Quick-start: For MSP-USTD1/MSP-USTD2

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Process Management

Introduction

What is this Quick-start?

This **Quick-Start** is for anyone who has to install and commission the **MSP-USTD1** or **MSP-USTD2** ultrasonic system, and does not need in-depth information.

For full installation instructions, you **must** refer to the installation (IM) manuals supplied with the equipment.

What are these MSP-USTD1 and MSP-USTD2 systems?

They are level, contents, or flow measurement and control systems. Suitable applications include wet well level (and pump) control, tank contents measurement, and open channel flow measurement.

The system comprises mains or DC powered **MCU901** control unit, an **MSP900SH** ultrasonic transmitter with a mounting kit, and manuals. MSP-USTD**1** has the **wall-mounted** version of the MCU901; MSP-USTD**2** has the **panel-mounted** MCU901.

Figure 1: MCU901W – wall-mounted	Figure 2: MSP900SH	Figure 3: MCU901P – panel-mounted

About the MCU901 Control Unit

The MCU901 unit is a member of the **MCU900 family** of control units. It has:

- Full support for a single MSP900SH ultrasonic transmitter – measuring level by default
- a 4-line LCD display with back light – displays both text and graphical information
- a 6 button keypad
- an LED indicator
- an intuitive menu system – for setting up
- **2** digital inputs (voltage-free contacts) for triggering various activities (e.g. displaying a message)
- **5** relay outputs (e.g. for controlling pumps, indicating alarms, etc.)
- a 4-20mA output.

All setting up is achieved from the front panel of the MCU901 control unit.

About the MSP900SH Ultrasonic Transmitter

This is a loop-powered transmitter, factory sealed and fitted with cable ready to install on aqueous applications. The transmitter is pre-configured to measure liquid level and communicates values to the MCU901.

The other manuals

The following manuals are supplied along with this Quick-start manual:

MCU901:	MSP900SH:
Installation manual (IP2030/IM)	Installation manual (IP2040/IM)
Safety instructions (IP2030/SI)	Safety instructions (IP2040/SI)

Full operation manuals IP2030/OM and IP2040/OM are available on request from Mobrey Measurement and are on the web at www.mobrey.com.

Installation

Location of MSP900SH

- Install the transmitter above the liquid surface using the bracket provided.
- Do **not** mount the MSP900SH on a structure that is subject to vibration, or in a position where damage may be caused by impact or thermal stress.
- The equipment is **not** intended for use in areas exposed to dust.
- The equipment must **not** be installed directly in any process where the enclosure might be charged by the rapid flow of non-conductive media.

Location of MCU901

- The MCU901 **must not** be located in a hazardous area. **Do not** mount the MCU901 where it is subject to vibration, or in a position where damage may be caused by impact, thermal stress or liquid ingress.
- The **MCU901W** is housed in a tough IP65 enclosure. If mounted outside, it is recommended that the unit be protected from direct heavy rain.
- The **MCU901P** is a standard DIN size designed for direct mounting in a control panel. It is designed for panel mounting in a weatherproof environment.

Cabling (MCU901W)

1. Cable the MSP900SH to the MCU901 using the gland provided. (Undo 2 screws and lift cover away to reveal terminals).
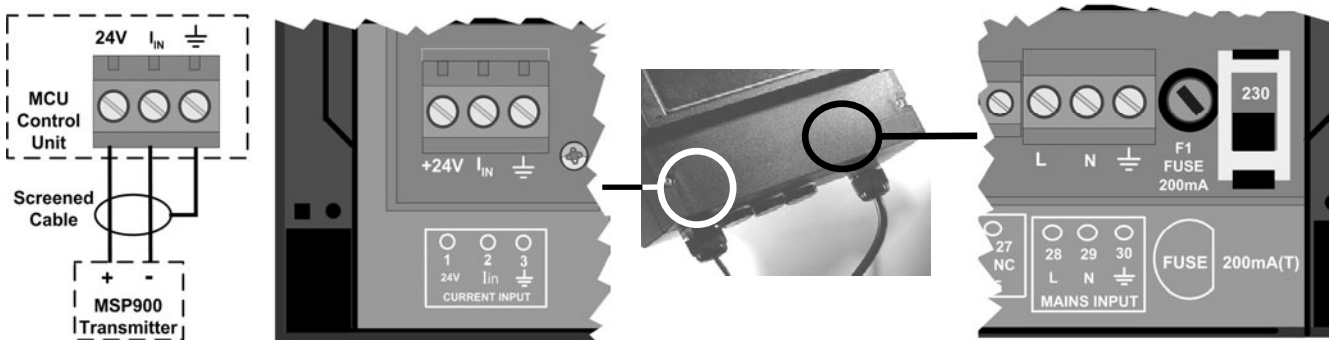

2. Check the voltage selector switch (230V or 115V) and adjust if necessary. (Mains unit only).

3. Cable the power lead to the MCU901 using the gland provided. **Do not apply power yet**.

4. Make connections to relay terminals and current output terminals, if required.

5. Seal unused cable entries with the blanking plugs provided.

6. Replace and secure the terminal cover.
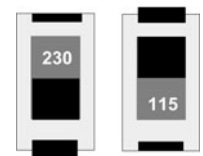
Cabling (MCU901P)

1. Cable the MSP900SH transmitter to terminals **1**, **2** and **3** on the rear panel of the MCU901. (See figure inset, right)

2. Check the voltage selector switch (230V or 115V) and adjust if necessary. (Mains unit only).

3. Cable the AC power supply to terminals **28** (Live) and **29** (Neutral) on the rear panel of the MCU901. Note that mains Earth is not required. (Mains unit only).

4. Connect terminal 30 to an Intrinsically Safe Earth. **This is essential only if the MSP900SH is in located in a hazardous area.**
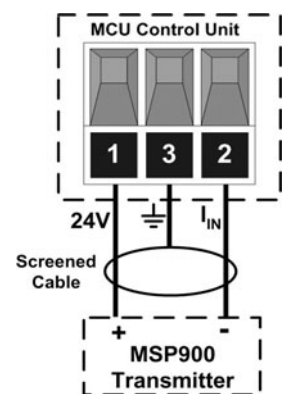
Getting started

After completing the installation of both MCU901 control unit and the MSP900SH transmitter, the next stage is to switch on.

1. Familiarise yourself with the front panel fascia.
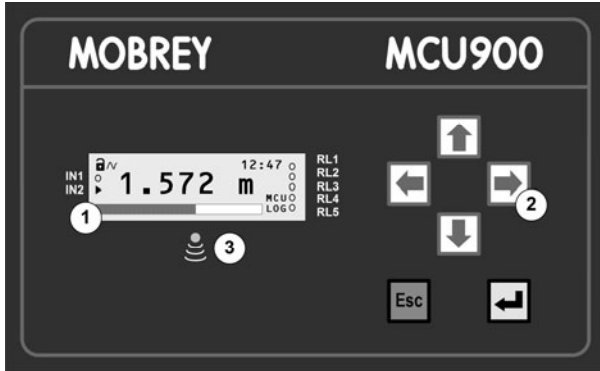
Front Panel Fascia of MCU901W

Key to figure:

① 4-line LCD with backlight.
② Keypad with 6 function keys.
③ Status LED – flashes once per second if okay.

2. Switch on the MCU901 by applying the power. Wait for the **primary display** (inset, right) to appear.

During this time, the MCU901 will read parameters from the MSP900SH transmitter.

If being used for the first time, it will prompt for the **Bottom Reference** of the MSP900SH transmitter and then automatically set-up the 4-20mA output span over this range. **If you do not want to commission the system now, simply switch off the power – the same prompt will then re-appear when switching on the next time.**

If you are commissioning the system, edit the Bottom Reference with the arrow-keys and then press the yellow key to confirm the value. The Bottom Reference can be changed at a later stage but it is better to get it correct now. Should you press the red (ESC) key, the MCU901 will continue and the Bottom Reference prompt will re-appear when switching on the next time.

