Vehicle Certification Agency

THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

COMMUNICATION CONCERNING THE ~~APPROVAL GRANTED~~ [(1)]/ APPROVAL EXTENDED [(1)]/ ~~APPROVAL REFUSED~~ [(1)]/ ~~APPROVAL WITHDRAWN~~ [(1)]/ ~~PRODUCTION DEFINITIVELY DISCONTINUED~~ [(1)] OF A TYPE OF ~~ELECTRICAL~~/ ELECTRONIC SUB-ASSEMBLY [(1)] WITH REGARD TO REGULATION NO. 10.05

E11 Approval No: 10R-055172

Extension No: 02

1. Make (trade name of manufacturer): Haldex Brake Products Ltd.

2. Type and general commercial description(s): EB+ Info Centre 2

3. Means of identification of type, if marked on the ~~vehicle~~/component/~~separate technical unit~~: [(1)]
Self-adhesive label

3.1. Location of that marking: Label located on the rear face of product

4. Category of vehicle: Not applicable

5. Name and address of manufacturer:
Haldex Brake Products Limited
MIRA Technology Park
Lindley
Warwickshire
CV13 6DE
United Kingdom

6. In the case of components and separate technical units, location and method of affixing of the approval mark: A label attached to the unit casing

UK Approval Authority Vehicle Certification Agency
12-Feb-18

7. Address(es) of assembly plant(s):
BMS Circuits
Avenue Paul Gelos
BP531
FR-64105 Bayonne
France

8. Additional information (where applicable): See appendix

9. Technical Service responsible for carrying out the tests: HORIBA MIRA Ltd

10. Date of test report: As before and Technical Review dated 29 January 2018

11. No. of test report: As before and Technical Review EAT387323

12. Any remarks: Approval to Supplement 1

13. Place: BRISTOL

14. Date: 12 FEBRUARY 2018

15. Signature: 

D LAWLOR
Chief Technical and Statutory Operations Officer

16. The index to the information package lodged with the Approval Authority, which may be obtained on request, is attached.

17. Reasons for extension: To cover
1) Change in location of design authority from Redditch, UK to Lindley, UK
2) Update of approval to Revision 5, Supplement 1
3) Variants 815 044 XX1 and 815 047 XX1 removed (no longer sold under the BPW trade name)

(1) Strike out what does not apply.

Appendix

to type-approval communication form No. E11 10R-055172 Extension 02

concerning the type-approval of an electrical/electronic sub-assembly under Regulation No. 10.05

1. Additional information:

1.1. Electrical system rated voltage: 24 V. ~~pos~~/neg ground (1)

1.2. This ESA can be used on any vehicle type with the following restrictions:
Negative ground vehicles only

1.2.1. Installation conditions, if any: Fitting is to be in accordance with Haldex installation instructions

1.3. This ESA can be used only on the following vehicle types: Not applicable

1.3.1. Installation conditions, if any: Not applicable

1.4. The specific test method(s) used and the frequency ranges covered to determine immunity were: (Please specify precise method used from Annex 9):
• ISO 11452-5: 2002, 20 to 1000 MHz, 800 mm Stripline
• ISO 11452-2: 2004, 400 to 2000 MHz, Absorber Lined Shielded Enclosure

1.5. Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests: HORIBA MIRA Ltd, Watling Street, Nuneaton, Warwickshire, CV10 0TU, United Kingdom

2. Remarks: None

(1) Strike out what does not apply.

EB+ Info Centre 2 Information Display Unit

Information Document for Product EMC Assessment

Summary

This document demonstrates that the worst-case installation of an EB+ Info Centre 2, when assessing EMC conformity will be variant 815 041 XX1 working in the active operating mode.

