Release Information
ABCC40 EtherCAT

This release contains:

Type	File/Subcomponents	Label	File updated in this release
This document	-	-	Yes
HIFF file	ABCC_40_ECT_7305_2_21_01.hiff	7305_2.21.01	Yes
	SW	7305_2.25.01	No
	HDL	7305_2.06.02	Yes
License file	LICENSE.txt	7305_2.25.01	No
ABP header files	abp.h abp_asm.h abp_ect.h abp_etn.h abp_fsi.h abp_fusm.h abp_mdd.h abp_nwetn.h abp_safe.h abp_smtp.h abp_soc.h abp_sync.h	8041_7.76.01	No
ESI files	HMS Anybus CompactCom 40 EtherCAT 2_21.xml HMS Anybus CompactCom 40 EtherCAT 2_21 EoE Disabled.xml	7305_2.21.01	Yes

Package history:

Release	Update
First release	–

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ABCC40 EtherCAT

Reason for release:

Fix for incorrect handling of EtherCAT commands with length 0 bytes.

Affected functionality

		Description
Affected functionality	☐ Network conformity ☐ Application interface ☒ Network interface ☐ IT-functionality ☐ Security ☐ Stability ☐ Other	Fix for incorrect handling of EtherCAT commands with length 0 bytes.

Field update recommendation

		Description
Field update recommendation	☐ Update required for conformance testing ☒ Only devices in the field showing problems ☐ All devices in the field	Fix for incorrect handling of EtherCAT commands with length 0 bytes.

Compatibility:

Hardware

Firmware can be downloaded to an ABCC40 Ethernet hardware with the following hardware IDs:

Hardware-ID (48 bits)
0x040303000001
0x040303000002

Host application firmware

Change	Description
-	Release is fully backwards compatible with previous version

Network

Change	Description
-	Release is fully backwards compatible with previous version

EtherCAT slave information file (ESI)

ESI	Firmware	Description
Previous ESI file	This firmware	This release will work with the previous ESI file, meaning existing applications will not need to be updated, unless version checking is enabled in the configuration.

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ESI	Firmware	Description
HMS Anybus CompactCom 40 EtherCAT 2_21.xml	This firmware	This ESI file is intended for modules with EoE enabled.
HMS Anybus CompactCom 40 EtherCAT 2_21 EoE Disabled.xml	This firmware	This ESI file is intended for applications containing modules produced before 2.00 was released. These modules does not contain an Ethernet MAC address so EoE functionality is automatically disabled for these modules.
HMS Anybus CompactCom 40 EtherCAT 2_21.xml	Previous firmware	This ESI file can be used with the previous firmware unless version checking is enabled in the master.
HMS Anybus CompactCom 40 EtherCAT 2_21 EoE Disabled.xml	Previous firmware	This ESI file can be used with the previous firmware unless version checking is enabled in the master.

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 recover.

Note: When upgrading to this version from a version lower than 2.06 the module will enter the EXCEPTION state during the first startup and the non-volatile storage will be cleared.

Note: When upgrading from version 1.XX to 2.XX the file system on the module needs to be formatted before it can be used.

Firmware upgrade:

FTP:

1. Initialize the module
2. Upload the .hiff-file using FTP to the "\firmware" folder.
3. Power cycle the module and wait until the module status LED stops flashing red and green (Do absolutely not turn off the power during this time). After the update is finished the module will restart itself.
4. Update complete!

Firmware manager:

1. Mount the module on a Anybus USB Board 2
2. Start Firmware Manager II
3. Load the HIFF file into the program's Firmware Repository
4. Follow the Manual Update Wizard in the program
5. The update is complete when the wizard is completed

Known limitations:

No known limitations.

