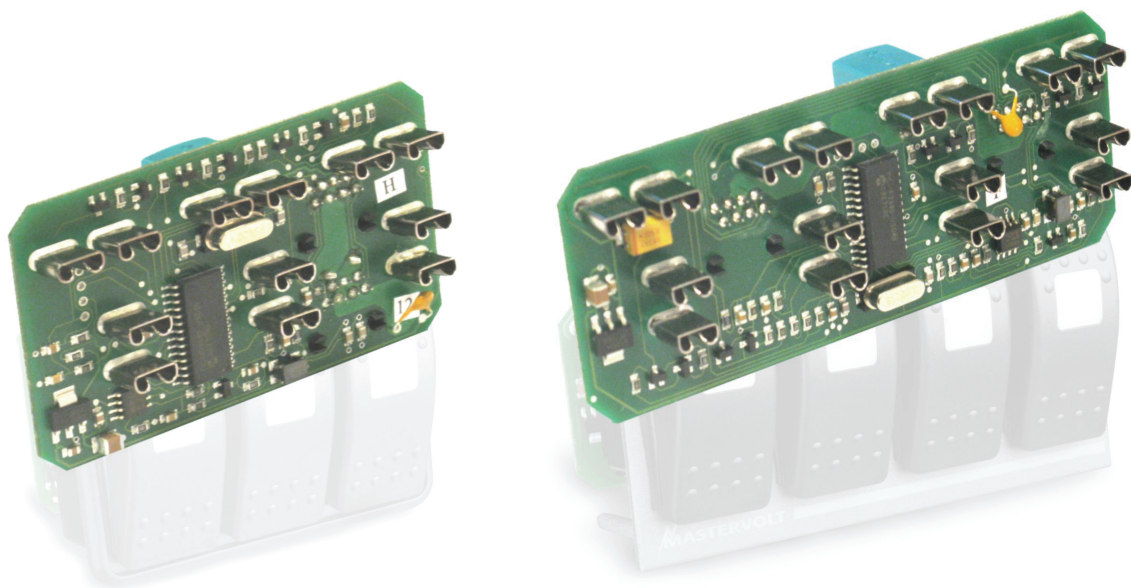


# **MASTERVOLT**

USERS MANUAL / GEBRUIKERSHANDLEIDING  
BETRIEBSANLEITUNG / MANUEL D'UTILISATION  
MANUAL DE UTILIZACION / INSTRUZIONI PER L'USO

## **Switch Input** **3 / 4**

**MasterBus input device for electrical switches**



MASTERVOLT  
Snijdersbergweg 93,  
1105 AN Amsterdam  
The Netherlands  
Tel.: +31-20-3422100  
Fax.: +31-20-6971006  
www.Mastervolt.com

|             |           |
|-------------|-----------|
| ENGLISH:    | PAGE 1    |
| NEDERLANDS: | PAGINA 13 |
| DEUTSCH:    | SEITE 25  |
| FRANÇAIS:   | PAGINA 37 |
| CASTELLANO  | PÁGINA 49 |
| ITALIANO    | PÁGINA 61 |

