a relay or contactor coil, which in turn controls the motor.

Inputs:

- Input 1: Spare
- Input 2: Spare

Outputs:

- Output 1: **Pump**
- Output 2: Spare

As with the SMS-T4, the spare inputs and output can be assigned other monitoring or control functions.

Failsafe Provisions for Loss of Power and/or Cellular Service

The normal sequence of operation is described on pages 9 and 10 of this document. In general, the system is designed to recover from the loss of power or the loss of cellular service.

Power or cell service lost at the reservoir SMS-T4

If the pump was running at the time service was lost, the pump will continue operation. However, with the "Pump timeout feature" implemented (see p. 9), if no refresh signal has been received after 15 minutes, the pump will automatically shut down. This provides failsafe protection.

Power or cell service lost at the pumping station SMS-2

If the pump was running at the time of a loss of service it will resume pumping when service is restored and will continue until the high float closes.

Record the SIM cell numbers here:

Tank/Reservoir SIM Cell # _____

Pump Station SIM Cell # _____

Cell # format for programming

For programming, the following format must be used to enter SIM cell numbers:

+??XXXXXXXXXX

+ is the required prefix

?? is the country code (See below)

XXXXXXXXXX is the mobile number (without the preceding 0 where applicable)

Country Codes: Examples:

New Zealand = 64 (+64 and the number without the preceding 0)

If the user's number is 0211893070 then Command = **add user +64211893070**

Australia = 61 (+61 and the number without the preceding 0)

If the user's number is 0412882900 then Command = **add user +61412882900**

Singapore = 0065 (+65 and the number without the preceding 0)

If the user's number is 0412882900 then Command = **add user +65412882900**

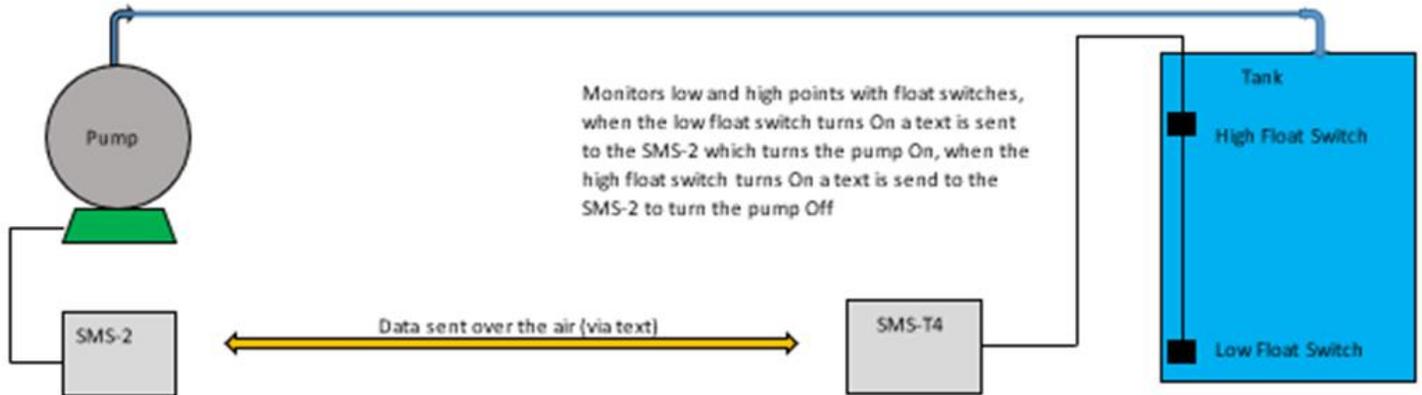
USA & Canada = 001 (+1 and the Area Code & Number)

If the user's number is 412-555-1234 then Command = **add user +14125551234**

Installation and Setup Programming for Tank and Reservoir Level Control System

SMS-T4 and SMS-2 for automatic control of a pump filling a remote tank. A SMS-T4 is used at the tank/reservoir and an SMS-2 at the pumping station.

Using float switches to monitor tank or reservoir level:



Setup of SMS-T4 and SMS-2 SIM Cards

Setting up system for the first time:

Please ensure the SIM cards do NOT have a PIN number or is locked and has been ACTIVATED with the network provider. Insert into SIM slot on the back and power the unit up.

You must wait for the LED to be slowly flashing (every 3 seconds) before sending any commands. Give it a few minutes, as the unit will set auto-band and other details for the country.