Once the start-up is completed, the primary display should appear, showing the measured depth of the liquid in the tank. The value on the primary display is the P.V. (Primary Variable).

3. Familiarise yourself with the **primary display**.
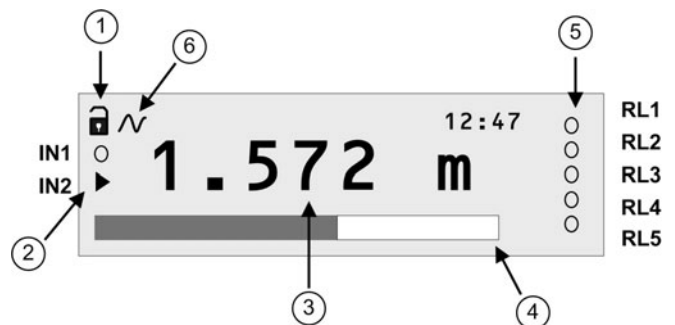
Primary Display

Key to figure:

1. Off-line/on-line status. (Locked padlock = on-line) (See page 14)
2. Digital input status. (o = de-energised, ▶ = energised)
3. Measured variable (P.V.) and units of measurement.
4. Bar graph of 4-20mA output of MCU901.
5. Relay (RL) status. (o = de-energised, ▶ = energised)
6. Digital communication in progress. (Absent if idle)

Note: If a "Find Instrument" screen appears and remains, power off. Check the cabling and then try again. If the problem persists, follow the on-screen prompts until the primary display appears.
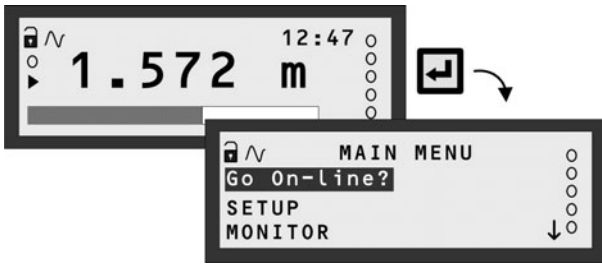
How to display the menu system

4. Press the yellow (**ENTER**) key to display the top-level of the menu system.

The primary display re-appears automatically if there is no keypad activity for several minutes, if on-line. In addition, it re-appears when pressing the **ESC** key whilst at the top level of the menu system.

5. Navigation of the menu system is achieved by using the **ARROW** keys, the **ENTER** key, and the **ESC** key. (See figure, right). The **ESC** key will return you to the previous menu level.

6. The **Main Menu** sits above a series of sub-menus. Within the menus, there are also **parameter screens** for programming – setting up for an application, adjusting default settings, etc. – and for **displaying** information.

Selecting this will bring up the "Set-up" menu for programming the MCU901.
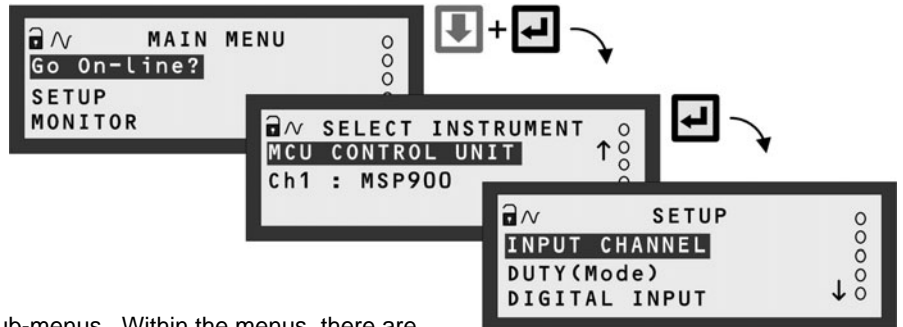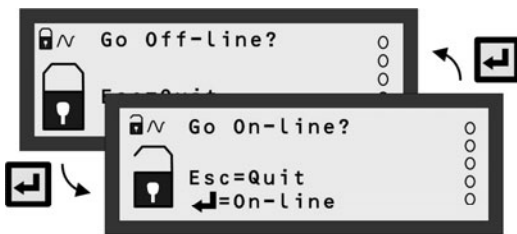

Toggles operating mode for MCU901. An open padlock indicates that the MCU901 is off-line and parameter values can be entered or changed. (See page 14)

Selecting this will bring up the "Set-up" menu for optional MSP900 programming.

The transmitter Bottom Reference can be changed here.
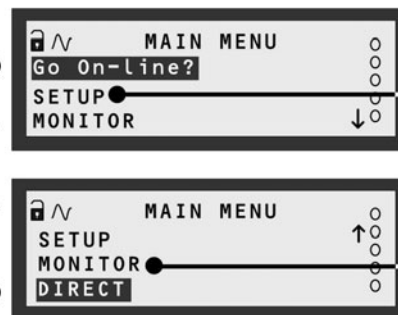
Direct access menu for advanced users to select parameter screens.

Selecting this will allow you to monitor live readings and diagnostic information for the MCU901.

Selecting this will allow you to monitor live readings and diagnostic information from the MSP900 transmitter.

7. Programming the MCU901 unit is **best achieved** through easy-to-follow **Wizards**. They are simply a sequence of on-screen prompts, allowing you to easily set-up an individual function or a large application **without fuss**. There is a **collection of Wizards** for most functions and applications. They are all selected and started through the menu system. **On the pages that follow, examples for several applications show how to use them.**
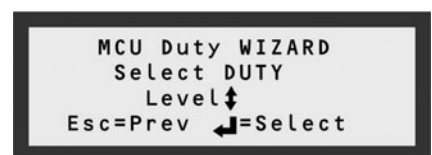
Example of a Wizard

8. Additional features, such as password protection, resetting to factory defaults, etc., can found on pages 14/15.

Application/Duty: Level Measurement

1. With power on and the MSP900SH transmitter giving a 4-20mA signal to the MCU901 unit (see previous pages), you can now programme the MCU901 for an application. **This application example is for level measurement.**

<u>Requirements</u>
Live level measurement in units of metres over a range of 0 to 11.7 metres.
High level alarm.

<u>Input Data</u>
Tank Shape: Linear (e.g. Square)

Bottom Reference: 12 metres

The MSP900SH transmitter is supplying the live level measurements in units of metres.
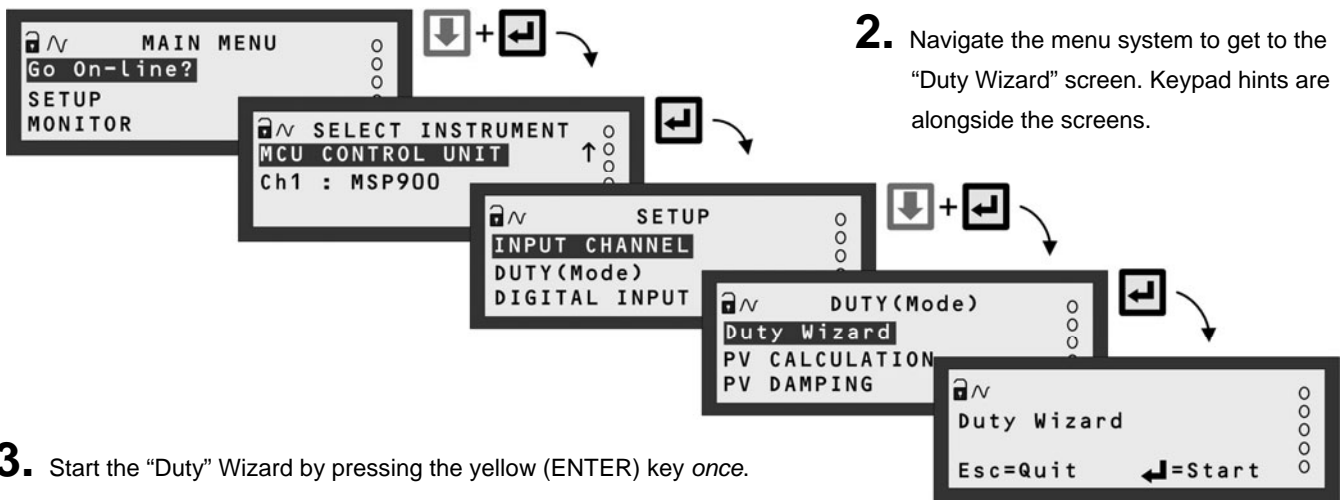
2. Navigate the menu system to get to the "Duty Wizard" screen. Keypad hints are alongside the screens.