**CONTENTS:**

v 1.1 February 2009

|           |                                                  |           |
|-----------|--------------------------------------------------|-----------|
| <b>1</b>  | <b>GENERAL INFORMATION</b> .....                 | <b>3</b>  |
| 1.1       | Use of this manual.....                          | 3         |
| 1.2       | Guarantee specifications.....                    | 3         |
| 1.3       | Quality.....                                     | 3         |
| 1.4       | Validity of this manual.....                     | 3         |
| 1.5       | Liability.....                                   | 3         |
| <b>2</b>  | <b>SAFETY GUIDELINES AND MEASURES</b> .....      | <b>4</b>  |
| 2.1       | Warnings and symbols.....                        | 4         |
| 2.2       | Use for intended purpose.....                    | 4         |
| 2.3       | Organizational measures.....                     | 4         |
| 2.4       | Maintenance and repair.....                      | 4         |
| 2.5       | General safety and installation precautions..... | 4         |
| <b>3</b>  | <b>OPERATION</b> .....                           | <b>5</b>  |
| 3.1       | Functional overview.....                         | 5         |
| 3.2       | MasterBus displays.....                          | 5         |
| <b>4</b>  | <b>MASTERBUS</b> .....                           | <b>6</b>  |
| 4.1       | What is MasterBus?.....                          | 6         |
| 4.2       | Event based commands.....                        | 6         |
| <b>5</b>  | <b>MASTERBUS FUNCTIONS</b> .....                 | <b>7</b>  |
| 5.1       | MasterBus menus.....                             | 7         |
| 5.2       | MasterBus task data.....                         | 8         |
| <b>6</b>  | <b>INSTALLATION</b> .....                        | <b>9</b>  |
| 6.1       | Things you need for installation.....            | 9         |
| 6.2       | Installation step by step.....                   | 9         |
| 6.3       | Commissioning.....                               | 9         |
| <b>7</b>  | <b>ORDERING INFORMATION</b> .....                | <b>10</b> |
| <b>8</b>  | <b>TROUBLE SHOOTING</b> .....                    | <b>10</b> |
| <b>9</b>  | <b>SPECIFICATIONS</b> .....                      | <b>11</b> |
| 9.1       | Technical specifications.....                    | 11        |
| 9.2       | Dimensions.....                                  | 11        |
| <b>10</b> | <b>EC DECLARATION OF CONFORMITY</b> .....        | <b>12</b> |

# 1 GENERAL INFORMATION

## 1.1 USE OF THIS MANUAL

Copyright © 2009 Mastervolt. All rights reserved.  
 Reproduction, transfer, distribution or storage of part or all of the contents in this document in any form without the prior written permission of Mastervolt is prohibited.

This manual serves as a guideline for the safe and effective operation, maintenance and possible correction of minor malfunctions of the *Switch Input 3 and Switch Input 4*, called Switch Input from now.

This manual is valid for the following models:

| Description    | Part number |
|----------------|-------------|
| Switch Input 3 | 77031300    |
| Switch Input 4 | 77031400    |

Every person who works on or with the *Switch Input* must be completely familiar with the contents of this manual, and follow its instructions.

Keep this manual at a secure place!

The English version includes 12 pages.

## 1.2 GUARANTEE SPECIFICATIONS

Mastervolt guarantees that this unit has been built according to the legally applicable standards and specifications. Should work take place which is not in accordance with the guidelines, instructions and

specifications contained in this users manual, then damage may occur and/or the unit may not fulfil its specifications. All of these matters may mean that the guarantee becomes invalid.

## 1.3 QUALITY

During their production and prior to their delivery, all of our units are exhaustively tested and inspected. The standard guarantee period is two years.

## 1.4 VALIDITY OF THIS MANUAL

All of the specifications, provisions and instructions contained in this manual apply solely to standard versions of the *Switch Input* delivered by Mastervolt.

## 1.5 LIABILITY

Mastervolt can accept no liability for:

- consequential damage due to use of the *Switch Input*;
- possible errors in the manuals and their results.



### CAREFUL!

Never remove the type number sticker.

Important technical information required for service, maintenance & secondary delivery of parts can be derived from the type number sticker.

## 2 SAFETY GUIDELINES AND MEASURES

### 2.1 WARNINGS AND SYMBOLS

Safety instructions and warnings are marked in this manual by the following pictograms:



#### **CAREFUL!**

Special data, restrictions and rules with regard to preventing damage.



#### **WARNING**

A WARNING refers to possible injury to the user or significant material damage to the charger if the user does not (carefully) follow the procedures.



A procedure, circumstance, etc which deserves extra attention.