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Updated in version 2.21:

Title	Category	Description	Issue(s)
Frame forwarding of 0 length datagrams.	Bug fix	Fixes frame forwarding problem when datagrams have data size 0.	A9208-29

Updated in version 2.20:

Title	Category	Description	Issue(s)
EtherCAT ENUM data types	New functionality	It is now possible to implement EtherCAT ENUM data types of lengths 1-32 bits. It is also possible to have an EtherCAT ENUM data type on an entry within a RECORD object.	A7305B-341
Entry descriptions for 0x1C32 and 0x1C33	Bug fix	The module now returns the size and names for entries on 0x1C32 and 0x1C33 also for entries that are defined in the EtherCAT specification but not supported by the module.	A7305B-350
Complete access upload towards 0x1C32 and 0x1C33	Bug fix	Padding data is now included in complete access SDO upload responses for entries defined in ETG.1020 but not supported by the module for objects 0x1C32 and 0x1C33.	A8010-62
Complete access download towards 0x1C32 and 0x1C33	Bug fix	Padding data is now expected in complete access SDO download requests for entries defined in ETG.1020 but not supported by the module for objects 0x1C32 and 0x1C33.	A8010-63
Factory default reset of NVS parameters	Bug fix	Some non-volatile parameters did not reset correctly upon factory-default reset.	A8015-34
Modular device profile device type	Bug fix	Corrected device type value when running modular device profile (now 5001 instead of 0x5001).	A8042-60
Data type override	New functionality	The host application can now override the data type for any object entry using the Get_Data_Type command of the EtherCAT host application object.	A8042-59
Object list generation	Bug fix	It is now possible to read out a correct object list also when more than 256 ADIs are implemented in a host application using an ABCC30 operating mode.	A8042-58

Updated in version 2.19:

Title	Category	Description	Issue(s)
PDO configuration objects	Bug fix	Fixed problem where safety PDO mapped object were overwritten by assembly mapped object.	A8042-57
Web server fix	Bug fix	Fixed so that the web server can be disabled.	A8031-665
Web server fix	Bug fix	Fixed so that metadata.json and metadata2.json is aborted when a connection closes.	A8031-668 A8024-73
Web server fix	Bug fix	Fixed issue which could result in a crash if metadata.json or metadata2.json requests takes more than 3 minutes to complete	A8031-667 A8024-74
FTP server fix	Bug fix	FTP operations could sometimes crash the module	A8023-73
DHCP client fix	Bug fix	Fixed initial DHCP xid is 0.	A8022-172
TCP retransmission fix	Bug fix	Reduced number of TCP retransmissions to get faster connection timeout of faulty connections.	A8022-174

Updated in version 2.18:

Title	Category	Description	Issue(s)
Sync manager parameter objects	Bug fix	Corrected entry names on objects 0x1C32 and 0x1C33 according to EtherCAT specification.	A7305B-313 A8010-60
Sync manager parameter objects	Bug fix	Changed access rights to read only for sub-index 2 on object 0x1C33 to match the EtherCAT specification.	A8010-59

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Title	Category	Description	Issue(s)
Sync manager parameter objects	Bug fix	The module no longer returns an SDO abort code on complete access SDO upload requests towards 0x1C32/0x1C33 when the host application has added sub-indices using the EtherCAT host object "Object sub-index translation" attribute.	A8305B-315 A8010-57
Number of sub-indices on PDO configuration objects	New functionality	The attribute "Max number of ADI mappings" on assembly mapping instances is now used by the module as the maximum number of sub-indices for the corresponding PDO configuration object.	A7305B-316 A8042-56
Number of sub-indices on PDO configuration objects	New functionality	Added assembly mapping instance attribute 14 (Max number of ADI mappings) to abp_asm.h	A8041-100
DHCP	Bug fix	Fix for incorrect DHCP address release. T0 (total lease time) was truncated to 65535 seconds if T0 > 65535. As T1 and T2 arent truncated they may end up being later in time than the lease time resulting in the address being released before attempting renew/rebind.	A8022-166
DHCP	Bug fix	DHCP XID received in DHCP offer is now re-used in DHCP request.	A8022-167
Web server	Bug fix	Fixed issue causing web access file containing path to other access file not working	A8031-661

Updated in version 2.17:

Title	Category	Description	Issue(s)
Serial firmware upgrade stability	Bug fix	Improved stability of firmware download when using UART/serial programming interface	A7044-38
Get Entry Description Object Access override	New functionality	Added command for getting Object Access in Get Entry Description Response from the EtherCAT host application object. This command is used to override the “Object Access” information present in the Get Entry Description response. This can be used e.g. to change the access rights of an object to make it writeable only in the PREOP state, or to set the “Setting” flag for object entries.	A7305B-222, A8038-47, A8041-99, A8042-52
PDO configuration object names	New functionality	Made it possible to use the assembly instance Name attribute as the object name for the corresponding PDO configuration object.	A7305B-241, A8038-45, A8042-51
Sync manager parameter objects	Improved functionality	Updated the behavior for the Sync Manager Parameter objects (0x1C32 and 0x1C33). These objects no longer have any sub-indices in SAFE-OP and OP if the corresponding sync manager is disabled.	A7305B-244
FoE handling	Improved functionality	The ABCC40-ECT will now respond to FoE_Data requests with FoE_Busy while the file system is writing the data received in the FoE_Data request.	A7305B-288
EEPROM Sync Manager category	Bug fix	All content of the assembly mapping object and its instances (if implemented by the application) is now read by the module during the NW_INIT state. This is done to be able to set the correct sizes for sync manager 2 and 3 in the EEPROM Sync Manager Category.	A7305B-292
Internal reset	Bug fix	More robust internal (self induced) firmware reset handling.	A8040-12

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Title	Category	Description	Issue(s)
TCP/IP stack bug fix	Bug fix	Fixed potential fatal problem in the TCP/IP stack. If a IGMP request frame with a Max Response Time value of 0 or 1 was sent to the module a Divide by zero exception occurred and triggered a fatal event.	A8022-160
Web server	Bug fix	Changed error code returned when object cannot be created due to path size limitations from 409 to 500	A8024-70
Modbus operating mode	Bug fix	Modbus operating mode: It is no longer any problem to use code 70 to set virtual attributes at every start. The flash is only written when if the content is updated.	A8026-311
Segmentation client functionality	Bug fix	When the module acts as a segmentation client it will no longer include any data in commands after the first command during a segmentation session. According to the specification only the destination object, instance number, command number and command extension 0 have to match for all commands during a segmentation session. Previously undefined data was sent in subsequent commands.	A8026-306
Anybus object reset command	Bug fix	The reset command of the Anybus object sets the module in Exception state only if the request is correctly formatted.	A8026-304
New ENUM string	New functionality	Enum string "Security Error" of ABP exception code 0x0D has been added.	A8026-305
Modbus operating mode	Bug fix	The modbus opearting mode did not work/was unstable for some software releases.	A8026-302
Anybus object reset command	Bug fix	Module now enters exception after the Anybus reset has been completed. Before it entered exception just before performing the actual reset.	A8026-303
New H_APPSTATUS error code	New functionality	Added support for new H_APPSTATUS error code “General synchronization error”. This error code is translated to EtherCAT AL Status code 0x001A Synchronization error.	A8041-98

Updated in version 2.16:

Title	Category	Description	Issue(s)
Overriding PDO assignment object content	New functionality	It is now possible to override the PDO assignment object content (0x1C12 and 0x1C13) using attributes 28 and 29 on the EtherCAT host application object.	A7305B-225
SII general category PDO related flags	New functionality	The host application can now override the values for the PdoAssign, PdoConfig and PdoUpload flags in the SII general category "CoE Details" field using attribute 30 on the EtherCAT host object.	A7305B-226
Memory leak in case of blocked EMCY messages.	Bug fix	EoE frames pending for transmission no longer blocks transmission of EMCY messages. This prevents a memory leak that could cause a FATAL event if mailboxes weren't read while triggering events that generates EMCY messages	A7305B-227
EoE Tx frame behavior	Bug fix	If a Tx EoE frame is re-queued due to a full send mailbox it will no longer automatically trigger a new attempt to put it in the send mailbox. Instead it will be attempted to add to the send mailbox when the send mailbox is read by the master.	A8010-50
EoE Tx frame behavior	Improved functionality	Queued EoE Tx frames are now discarded on transition to INIT state.	A8010-51