3. Start the "Duty" Wizard by pressing the yellow (ENTER) key *once*.

4. Work through the "Duty" Wizard prompts (see next page) until completion; this occurs when the menu system re-appears. Keypad hints, for the illustrated Wizard sequence on the next page, are provided alongside the prompts. If applicable, adapt the example to suit your application.

5. Circled numbers in the illustrated Wizard sequence relate to these notes:

① Select "Level" from the multiple-choice list.

② Programme the 4-20mA output span with a level range (e.g. 0 to 11.7 metres)

③ Set-up a high level alarm – the relay RL1 is energised whenever the measured level exceeds a pre-set level and de-energises below another pre-set level, as defined at these prompts.

④ Optional overrides to prevent individual relays from being energised for too little time or too much time.

⑤ Option to set-up further relays.

6. Return to the main menu by holding the **ESC** key for a few seconds, releasing it when the main menu appears. Next, go on-line by selecting the "Go on-line" menu option and then pressing the **ENTER** key *once*. Finally, press the **ESC** key repeatedly until the primary display appears. The level measurement will be live on the primary display.

1

```
Duty WIZARD
Select DUTY
 Level  ↕
ESC=Prev  ↵=Next
```

Options:
* Wet Well
* Level
* Contents
* Flow

⬇ ↵

2

```
Enter Level
to give 4mA out
 0000000 m
```
↵

```
Enter Level
to give 20mA out
11.700 m
```
⬆ ➡ ⬆ ➡ ⬇ ➡ ⬇ ↵ (11.7)
(x4)

Options:
* Single relay
* Pump Control
* Custom

```
MCU Relay WIZARD
Select FUNCTION
Single relay ↕
ESC=Prev ↵=Select
```
↵

Options:
* Relay 1
* Relay 2
* Relay 3
* Relay 4

```
Single relay
Select Relay
Relay 1 ↕
```
↵

```
Single Mode for
Relay 1
Set point ↕
```
↵

Options:
* Set point
* Rate of change
* Out of limits
* Digital input

Options:
* Primary Variable
* Secondary Variable
* Tertiary Variable
* Fourth Variable

```
Select Source for
Set point
Primary Variable ↕
```
↵

3

```
On point for relay 1
9.0000 m
```
⬆ ➡ ⬇ ↵ (9.0)
(x9)

```
Off point for relay 1
8.5000 m
```
⬆ ➡ ⬇ ➡ ⬆ ↵ (8.5)
(x8) (x5)

4

```
Select
Autosequence Mode ?
```
Esc (No)

Options:
* Scum Line Prev
* Energy Saving
* Pump Down

```
Select Relay
control enhancement
Scum Line Prev ↕
```
Esc (Exit)

5

```
Relay Setup Complete
Program further
relays ?
```
Esc (No)

(Exit to menu system)

Application Example: Level Measurement using Duty Wizard

Application/Duty: Wet Well (with Pump Control)

1. With power on and the MSP900SH transmitter giving a 4-20mA signal to the MCU901 unit (see previous pages), you can now programme the MS901 for an application. **This application example is for a Wet Well with pump control.**
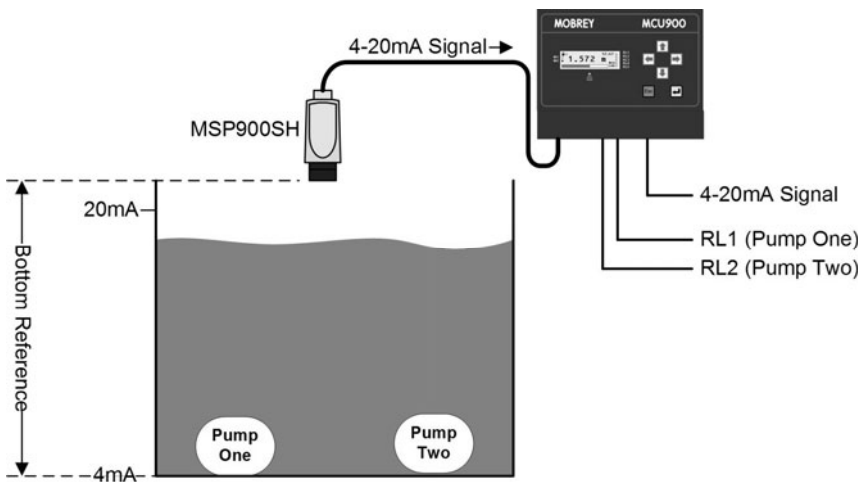

Requirement
- Live measurement in units of metres.
- Emptying application with **2 pumps**
- RL1 On at 2.0m at and Off at 0.5m
- RL2 On at 3.8m and Off at 3.3m
- Additional relay functions: None

Input Data
- Tank Shape: Square
- Bottom Reference: 5 metres

The MSP900SH transmitter is supplying the live level measurements in units of metres.

