DEIF

-power in control

CE

Delomatic 4
DM-4 Land/DM-4 Marine

Replacement Guides
Part 2, chapter 23

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23. Replacement Guides

Delomatic modules

General information

Please notice that all I/O address switches are of a turning knob type and are set with a small screwdriver. All turning knob switches have 16 positions (zero to F (Hex)). All other DIP switches are jumpers. All DIP switches are placed in a way, so it is necessary to remove the board from the rack to operate them. Before removing any board, disconnect the supply to the PCM module, and if the board is supplied separately, remove this supply too.

Before handling the boards

Before handling the boards, there is a few, but important instructions:

Throughout the whole process of manufacture and test, the products have been kept in static shielding bags, and all personnel handling the products have been protected against static electricity and the subsequent ESD (electrostatic discharge).

Consequently, we ask you to observe certain instructions when handling our products - otherwise our efforts may be wasted:

- Be sure to carry a connection to earth when handling our PCBs. If the correct equipment (bracelet) is not available, you must improvise. You can e.g. place a wire, from which the insulation has been removed, under your watch and connect this to earth via a heavy resistor (1 MΩ).

- As to finding earth connection, it should be possible to use the rack frame or the cabinet.

- Please notice that the limit for registration of static electricity for a human being is considerably higher than the limit above which electronics and electronic components are damaged.

     Be aware of static electricity when handling the boards!

When handling the boards

When handling the boards, there are a few, but important instructions:

In order to ensure the best possible service for our customers, and according to the requirements stated in the ISO9001, DEIF A/S keeps track of all vital parts in a Delomatic installation.

In this way, we are able to keep records updated on exact hardware and software versions operating in a specific installation.

During the final test performed by DEIF A/S, before the goods are leaving for use at the customer's premises, a form is filled in with all relevant data:

General data:
- Project no. (which is unique)
- Order no. (which is unique)
- DGU no. (a unique no. is given to every single DGU in an application - that is, if an application includes more than one DGU, they will be designated DGU1, DGU2 etc.)
- Date and initials for the test
- Version of tested software

Specific data:
- Stock no. for every module included in the specific application
- Hardware version
- Module designation (i.e. IOM)
- No. of modules (if more than one module of that specific type is included in one DGU)
- PO no. (Production Order no., which is unique for every single module)
- Versions of software used in specific modules

Version of the application-specific software is recorded separately.

Whenever a problem may occur and a customer calls DEIF A/S for assistance, we immediately know the exact hardware and software combination included in that specific installation. We even know in what DGU a specific module is incorporated. If it should happen that we experience general problems either in specific combinations of hardware and software or in specific single modules or types of applications in general, we are able to trace which installations may be affected and in that way make the right decisions.

In order to keep these records valid, it is of vital importance that our customers respect the following guidelines:
- Please do not switch over modules from one DGU to another before consulting the documentation provided by DEIF A/S, and preferably consulting DEIF A/S.

Two IOM modules (or others) may be different, depending on the specific configuration. Delomatic is a very flexible system, but not regarding uncritical switch of modules!
- Please give us a hint, if you do switch modules permanently, this will keep our records updated.
  Call or fax DEIF A/S, attn.: Service Dept.:
  Tel.: + 45 9614 9614   Fax: +45 9614 9615
  service@deif.com

- When modules are replaced due to updating or due to any malfunctions, please let us know the exact location of new modules.

1. Replacement of the Power and Control Module (PCM 4.X)

Replacement of module PCM 4.1

Before replacing the modules, please take the following measures:

Placement of I/O addr./jumpers PCM 4.1
Upload the parameter settings by means of the utility software.

Rotation switch S5:
I/O address (= DGU ID no.) for the ARC network is to be set.
Note: all DGUs must have different ID numbers, starting with number 1 and up to F. The setting is unique, and the replacement module must have exactly the same setting as the defective module. The I/O address reflects the ARC network node ID.

