RELEASE INFORMATION

Project name		Project No
Anybus Communicator Generic CAN		7414
Software	Software version	Release date
Application	Version 1.08 Build 02	2013-09-03

This release contains:

- This document

- Firmware Packages

    o CANopen – "FWP_COMMUNICATOR_CAN_CANOPEN_V_1_08_02.fwp"

    o CC-Link – "FWP_COMMUNICATOR_CAN_CC_LINK_V_1_08_02.fwp"

    o ControlNet – "FWP_COMMUNICATOR_CAN_CONTROLNET_V_1_08_02.fwp"

    o DeviceNet – "FWP_COMMUNICATOR_CAN_DEVICENET_V_1_08_02.fwp"

    o EtherCAT – "FWP_COMMUNICATOR_CAN_ETHERCAT_V_1_08_02.fwp"

    o EtherNet/IP –
       "FWP_COMMUNICATOR_CAN_ETHERNET_IP_2PORT_V_1_08_02.fwp"

    o ModbusRTU – "FWP_COMMUNICATOR_CAN_MODBUS_RTU_V_1_08_02.fwp"

    o ModbusTCP –
       "FWP_COMMUNICATOR_CAN_MODBUS_TCP_2PORT_V_1_08_02.fwp"

    o PROFIBUS – "FWP_COMMUNICATOR_CAN_PROFIBUS_V_1_08_02.fwp"

    o PROFINET IO – "FWP_COMMUNICATOR_CAN_PROFINET_IO_V_1_08_02.fwp"

    o PROFINET IRT – "FWP_COMMUNICATOR_CAN_PROFINET_IRT_V_1_08_02.fwp"

- Configuration files labelled: "SW release 1.08 Build 02"

    o CANopen EDS file – "ABC_CAN_CANOPEN_V_1_12.eds"

    o ControlNet EDS file – "005A000C00520100.EDS"

    o DeviceNet EDS file – "005A000C00510100.EDS"

    o EtherCAT ESI file – "ABC_CAN_ETHERCAT_V_1_08.xml"

    o EtherNet/IP EDS file – "005A000C00530100.EDS"

    o PROFIBUS GSD file – "HMSA1838.gsd"

    o PROFINET IO GSD file – "GSDML-V2.2-HMS-ABC_CAN_PROFINET_IO-
       20130902.xml"

    o PROFINET IRT GSD file – "GSDML-V2.2-HMS-ABC_CAN_PROFINET_IRT-
       20130902.xml"

- ABS File Systems

    o EtherNet/IP ABS – "AB4606-ABS-EIP_2P/FILESYSTEM_EIP_EIT_V_1_4.zip"

    o Modbus TCP ABS – "AB4608-ABS-EIT_2P/ FILESYSTEM_EIP_EIT_V_1_4.zip"

    o PROFINET IO ABS– "AB4607-ABS-PRT /FILESYSTEM_PRT_PIR_1_1.zip"

    o PROFINET IRT ABS– "AB4609-ABS-PIR/FILESYSTEM_PRT_PIR_1_1.zip"

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Reason for release:

Update to pass ODVA conformance test.

Updated EtherNet/IP, PROFINET IO & PROFINET IRT fieldbus interface versions.

Added "Clear buffer in error passive" configuration option.

Supported hardware:

Firmware can be downloaded to ABC-CAN hardware with carrier board PCBs marked 1019-1.1.1.
Supported versions of ABS fieldbus interfaces are:

CANopen: 2215-1.0.1
DeviceNet: 3266-2.2.1
EtherNet/IP: 2221-2.2.1
PROFIBUS: 3261-2.1.1 (2.2.1)
PROFINET IO: 2204-2.1.1
EtherCAT: 2220-3.3.1
CC-Link: 3288-1.0.1
ControlNet: 4030-1.32
ModbusRTU: 4125-1.2.2
ModbusTCP: 2221-2.2.1
ProfinetIRT: 2222-1.4.1

Compatibility:

EDS and GSD files older than those supplied in this release are not compatible with this firmware and need to be updated.