2. Navigate the menu system to get to the "Duty Wizard" screen. Key-press hints are alongside the screens.
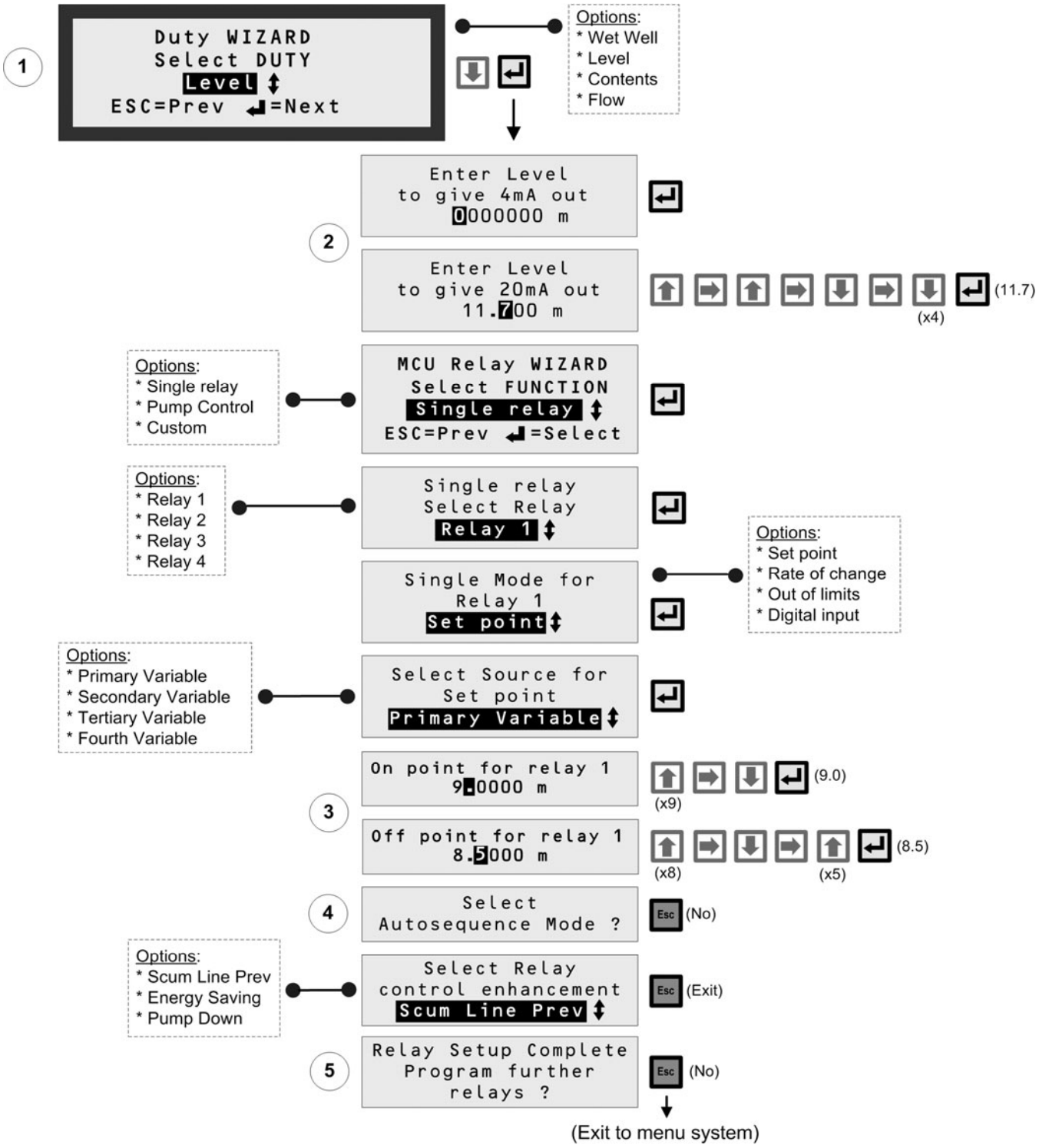
3. Start the "Duty" Wizard by pressing the yellow (ENTER) key *once*.

4. Work through the "Duty" Wizard prompts until completion; this occurs when the menu system re-appears. Keypad hints, for the illustrated Wizard sequence on the next page, are provided alongside the prompts. If applicable, adapt the example to suit your application.

5. Circled numbers in the illustrated Wizard sequence relate to these notes:

① Select "Wet Well" from the multiple-choice list.

② Programme the 4-20mA output span with a level range (e.g. 0 to 4.7 metres)

③ Set-up of On and Off points for Relay 1 (Pump 1) and Relay 2 (Pump 2).

④ Options for switching lead pump according to specified criteria (e.g. number of times used).

⑤ Option to set-up further relays.

6. Return to the main menu by holding the **ESC** key for a few seconds, releasing it when the main menu appears. Next, go on-line by selecting the "Go on-line" menu option and then pressing the **ENTER** key *once*. Finally, press the **ESC** key repeatedly until the primary display appears. The level measurement will be live on the primary display.

① DUTY WIZARD
Select Duty
Wet Well ⬍
Esc=Prev ↵=Next

↵

Options:
* Wet Well
* Level
* Contents
* Flow

②

Enter Well Level
to give 4mA out
000000 m

↵

Enter Well Level
to give 20mA out
4.**7**000 m

⬆ ➡ ⬇ ➡ ⬇ ↵ (4.7)
(x4)   (x4)

Options:
* Single relay
* Pump Control
* Custom

MCU RELAY WIZARD
Select function
Pump Control ⬍

↵

Options:
* 2
* 3
* 4

Number of Pumps
2 ⬍

↵

Select Application
Emptying ⬍

↵

Options:
* Emptying
* Filling

Select Pump Control
Duty
Assist split off ⬍

⬇ ↵ (Duty Assist split off)

Options:
* Duty Assist com off
* Duty Assist split off
* Duty Stby com off
* Duty Stby split off

On point for relay 1
2.**0**0000 m

⬆ ➡ ⬇ ↵ (2.0)
(x2)

Off point for relay 1
.**5**0000 m

⬇ ➡ ⬆ ↵ (0.5)
(x5)

③

On point for relay 2
3.**8**000 m

⬆ ➡ ⬇ ➡ ⬇ ↵ (3.8)
(x2)   (x3)

Off point for relay 2
3.**3**000 m

⬆ ➡ ⬇ ➡ ⬆ ↵ (3.3)
(x3)   (x3)

④

Select
Autosequence Mode ?

Esc (No)

Options:
* Scum Line Prev
* Energy Saving
* Pump Down

Select Relay
control enhancement
Scum Line Prev ⬍

Esc (Exit)

⑤

Relay Setup Complete
Program further
relays ?

Esc (No)

(Exit to menu system)

Application/Duty: Contents Measurement

1. With power on and the MSP900SH transmitter giving a 4-20mA signal to the MCU901 unit (see previous pages), you can now programme the MCU901 for an application. **This application example is for contents measurement.**
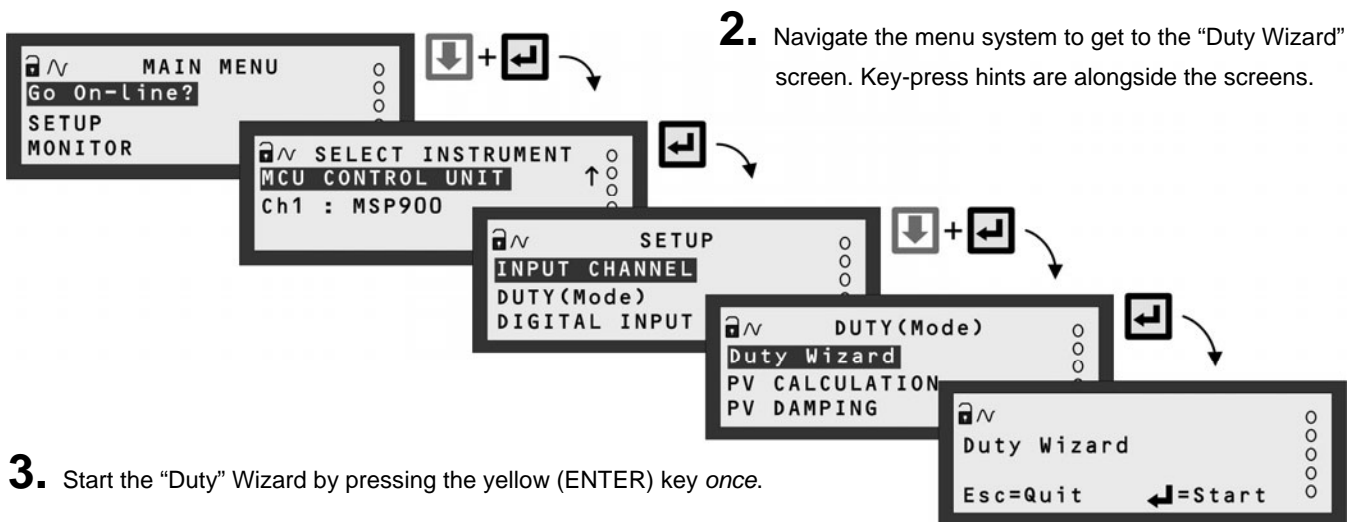
Requirement
Live contents measurement in units of litres.
Low level alarm at 2000 litres.

Input Data
Tank Shape: horizontal cylinder with flat ends.
Tank Diameter: 2.5 metres.
Tank Length: 5 metres.

The MSP900SH transmitter is supplying live level measurements in units of metres.