Jumpers:
X11:   2-wire RS485 communication
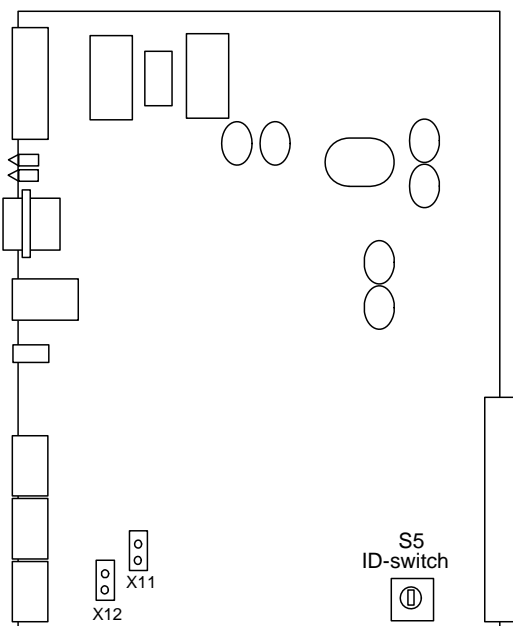X12:   4-wire RS485 communication

Software:
Please observe the software version number etc. (display reading).
     Project number
     Version number
     Revision number

Address switch/jumpers on the PCM module

Read all settings (timers and limits) before exchanging the module.

   - Switch all equipment into switchboard control
   - Remove the power supply from the defective DGU
   - Remove other connections/plugs on the PCM
   - Exchange the module after securing the correct settings of the jumpers and rotation switch
   - Connect the plugs and power supply again
   - Download the application software to the unit

- Download the parameter settings by means of the utility software and check these
- Make a test to secure that the system works as predetermined

If the dedicated software is not present, then contact DEIF to have the software sent by e-mail.

Please refer to the manual for the utility software for further explanations regarding this software.

Replacement of module PCM 4.5

Before replacing the modules, please take the following measures:

Placement of I/O addr./jumpers PCM 4.5
Upload the parameter-settings by means of the Utility-software
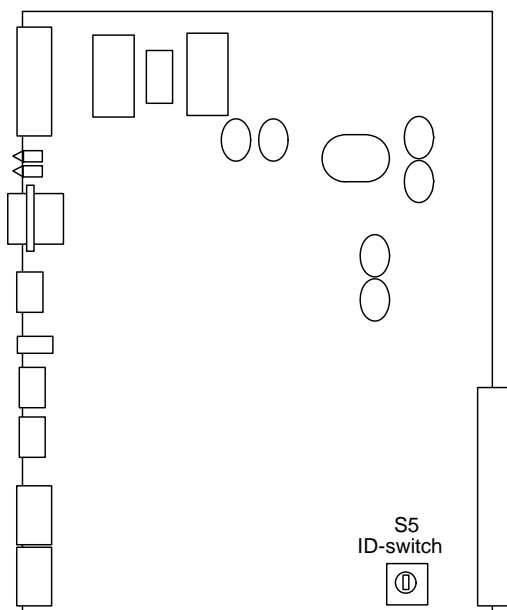
Rotation switch S5:
I/O address (= DGU ID no.) for the ARC network is to be set.
Note: all DGUs must have different ID numbers, starting with number 1 and up to F. The setting is unique, and the replacement module must have exactly the same setting as the defective module. The I/O address reflects the ARC network node ID.

Software:
Please observe the software version number etc. (display reading).
- Project number
- Version number
- Revision number

S5
ID-switch

Address switch/jumpers on the PCM module

Read all settings (timers and limits) before exchanging the module.

- Switch all equipment into switchboard control
- Remove the power supply from the defective DGU
- Remove other connections/plugs on the PCM
- Exchange the module after securing the correct settings of the jumpers and rotation switch
- Connect the plugs and power supply again
- Download the application software to the unit
- Download the parameter settings by means of the utility software and check these

- Make a test to secure that the system works as predetermined

If the dedicated software is not present, then contact DEIF to have the software sent by e-mail.