Compiled By: A. Jones/M.Poole			Approving Specialist:	Chief Engineer:
3	12/09/17		Engineering Manager:	VP Engineering:
Issue:	Date:	File:		

Abbreviations

ABS	Anti-lock Braking System
CAN	A low voltage, automotive communications system
EBS	Electronic Braking System
EB+	A trade name for a particular range of Haldex EBS ECUs
ECU	Electronic Control Unit
EMC	Electro-Magnetic Compatibility
EEPROM	Electrically Erasable non-volatile memory
IC	Integrated Circuit
PCB	Printed Circuit Board
DTC	Diagnostic Trouble Codes

System Description

The EB+ Info Centre 2 is an information collection, storage and display unit. The unit accepts vehicle information and diagnostic information from Haldex Electronic Braking System (EBS) electronic control units (ECUs) by means of an ISO 11898 CAN communications port.

An EB+ Info Centre 2 displays information for the user on an LCD, when requested to do so by means of button pressing. Each unit has three buttons that choose the display of the desired information in combination. A clear plastic cover provides protection to the display and buttons.

When the vehicle has no electrical supply, it is possible for a user to access information stored within the EB+ Info Centre 2, when an internal battery fitted to the Info Centre. The battery is located in a separate battery compartment within the enclosure and is designed to be replaced once fully discharged at a Haldex approved service centre. Some variants do not have this feature, as they are not fitted with a battery.

An EB+ Info Centre 2 consists of a single PCB fitted inside a two-piece enclosure with a protecting cover. The connector is formed in the plastic enclosure with pins stitched through the enclosure. The PCB is assembled into the enclosure and the connector pins are soldered. A separate cable assembly is connected to the Info Centre 2 which then connects to the EBS ECU via the diagnostic port.

ECU Variants

There are two variants of the electronic circuit within EB+ Info Centre 2, the first has an internal battery and for the second simpler variant the battery is omitted. The character ‘X’ in the part number may be any number 0-9 and is used to identify slight differences in the mechanical components used in the assembly of the Info Centre 2

Haldex EB+ Info Centre 2 Variant #1:- With Battery

The Info Centre 2 unit connects directly to a 24V EBS ECU by means of a separate cable assembly. The cable assembly plugs into the EB+ Info Centre 2 and into the EB+ ECU using polarised locking connectors. This variant has a battery back-up supply and can be used to retrieve information pertaining to the trailer and/or Electronic Braking System when no power is supplied from the EBS ECU. This variant is the Haldex version of the Info Centre 2 and is identified by the Haldex logo on the front cover plate and on the Overlay.

Haldex EB+ Info Centre 2 assembly part number: 815 041 XX1

Haldex EB+ Info Centre 2 ADR Variant #2 :- Without Battery Fitted

This Info Centre 2 variant again connects directly to a 24V EBS ECU by means of a separate cable assembly. The cable assembly plugs into the EB+ Info Centre 2 and into the EBS ECU using polarised locking connectors This variant however does not have a battery-backup and can only be used to retrieve information when power is supplied from the EBS ECU. This variant is a simpler version in terms of electronic circuitry compared to the variant with battery power. This variant is the Haldex version of the Info Centre 2 and is identified by the Haldex logo on the front cover plate and on the Overlay.

Haldex EB+ Info Centre 2 assembly part number: 815 046 XX1

TRS EB+ Info Centre 2 Variant #5:- With Battery

This variant is intended to be connected to a 12V EBS ECU and is identical in terms of electronic hardware to the Haldex Info Centre 2 battery version. There are minor difference in software between this variant and the Haldex Info Centre 2 though these differences have no effect on the emissions generated by the unit. A different Overlay is used to distinguish this variant from the Haldex Info Centre 2 battery version.