2. Navigate the menu system to get to the "Duty Wizard" screen. Key-press hints are alongside the screens.

```
⊟⋀    MAIN MENU      o
Go On-Line?          o
SETUP                o
MONITOR
```

```
⊟⋀ SELECT INSTRUMENT  o
MCU CONTROL UNIT    ↑ o
Ch1 : MSP900          o
```

```
⊟⋀         SETUP      o
INPUT CHANNEL         o
DUTY(Mode)            o
DIGITAL INPUT
```

```
⊟⋀      DUTY(Mode)    o
Duty Wizard           o
PV CALCULATION        o
PV DAMPING
```

```
⊟⋀                    o
Duty Wizard           o
                      o
Esc=Quit    ↵=Start   o
```
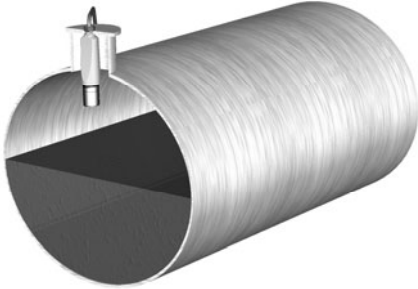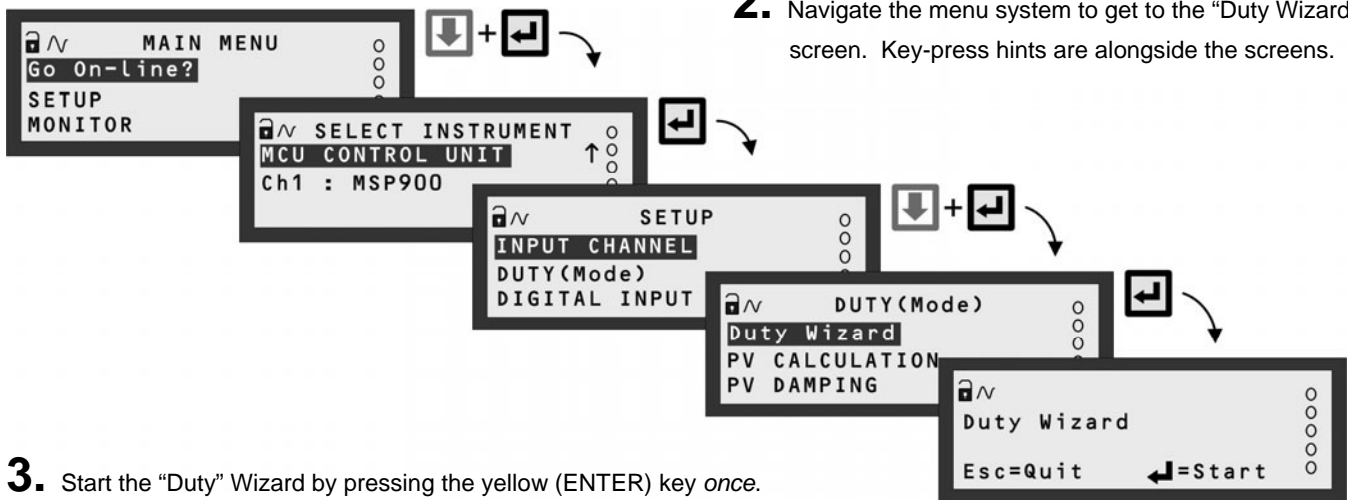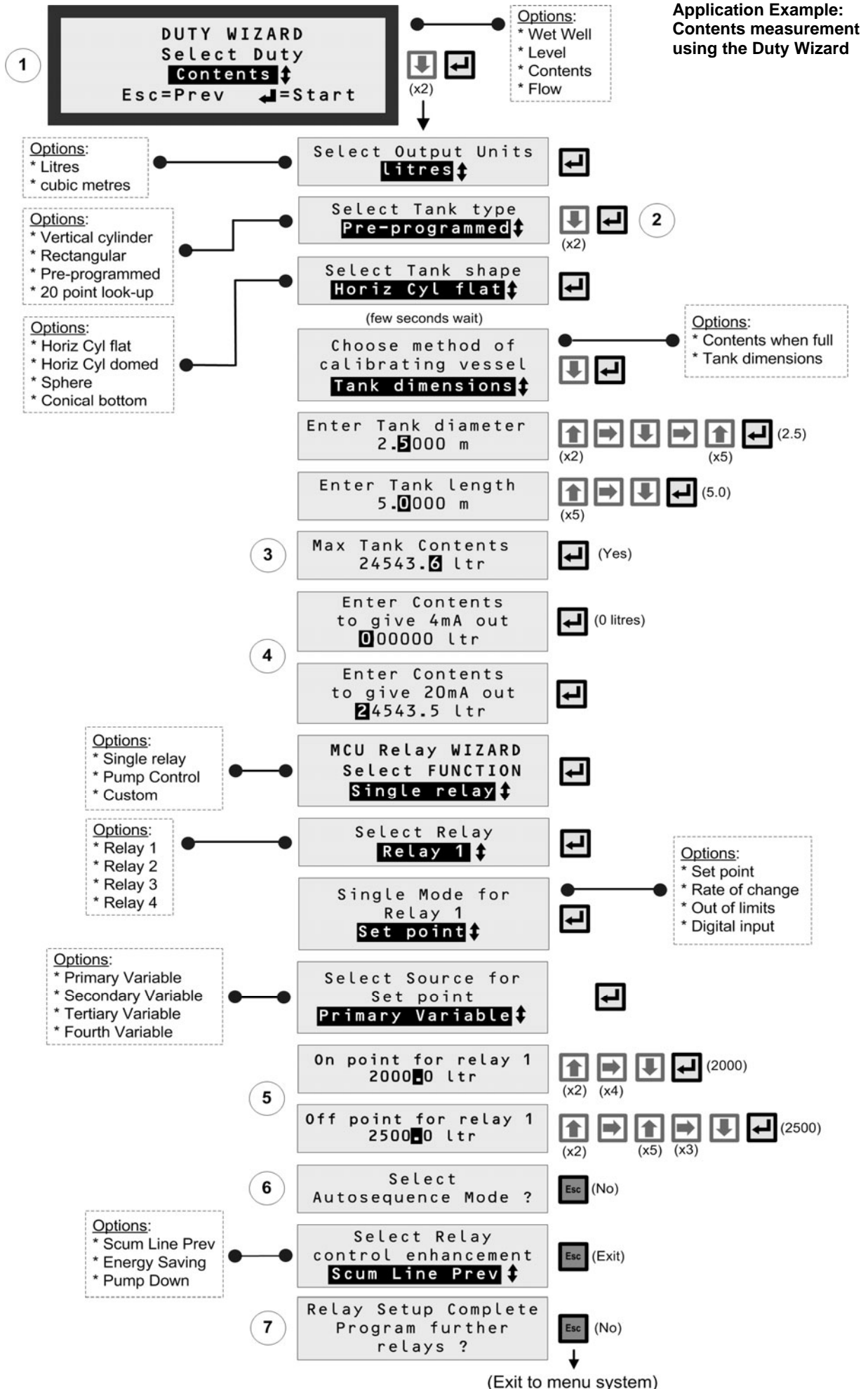
3. Start the "Duty" Wizard by pressing the yellow (ENTER) key *once*.

4. Work through the "Duty" Wizard prompts until completion; this occurs when the menu system re-appears. Keypad hints, for the illustrated Wizard sequence on the next page, are provided alongside the prompts. If applicable, adapt the example to suit your application.

5. Circled numbers in the illustrated Wizard sequence relate to these notes:

① Select "Contents" from the multiple-choice list.

② The required tank shape is a pre-programmed shape from the MCU901 library.

③ Maximum contents as calculated by MCU901 unit. It can be edited here if required.