### 2.2 USE FOR INTENDED PURPOSE

- 1 The *Switch Input* is constructed as per the applicable safety-technical guidelines.
- 2 Use the *Switch Input* only:
  - in a technical correct condition;
  - in a closed, well-ventilated room, protected against rain, moist, dust and condensation;
  - following the instructions in the users manual.



#### **WARNING**

Never use the *Switch Input* in locations where there is danger of gas or dust explosion or potentially flammable products!

- 3 Use of the *Switch Input* other than mentioned in point 2 is not considered to be consistent with the intended purpose. Mastervolt is not liable for any damage resulting from the above.

### 2.3 ORGANIZATIONAL MEASURES

The user must always:

- have access to the user's manual;
- be familiar with the contents of this manual. This applies in particular to this chapter, Safety Guidelines and Measures.

### 2.4 MAINTENANCE AND REPAIR

- 1 If the electrical installation is switched off during maintenance and/or repair activities, it should be secured against unexpected and unintentional switching on:
  - switch off all charging systems;
  - switch off the connection with the batteries;
  - be sure that third parties cannot reverse the measures taken.
- 2 If maintenance and repairs are required, only use original spare parts.

### 2.5 GENERAL SAFETY AND INSTALLATION PRECAUTIONS

- Connection and protection must be done in accordance with local standards.
- Only allow changes in your electrical system to be carried out by qualified electricians.
- Check the wiring at least once a year. Defects such as loose connections, burned cables etc. must be corrected immediately.

### 3 OPERATION

#### 3.1 FUNCTIONAL OVERVIEW

The Switch Input is a MasterBus based input module. Electrical switches generate a MasterBus signal to control the connected MasterBus devices.

Input: push of a button.

Output: MasterBus signal to control connected MasterBus devices.

MasterBus menus:

- Monitoring menu;
- Configuration menu to enter names;
- Event menu to program controlling settings.

Read out device:

For installing and adjusting the Switch Input a monitoring device is necessary. For example:

- MasterView Easy;
- MasterAdjust PC software (via USB interface)

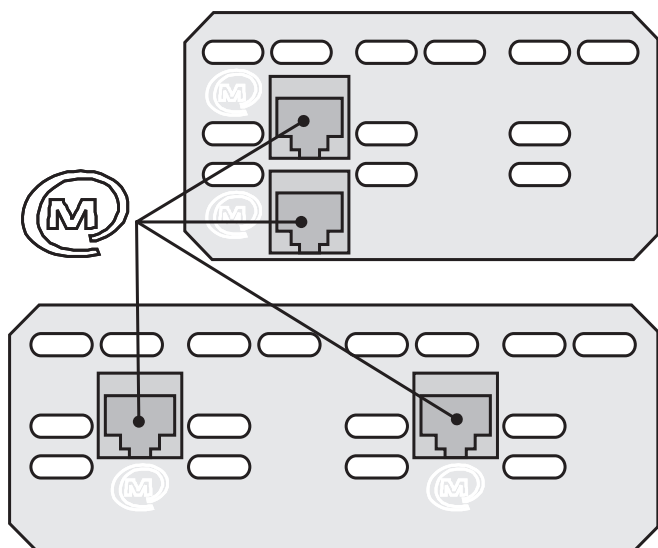


Figure 1: Switch Input connections

#### 3.2 MASTERBUS DISPLAYS

Mastervolt offers several ways of displaying your MasterBus data. Shown is the MasterView Easy panel.



Figure 2: MasterView Easy panel

Another way of displaying and setting values is the MasterAdjust software, shown for Switch Input application. See figure 3.

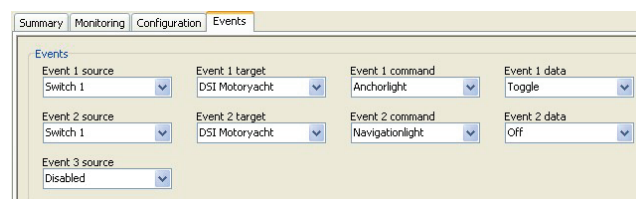


Figure 3: MasterAdjust software

## 4 MASTERBUS

### 4.1 WHAT IS MASTERBUS?



All devices that are suitable for MasterBus are marked by the MasterBus symbol.