Programming

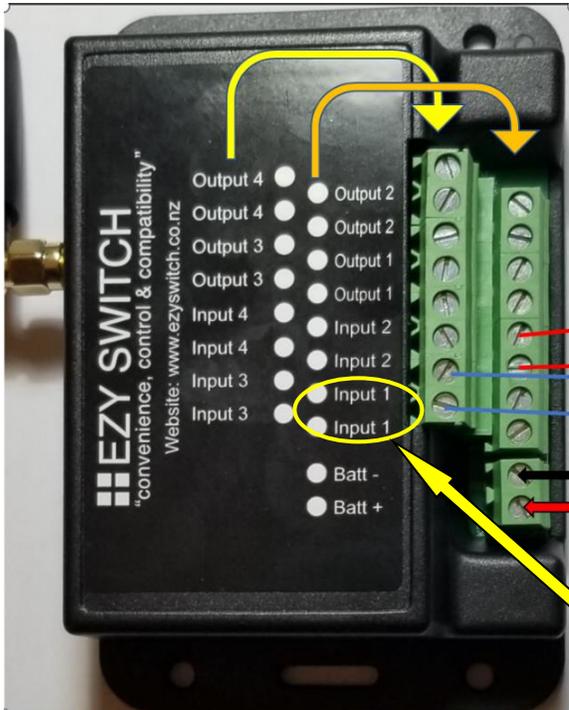
As with all EZY Switch products, all programming is accomplished using text message commands via a cell phone. All alerts for off-normal conditions and commands to interrogate input/output status or to control devices are via text messages.

Up to 10 cell phones may be designated as "users" to send commands and receive alert text messages.

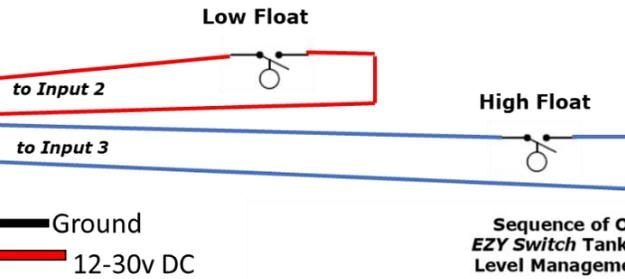
It is very important that all users read and understand general operation and the text commands and responses which the SMS-T4 and SMS-2 accepts and sends as described in this manual. For optional applications of the SMS-T4 and SMS-2 review the EZY Basics Manual of popular EZY Switch commands for programming helps.

Physical Installation

For the SMS-T4 at the tank or reservoir, connect low float switch to input2 and high float switch to input3. Float switches must be **normally open and closing** when water is present.



Wiring Connections for EZY Switch SMS-T4 Tank/Reservoir Level Management System Tank/Reservoir Unit



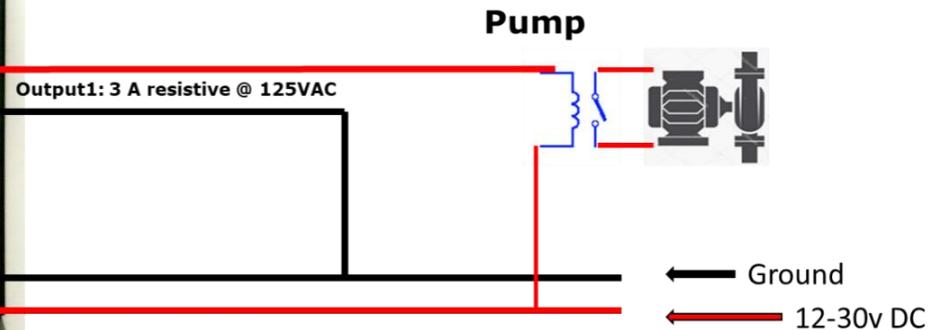
Sequence of Operation EZY Switch Tank/Reservoir Level Management System

| Float Operation | SMS-T4/T8 Tank/Reservoir | SMS-2 Pumping Station | PUMP |
|-------------------------------|---|--|------|
| High float opens | No message | No message | OFF |
| Low float opens | Message: "The tank has reached low alarm level" | Message: "bf4-well-pump has been turned on" | ON |
| Low float closes | No message | No message | ON |
| High float closes (tank full) | Message: The tank low alarm has been reset | Message: "bf4-well-pump has been turned off" | OFF |

At the Pump station, connect the pump to output1.