④ Programme the 4-20mA output span with a content range (e.g. 0 to 24,543.5 litres)

⑤ Set-up a low level alarm – the relay RL1 is energised whenever the measured level falls below a pre-set level and de-energises on rising above another pre-set level, as defined at these prompts.

⑥ Optional overrides to prevent individual relays from being energised for too little time or too much time.

⑦ Option to set-up further relays.

6. Return to the main menu by holding the **ESC** key for a few seconds, releasing it when the main menu appears. Next, go on-line by selecting the "Go on-line" menu option and then pressing the **ENTER** key *once*. Finally, press the **ESC** key repeatedly until the primary display appears. The content measurement will be live on the primary display.

**Application Example:
Contents measurement
using the Duty Wizard**

(1)

```
DUTY WIZARD
Select Duty
 Contents  ↕
Esc=Prev  ↵=Start
```

⬇ ↵
(x2)

Options:
* Wet Well
* Level
* Contents
* Flow

Options:
* Litres
* cubic metres

```
Select Output Units
 litres ↕
```
↵

Options:
* Vertical cylinder
* Rectangular
* Pre-programmed
* 20 point look-up

```
Select Tank type
 Pre-programmed ↕
```
⬇ ↵ **(2)**
(x2)

Options:
* Horiz Cyl flat
* Horiz Cyl domed
* Sphere
* Conical bottom

```
Select Tank shape
 Horiz Cyl flat ↕
```
↵

(few seconds wait)

```
Choose method of
calibrating vessel
 Tank dimensions ↕
```
⬇ ↵

Options:
* Contents when full
* Tank dimensions

```
Enter Tank diameter
2.5000 m
```
⬆ ➡ ⬇ ➡ ⬆ ↵ (2.5)
(x2)   (x5)

```
Enter Tank length
5.0000 m
```
⬆ ➡ ⬇ ↵ (5.0)
(x5)

(3)
```
Max Tank Contents
24543.6 ltr
```
↵ (Yes)

(4)
```
Enter Contents
to give 4mA out
000000 ltr
```
↵ (0 litres)

```
Enter Contents
to give 20mA out
24543.5 ltr
```
↵

Options:
* Single relay
* Pump Control
* Custom

```
MCU Relay WIZARD
Select FUNCTION
 Single relay ↕
```
↵

Options:
* Relay 1
* Relay 2
* Relay 3
* Relay 4

```
Select Relay
 Relay 1 ↕
```
↵

```
Single Mode for
Relay 1
 Set point ↕
```
↵

Options:
* Set point
* Rate of change
* Out of limits
* Digital input

Options:
* Primary Variable
* Secondary Variable
* Tertiary Variable
* Fourth Variable

```
Select Source for
Set point
 Primary Variable ↕
```
↵

(5)
```
On point for relay 1
2000.0 ltr
```
⬆ ➡ ⬇ ↵ (2000)
(x2) (x4)

```
Off point for relay 1
2500.0 ltr
```
⬆ ➡ ⬆ ➡ ⬇ ↵ (2500)
(x2) (x5) (x3)

(6)
```
Select
Autosequence Mode ?
```
Esc (No)

Options:
* Scum Line Prev
* Energy Saving
* Pump Down

```
Select Relay
control enhancement
 Scum Line Prev ↕
```
Esc (Exit)

(7)
```
Relay Setup Complete
Program further
relays ?
```
Esc (No)

(Exit to menu system)

Application/Duty: Flow Measurement

1. With power on and the MSP900SH transmitter giving a 4-20mA signal to the MCU901 unit (see previous pages), you can now programme the MCU901 for an application. **This application example is for flow measurements.**
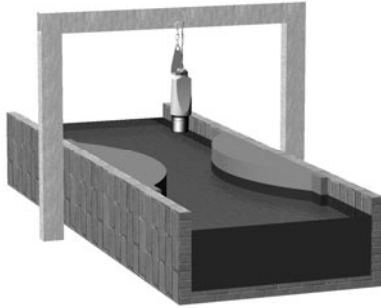
Requirement
Live flow measurements in units of cubic metres per second.
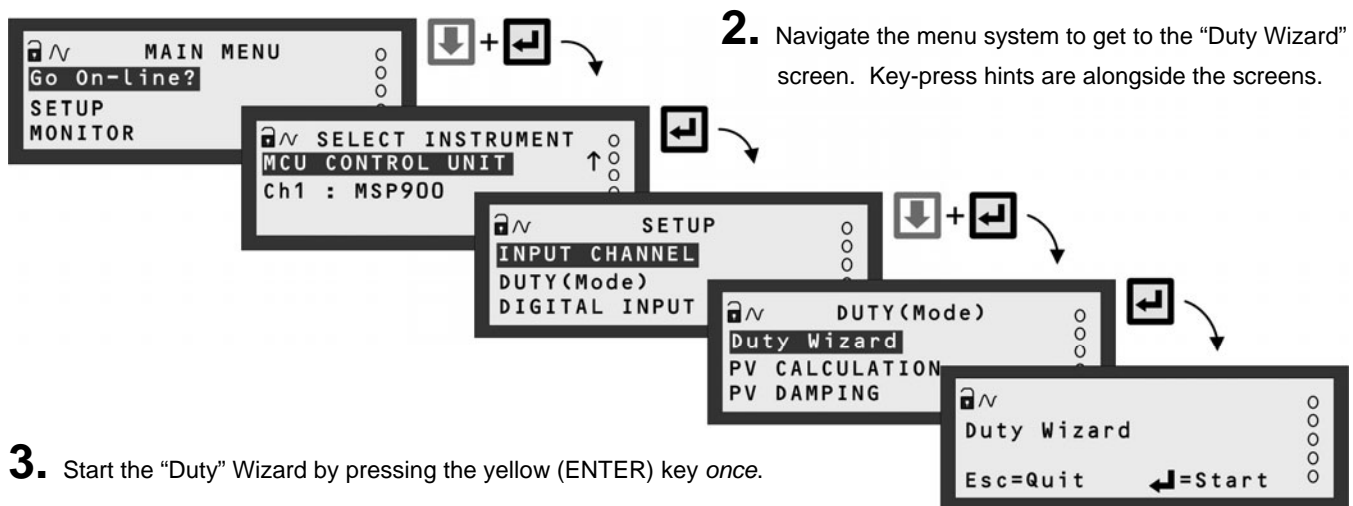Totalised flow in cubic metres per second.