MasterBus is a fully decentralized data network for communication between the different Mastervolt system devices. It is a CAN-bus based communication network which has proven itself as a reliable bus-system in automotive applications. MasterBus is used as power management system for all connected devices, such as the inverter, battery charger, generator and many more. This gives the possibility for communication between the connected devices, for instance to start the generator when the batteries are low.

MasterBus reduces complexity of electrical systems by using UTP patch cables. All system components are simply chained together. Therefore each device is equipped with two MasterBus data ports. When two or more devices are connected to each other through these data ports, they form a local data network, called the MasterBus. The results are a reduction of material costs as only a few electrical cables are needed and less installation time.

For central monitoring and control of the connected devices Mastervolt offers a wide range of panels which show full status information of your electrical system at a glance and a push of a button. Four different panels are available, from the MasterView Easy up to the full colour MasterView System panel.

All monitoring panels can be used for monitoring, control and configuration of all connected MasterBus equipment.

New devices can be added to the existing network in a very easy way by just extending the network. This gives the MasterBus network a high degree of flexibility for extended system configuration, not only today, but in the future as well!

Mastervolt also offers several interfaces, making even non-MasterBus devices suitable to operate in the MasterBus network. For direct communication between the MasterBus network and a product which is not from Mastervolt, the Modbus interface is recommended.



**CAUTION:** Never connect a non-MasterBus device to the MasterBus network directly! This will void warranty of all MasterBus devices connected.

### 4.2 EVENT BASED COMMANDS

With MasterBus each device can be programmed to initiate an action at another connected device. This is done by means of event based commands, see chapter 5 for explanation.

An event is a *condition* to be met at which you want *another device* to perform a *task*.

In chapter 5 the Events are explained.

## 5 MASTERBUS FUNCTIONS

### 5.1 MASTERBUS MENUS

This chapter describes the MasterBus functions to be configured at the Switch Input.

| Menu/<br>Read        | Description                                                                                                                                                               | Factory<br>setting                        | Range                                |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------|
| <b>Monitoring</b>    |                                                                                                                                                                           |                                           |                                      |
| State                | State of the Switch Input device (3 or 4 switches).                                                                                                                       | On                                        | On, Disabled                         |
| Switches X           | Switch X operation. X ranges 1-3, 1-4.                                                                                                                                    | On                                        | On, Stand by                         |
| Feedback X           | Feedback number X. X ranges 1-3, 1-4. This feedback indicates the device selected has been switched On and is functioning.                                                | Off                                       | Off, On, Alarm                       |
| Disabled             | Check box to disable/ enable the Switch Input.                                                                                                                            | Enabled                                   | Enabled, Disabled                    |
| <b>Configuration</b> |                                                                                                                                                                           |                                           |                                      |
| Language             | Language setting of the Switch Input. NOTE: the language of the display may differ from this setting.                                                                     | English                                   | 10 languages, see section 9.1.       |
| Device name          | Name of your Switch Input in the MasterBus system. If you have more than one Switch Input you might want to change names.                                                 | DSI<br>Switch in 3,<br>DSI<br>Switch in 4 | DSI + any maximum 12 character name. |
| Events locked        | Option to disable event configuration on the device. Operable by installer only (log in required).                                                                        | Unchecked                                 | Unchecked, Checked                   |
| Switch X             | Name of switch number X. X ranges 1-3, 1-4. Naming the switches after their application is convenient, for instance "Anchor light" for the anchor light switch.           | Switch X                                  | Any maximum 16 character name.       |
| Feedback X           | Name of feedback number X. X ranges 1-3 (1-4). Naming the feedbacks after their application is convenient, for instance "LED Anchor Light" for the anchor light feedback. | Feedback X                                | Any maximum 16 character name.       |
| <b>Events</b>        |                                                                                                                                                                           |                                           |                                      |
| Event 1 source       | Switch X to let a MasterBus device perform a task.                                                                                                                        | Disabled                                  | Disabled, Switch 1-3 (1-4)           |
| Event 1 target       | MasterBus device to perform a task. A common target for the Switch Input is the Digital Switching Device.                                                                 | -                                         | System dependent                     |
| Event 1 command      | Task command for event 1. Device part to perform the task, for instance Channel 2 on the Digital Switching Device.                                                        | -                                         | System dependent                     |
| Event 1 data         | Task data for event 1. Action to be performed by the device part. See figure 4.                                                                                           | -                                         | On, Off, Copy, Copy Invert, Toggle   |