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Title	Category	Description	Issue(s)
DHCP notification to host application	New functionality	Added host application notification to the Ethernet host object instance attribute 16 (IP configuration) when DHCP is either enabled or disabled. Ethernet Host object attribute 16, IP Configuration, is being written if DHCP is disabled, even if no parameters in attribute 16 is changed. This is done in order for application to get a notification that DHCP is changed even if DHCP isn't included in the attribute. Applications may use this as an indication and then read the actual DHCP configuration from the Network configuration object.	A8022-155, A8031-538
ACD (Address conflict detection) behavior	Bug fix	Fixed an issue where subnet mask and gateway address might be reset to a previous value after a transition to INIT state. If ACD is enabled and the gateway address or subnet mask is changed these values might be reset to their previous values after a transition to INIT state. If a power cycle of the device is performed after the change of these addresses they will be retained also during a later transition to INIT state.	A8022-154
Web server functionality addition	New functionality	Added support for "Expect: 100-Continue" HTTP header in web server.	A8024-39
Anybus object Reset command	New functionality	Added support for the Anybus object Reset command. This command allows the host application to factory default the Network configuration object and the file system.	A8026-289
New attributes to abp_ect.h	New functionality	Added new attributes "Default TxPDO assign", "Default RxPDO assign" and "SII General category CoE Details" attributes to abp_ect.h	A8041-93
Anybus file system interface object	Bug fix	Fixed error code when writing to non-writable object attribute 16 "Disc type". Previously "Invalid command" was received, should be "Not settable".	A8051-43
JSON output escaping	Bug fix	Control characters contained in JSON output are now escaped correctly	A8071-4

Updated in version 2.15:

Title	Category	Description	Issue(s)
ESC behavior for read commands towards unsupported registers	Improved functionality	EtherCAT reads of undefined register space in the ESC will now return zeroes. This is in line with upcoming updates of the EtherCAT specification. This is a corner case which only ever affected EtherCAT masters which relied on undocumented behaviour in the EtherCAT protocol.	A7305A-16, A9208-26
Misconfigured FMMU behavior	Bug fix	A misconfigured FMMU configured with length 1, and a logical stop bit lower than the logical start bit, may generate an internal access in the ESC when a network command is directed to that adress. This is a extreme cornercase, which does not occur in normal operations.	A9208-27
Translation of PDO mapped padding ADI entries	Improved functionality	When mapping PADx ADI elements to read or write process data during the SETUP state, the corresponding PDO entries in the PDO configuration objects (0x16xx and 0x1Axx) will now show object index 0x0000 and sub-index 0x00 to indicate they are only used for padding. Earlier the normal ADI element -> CoE object entry translation scheme was used for padding entries on PDO configuration object as well.	A8042-47
Complete access SDO requests	Bug fix	It is now possible to issue SDO complete access requests towards CoE object entries corresponding to ADIs with a size of 254-255 bytes when using the 255 byte message channel. Earlier such requests generated an SDO abort code	A8042-46

Updated in version 2.14:

Title	Category	Description	Issue(s)
SII sync manager category	Bug fix	The module no longer updates the SII Sync manager category when the process data size changes after process data remap.	A7305B-219
EoE frame buffer memory leak	Bug fix	Fixed memory leak of EoE frame buffers on transition to INIT.	A7305B-220
Float SSI ASCII represenation	Improved functionality	ASCII representation of floating point data printed as SSI data through web server has been improved.	A8047-37
Names for 0x1C32 and 0x1C33	Improved functionality	The names for object 0x1C32 and 0x1C33 are now equal to the names specified in ETG.1020_V1i2i0.	A8010-45

Updated in version 2.13:

Title	Category	Description	Issue(s)
ABCC data type DOUBLE	New functionality	ABCC data type DOUBLE is now supported. DOUBLE is translated to EtherCAT data type Real64.	A7305B-212
Failure to map byte-aligned data after array of bits	Bug fix	Fixed problem with allowing mapping of byte-aligned ADI elements following a mapped array of bit data types (BITx/PADx) in a single mapping command (Map_ADI_Write_Ext_Area/Map_ADI_Write_Ext_Area).	A8026-284

Updated in version 2.12:

Title	Category	Description	Issue(s)
Modbus serial operating mode	New functionality	The Modbus serial operating mode is now supported.	A7305B-199