Please refer to the manual for the utility software for further explanations regarding this software.

## 2. Replacement of the combined Input/Output Module (IOM 4.1)

Replacement of module

Handle: For replacement, please notice that the replacement unit is given the same I/O address (rotation switch) as the unit to be replaced, and all output channels are set to the right format.

- Switch all equipment into switchboard control
- Remove the power supply from the defective DGU
- Remove other connections/plugs on the IOM
- Exchange the module after securing the correct settings of the jumpers and rotation switch
- Connect the plugs and power supply again
- Make a test to secure that the system works as predetermined

Input channels

DIP switches: For each input channel there is a DIP switch to select the format of the input. There are three different formats: Binary, voltage or current. On the board, it is illustrated how the DIP switches should be placed for the three signal formats.
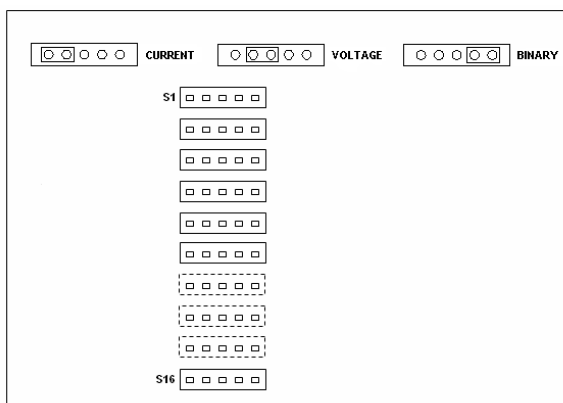
The I/O address for the backplane bus is to be set. Please notice that all IOM 4.1 modules must have different I/O addresses starting with zero (null). The I/O address is set by means of the I/O address switch.
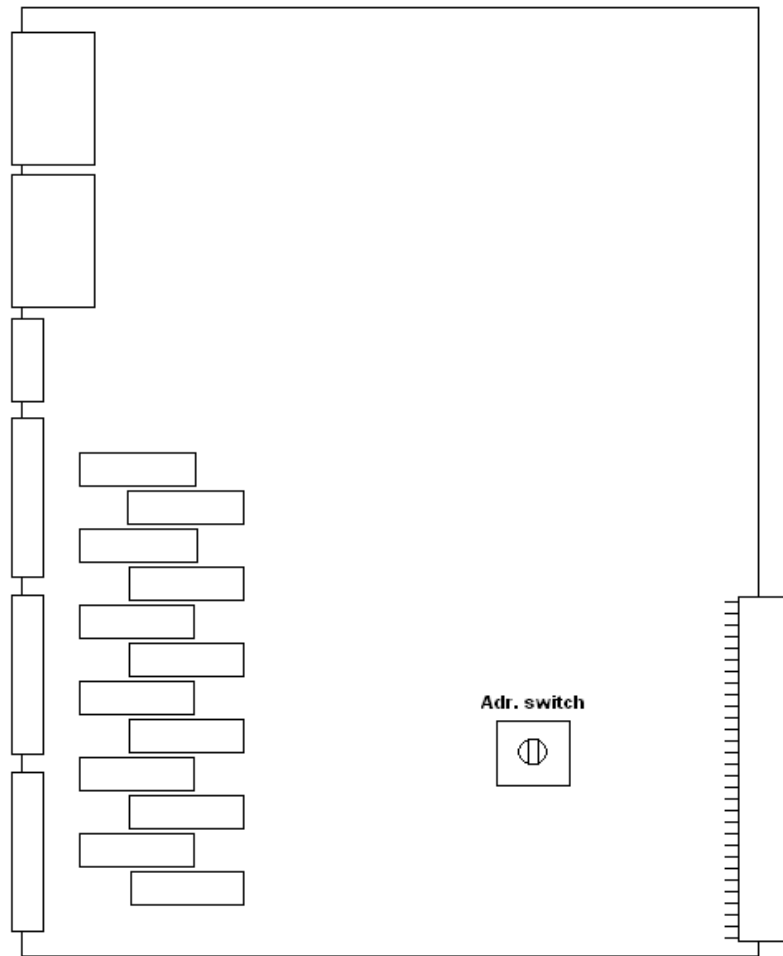
Address switch on the IOM module

Output channels

No DIP switches are to be set on the output channels.

