


# Product Change Notification PCN\_MOBILE\_2407\_035

## PCN Identification Data

	<b>Bucher Hydraulics AG</b> Industriestrasse 15 CH-6345 Neuheim	on behalf of	<b>Bucher Hydraulics AG</b> Mobile Drives Obere Neustrasse 1 CH-8590 Romanshorn
Notification No.	PCN_MOBILE_2407_035		
Type of Notification	<input checked="" type="checkbox"/> PCN (Product Change Notification) <input type="checkbox"/> PTN (Product Termination Notification)		
Product Category	MOBILE PSU 400V		
Type of Change	<input checked="" type="checkbox"/> Hardware <input checked="" type="checkbox"/> Software <input type="checkbox"/> Process <input checked="" type="checkbox"/> Documentation		
Form / Fit / Function	<input type="checkbox"/> compatible <input checked="" type="checkbox"/> not compatible		
Supplier Contact	Bucher Hydraulics AG - Mobile Helpline		

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## PCN History

Revision	Version	Date and Time	Changes
667729	1	Oct/03/2024 17:13:39	First Revision

## 1 Description of Changes

Change Description

### ~~NAWR\_HW-12784~~ **Mounting instrucion**

The mounting instructions are no longer provided with the device in hard copy.

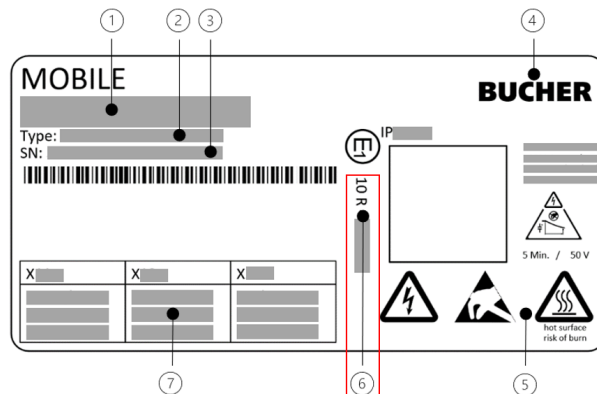
A QR code is attached to the cover of the X31 plug. The instructions can be accessed online via this code and are available in different languages.



### ~~NAWR\_HW-12780~~ **Approval identification**

This change refers to the fact of a revised standard of UN ECE R10 from Revision 4 / 5 to Revision 6. The MOBILE units have been approved to the new revision 6 and the name plate we will change in field no. 6 for approval identification as follows:

Previous approval identification	New approval identification
10 R - 05 7105	10 R - 06 10299
10 R - 04 7105 (400V devices)	10 R - 06 10299




### ~~NAWR\_HW-12270~~ **Accessory pack**

To optimize processes, the following components are no longer pre-assembled on the device, but are included in an accessory pack with the device:

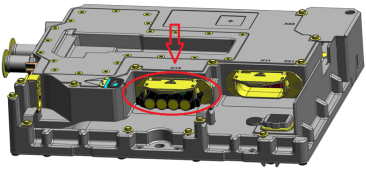
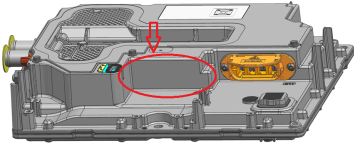
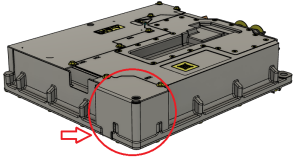
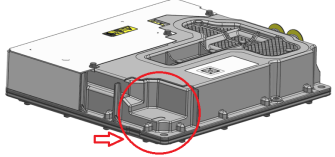
- Cable grommets
- PE screw
- Clamps
- Screws for fastening the clamps

Change      Decription

 NAWR\_HW-11844

## Housing Design

The design of the PSU is being optimized. See folowing table for the changes.