How to upgrade from previous versions:

It is very important that the following steps are performed in correct order; otherwise the module may be unusable and must be sent back to HMS for recovery.

Please see separate Firmware Upgrade Instruction, also included in the ZIP-file: "FWDL instructions Communicator CAN SCM-1300-006_1_00.pdf"

Known limitations:

- **Error passive not always detected on higher baud rates if CAN cable is disconnected** – If the CAN cable (including termination) is disconnected during operation and a baud rate of 500k or higher is used, the ABC does not enter error passive mode. *Internal ID 0006301*

- **Wrong serial number information read from fieldbus on EtherCAT and CANopen** – The serial number that can be read out through the network does not match what is printed on the label. *Internal ID 0006220, 0006033*

- **Profibus DP requires 1 byte in and 1 byte out** – Configurations on a Profibus DP module currently requires 1 byte to be mapped in each direction.

- **Received CANopen PDOs with fewer bytes than configured are accepted -** When sending a PDO with fewer bytes of data than configured in the RPDO on the communicator, the communicator consumes it. The data mapped in the RPDO that is not filled with the data from the consumed PDO is filled with random values.

- **No CANopen emergency messages are sent for mismatched PDO sizes** – No emergency messages are returned by the communicator when sending PDOs that contain more or less bytes than the configured RPDO size on the communicators CANopen side.

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Updated in version 1.08

- New functionality

  - **Modbus Offline timeout** – New configuration option that enables Modbus TCP requests to bring the network state to Online. Describes the time since last received request that the state shall remain Online. If 0, Modbus TCP requests does not affect Online/Offline status. Previously this was configurable via the onoffln.cfg on the EtherNet/IP and Modbus TCP file systems.

- Improved functionality

  - **EtherNet/IP Run/Idle header toggles Online/Offline** – An EtherNet/IP connection in RUN mode (or Modbus, see Modbus Offline timeout above) is now required for the network state to become Online.

- Bug fixes

  - **Fatal error if multiple bits are set in bitmsg to gcan_TxTask** – Task now handles multiple simultaneous requests properly. Internal ID: #9228

Updated in version 1.07

- New functionality

- **Clear CAN buffer in Error passive** – New configuration option. If the CAN controller signals Error Passive and this option is enabled, CAN frames that are not successfully transmitted while will be discarded. If disabled, the old behaviour of buffering up to 255 frames that will be released when the error is resolved is kept. Error passive is usually caused by a disconnected CAN cable.

- Improved functionality

- **EtherNet/IP**

  o **Update of ACD in TCP/IP stack** – The ACD functionality in the TCP/IP stack has been updated to support revision 3 of the CIP TCP/IP Interface object. This includes support for semi-probing and updated timing constants. Internal ID: 0005546, 0007457

  o **Revision 3 of CIP DLR object** – The CIP DLR object has been updated to support revision 3 of the DLR object. This includes two new bits defined in attribute 12, capability flags, and an updated response to the Get_Attribute_All service.

  o **Support for new DLR frames** – The module can now handle the new DLR frames introduced in the CIP specification Volume 2 Edition 1.14. This includes handling the Flush_Tables frame, transmitting Learning_Update frames, forwarding Learning_Update frames and Advertise frames from other modules.

- Bug fixes

- **Fatal event on reset from fieldbus** – Fixed an issue where the module sometimes crashed if a reset from fieldbus was received on EtherNet/IP or CANopen. Internal ID: #8595

- **EtherNet/IP**

  o **Disabled hidden IP address DIP switch** – The DIP switch hidden under the ABC housing is now disabled. Also, the configuration capability attribute of the TCP/IP Interface object no longer indicates that IP settings may be obtained from hardware: 0008962, 0008609.