Analogue output channels

No DIP switches are to be set on the analogue output channels.

3. Replacement of the Synchronisation, Control and Measuring Module (SCM 4.X)

Replacement of module SCM 4.1

The SCM 4.1 module consists of 1 card.

Rotation switch:
The I/O address for the backplane bus of the rack is to be set. Please notice that all SCM 4.1 and SCM 4.2 modules must have different I/O addresses starting with zero (null) and up to three. The I/O address is set by means of the I/O address switch.

Jumpers X10, X13 and X20 are all OFF.

- Switch all equipment into switchboard control
- Make sure no current is running through the current transformers

Adr. switch

PLUG FOR SCM CARD 2
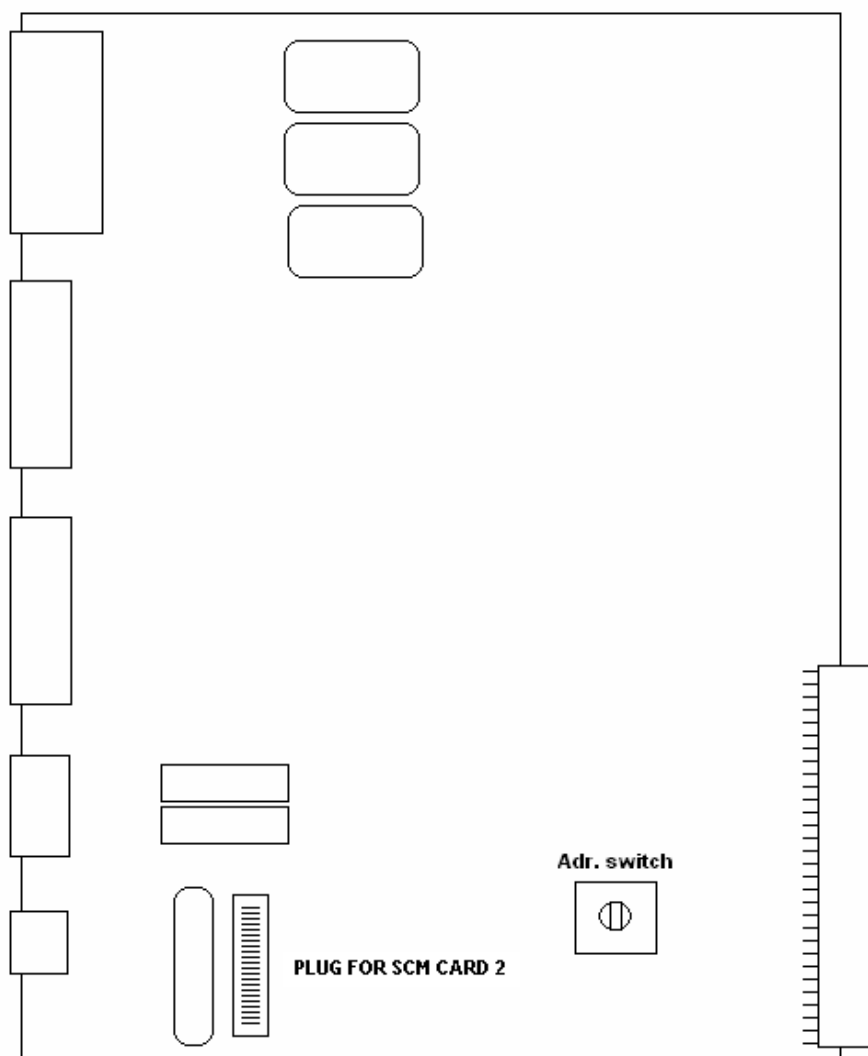
Address switch on the SCM

Remove the power supply from the defective DGU
- Remove other connections/plugs on the SCM
- Exchange the module after securing the correct settings of the jumpers and rotation switch
- Connect the plugs and power supply again
- Make a test to secure that the system works as predetermined

Handle: For replacement, please notice that the replacement unit is given the same I/O address as the unit to be replaced.