## 5.2 MASTERBUS TASK DATA

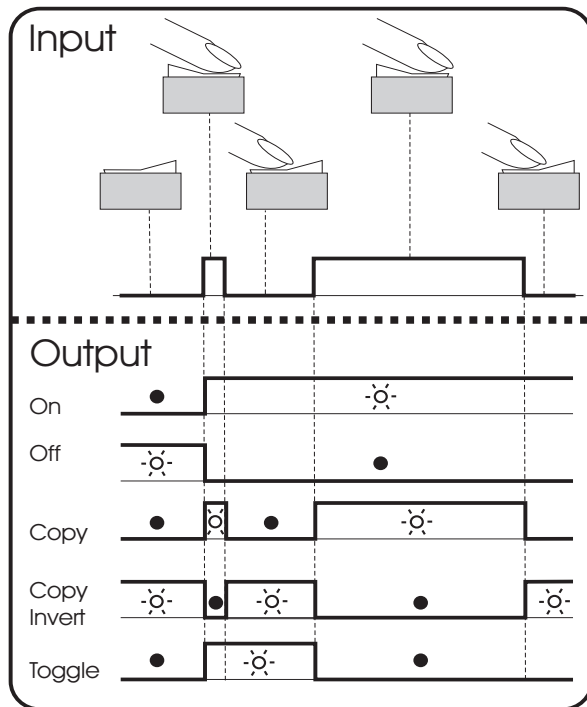


Figure 4: Task data

See figure 4.

- The **input** can be achieved by operating an on/off switch.
- **On** changes the status to On at the first input signal.
- **Off** changes the status to Off at the first input signal.
- **Copy** lets the status follow the input.
- **Copy Invert** lets the status follow the opposite of the input.
- **Toggle** changes the status at the first signal and changes back at the second signal. It is used in combination with a pulse switch. Toggle is used for dimming too by holding the pulse switch pressed for a longer time.

### Event example 1: light switch

The Switch Input can be used for switching connected MasterBus devices, for instance a reading light. Configuration here is done on the Switch Input 3. Switch 1 is the left switch.

#### Event configuration example 1

|               |               |
|---------------|---------------|
| Event source  | Switch 1      |
| Event target  | Reading light |
| Event command | State         |
| Event data    | Copy          |

For every Switch Input, more events can be configured.

### Event example 2: Navigation lighting

A common application of the Switch Input is the combination with the Digital Switching Device. Shown below is the configuration on a Switch Input to control a channel on the Digital DC 10x10A. Switch 2 is the middle switch.

#### Event configuration example 2

|               |           |
|---------------|-----------|
| Event source  | Switch 2  |
| Event target  | DSD 1     |
| Event command | Channel 1 |
| Event data    | Copy      |



## 6 INSTALLATION



### WARNING

During installation and commissioning of the Switch Input, the Safety Guidelines and Measures are applicable at all times. See chapter 2 of this manual.



### CAREFUL!

Wrong MasterBus connections may cause damage to the Switch Input and other equipment as well, which is not covered by warranty!