Description	Previous device	New device
The dummy plug at the position of X13 is not in use anymore		
The cover plate for the connector X33 protection is no longer present		

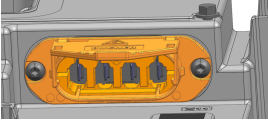
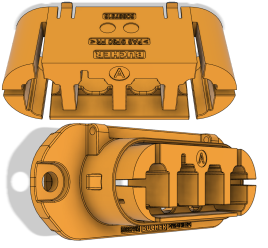
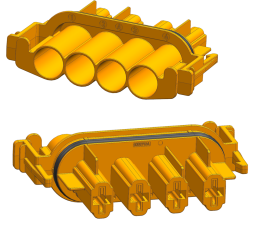
Change Description

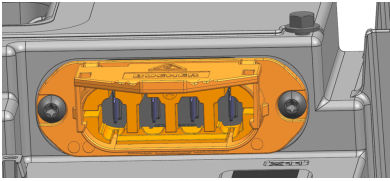
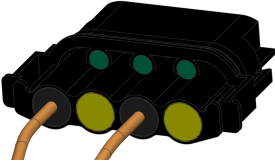
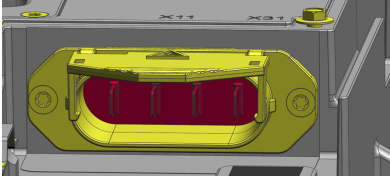
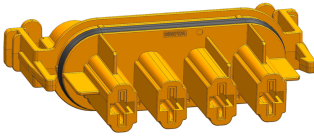
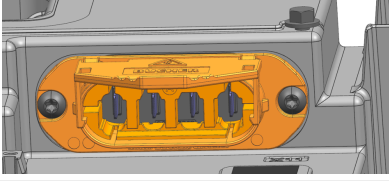
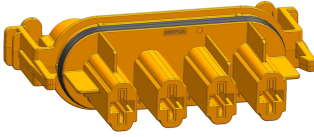
NAWR\_HW-11843

## High voltage Connector design

The HV plug is being redesigned with the following points in consideration:


- Ensuring availability for the next MOBILE inverter platforms
- The electrical contacts remain unchanged
- New finger protection to increase protection against physical contact
- Introduction of coding to prevent incorrect connection
- Ensuring compatibility in the design

Description	Details of new Connector design
Counter plug (with cover cap) mounted on inverter unit	
Counter plug with implemented "BUCHER" logo and finger protection (removable in case for backward compatibility)	
Cable connector with printed indication to coding	

Case	Connector design		Compatibility given by
	Device side	Cable side	
1	<p><i>New design</i></p> 	<p><i>Previous design</i></p> 	Removing the finger protection on the device side
2	<p><i>Previous design</i></p> 	<p><i>New design</i></p> 	No action required (fully compatible)
3	<p><i>New design</i></p> 	<p><i>New design</i></p> 	No action required (fully compatible) Coding and protection against physical contact is given

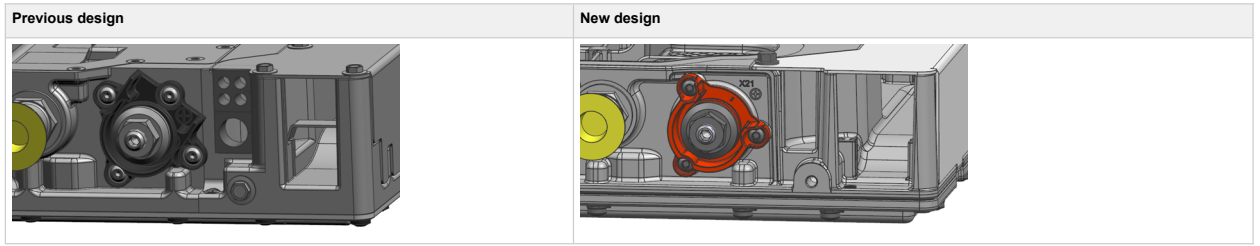
**Please note:** The corresponding coding to the socket on the device will be described in the hardware manual. In addition to the hardware manual the mounting instruction can be found via QR code on the X31 cover. Details for removing the finger protection and mounting advices are specified in the mounting instruction.

Change      Decription

 NAWR\_HW-11830

### **PSU output**

The connection area on the PSU output X21 B+ is revised and the plastic part is changed to the color red.  
See picture below:



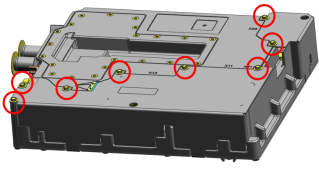
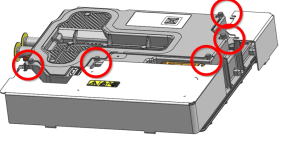
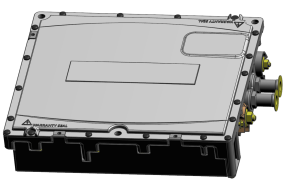