Input Data
Channel Shape: Flume
Maximum depth: 1 metre
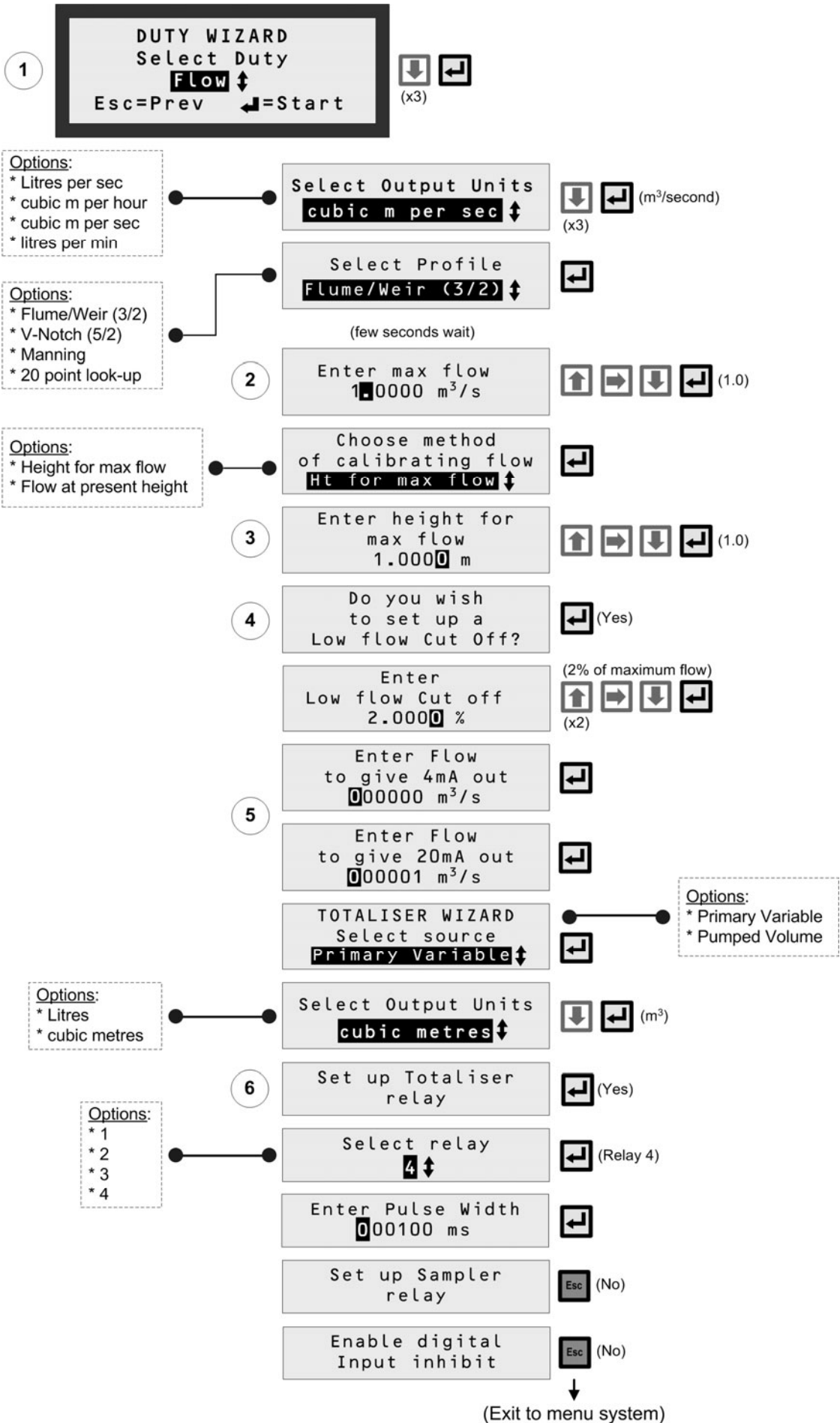Maximum rate: 1 cubic metre per second

The MSP900SH transmitter is supplying live level measurements in units of metres.

Output Data
The MCU901 will be calculating the flow rate.

2. Navigate the menu system to get to the "Duty Wizard" screen. Key-press hints are alongside the screens.

3. Start the "Duty" Wizard by pressing the yellow (ENTER) key *once.*

4. Work through the "Duty" Wizard prompts until completion; this occurs when the menu system re-appears. Keypad hints, for the illustrated Wizard sequence on the next page, are provided alongside the prompts. If applicable, adapt the example to suit your application.

5. Circled numbers in the illustrated Wizard sequence relate to these notes:

① Select "Flow" from the multiple-choice list.

② Enter the maximum rate of flow.

③ Enter the present height of maximum flow in the Flume.

④ Option of registering flow as 0 m³/s on the MCU901 while the measured flow rate is below a programmed cut off.

⑤ Programme the 4-20mA output span with a flow rate range (e.g. 0 m^3/s to 1 m^3/s)

⑥ Option to set-up a relay to output (100ms) pulses representing the totalised flow.

6. Return to the main menu by holding the **ESC** key for a few seconds, releasing it when the main menu appears. Next, go on-line by selecting the "Go on-line" menu option and then pressing the **ENTER** key *once.* Finally, press the **ESC** key repeatedly until the primary display appears. The flow measurement will be live on the primary display.

1

```
    DUTY WIZARD
    Select Duty
     Flow ↕
Esc=Prev   ↵=Start
```
⬇ ↵ (x3)

Options:
* Litres per sec
* cubic m per hour
* cubic m per sec
* litres per min

```
Select Output Units
 cubic m per sec ↕
```
⬇ ↵ (m³/second) (x3)

Options:
* Flume/Weir (3/2)
* V-Notch (5/2)
* Manning
* 20 point look-up

```
  Select Profile
 Flume/Weir (3/2) ↕
```
↵

(few seconds wait)

2
```
  Enter max flow
 1.0000  m³/s
```
⬆ ➡ ⬇ ↵ (1.0)

Options:
* Height for max flow
* Flow at present height

```
  Choose method
of calibrating flow
 Ht for max flow ↕
```
↵

3
```
 Enter height for
    max flow
   1.0000 m
```
⬆ ➡ ⬇ ↵ (1.0)

4
```
   Do you wish
   to set up a
 Low flow Cut Off?
```
↵ (Yes)

```
     Enter
 Low flow Cut off
    2.0000 %
```
⬆ ➡ ⬇ ↵ (2% of maximum flow) (x2)

5
```
   Enter Flow
 to give 4mA out
  000000 m³/s
```
↵

```
   Enter Flow
 to give 20mA out
  000001 m³/s
```
↵

```
 TOTALISER WIZARD
  Select source
 Primary Variable ↕
```
↵

Options:
* Primary Variable
* Pumped Volume

Options:
* Litres
* cubic metres

```
Select Output Units
  cubic metres ↕
```
⬇ ↵ (m³)

6
```
 Set up Totaliser
     relay
```
↵ (Yes)

Options:
* 1
* 2
* 3
* 4

```
  Select relay
      4 ↕
```
↵ (Relay 4)

```
 Enter Pulse Width
   000100 ms
```
↵

```
 Set up Sampler
     relay
```
Esc (No)

```
 Enable digital
 Input inhibit
```
Esc (No)

↓
(Exit to menu system)

Application Example: Flow Measurements using Duty Wizard

Other Features

Restoring factory defaults (Erases all user entered data)

To re-set the MCU901 unit back to the factory defaults, navigate to the "Load Defaults" screen and press the **ENTER** key *twice*.
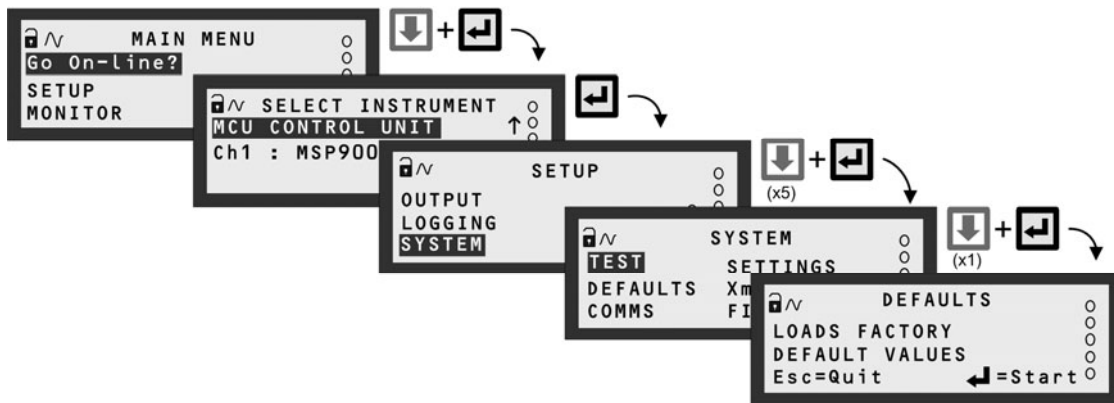

Navigating to the LOAD DEFAULTS Screen

PIN Security

Personal Identification Number (PIN) security prevents unauthorised people from programming the MCU901 control unit. Typically, this is set-up when all the other programming has been completed. As with Bankcards, there is one PIN number.