Wiring Connections for EZY Switch SMS-2 Tank/Reservoir Level Management System Pumping Station Unit



Programming the SMS-T4 (Tank/Reservoir Controller)

Send the following commands (in **bold type**) to the SMS-T4:

Step 1: Command: **Set user**

(adds your cell number as primary user) **Note:** the unit will pick up your number from the incoming text. When the Initial user setup has been successful the system responds with: **"Your number has just been added to the user list"**

Note: The initial user is often the installer who sets the system up, and after adding other users, has the option to remove his number.

Step 2: Command: **Add user +??xxxxxxxx**

(where **+??xxxxxxxx** is the SIM number of SMS-2 Pump Controller)

Response: **"The user number +??xxxxxxxx has been added to the user list"**

*+ is the required prefix
?? is the country code (See bottom of NEXT PAGE)
XXXXXXXXXX is the mobile number (without the preceding 0 where applicable)*

Step 3 Command: **Set +??xxxxxxxx as pump controller**

(where **+??xxxxxxxx** is cell number of SIM card in the SMS-2 pump controller SIM card)

Response: **"The pump controller unit has been set using this SIM number"**

Step 4 Command: **Set float mode**

Response: **"Float switch mode has been set"**

Programming the SMS-2 (Pump controller)

Send the following commands (**Bold Type**) to the SMS-2:

Step 5 Command: **Set user** (adds your cell number as primary user)

Response: **"Your number has just been added to the user list"**

Step 6 Command: **Set pump mode**

Step 7 Command: **Add user +??xxxxxxxx** (where **+??xxxxxxxx** is the cell number of the SIM card in the SMS-T4 tank/reservoir controller)

Response: **The user number +??xxxxxxxx has been added to the user list**

*+ is the required prefix
?? is the country code (See bottom of NEXT PAGE)
XXXXXXXXXX is the mobile number (without the preceding 0 where applicable)*

Step 8 Optional: If you choose to name the pump e.g., "well pump 4" Use the following command:

Command: **Change Output1 to well-pump-4**

Response: **The output name has been changed to well-pump-4**

This command is used to change Inputs and Outputs to a new name. Names can be words up to a **total length of 20 characters, please note the name can contain a dash (-) but NOT spaces.** Once the name has been changed, the particular Input or Output is always referred to by the **new name** (e.g. Alarm). For commands or status interrogation and the SMS unit will respond using the new name.

Pump Timeout Feature

As a standard default feature, the SMS-T4 tank/reservoir controller sends a text to the pump controller to turn the pump on. Then every 12 minutes it sends a refresh text. If the pump controller does not receive this refresh text after 15 minutes, it automatically turns the pump off. See page 9 for a description of the sequence of operation and failsafe procedure.

If you do NOT require this feature, then send the following text to BOTH SMS units – the one at tank/reservoir and the pump units:

Command: **Pump timeout off**

To restore this feature and turn Pump Timeout on, send this command to BOTH SMS units:

Command: **Pump timeout on**

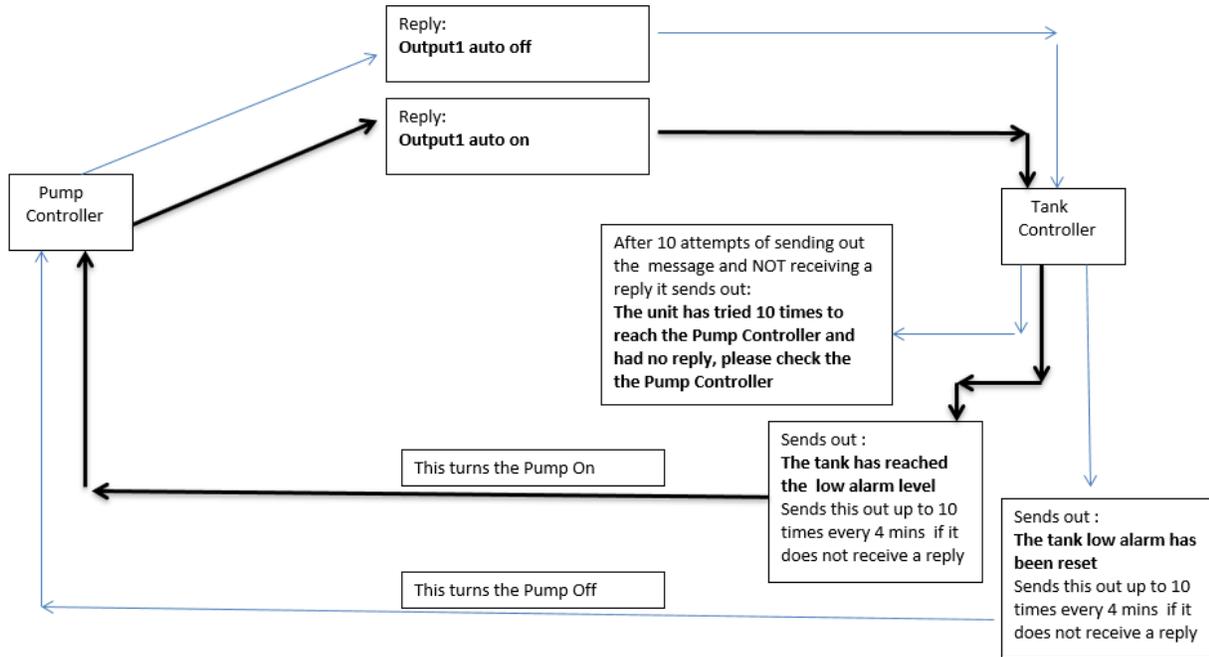
To Finish:

It may be desirable to mask the input status texts from being sent to all "users". This feature allows for the individual inputs to be masked per programmed user, so only the designated or "set inputs" will be sent to a selected programmed number. (System default is for all users to received texts from all inputs)

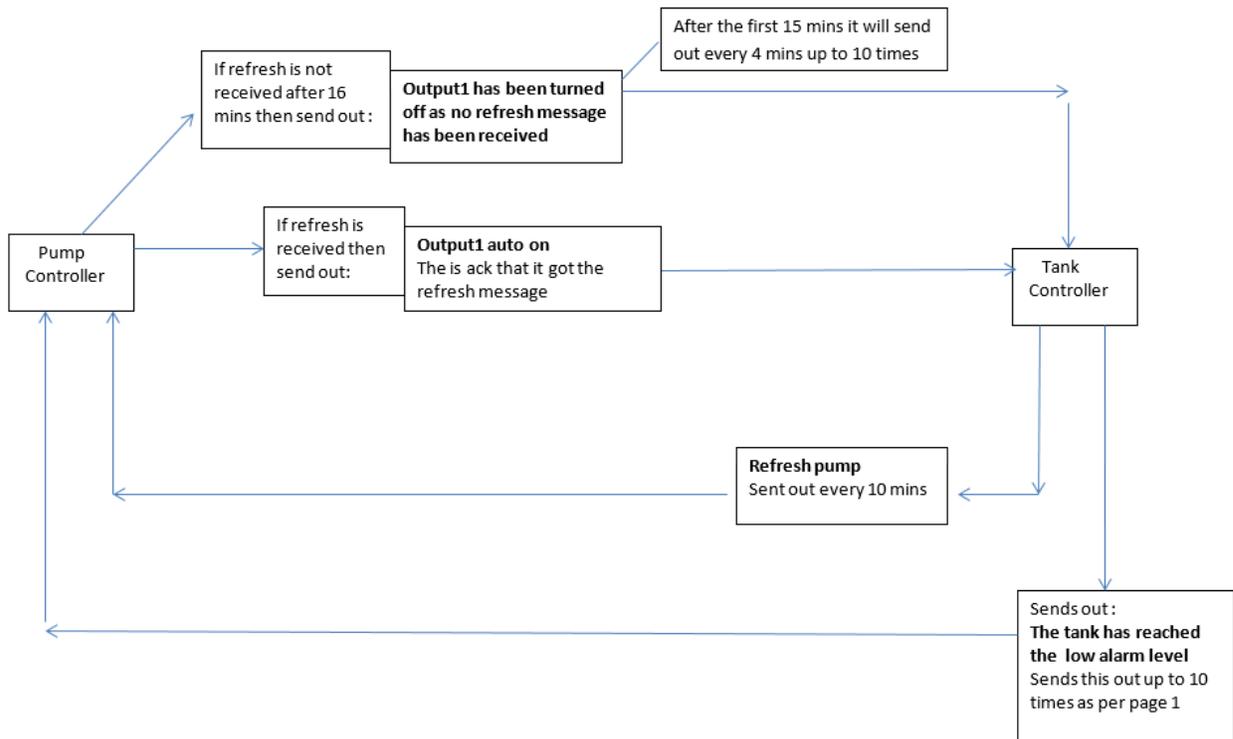
Command: **Set +??XXXXXXXX inputs 1,3** (inputs can be 1-4 for SMS-T4 or 1-8 for SMS-T8)