Replacement of module SCM 4.2

The SCM 4.2 module consists of 2 cards connected by a wired bus on the front side (not the backplane bus).

The card located to the **left** on the SCM 4.2 module is the same card as in the SCM 4.1 module. For detailed information about this card, please refer to the SCM 4.1 module.

The card located to the **right** on the SCM 4.2 module is the EM (Engine Module).

Two relay boards, OPR-1, can be mounted:

- One for output for a mechanical speed governor (instead of an electronic speed governor)
- One for outputs for mechanical voltage regulation (instead of an electronic voltage regulation)

These OPR-1 are only to be mounted, if binary interface to the governor/AVR is present. If analogue interface is used, then remove these OPR-1 PCBs.

The OPR-1 can be replaced if needed. This is easily done, by placing the module front down and removing the screws. Before reinserting the module, check the interconnection between the two PCBs (8-wire connection).

4. Replacement of the Display Unit 2 (DU-2)

Replacement of module

- Switch all equipment into switchboard control
- Remove the power supply from the defective DGU
- Remove other connections/plugs on the display unit
- Exchange the module after securing the correct settings of the jumpers
- Connect the plugs and power supply again
- Set the CAN slave ID according to the correct configuration, please see the HMI set-up document
- Make a test to secure that the system works as predetermined

Standard display DU-2

Dipswitch for termination of the 120 End-resistor
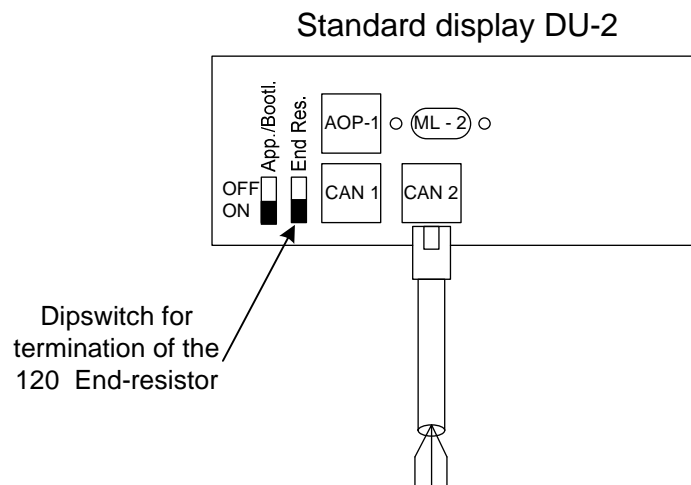
Setup of CAN master/slave on DU-2

The DU-2 has 4 ports on the back, 1 for the monitor cable, 1 for cable to AOP-1 and 2 for CANbus. The monitor port is used to connect the first DU-2 to the DGU/Delomatic PCM. The 2 CANbus ports are used for an AOP-2 or a second DU-2.

To enter the setup of the 3 ports, press arrow left, right and up at the same time and enter a screen for CAN ID change. The setting can be:

ID = 0: Use monitor port only
ID = 1: Use monitor port and CANbus ports (used with AOP-2s)
ID = 2: Use CANbus ports only (used for second DU-2 on CANbus)
ID = 3: Use CANbus ports only (used for third DU-2 on CANbus)

Press enter to save and exit the setup. See the illustration below to find the different buttons.

Press push-buttons arrows left, up and right initiates ID-setting mode.

Default setting is ID = 0.