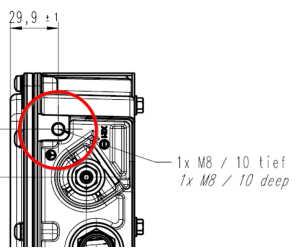
Change Description

NAWR\_HW-11829

## Aluminum die-cast housing

The enclosure housing case of the inverter is being redeveloped, incorporating the following features:

- Faster and easier assembly of the cover plates
- Additional potential bonding point
- Reduction of the weight

Description	Previous design	New design
<ul style="list-style-type: none"> <li>• Only three screws (instead of six) left to fix the large cover plates.</li> <li>• The screw holes in the sheet metal have been replaced by slots.</li> <li>• The screws do not have to be removed anymore, even with loosened screws the mounting of the plates is possible.</li> </ul>		<p>DCU PSU</p> 
<ul style="list-style-type: none"> <li>• Adapted design of the housing cover</li> </ul>		
<ul style="list-style-type: none"> <li>• Additional potential bonding point with an M8 thread close to X21 -</li> </ul>	-	

	Previous design	New design
<b>Weight</b>	8.4 kg	8.1 kg
<b>Water cooling: Fluid volume</b>	0.16 l	0.21 l
<b>*Decrease in pressure in the water cooler (@ 15 l/min, 65 °C, water / ethylene glycol 50/50 %)</b>	66 mbar	69 mbar

**\*Please note:** For detailed information of decrease in pressure in the water cooler see MOBILE hardware manual.

Change Description

NAWR\_HW-10494

### Extension to CAN FD

The CAN interface is extended for CAN FD. The interface is compatible with the previous version of devices. The termination remains unchanged.

Public CAN		Previous device	New device
CAN function		Classic CAN	Classic CAN, CAN FD incl. Signal Improvement Capability
Standard compliance		SAEJ1939	SAEJ1939, ISO 11898-2, CIA 601-4
Transmission rate Classic CAN	kBit/s	125, 250, 500	125, 250, 500, 1000
Transmission rate CAN FD	kBit/s	---	1000, 2000, 5000, 8000
Capacity* CAN_H - GND / CAN_L - GND	pF	170	60
Capacity* CAN_H - CAN_L	pF	85	40
Common-Mode Choke	uH	51	51

\* incl. ESD-protection and CAN-transceiver

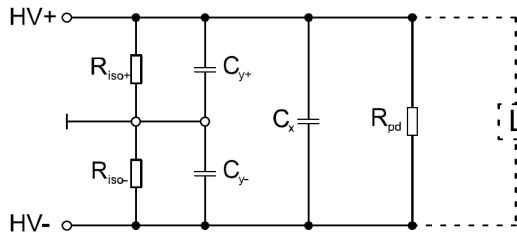
**Please note:** For detailed information about CAN FD extension see MOBILE hardware manual.

NAWR\_HW-10089

### Increase of insulation resistance

The insulation resistance in DC link is increased. Other characteristics remain unchanged.

			Previous device (400V) EMDAG3..., EMDAG4...	Previous device (800V) EMDAG2..., EMDAG3..., EMDAG4...	New device EMDAG2..., EMDAG3..., EMDAG4...
Insulation resistance	$R_{iso}$	MΩ	10	20	>50



HV+, HV- DC HV electric circuit  
 $R_{iso+}$ ,  $R_{iso-}$  Resulting resistance per HV potential  
 $R_{pd}$  Resistance for passive discharge  
 $C_x$  Capacity of the X-capacitors  
 $C_{y+}$ ,  $C_{y-}$  Resulting capacitance of Y-capacitors, parasitic capacitance, capacitance between HV+ or HV- and electrical ground  
 L Load  
 $\perp$  Electrical ground

Change Description

NAWR\_HW-10034

## Dataset transfer

- Processor architecture has changed
- Only new firmware release R7 can run on new device HW-012
- Old firmware and data sets (R5.x, R6.x) are no longer compatible to new device HW-012
- New firmware R7 has extensions, but is functionally compatible (for details see release notes in the firmware package)
- Data sets from R6.x must be migrated to R7.0 using Parameter Manager (see following short description)

The diagram shows the workflow for dataset transfer. It starts with an old device (HW010/011) and its dataset (R6.x). The Parameter Manager software is used to upload this dataset. In the software interface, the 'Show only differences' option is enabled. The user then selects all parameters (Ctrl+A) and clicks 'Copy / Merge'. Finally, the new dataset (R7.x) is downloaded to the new device (HW012).