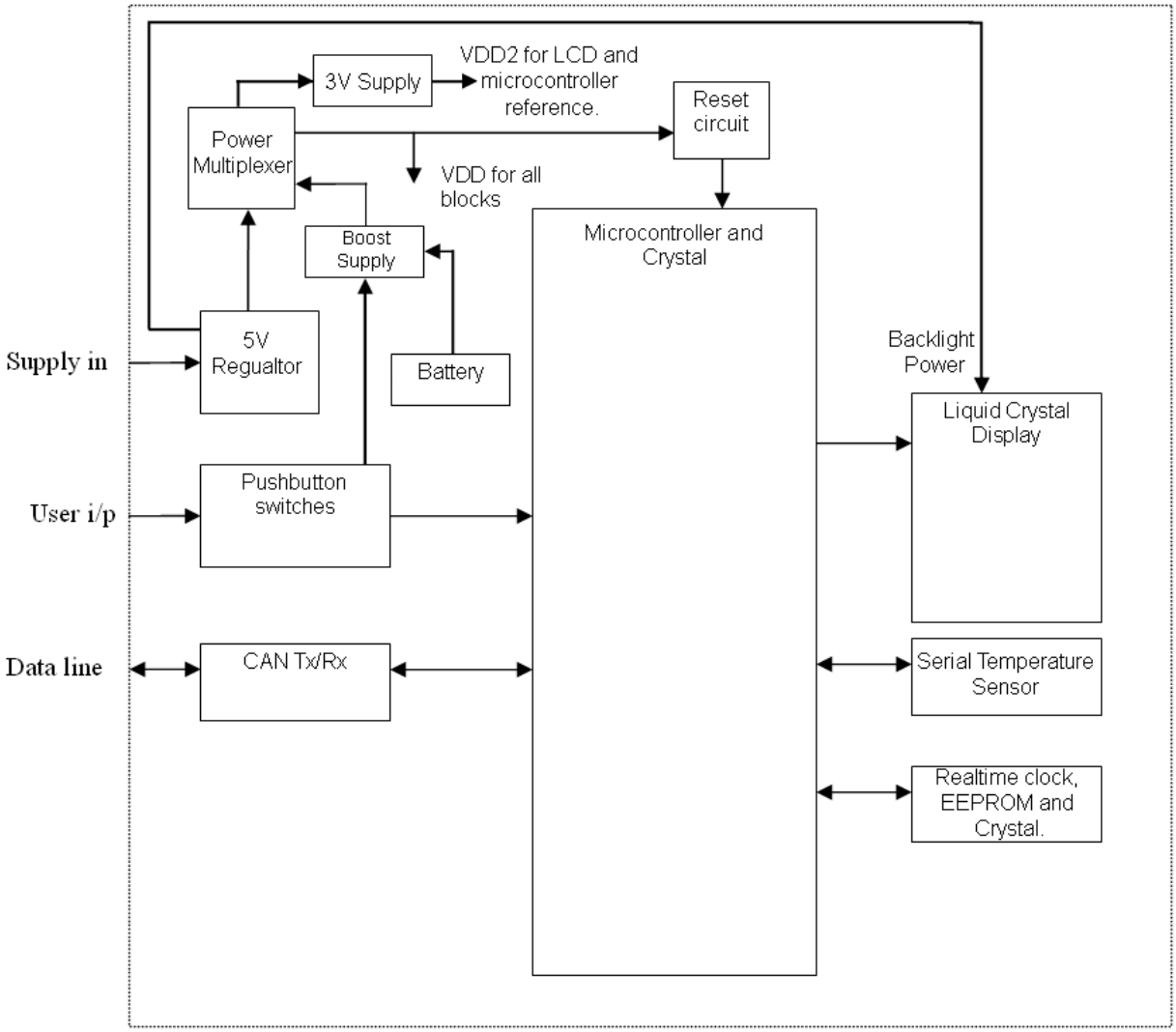
TRS EB+ Info Centre 2 assembly part number: 815 049 XX1

TRS EB+ Info Centre 2 ADR Variant #6 :- Without Battery Fitted

This variant is intended to be connected to a 12V EBS ECU but is identical in terms of electronic hardware to the Haldex Info Centre 2 non battery version. There are minor difference in software between this variant and the Haldex Info Centre 2 though these have no effect on the emissions generated by the unit. A different Overlay is used to distinguish this variant from the Haldex Info Centre 2 non battery version.