5. Replacement of the Additional Operator Panel 1 (AOP-1)

Replacement of module
- Switch all equipment into switchboard control
- Remove the power supply from the defective DGU
- Remove other connections/plugs on the AOP-1
- Take out the text labels from the defective AOP-1 and insert these into the pockets on the new AOP-1
- Connect the plugs and power supply again
- Make a test to secure that the system works as predetermined

## 6. Replacement of the Additional Operator Panel 2 (AOP-2)

Replacement of module

- Switch all equipment into switchboard control
- Remove the power supply from the defective DGU
- Remove other connections/plugs on the AOP-2
- Take out the text labels from the defective AOP-2 and insert these into the pockets on the new AOP-2
- Connect the plugs and power supply again
- Set the CAN slave ID according to the correct configuration, please see the HMI setup document
- Make a test to secure that the system works as predetermined

Additional AOP-2

Dipswitch for termination of the 120 End-resistor
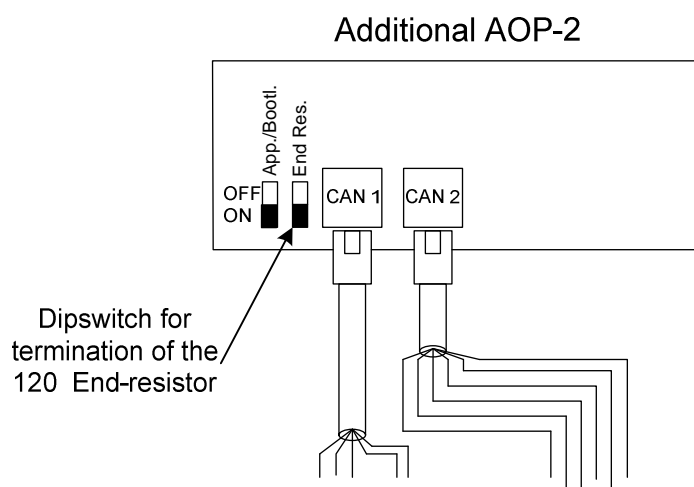
Setup of AOP-2 CAN no.

The AOP-2 needs a CAN no. to tell the system which AOP-2 it is on the BUS. If there is only one AOP-2, the no. is set to 1. If there is more than one, they will be numbered 1, 2, 3 etc.

To set up the CAN no., first press the 2 buttons to the right for 5 sec. The no. is indicated with a red light in the first left column of LEDs. If LED no.1 is on, it has no. 1, if LED no. 2 is on, it has no. 2 and so on. To scroll up and down, use the two buttons to the right. To choose the selected no., press the enter button. This button is also used to exit the set-up. See the illustration below to find the different buttons and LEDs.
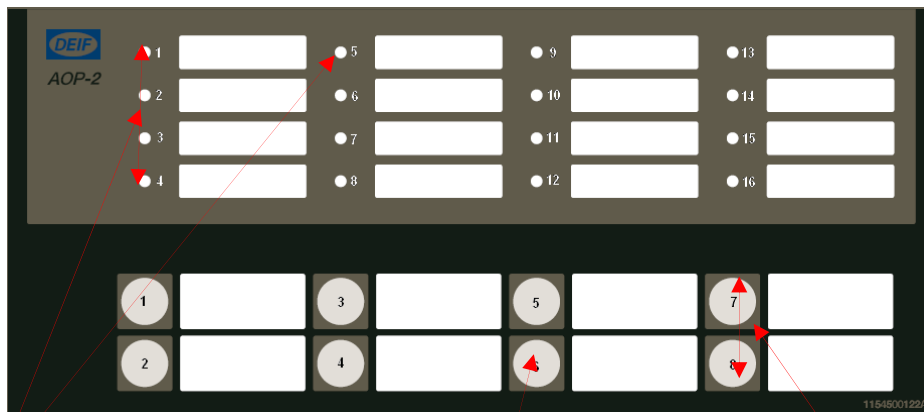
LEDs 1-5 indicate CAN no.   Enter/exit push-button.   Push-buttons to enter setup and change no. of CAN.