### 6.1 THINGS YOU NEED FOR INSTALLATION

Materials:

- Switch Input module
- Installation manual Switch Input 3, 4
- 3 or 4 Carling switches (not included)
- MasterBus cable (not included)
- Terminator for MasterBus

### 6.2 INSTALLATION STEP BY STEP

1. Click the Carling switches into the frames.
2. Press the switch lips firmly into the sockets, see figure 5.

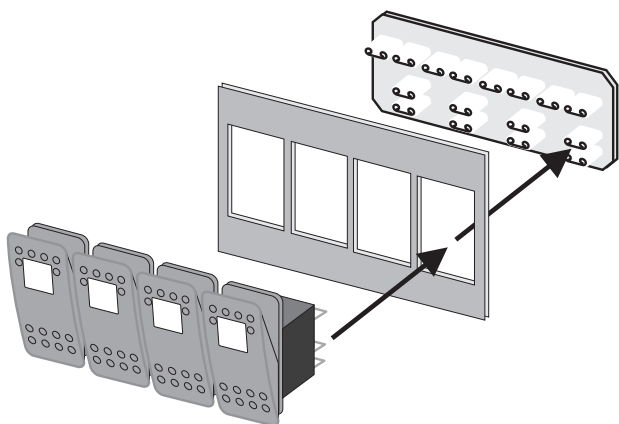


Figure 5: Mounting the switches

3. Mount the frame to the wall or to your dash board.
4. Insert the MasterBus cables at the back side of the device like shown in figure 6.



Do not forget to install the MasterBus terminator if necessary!

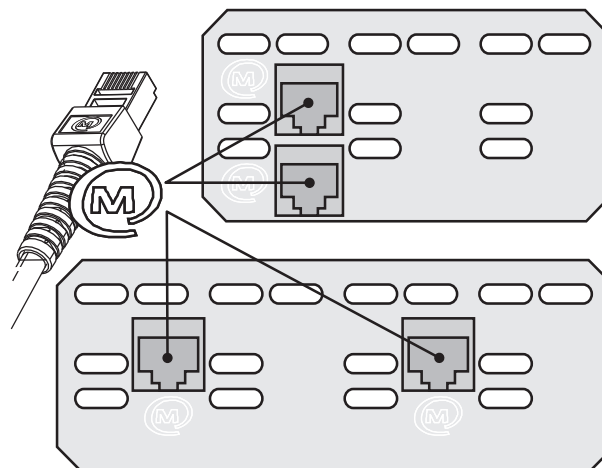


Figure 6: MasterBus connections Switch Input 3, 4

### 6.3 COMMISSIONING

Connect the electrical power, then configure the switches (see chapter 5).

## 7 ORDERING INFORMATION

| Part number | Description                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------|
| 77010300    | MasterView Easy                                                                                                               |
| 77030100    | MasterBus USB interface, required as interface between your PC and the MasterBus network                                      |
| 77040000    | MasterBus terminator for the MasterBus network (standard included)                                                            |
| 77040020    | MasterBus connection cable, 0,2m / 0.6ft                                                                                      |
| 77040050    | MasterBus connection cable, 0,5m / 1.6ft                                                                                      |
| 77040100    | MasterBus connection cable, 1,0m / 3.3ft                                                                                      |
| 77040300    | MasterBus connection cable, 3,0m / 10ft                                                                                       |
| 77040600    | MasterBus connection cable, 6,0m / 20ft                                                                                       |
| 77041000    | MasterBus connection cable, 10m / 33ft                                                                                        |
| 77041500    | MasterBus connection cable, 15m / 49ft                                                                                        |
| 77042500    | MasterBus connection cable, 25m / 82ft                                                                                        |
| 77050000    | Complete set to assemble MasterBus cables. Delivery includes: 100m / 330ft UTP cable, 50 pcs. modular jacks and crimping tool |
| 77050100    | 100m / 330ft MasterBus cable                                                                                                  |
| 77050200    | 50 pcs. MasterBus connectors                                                                                                  |
| 77030900    | Digital Input                                                                                                                 |
| 70906530    | Carling switch 12V (On)/Off                                                                                                   |
| 70906510    | Carling switch 12V On/Off                                                                                                     |
| 77031500    | Digital DC 10x10A                                                                                                             |