In this example, the system is set such that ONLY inputs 1 & 3 will be texted to the number XXXXXXXXXX. The system responds with: "The inputs for user number +XXXXXXXXXX have been set" To set back to factory default: **Set +??XXXXXXXX inputs 1,2,3,4** (or 1,2,3,4,5,6,7,8 for the SMS-T8)

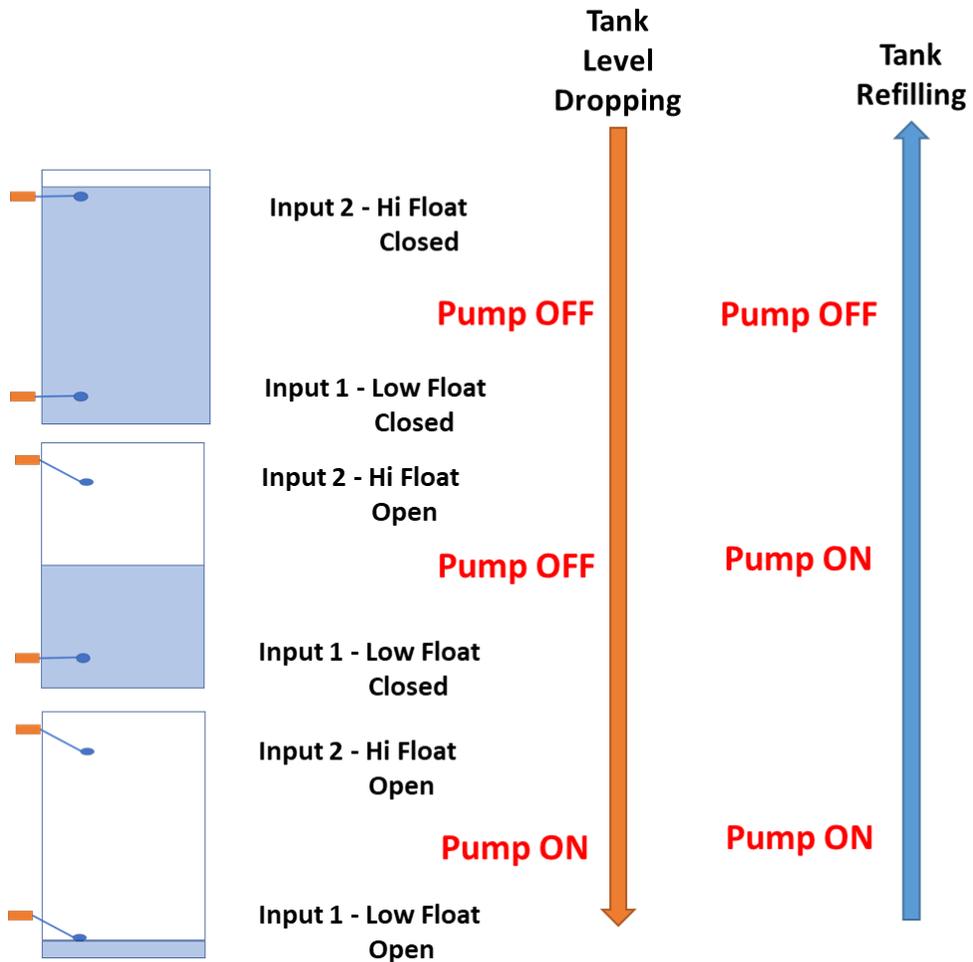
Sequence of Operation with "Pump Timeout" feature turned ON (Default setting)



Sequence of Operation with "Pump Timeout" feature turned Off



Float Mode Pump Operation



Sequence of Operation EZY Switch Tank/Reservoir Level Management System

| | Float Operation | SMS-T4/T8 Tank/Reservoir | SMS-2 Pumping Station | PUMP |
|---------------|-------------------------------|---|--|------|
| Level falling | High float opens | No message | No message | OFF |
| | Low float opens | Message: "The tank has reached low alarm level" | Message: "bf4-well-pump has been turned on" | ON |
| Level rising | Low float closes | No message | No message | ON |
| | High float closes (tank full) | Message: The tank low alarm has been reset | Message: "bf4-well-pump has been turned off" | OFF |

Electrical Specifications

Supply Voltage 12 to 30 Volts DC @ **800mA peak**

Quiescent Current 40 Milli-amps

Data Retention 10 years (without power)

Outputs Relay = 3 A resistive @ 30V AC/DC

Max Input voltage 30v DC

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