The Parameter Manager can be used via software tool MOBILE Engineer and MOBILE Starter. How to use the Parameter Manager for Dataset transfer is described in the Application Note PDF *Dataset Merge*. Please use the LOGintern area to get access to the Application Note (category Power Electronics (Mobile Drives); subcategory Documents).

The new firmware release package R7.0 can also be downloaded in the LOGintern area (subcategory Firmware).

However in case of assistance for dataset migration do not hesitate to contact the support team via [support.rh@bucherdrives.com](mailto:support.rh@bucherdrives.com).

NAWR\_HW-9879

## Change to pre-charge

This change describes the effect of pre-charge.

**Old device:** When the previous device is enabled and the HVDC is switched off, the DC link capacity was charged to 20 ... 23 V by standby currents.

**New device:** The internal power supply is changed to prevent the DC link from charging to 20...23V and avoid the effect of pre-charge.

NAWR\_HW-3348

## Change to ambient conditions

This change refers to the ambient conditions and describes the installation height of the devices, so called altitude that has increased according table below:

Altitude previous		Altitude new	
0 ... 2000 m AMSL	Overvoltage category II	0 ... 3000 m AMSL	Overvoltage category II for systemvoltage up to 600 VAC
2000 ... 4000 m AMSL	Overvoltage category I	3000 ... 4000 m AMSL	Overvoltage category I for systemvoltage up to 600 VAC or overvoltage category II for systemvoltage up to 300 VAC



Change      Description

NAWR\_HW 16

## Change of pinning to X31 connector

To prevent short circuit between InterLock1 (Pin7) and InterLock2 (Pin6), the pin assignment of Interlock2 (Pin6) on X31 has been changed to Pin 4.

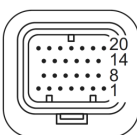


### Hinweis!

Geänderte Belegung des Steckers X31 (Steueranschlüsse)

### Note!


Changed assignment of connector X31 (control connections)

X31	Previous pinning EMDxGxxxxxxxxxx000 EMDxGxxxxxxxxxx000	Present pinning EMDxGxxxxxxxxxx01x EMDxGxxxxxxxxxx01x
	1 CAN_H_TERM_PUBLIC	CAN_H_TERM_PUBLIC
	2 CAN_H_PUBLIC	CAN_H_PUBLIC
	3 CAN_L_PUBLIC	CAN_L_PUBLIC
	4 CAN_H_TERM_PRIVATE	InterLock2
	5 CAN_L_PRIVATE	CAN_L_PRIVATE
	6 InterLock2	CAN_H_PRIVATE
	7 InterLock1	InterLock1
	8 KL15	KL15
	9 CAN_GND	CAN_H_PUBLIC
	10 CAN_H_PRIVATE	CAN_L_PUBLIC
	11 CAN_GND	CAN_L_TERM_PUBLIC
	12 ID_PIN1	ID_PIN1
	13 ID_PIN3	ID_PIN3
	14 FLX_IN4	FLX_IN4
	15 FLX_IN3	FLX_IN3
	16 FLX_IN2	FLX_IN2
	17 FLX_IN1	FLX_IN1
	18 ID_PIN2	ID_PIN2
	19 ID_PIN4	ID_PIN4
	20 KL31	KL31
	21 KL30	KL30
	22 KL30	KL30
	23 FLX_OUT4	FLX_OUT4
	24 FLX_OUT3	FLX_OUT3
	25 FLX_OUT2	FLX_OUT2
	26 FLX_OUT1	FLX_OUT1

### Backward Compatibility:

Subject	Notes
Backward compatibility to earlier version:	The changed pinning is not compatible with the previous version.
What to be done for replacement of earlier version by this new version:	You have to check the wiring and pinning on X31 connector according to the table above.
Changes in Communication:	The internal Private CAN termination has been removed. You have to terminate the Private CAN externally.
Changes in Parametrization:	No change of parametrization needed.
Changes in Functionality:	Changes of functionality are listed in the SW Release Notes (for changes since R5.2 see release notes R6.1; for changes since R6.1 see release notes R7)

Change Description

 NAWR\_HW-9


## Change of CAN interface

Wake Over CAN ISO 11898-5 is realized by modification of the CAN interface including:

- No galvanic isolation between CAN\_GND and KL31 anymore
- Common mode voltage immunity  $\pm 40V$  according ISO 16750 by CAN transceiver
- Reduction of the reset time to allow earlier CAN communication after CAN and KL15 wakeup
- $\pm 80V$  fault protection on CANL, CANH
- UBAT (KL30) Power Off supply current  $<100\mu A$  (@ 12V),  $<200\mu A$  (@24V)