Mastervolt offers a wide range of products for your electrical installation, including AGM batteries, GEL batteries, Switch Input kits, battery switches, battery cables, battery terminals and Mastervision switchboards. See our website [www.mastervolt.com](http://www.mastervolt.com) for an extensive overview of all our products and free to download software for remote monitoring.

## 8 TROUBLE SHOOTING

Please contact your local Mastervolt Service Centre if you cannot correct a problem with the aid of the malfunction table below. See [www.Mastervolt.com](http://www.Mastervolt.com) for an extended list of Mastervolt Service Centres.

| Failure                                                                     | Possible cause                                                                               | What to do                                                                                                          |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| No communication.                                                           | Error in the wiring.                                                                         | Check the MasterBus cables.                                                                                         |
|                                                                             | No terminating device placed at the ends of the network.                                     | MasterBus needs a terminating device on both ends of the network. Check if installed.                               |
|                                                                             | MasterBus network is configured as a ring network.                                           | Ring networks are not allowed. Check the network connections.                                                       |
|                                                                             | T-connections in the MasterBus network.                                                      | Check if T-connections are made in the network. T-connections are not allowed.                                      |
| Wrong language is displayed.                                                | Wrong setting of the language at the Switch Input.                                           | Adjust the language setting. See chapter 5, Configuration.                                                          |
|                                                                             | Wrong setting of the language at displaying device.                                          | Every separately connected device can have its own language setting. See the user's manual of the connected device. |
| Event configuration is not possible, the menus are still readable but grey. | The installation technician has locked the events to prevent unwanted configuration changes. | If desirable, ask the technician to unlock the event configuration (temporarily).                                   |

## 9 SPECIFICATIONS

### 9.1 TECHNICAL SPECIFICATIONS

| Specifications                                                  |                                                                                            |                           |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------|
| Model                                                           | Switch Input 3                                                                             | Switch Input 4            |
| Article number                                                  | 77031300                                                                                   | 77031400                  |
| Function                                                        | MasterBus input device with fastons for electrical switches                                |                           |
| Manufacturer                                                    | Mastervolt Amsterdam, the Netherlands                                                      |                           |
| Configuration and monitoring                                    | By means of an external display or PC screen                                               |                           |
| Available languages                                             | English, Nederlands, Deutsch, Francais, Castellano, Italiano, Norsk, Svenska, Suomi, Dansk |                           |
| Number of configurable events                                   | 63                                                                                         | 63                        |
| Number of products that can control the Switch Input            | Unlimited                                                                                  | Unlimited                 |
| MasterBus powering capability                                   | No                                                                                         | No                        |
| Communication isolation                                         | Galvanic                                                                                   | Galvanic                  |
| Power consumption in sleep modus, no feed back LED illuminating | 0.19 mA                                                                                    | 0.19 mA                   |
| IP factor                                                       | 21                                                                                         | 21                        |
| Weight                                                          | 35 g including terminator                                                                  | 45 g including terminator |