  o **Quality of Service object attribute 4-8 returns wrong values** – The module did not return values previously set with the Set_Attribute_Single service when a Get_Attribute_Single service was received. The values returned were the currently used ones. Also the values stored in NV memory were read at start up but they were not written to the QoS object. Internal ID: 0008552, 0008556.

  o **Line termination errors when storing ethcfg.cfg** – When storing new values to the configuration file there were missing line terminations after one configuration value and too many line terminations after another configuration value. Internal ID: 0008612.

  o **Failing DLR ring mode when 2 supervisors are present** – The cause of the problem was that the switch did not manage the bi-directional DLR beacon frames that were transmitted by the supervisor. The switch will now be configured to forward packets addressed to the supervisor's MAC address to both ports. Internal ID: 008961.

  o **QoS and other settings are 0 if Ethernet settings are used** – When Ethernet settings are used in the ABC-CAN configuration, QoS and ACD settings were not read from the NV configuration upon initialization. Internal ID: 0008910.

- o **Uses the sequence id from the last received Announce frame incorrectly –** The module incorrectly used the stored sequence id of the last DLR announce frame when transmitting DLR frames. A new sequence id counter has been added to be used when it transmits DLR frames. Internal ID: 0009098.

- • **PROFINET IRT**

  - o **Configured Station Name not cleared when setting non-permanent Station Name** – When the commissioning tool is setting a temporary Station Name the intention is that the module should clear any previously stored Station Name. This is likely not a problem in real-world applications as there are, as far as is known, no tools setting temporary station names. During conformance testing this is tested though, and there might be tools in the future using this functionality. This has been corrected so that when a temporary station name is used any previously stored station name will be cleared, and at next start-up there will be no station name in use. *Internal ID: 0008009.*

  - o **Potential certification issue with UDP port number in connect response and End point mapper –** When receiving a request to read the "End point mapper" the Anybus module would respond to this request with incorrect port number (the port number which is specified with PROFINET IO specification 2.2). As of PROFINET IO specification 2.3 the port number should be 0xC000 instead.
    There are no practical consequences of this issue to the end user, apart from PROFINET IO conformance test.
    This bug has been corrected by an override to change the default dynamic port to 0xC000 when using bind. *(see issue 0007525)*

  - o **Conformance test issue - Shared Device** – With PROFINET IO it is possible for two (or more) IO Controllers to control different part of a devices' output data – this is called Shared Device. As of version 3.04 this has been supported in the Anybus module. However, this functionality has not been fully supported internally and the Anybus interface towards the host application cannot handle this kind of situation, thus the number of AR:s has been decreased from 2 to 1.
    For existing applications there should be no consequence as this functionality has never been usable. If an IO Controller would open up a Shared Device connection it would now be denied to do so. *(see issue 0007732)*

  - o **DCP Signal "Flash once" is not implemented according to PROFINET IO spec** – During installation it is possible to use the DCP Signal functionality to identify PROFINET IO devices on the network. When sending this request to the Anybus module it will display incorrect LED-sequence, compared to the PROFINET IO specification. The displayed LED-sequence of the Module Status LED is documented in the manual, thus there should not be a real world problem.
    This bug has been corrected by changing the blink frequency to 1 Hz. *(see issue 0007804)*

  - o **There is a race condition in the time out handling in the SNMP implementation** – When an SNMP request is received and it cannot be handled by the PROFINET IO stack it is forwarded to the VxWorks operating system. When the PROFINET IO stack is waiting for the response from the VxWorks operating system there is a race condition if the response comes very close to a set timeout time. When this happens a fatal error (that is, the Anybus module will stop execution and leave the network, switch will be disabled) is triggered and the execution is stopped. This means that any on-going PLC communication will be interrupted until the Anybus module has been re-started and re-initialized. Modules connected to the Ethernet switch of the Anybus module will lose their link and communication going through the Anybus Ethernet switch.
    The race condition has been eliminated and a fatal error will no longer be thrown in cases where the response and the timeout are given triggered in close proximity.