TRS EB+ Info Centre 2 assembly part number: 815 050 XX1

ECU Block Diagram



Circuit Description

The EB+ Info Centre 2 electronics comprise of :-

A microcontroller driven by a 4MHz clock. This controls most of the other circuit elements. This microcontroller has internal timers, read only memory, random access memory, a CAN communications port operating at 250kHz, analogue input ports, digital input and output ports and an LCD driver.

The liquid crystal display is 240 segments wide by 128 high with a transreflective backing. This item is driven directly by the microcontroller. It has a backlight that is controlled by the microcontroller.

A real time clock IC that communicates with the microcontroller using a synchronous serial bus protocol operating below 100kHz. The clock circuit uses a low power 32kHz crystal oscillator.

An electrically erasable serial random access memory (EEPROM) that communicates with the microcontroller over a synchronous serial bus that operates at a rate below 100kHz.

A temperature sensor that communicates with the microcontroller over a synchronous serial bus that operates at a rate below 100kHz.

A 20ms power on reset integrated circuit with an integral voltage monitor.

A step up switching converter with a 5V output which takes power from a 3.6V replaceable battery, if fitted. The integrated circuit uses a switching technique with a maximum frequency of 1.2MHz to generate its output. This circuit can be controlled by the microcontroller. This circuit can also be powered on when the user presses a push button.

A power supply regulator with a 5V output that takes power from the vehicle supply. When this device generates its 5V output, it uses a switching technique that has a maximum rate of 500kHz.

The power supply used is selected with a 'power multiplexer', if both the battery supply and trailer supply are present the trailer supply is used.

A linear voltage regulator generates a 3V supply for the liquid crystal display and reference for the microcontroller.

Operating Modes

The EB+ Info Centre 2 has up to five operating modes. The nature of the available power supplies, fault status of the EBS ECU connected to the Info Centre 2 and the user's actions determine the mode.

1. Quiescent mode

An EB+ Info Centre 2 without a battery fitted ceases to operate when the EBS ECU no longer provides it with power. If the EB+ Info Centre 2 has a battery fitted, it ends its display and reduces its power consumption by removing power from the microcontroller when no vehicle supply is available and no buttons have been pressed for a period. The real time clock alone would continue to run. A battery powered EBS Info Centre 2 can be woken by pressing any of the buttons.

2. Display mode

Display mode is only available on an EB+ Info Centre 2 fitted with a battery. When a user presses any button on the unit in its quiescent mode, the power supply is activated and the microcontroller and its associated devices are powered. The power supply is maintained and the device provides information to the user for a period. After this time, power is removed from the microcontroller and the unit returns to the quiescent mode to preserve battery life. Pressing any button also restarts the display period.

3. Interface Mode

With the vehicle supply powering the EBS ECU, the EB+ Info Centre 2 takes its power from the EBS ECU and communicates with it over a CAN serial bus. Information may pass between the two devices and the EB+ Info Centre 2 can store a copy of information held in the EBS ECU. The EB+ Info Centre 2 remains in this mode until the removal of the power supply provided by the EBS ECU, or until a user presses one of its buttons. When power is removed from an EB+ Info Centre 2 without a battery fitted, the unit ceases to operate. Those units with a battery fitted drop back into the quiescent mode.

4. Active mode

Active mode is entered from the interface mode when a user presses a button. This causes the EB+ Info Centre 2 to display selected current information. During the active mode, information continues to pass between the EB+ Info Centre 2 and the EBS ECU by means of the serial CAN bus.

5. Fault Alert mode

If a fault occurs with the EBS ECU and when vehicle supply is removed, the Info Centre 2 version with battery, powers up and flashes a red LED integrated within the Overlay for a period of time to provide indication that a fault has occurred. The version of Info Centre 2 without battery ceases to operate once vehicle supply has been removed.

Worst Case Assessment

This device has no immunity related functions as defined in 2006/28/EC, therefore only emissions and conducted transients need be considered.

An EB+ Info Centre 2 in the quiescent mode powered directly from an on-board battery, is in a low energy consumption standby state without microcontroller activity. EMC Emissions will be very low, as only the real time clock circuit is running.