### Backward Compatibility:

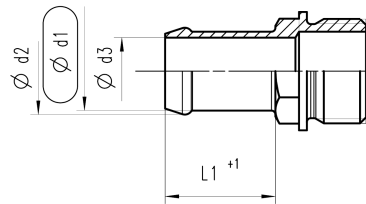
Subject	Notes
Backward compatibility to earlier version:	No changes required. Wakeup over CAN is disabled by default parameter set or not implemented for customer specific firmware. Backward compatibility is approved for KL15 turn off.
What to be done for replacement of earlier version by this new version:	No modifications on wiring is required. Activation of Wakeup over CAN can be done by parameter modifications (if included in firmware).
Changes in Communication:	No changes as long as Wakeup over CAN is not used.
Changes in Parametrization:	No changes as long as Wakeup over CAN is not used. Wakeup over CAN is disabled by default parameter set. To activate the Wakeup over CAN, use the appropriate MOBILE WoC Application Note
Changes in Functionality:	No changes as long as Wakeup over CAN is not used.

 NAWR\_HW-8

## Change of water cooling nozzle

The water cooling nozzle will be replaced by a backward compatible single bulge nozzle due to the following advantages:

- simplify the connection of hoses
- improve the tightness over life time



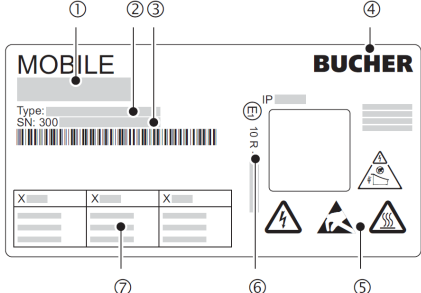
Mass	Unit	typ.
Size	[ ]	DN 20
d1	[mm]	20.0
d2	[mm]	21.0
d3	[mm]	16.3
L1	[mm]	30.0

### Backward Compatibility:

Subject	Notes
Backward compatibility to earlier version.	No changes on tubing is required. Backward compatibility is approved for known installations.
What to be done for replacement of earlier version by this new version?	Visual inspection of damages on tubing and if damages are visible replace it. Check tightness of tube connection after installation.

## 2 Marking of Parts / Traceability of Change

See the following areas on the name plate for identification



The changed devices can be identified based on the Type designation. ②  
(see section: Affected Parts)

## 3 Timing / Schedule

Start of Delivery (production line)	2025-03-17
Availability of Samples	2024-12-16
PTN of previous product	n.a.
Customer forecast for MOBILE inverters delivery until last order call	n.a.
Last order call previous product	2024-03-31
Last delivery previous product	2024-06-30
Last order call repair units previous product	2025-08-30
Product Discontinued	2024-11-30

## 4 Qualification / Validation

Qualification Report	Qualification documents can be reviewed on site (Bucher Hydraulics AG)
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## 5 Input to Customer for Risk Assessment Process

Form	No change of outline dimensions.
Fit	No change of outline dimensions. Check the wiring and pinning on X31 connector.
Function	See MOBILE Software R7 Release Notes.
EMI	EMI relevant changes are approved by ECE R10 certification.
Backward Compatibility	The new units are not backward compatible with previous units due to changed pinning on X31 connector.

## 6 Attachments / additional Documentation

Additional Documentation	New 2D and 3D-pdf files are available on Bucher Hydraulics Website (see LOGintern area <a href="https://www.bucherhydraulics.com/en/logintern">https://www.bucherhydraulics.com/en/logintern</a> )
Hardware Manual	New MOBILE Hardware Manual (see LOGintern area <a href="https://www.bucherhydraulics.com/en/logintern">https://www.bucherhydraulics.com/en/logintern</a> )
Mounting Instructions	New MOBILE Mounting Instructions (see LOGintern area <a href="https://www.bucherhydraulics.com/en/logintern">https://www.bucherhydraulics.com/en/logintern</a> )
SW Reference Manual	New MOBILE Software Manual (see LOGintern area <a href="https://www.bucherhydraulics.com/en/logintern">https://www.bucherhydraulics.com/en/logintern</a> )

## 7 Affected Parts

#		Previous device	New device
1	<b>Supplier Part No.</b> <b>Supplier Part Name</b> <b>Supplier Type designation</b>	30013538348 MOBILE PSU 5.6 (400 V) 000 EMDAG3562000S00000	30010002667 MOBILE PSU 5.6 (400V) 012 EMDAG3562000S00012