  - o **Irregularities between the File System's 8kB Used Sector Field and the 4MB File System Memory** – One error related to this problem causes the file system to loose space after a firmware upgrade *(see issue 0006967)*. If this error occurs, simply restart ABS-PIR and CheckDisk will correct this error. Other errors which are corrected by CheckDisk are

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related to irregularities between the File System's 8kB Used Sector Field and the 4MB File System Memory. In some cases data was found on the Flash memory while it was supposed to have been deleted or the file system was referring to data blocks which were in fact already empty. Such irregularities may occur when turning off the power while data are deleted from the Flash memory or when data are written to the <u>Flash memory, and these errors are corrected by the</u> CheckDisk function.

- **PROFINET IO**

  o **Device sends too many cyclic telegrams** – If the IO controller stops sending cyclic telegrams (for example if the cable is cut) then the module might send too many cyclic telegrams (3-6 cyclical telegrams are allowed) before the watchdog of the PROFINET IO time out. This bug does not cause any actual problem for the device, and the problem is only detected if a pre-conformance test is run. Therefore, upgrading from a previous firmware version isn't necessary unless you want to pass a related pre-conformance test. *Internal ID: 0008578.*

  o **Configured Station Name not cleared when setting non-permanent Station Name** – When the commissioning tool is setting a temporary Station Name the intention is that the module should clear any previously stored Station Name. This is likely not a problem in real-world applications as there are, as far as is known, no tools setting temporary station names. During conformance testing this is tested though, and there might be tools in the future using this functionality. This has been corrected so that when a temporary station name is used any previously stored station name will be cleared, and at next start-up there will be no station name in use. Internal ID: 0008007.

  o **Potential certification issue with UDP port number in connect response and End point mapper** – For End point mapper "lookup responses", the UDP Port now uses a value in the range from 0xC000 to 0xFFFF. Internal ID: 0007527.

  o **DCP Signal "Flash once" is not implemented according to PROFINET IO spec** – Implemented the DCP Signal "Flash once" according to the PROFINET IO spec (module status LED green 1Hz). Internal ID: 0007814.

  o **IOPS for interface/port sub-modules not set to BAD on mismatch** – IOPS for Interface/Ports have been corrected to be set to BAD in case of a mismatch for the configuration. Internal ID: 0006744.

  o **Incomplete code to detect 4ms cycle time in controller cut-off detection** – When commissioning the IO Device to be using, for example, 4ms cycle time with a send-clock of 2ms the module would sometimes incorrectly drop the IO connection. Internal ID: 0007298.

  o **Bad TCP checksum** – The TCP checksum error was corrected. Internal ID: 0006569.

  o **Pad DHCP frames to 312 bytes** – Changed so DHCP options field always is padded to maximum size of 312 bytes in frames sent. This is to be compliant against legacy DHCP server implementations. Internal ID: 0007827.

  o **PROFINET interface is not started if Station Type is set to 31 chars** – The maximum station type length was set to 31 chars + null = 32, allowing the PROFINET interface to be started properly. Internal ID: 0005879.

  o **Error regarding fault codes reported by conformance test lab** – The "Read response, Error" from Index 0x802a now shows "invalid index" instead of incorrectly "Invalid sub-slot". Internal ID: 0007857.

- Other changes

Updated in version 1.06 Build 01 C

- New functionality

- Improved functionality

  - **Name of DAP in GSD-files** – With some commissioning tools the different access points of the Device (the so called DAP's, Device Access Point) are not displayed correctly. The consequence of this is that it might be hard, or not possible, to choose the correct access point. To improve the situation the name of the different DAP's have been renamed to have unique names so that it is easier to choose the correct one.

- Bug fixes

- Other changes

Updated in version 1.06 Build 01 B

- New functionality

- Improved functionality

  - **ACM CanOpen** – Improved compatibility with ACM CanOpen.