In the display mode, the CAN bus interface is not powered and other parts of the electronics are not engaged in order to save power. However a separate boost power supply is engaged in this mode to convert the 3.6V battery voltage to 5V to supply microcontroller and other electronic circuits. The boost power supply uses an on-board oscillator to step up the voltage which is a source of EMC emissions. This power supply is only engaged during display mode and does not operate when the power is supplied by the EB+ ECU. Therefore this operating mode is considered to be one of the worst-case modes in terms of emissions.

In fault alert mode, the CAN bus interface is not active, the microcontroller runs at a lower clock speed and other parts of the electronics are not engaged in order to save power.

In the interface and active modes the microcontroller runs and most of the devices associated with it also run. However, in the active mode the LCD always operates. The microcontroller interface to the real time clock, EEPROM and the CAN bus serial interface also operate during this mode. Therefore this operating mode is considered to be one of the worst-case modes in terms of emissions

The worst case for conducted transient testing is active mode, as this gives the maximum of operating conditions and the power supply in the EB+ Info Centre 2 is connected to the incoming supply.

The worst case operating modes of the Info Centre 2 for radiated emissions are the active and display modes. Therefore for EMC emissions testing, the Info Centre 2 shall in turn be tested in each of these two modes.

Therefore the part chosen for assessment is the variant that has a battery fitted, part number 815 041 001.

Product Installation and EMC Performance

No intentional EMC screening, either of cable or elsewhere within the installation, is employed on installations of EB+ Info Centre 2.

When installed on a vehicle, the EB+ Info Centre 2 is completely covered. Neither its display nor pushbuttons is accessible or visible to a driver located at the vehicle controls.

EMC performance is considered in the Haldex installation instructions.

Document Control

Note Info Centre 2 ECU part number 815 041 001 submitted as representative of the type for EMC considerations contains electronic assembly 003 9394 09 as listed below.

The character 'X' in the part number may be any number 0-9 and is used to identify slight differences in the mechanical components used in the assembly of Info Centre 2

Variant: Haldex EB+ Info Centre 2 - Fitted With Battery Fitted

ECU Part Number	815 041 001
PCB Assembly	003 9394 09 issue 4
PCB Sub Assembly	003 9393 09 issue 3
Parts List	003 9459 09 issue 1
Schematic	911 462 001 issue 1
Software	042 7147 09
PCB (un-populated)	042 7146 09 issue 4

Variant: Haldex ADR EB+ Info Centre 2 – No battery fitted

ECU Part Number	815 046 001
PCB Assembly	003 9401 09 issue 1
PCB Sub Assembly	003 9402 09 issue 2
Parts List	003 9460 09 issue 1
Schematic	911 469 001 issue 1
Software	042 7147 09
PCB (un-populated)	042 7146 09 issue 4

Variant: TRS EB+ Info Centre 2 - Fitted With Battery Fitted

ECU Part Number	815 049 001
PCB Assembly	003 9394 09 issue 4
PCB Sub Assembly	003 9393 09 issue 3
Parts List	003 9459 09 issue 1
Schematic	911 462 001 issue 1
Software	042 7147 09
PCB (un-populated)	042 7146 09 issue 4

Variant: TRS ADR EB+ Info Centre 2 – No battery fitted

ECU Part Number	815 050 001
PCB Assembly	003 9401 09 issue 1
PCB Sub Assembly	003 9402 09 issue 2

Parts List	003 9460 09 issue 1
Schematic	911 469 001 issue 1
Software	042 7147 09
PCB (un-populated)	042 7146 09 issue 4

Product Approval History

Original Approval

Date originally tested	16th & 18th June 2009
New approval number	e11*72/245*2006/28*5172*00
	E11 10R-035172
Date originally approved	3rd August 2009

First Subsequent Revision

New approval number	E11 10R-035172 Ext 1
Date of extension of approval	10th June 2013

Second Subsequent Revision

New approval number	
Date of extension of approval	

Appendix 1 – Description of changes

Description of changes in the first approval extension

Details of new assembly plant (BMS) added to the approval and existing assembly plant Jabil removed.