### 9.2 DIMENSIONS

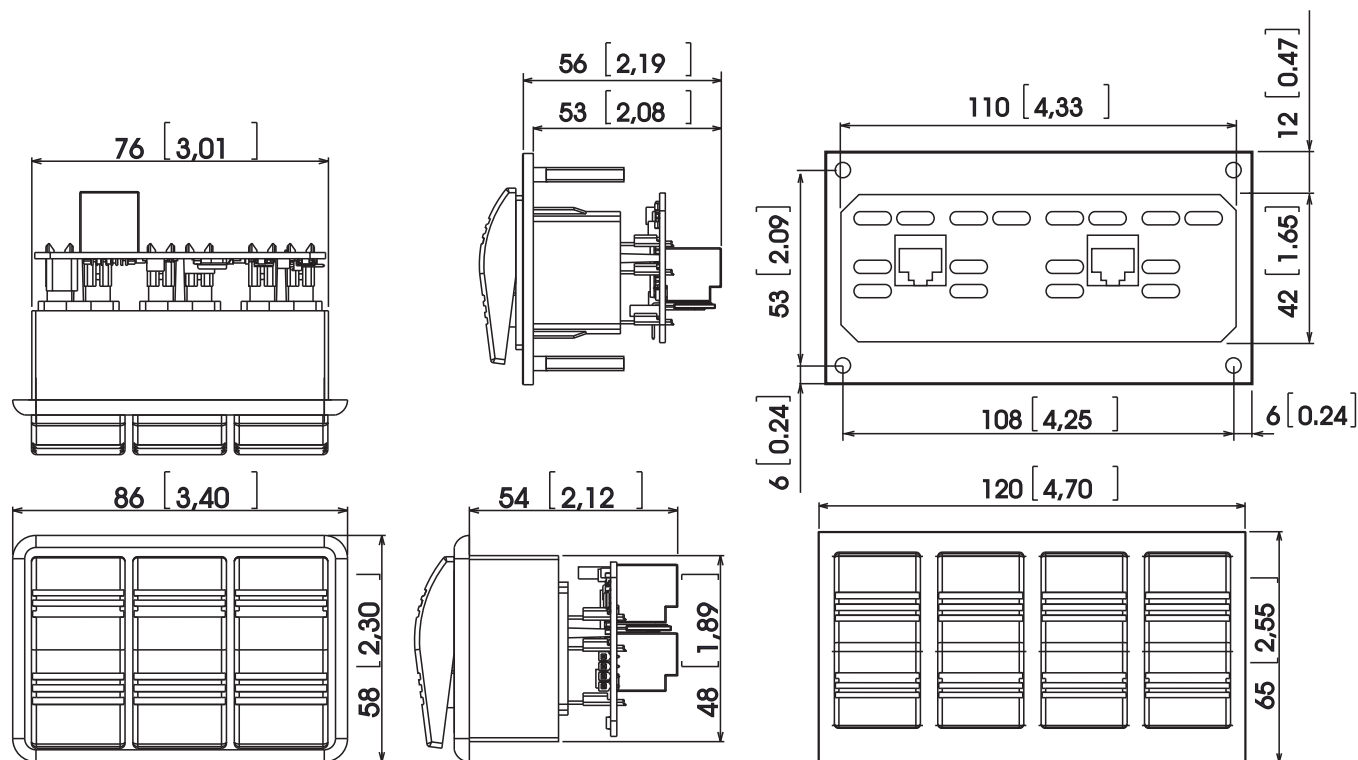


Figure 7: Dimensions in mm (inches)

**10 EC DECLARATION OF CONFORMITY**

Manufacturer Mastervolt  
Address Snijdersbergweg 93  
1105 AN Amsterdam  
The Netherlands



Herewith declares that:

Product:

77031300 Switch Input 3  
77031400 Switch Input 4

Is in conformity with the provision of the EC EMC directive 89/336/EEC and amendments 92/31/EEC, 93/68/EEC.

The following harmonised standards have been applied:

Generic emission standard: EN 50081-1:1992  
Generic Immunity standard: EN 50082-1:1997  
Low voltage directive: 2006/95/EC, with standard:  
Low voltage standard: EN 60950: 2000

Amsterdam,

P.F. Kenninck,  
General Manager MASTERVOLT

 **MASTERVOLT**

Snijdersbergweg 93, 1105 AN Amsterdam, The Netherlands  
Tel : + 31-20-3422100  
Fax : + 31-20-6971006  
Email : [info@Mastervolt.com](mailto:info@Mastervolt.com)