- Bug fixes

- Other changes

Updated in version 1.06 Build 01

- New functionality

- Improved functionality

- Bug fixes

  - Fixed an issue where the ABC configuration was not interpreted properly if there were several CAN frames without any data/constant/range objects configured. This caused the following transactions in the configuration to be excluded from the actual configuration. Internal SW issue ID 7567.

- Other changes

Updated in version 1.05_B

- New functionality

- Improved functionality

- Bug fixes

- Other changes

Updated EtherNetIP EDS file to increase compatibility with Rockwell EDS AddOn profiles.

- Changed Catalog field.

- "Allow Value Edit" bit is now set for the AssemN entries to allow choosing a structure for the assembly data.

Updated in version 1.05

- New functionality

- **Dynamic transactions** – To allow a fieldbus master to dynamically change the configuration of a transaction, support for dynamic transactions have been implemented. It is possible to create one dynamic produce and one dynamic consume transaction. The dynamic parameters of the transaction are mapped on the fieldbus out area. *Internal ID 0006977*

- **Transaction status byte** – This status byte has been implemented to give a better view of the status of a transaction to the fieldbus master. It is available for consume and response transactions and can optionally be mapped on the fieldbus in area. As the livelist only displays if there are any error this byte displays the error in detail; data error, timeout error and not executed. *Internal ID 0007011*

- **Silence time** – To guarantee that no starvation on the network occurs for communication objects with low priorities a silence time parameter has been implemented to limit the network access for the Anybus Communicator CAN. This timer is disabled by default but can be enabled by configuring a timer value in milliseconds. This parameter defines the minimum time that has to elapse between the transmissions of two consecutive CAN frames. *Internal ID 0006954*

- **Enable/disable consistency check** – The possibility to disable the data consistency within a transaction has been implemented to allow proprietary protocols to use a superposed protocol taking care of data consistency. This will make a consume or a response transaction, containing multiple frames, to update the fieldbus in area at every single reception of a frame that belongs to the transaction. *Internal ID 0006554*

- Improved functionality

- **Produce transaction can be trigged by another produce transaction** – The possibility to trig a transaction using another transaction's transmission complete byte has been implemented. This will allow control of transmission order of a number of CAN frames. *Internal ID 0006959*

- **New characters allowed by xml parser in attribute values** – The following characters are allowed by the xml parser; !"#$%&'()*+,/;<=>?@[\]^`{|}~. These characters are possible to use in the input boxes in the Anybus Configuration Manager if there are no other mentioned restrictions.

- Bug fixes

- **Fixed problem where CAN messages could be sent in wrong order** – Changes have been done to guarantee that CAN messages are sent in correct order. *Internal ID 0006668*

- **Fixed problem where writing to flash fails in rare occasions** – It has been observed that configuration files downloaded from Anybus Configuration Manager contains invalid data when stored in the flash memory on the module. A fix has been implemented to detect these write errors and a FATAL event will occur if a write operation fails multiple times. *Internal ID 0006315*

- **Fix of subnet status LED Behavior** – At startup the subnet status LED was flashing red (transaction error/timeout) until all transactions had been executed successfully. This does not represent the correct state of the module and a new flashing green state has been added. The subnet status LED will flash green until all transactions have been executed once or until a condition in any other LED state have been met. *Internal ID 0006359*

- **Fixed problem where additional frames were produced on on/offline transition** – It has been observed that a produce transaction with update mode set to trigger byte and offline option set to clear data produces additional frames when the fieldbus goes offline. The internal procedure to trig the clear data transmission of a produce transaction has been updated to avoid this problem. However, this change will also affect the current behaviour when the fieldbus goes online again. Until now, the present fieldbus data have been transmitted on the CAN network automatically when the fieldbus goes online. For now, this will not occur. Still it is possible to manually affect the trigger byte to trig a transmission when the fieldbus goes online. *Internal ID 6306*

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- **Fixed problem where wrong serial number on were displayed on PROFINET IO/IRT web pages** – Update in the software has been done to present the correct serial number on the web page. *Internal ID 0006031*