Please notice:
If two displays have the same ID, LEDs 1-5 will flash quickly.
Button 6 - jump into the "ID change menu".

7. Ordering spare parts and service

General

Please observe a few, but important instructions when ordering spare parts:

Throughout the whole process of manufacturing and testing, the products have been marked with production numbers on each circuit. These numbers have been registered due to the assembling of the DGU, to be used for traceability, to make it possible for DEIF A/S to locate every module. Therefore it is important **not** to change any modules between several DGUs.

Ordering spare parts

To order the right spare parts with the right software and configuration it is necessary to give some information when ordering the part.

This information is:

1) **DEIF project number and application version number**
2) **Module type and I/O address number**
3) **DGU number**
4) **Ordering number**

1) The project number and application version number is found in the menu system on the DU.

2) The module type is printed on the front panel of the module.
   The I/O no. can be found in the following way:

   a.   If the alarm message for I/O error occurs, the module type and I/O no. can be read in the display on the DU (defective DGU).

   b.   In the I/O list, the I/O no. on each individual module can be found.

3) The DGU no. corresponds to the DG no., but can also be read on the side of the DGU.

4) To find the ordering no. for the module, please see the SPARE PART LIST.

Ordering a DEIF service engineer

To order a service engineer from DEIF A/S, please call

+45 9614 9614

which is the main telephone number for DEIF and will provide information on how to make contact outside normal office hours.

When contacting a service engineer, it is important to have all available information regarding the situation ready in order to get the best possible service (e.g. what happens, is it permanent or periodical, which mode is selected, what is the power consumption, what is the error message on the DU and so on).

8. Spare part list

Delomatic-4 Spare part list		
DEIF code No.	**Designation**	**Type**
DELOMATIC 4 RACKS		
1101010030	Rack, Base 60TE, Marine	DGU-1
1101010031	Rack, Base 42TE, Marine	DGU-1
1101010035	Rack, Base 30TE, Marine	DGU-1
1101010032	Rack, Base 24TE, Marine	DGU-1
DELOMATIC 4 MODULS		
2911140420	Power Supply and Control Module excl.appl software incl. CANOpen/Modbus comm. NOTE! CANOpen/Modbus only as spare part, no new features	PCM-4.1
2911140420	Power Supply and Control Module excl.appl software incl. CANOpen/Modbus comm. NOTE! CANOpen/Modbus only as spare part, no new features	PCM-4.5
2911140420	Input/Output Module	IOM-4.1
2911140420	Sync.Measurement and Control Module	SCM-4.1
2911140420	Sync.Measurement and Control Module incl. OPR-1 for mechanical Speed Governor	SCM-4.2
2044220130	Output relay PCB for and SCM.4.2	OPR-1
1101110096	Cover Plate	PLATE
DELOMATIC 4 INTERFACE		
2911140420	Display Unit, Diesel Generator	DU-2
2911140420	Display Unit, CB Breaker (Shaft/TG Generator)	DU-2
2911140420	Display Unit, no Breaker	DU-2
1022040042	Cable for PCM4.1/ PCM4.5-DU-2 3 m (Monitor exten.cord)	CABLE
1022040043	Cable for PCM4.1/ PCM4.5-DU-2 6 m, 2 plugs	CABLE
2911140420	Additional Operator Panel AOP-1	AOP-1
1022040059	Patch Cable for DU-2 - AOP-1 0,5 m, 2 plugs	CABLE
2911140420	Additional Operator Panel AOP-2	AOP-2
1030590001	24V/5V DC/DC converter 12W for AOP	CONV.
1022040060	CAN-CABLE for AOP-2, 3 m, 1 plug, 1 free wire	CABLE
1022040065	Cable USB Service-cable	CABLE
DELOMATIC 4 DOCUMENTATION		
DEIF project No.	Part 1 of 2 Project-specific documentation	DOC
4189232002	Part 2 of 2 Standard Delomatic 4 Documentation	DOC

DEIF A/S reserves the right to change any of the above.