The factory default is for PIN security to be inactive. To activate, navigate the menu system to the **PIN** screen and edit a **4-digit** personal identification number (PIN) that you want. The PIN is edited with the arrow keys and confirmed with the **ENTER** key; the 4-digit PIN will then be replaced by **"- - - -"** to indicate that PIN security is active. (By default, PIN is a 0 if inactive).

Once PIN security is activated, a prompt for the PIN will appear when needed for an activity, such as starting a Wizard. If correctly entered, no further PIN requests are made **unless** the "Cancel Password" option is selected from the MAIN MENU screen. This menu option appears only after correctly entering the PIN; the option disappears when selected, therefore making the MCU901 secure and prompt for the PIN when needed.
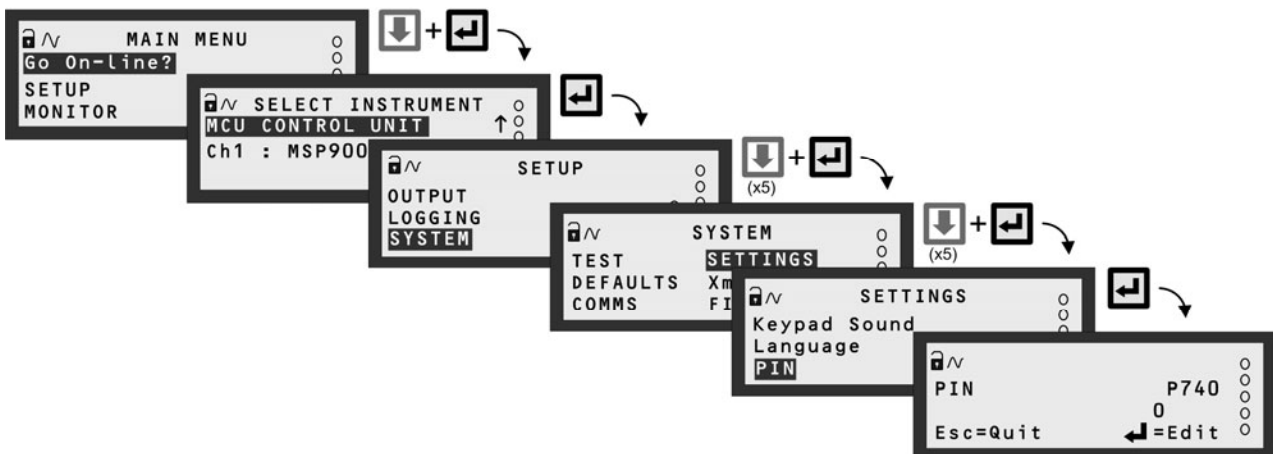
Navigating to the PIN set-up screen

Modes of operation

There are two operating modes for the MCU901. They are **on-line** and **off-line**.

An open padlock icon indicates the MCU901 is presently in the **off-line** mode. In this mode, the unit can be programmed providing that you know the security PIN (if set-up). Additionally, the 4-20mA output and all relays are frozen.

A closed padlock icon indicates that the MCU901 is presently in the **on-line** mode. In this mode, most of the unit **cannot be programmed**. However, you will be prompted to go off-line if you attempt to programme whilst in this mode and providing that you know the security PIN (if set-up). Additionally, the 4-20mA output and all relays are **not frozen**.
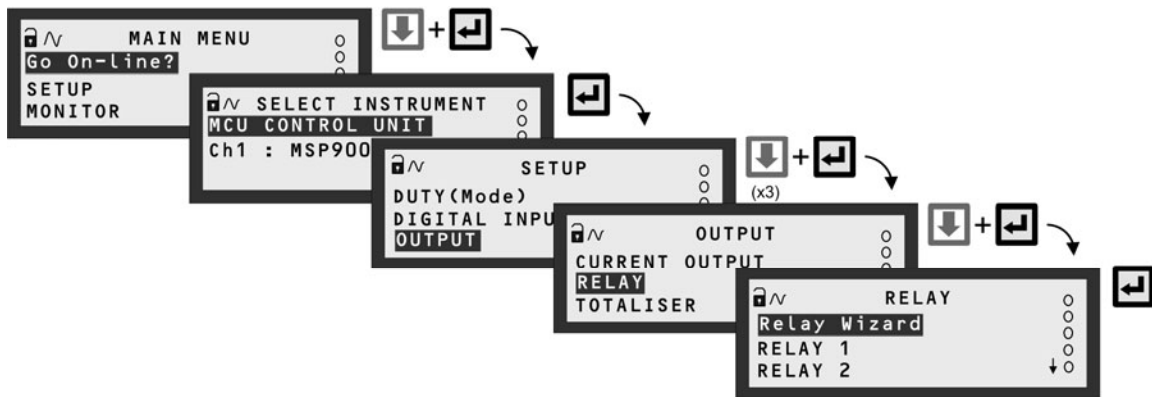
Relays

Relay outputs 1 to 4 are normally On Point/Off Point relays which may be used to start/stop pumps or open/close valves at different levels. They normally energise at one level and de-energise at a different level.

Alternatively, they may be programmed as out-of-limits alarms such that they are energised between defined points and will de-energise outside the defined limits. They may also be programmed to perform a variety of auto-sequences and auxiliary functions, such as pump-down operations, pump rotations to equalise wear, and desludge/cleaning.

Relay output 5 is normally a fail safe fault relay but may be re-allocated to another duty.

Relays can be set-up easily using the **Relay Wizard**, accessible by navigating to the RELAYS menu screen.


Navigating to the RELAY Screen

Relay (RL) Status

The relay status icons on the primary display have the following meanings:

▶	= energised	Relay is presently energised.
0	= de-energised	Relay is presently de-energised.
A	= Alarm	All active alarms can be viewed by parameter D831.
S	= Sampler	Relay is allocated to sampling duty.
T	= Totalising	Relay is allocated to totalising duty.

Comfort (System) Settings

The SETTINGS menu allows adjusting of the time and date, switching off the keyboard sound and changing language.
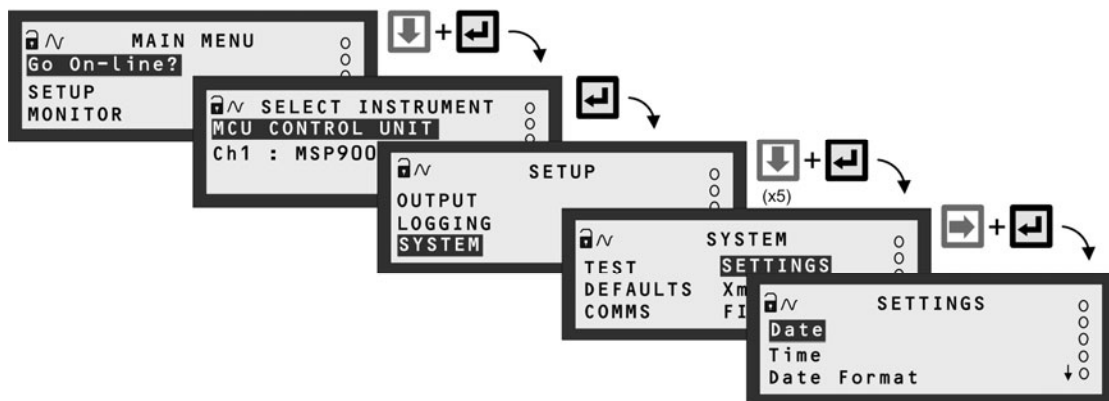
Navigating to the SETTINGS Menu

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