Description of changes in the second approval extension

1. The document has been updated to reflect the change in location of design authority from Redditch, UK to Lindley, UK.
2. Update of approval to Revision 5, Supplement 1.
3. Variants have been removed from the approval.

   All references to the variants 815 044 XX1 and 815 047 XX1, their constituent parts and assemblies have been removed from this document. The product will no longer be sold under the BPW trade name.

Appendix 2 – Information Required for ECE R10.05 Annex IIB

0 **General**

0.1 **Make (trade name of manufacturer):** Haldex Brake Products Ltd.

0.2 **Type and general commercial description(s):** EB+ Info Centre 2

0.3 **Means of identification of type, if marked on the component/separate technical unit:**

Self-adhesive label.

0.3.1 **Location of that marking:** Label located on the rear face of product

0.5 **Name and address of manufacturer:**

Haldex Brake Products Limited
MIRA Technology Park
Lindley
CV13 6DE
United Kingdom

0.7 **In the case of components and separate technical units, location and method of affixing of the EC type approval mark :**

A label attached to the unit casing.

0.8 **Address(es) of the assembly plant(s):**

BMS Circuits
Avenue Paul Gelos
BP531
FR-64105 Bayonne
France

1 **This ESA shall be approved as a component.**

2 **Restrictions of use and conditions for fitting:**

24V negative ground vehicles only.

Fitting is to be in accordance with Haldex installation instructions.

3 **Electrical system rated voltage:**

24V, negative ground.

Appendix 3 – List of variants covered by the approval

The following variants are covered by this approval:

815 041 XX1

815 046 XX1

815 049 XX1

815 050 XX1

The character ‘X’ in the part number may be any number 0-9 and is used to identify slight differences in the mechanical components used in the assembly of Info Centre 2.

Revision History

Issue:	Ref:	Date:	Revision
1	PR2021	25/06/09	Original Approval
2	C6418	18/03/13	Contract manufacturer updated from Jabil to MSL Circuits and new contract manufacturer source added, BMS Circuits.
3	C7128	12/09/17	All sheets – Haldex design authority & address updated to Lindley Sheet 11 – Appendix 2 title amended to reflect approval update to ECE R10.05 Sheet 11 – Removed MSL Circuits from assembly plant list Throughout document – Deleted BPW branded assembly options
4			Sheet 10 – Document history revised to accurately reflect that Jabil was replaced by BMS Circuits as the manufacturing location for the first extension of the approval. Sheet 10 Second Approval Update point 2 simplified as recommended at review Sheet 11 Section 0.3 – Description changed to accurately answer requirement Sheet 11 Section 0.3.1 – Description changed to identify location of label

TECHNICAL SERVICE

TECHNICAL REVIEW & DECLARATION OF PROPER PROCEDURES

VCA JOB NUMBER: EAT387323

MANUFACTURER: Haldex Brake Products Limited

ADDRESS: MIRA Technology Park
Lindley
Warwickshire
CV13 6DE
United Kingdom

MAKE/MODEL: Haldex Brake Products Ltd / EB+ Info Centre 2

This is a clerical extension only to cover the following changes:

1) Change in location of design authority (and approval holder) from Redditch to Lindley, UK
2) Update of approval to Revision 5, Supplement 1
   As the model does not have, nor interface with, a rechargeable electrical energy storage system (REESS), the type approval testing originally carried out to UNECE Regulation 10, Revision 3 remains valid and therefore no re-testing is required.
3) Removal of variants 815 044 XX1 and 815 047 XX1 as they are no longer sold under the BPW trade name.

The undersigned confirms that the tests conducted under the above job number have been carried out in accordance with the requirements of the specified Regulation/Directive and the Licence between HORIBA MIRA Ltd. and VCA relating to type approval testing.

The undersigned has not been involved in any design nor development work on the products to be approved nor, any related product.

SIGNED:

NAME (in capitals): STUART AUST

DATE 29 January 2018

UK Approval Authority | Vehicle Certification Agency
12-Feb-18