Title	Category	Description	Issue(s)
Modular device profile object acctess	Bug fix	Complete access upload requests towards sub-index 0 on objects 0xF030 (Configured module identity list) and 0xF050 (Detected module identity list) no longer return the coupler module ID.	A7305B-198
ESC DL Status register behavior	Bug fix	The "PDI Operational/EEPROM loaded correctly" bit is no longer cleared in register 0x110 "ESC DL Status".	A7305B-200
DHCP/static IP address handling	Bug fix	Fixed bug where the module would respond to ARP packets but no other IP packets after a link-down link-up event before response from DHCP server was received. This behavior only occurred with DHCP enabled and ACD disabled.	A8022-127
DHCP/static IP address handling	Bug fix	If both ACD and DHCP are enabled self conflict could earlier be possible.	A8022-128
New attributes on functional safety object	New functionality	Attributes 12 and 13,'Vendor block safe uc1/2' have been added to instance #1 of the Functional Safety Module object. These attributes contain the responses to the safety bootloader command Read_Vendor_Block.	A8026-272
Safety fail-safe information handling	Bug fix	In some cases the detailed information regarding a safety module entering fail-safe state was not propagated to the network.	A8026-271
Object 0x1011 handling	Bug fix	Corrected how expected size is calculated for object 0x1011.	A8038-42
SDO download abort code handling	Bug fix	Too little or too much data is now NAK:ed with corresponding abort code for static object entries.	A8038-32

Updated in version 2.11:

Title	Category	Description	Issue(s)
SEMI device firmware upgrade	New functionality	The ABCC will now reset the PHYs connected to the HMS ESC before sending POWER_ON Reset commands to the host application.	A7305B-192
SEMI device firmware upgrade	New functionality	Added a delay for the ACK of the last FoE Data request of FoE write file transfers. This will allow the host application more time to create the firmware candidate area file used to indicate the FW upgrade result on the BOOT->INIT transition.	A7305B-193
New attribute on the EtherCAT host object	New functionality	Added new attribute "Last FoE Data ACK delay" to the EtherCAT host object and abp_ect.h. This attribute can be used to control for how long the ABCC delays the ACK on the last FoE_Data request during FoE file write transfers.	A8041-84
Overflow in Sync Manager Watchdog calculation	Bug fix	Due to overflow in sync manager watchdog time calculation the watchdog time could become shorter (or disabled) than expected. This has now been corrected.	A8010-39
Web page freezes	Bug fix	Fixed that web server sometimes incorrectly replied with an "501 Not Implemented" HTTP message to client.	A8024-28
Checkbox of ADI type BOOL is not checked on the Parameters page	Bug fix	BOOL ADIs are represented on the Parameter web page using checkboxes. The checkbox was not set, even if the corresponding ADIs value was TRUE. This has now been corrected.	A8031-325
DHCP status on Status webpage is not visible if NC inst 6 is disabled	Bug fix	The whole DHCP status line was removed from the status web-page when DHCP was disabled (IP settings set statically). Now the DHCP status line is always shown independent of how IP settings are assigned, statically or from DHCP.	A8031-326

Title	Category	Description	Issue(s)
NW specific configuration button does not have a uniqe identifier	Bug fix	The "save setting" buttons on the network configuration web page is assigned uniqe names.	A8031-396
New Sync object attribute missing in abp_sync.h	New functionality	Added Application Cycle Factor attribute to abp_sync.h.	A8041-81
IP header validation in EtherCAT frames.	Bug fix	Added validation of IP version and IP header length of UDP EtherCAT frames.	A9208-25

Updated in version 2.10:

Title	Category	Description	Issue(s)
String handling in EtherCAT slave controller EEPROM	New functionality	It is now possible to get values other than CoE object 0x1008 set as SII order number and SII device name.	19230
Override entries on sync manager parameter objects from host application	Improved functionality	It is now possible for the host application to override existing sub-indices on 0x1C32 and 0x1C33 using the EtherCAT host object.	19188
Explicit device identification	Improved functionality	The "ID loaded" bit in the AL Status register is no longer set when the master requests the explicit device ID through register AL Control if explicit device identification isn't supported by the ABCC/host application.	19221
Number of supported EMCY messages	Improved functionality	There can now be one active EMCY message for each diagnostic object instance, preventing EMCYs to be discarded if diagnostic instances are created in the INIT state.	19212
Get_Enum_String command on NC object instance 1	Bug fix	Get_Enum_String command towards instance 1 of the network configuration object is now handled correctly.	16405
HIFF file validation problem	Bug fix	HIFF file validation done on transition from BOOT->INIT when a file has been downloaded to the FW candidate area no longer causes issues with the socket interface object functionality.	19233
Default product name	Other change	The default product name has been changed to "Anybus CompactCom 40 EtherCAT".	19254
Local shift time support in Free run mode	Bug fix	The bit in 0x1C32:04 and 0x1C33:04 indicating support for local time shift is now only set when synchronization is supported.	19262
Issue with printf and sprintf functions	Bug fix	Corrected text display of 64 bit information printed from tasks with unaligned (8 byte) stack. Float (32 bits) is also affected since it is printed as a double.	19110
TCP/IP stack issue	Bug fix	Fixed a problem where the TCP/IP stack crashed when retransmitting a TCP packet if the first attempt to send that packet hadn't been completed by the MAC driver yet	19117
New JSON parameter	New functionality	Added a new parameter, named “inst”, to metadata.json and metadata2.json. The new parameter allows the user to address the instance by number, as opposed to before when only the instance by order number could be used.	18848, 19098
DHCP status information	Improved functionality	Removed the DHCP status information from the WEB status page when the DHCP Client functionality fully has been disabled.	18889

Updated in version 2.09:

Title	Category	Description	Issue(s)
BITx and BOOL1 data handling	Improved functionality	"Don't care" bits in data returned for BITx and BOOL1 ADIs are now cleared by the module.	19018
SEMI device firmware upgrade	Improved functionality	Correction for SEMI device firmware upgrade. The internal flag keeping track of if a firmware file has been downloaded to the firmware candidate area is now cleared whenever the firmware candidate area file is deleted	19040
EtherCAT state machine handling	Improved functionality	"EtherCAT state" attribute on the EtherCAT host object is now always updated whenever the AL Status register is changed.	19047
ENUM data type info read via SDO	New functionality	SDO requests towards enum description objects are now forwarded to the safety module when safety is enabled. If the safety module indicates that the object doesn't exist the same ENUM info handling as before is used.	19039

Updated in version 2.08:

Title	Category	Description	Issue(s)
FoE file transfers	Bug fix	The FoE state machine is now reset on transition to INIT to enable new FoE requests once mailboxes are enabled again..	18928
SEMI device firmware upgrade	Improved functionality	The ABCC will no longer ACK the INIT transition after a valid firmware file has been downloaded. It will stay in BOOT until reset by the host application.	18929
EtherCAT state machine handling	Bug fix	The module will now go to INIT state with AL Status Code 0x0015 (Invalid mailbox configuration in BOOT) if mailbox sync managers are disabled in the BOOT state.	18953
FTP server stability	Bug fix	Improved stability of FTP server. In some cases the module crashed when closing an FTP connection.	18888
New attributes on Application host object	New functionality	The module now supports attribute 9 (Product name), 10 (Firmware version) and 11 (Hardware version) used for product branding. These attributes are read if the corresponding attributes on the EtherCAT host object aren't implemented.	18559

Updated in version 2.07:

Title	Category	Description	Issue(s)
FoE file transfers	Improved functionality	Ongoing FoE file transfers are now discarded on transition to the INIT state.	18597
ABCC functional safety module object	New functionality	ABCC40-ECT now supports the commands Get_Safety_Output_PDU and Get_Safety_Input_PDU towards the Anybus functional safety object.	18618
Assembly mapping object used together with the socket interface	Bug fix	The stack size for the task responsible for EtherCAT commands was increased to avoid writing beyond it when the assembly mapping object is implemented in the host application, causing the module to go FATAL if the socket interface object is used.	18703
NW_INIT exception handling	Bug fix	Solved an issue where an exception in state NW_INIT caused a fatal event.	17342
Network Ethernet object	New functionality	Interface counters and media counters can now be read from instance 2 of the Network Ethernet object.	18559

Updated in version 2.06:

Title	Category	Description	Issue(s)
Support for FSoE	New functionality	Support has been added for safety modules supporting Safety over EtherCAT connected over the Anybus Safety Interface, part of the black channel.	18482
Abort code handling for complete access SDO download requests for 0x1C32 and 0x1C33	Bug fix	The module no longer returns an abort code if only writing a single entry on the 0x1C32 and 0x1C33 objects fails when using complete access.	18433
EoE link loss behavior	Bug fix	If EoE link is lost, and after it was re-established a new (different) IP address is assigned by a DHCP server, then TCP connections were not closed. Instead they could make retransmissions using the old IP address which isn't allowed to be used anymore.	18286
JSON functionality	Bug fix	Fixed so that web server will accept forms sent to server using JSON $.post() function.	18250
File system interface objects	Other change	Fully removed support for attribute 15 (Disk CRC) for the file system interface objects (both Anybus and Application).	18273
Anybus File system interface object	Other change	Revision was increased to 3 for the Anybus file system interface object.	18394
Status web page	Bug fix	Corrected minor alignment issue on status web-page.	18271
Network configuration object bug fix	Bug fix	Fixed a bug which caused NVS parameters to be reset if the actual attribute of the host name or domain name instances in the Network configuration object where read when the ABCC was in EXCEPTION state.	18073
DHCP option 61	New functionality	Added support for DHCP Option 61 (client identifier)	17966
Disable DHCP client functionality	New functionality	Added support to allow the client to disable the DHCP Client functionality.	17973
New attribute EtherCAT host object	New functionality	Added new attribute "FSOE Status Indicator" to the EtherCAT object used only for FSoE support.	18402
Rx- and TxPDO mappable object lists	Bug fix	Object 0x2001 will now be included in Rx- and TxPDO object lists if mappable in the corresponding direction when the Get_Instance_Numbers command isn't supported.	18416
ESC register 0x0981	Bug fix	Writability of register 0x0981 corrected.	18421
SHICP Wink	New functionality	The ABCC40-ECT now support the SHICP Wink command whenever EoE is supported.	16454
FoE behavior	Bug fix	Sending a FoE Read request with empty file name will now generate a "File not found error" instead of uploading module.nfo.	17418
Rx- and TxPDO mapping	Bug fix	The module will no longer accept PDO configuration object indices that is out of range (0x1600-0x17FF for RxPDO, 0x1A00-0x1BFF for TxPDO) when generating the PDO mapping	18488
Modular device profile bug fix	Bug fix	The ABCC40-ECT now enters exception instead of logging a FATAL event when modular device profile is supported but number of slots is set to 0.	18500
EtherCAT state machine behavior	Bug fix	INIT state will now be correctly indicated after delayed BOOT->INIT transition.	18507

Title	Category	Description	Issue(s)
Accepted values for objects 0x1C12 and 0x1C13	Improved functionality	Downloaded values towards object 0x1C12 must now be either 0 or in the range of 0x1600-0x17FF. Downloaded values towards object 0x1C13 must now be either 0 or in the range of 0x1A00-0x1BFF.	18489
Link/Activity LED flickering rate corrected	Bug fix	Flickering rate of link/activity LEDs changed to comply with Ethercat specification.	18505

Updated in version 2.05:

Title	Category	Description	Issue(s)
Explicit device identification shall be indicated in the SII	New functionality	Added functionality to set the IdentALSts bit in the EEPROM if the DeviceId has been set from application. Added an attribute to EtherCAT object to disable this functionality.	13799
GetDiskCRC attribute	Other change	Attribute 15 of the FSI object, GetDiskCRC has been removed.	18259

Updated in version 2.04:

Title	Category	Description	Issue(s)
Memory leak	Bug fix	Memory leak when in state PreOp or greater and not monitored by master. Only valid when module is using EoE. *Issue was previously stated to be included in version 2.03 but the actual code change was by mistake not included in that release.*	17882
PDI Watchdog	New functionality	Add EtherCAT PDI Watchdog functionality in the module. *Issue was previously stated to be included in version 2.03 but the actual code change was by mistake not included in that release.*	17947, 17864

Updated in version 2.03:

Title	Category	Description	Issue(s)
~~Memory leak~~	~~Bug fix~~	~~Memory leak when in state PreOp or greater and not monitored by master. Only valid when module is using EoE.~~	~~17882~~
~~PDI Watchdog~~	~~New functionality~~	~~Add EtherCAT PDI Watchdog functionality in the module.~~ *Only the ESC part of the PDI Watchdog functionality was implemented in this version, the PDI Watchdog is default enabled (reg. 0x410) and will start and possibly expire, indicating time-out (reg 0x110:bit 1), in the Init and Pre-operational state after the default time-out time (100ms). A possible workaround would be to specificly disable the PDI Watchdog by writing the value zero to this register during network start-up.*	~~17947, 17864~~
Modular device	New functionality	Modular Device - Implement a more forgiving detected - configured handling. Added attribute in EtherCAT host object (0xF5) to enable this functionality.	17844
HMSOS	Improved functionality	Misc. maintenance.	-
NVS	Improved functionality	Misc. maintenance.	-
LWIP	Improved functionality	Misc. maintenance.	-

Title	Category	Description	Issue(s)
HWS	Improved functionality	Misc. maintenance.	-
ABF	Improved functionality	Misc. maintenance.	-
ABFIT	Improved functionality	Misc. maintenance.	-
COP	Improved functionality	Misc. maintenance.	-
M2SXXX	Improved functionality	Misc. maintenance.	-
ABP	Improved functionality	Misc. maintenance.	-
ABFCOP	Improved functionality	Misc. maintenance.	-
HMSLIB	Improved functionality	Misc. maintenance.	-

Updated in version 2.01:

Title	Category	Description	Issue(s)
Semi device profile firmware upgrade	New functionality	Firmware files present in the firmware candidate area are now validated on the BOOT->INIT transition. If the file is invalid the module will end up in ERR INIT state reporting AL status code 0x0007 (Firmware upgrade failed). With this change it is now possible to implement firmware upgrade according to the EtherCAT semi device profile specification.	11069, 17201
Anybus object network time attribute	Bug fix	Added missing Network time attribute (#19) in Anybus object. This attribute is used for getting the upper 32-bit part of the Network time when running in the SPI-operating mode towards the application.	16916
New SDO abort code	New functionality	ABP error code ABP_ERR_PROTECTED_ACCESS (0x16) is now translated to SDO abort code 0x08000021 (Data cannot be read or stored because of local control).	16947
Overriding object description	New functionality	Added support for new command on the EtherCAT host object called "Get_Object_Description". This command can be used to override the object description for objects corresponding to ADIs.	17202
“Number of subelements” attribute for more data types	New functionality	Implemented support for using the Number of subelements ADI attribute for ADI elements of non bit-aligned data types.	17203
New ABCC data type BOOL1	New functionality	ABCC data type BOOL1 is now supported and is translated to the EtherCAT data type BOOL.	17204
Support for Backup objects	New functionality	Support has been added for the new ADI NVS parameter functionality (both listing and ADI descriptor functionality).	17205
EtherCAT state notification	New functionality	The actual EtherCAT state is now written to attribute 20 on the EtherCAT host object.	17206
Object listing functionality for modular device profile	Bug fix	TxPDO and RxPDO object lists are now created correctly also when running modular device profile.	17244

Title	Category	Description	Issue(s)
Sub-index names on communication profile ARRAY objects	Bug fix	Names of sub-indices on ARRAY objects in the communication profile area are now SubIndex yyy where yyy is the sub-index number padded with leading zeroes.	17251
EtherCAT state transition timeouts	New functionality	Thanks to a new attribute on the EtherCAT host object it is now possible to change the EtherCAT state transition timeouts. **Note:** When the timeouts are changed the corresponding elements in the ESI file needs to be updated.	17330

Updated in version 2.00:

Title	Category	Description	Issue(s)
Add support for EoE and IT functionality	New functionality	Support for Ethernet over EtherCAT has been added together with support for IT functionality. Ethernet over EtherCAT is enabled by default but can be disabled using the EtherCAT host object. Note that for modules produced before version 2.00 was released EoE is automatically disabled since these modules lack an Ethernet MAC address. The following functionality is now supported: • Web • FTP • Socket interface object • SMTP client object • Full file system support via FTP and Anybus file system interface object • RMII (transparent Ethernet)	-
Complete access towards modular device objects	Bug fix	Complete access SDO requests now works correctly towards objects related to the Modular Device Profile functionality.	14681, 14682
Sync manager enable bit in EEPROM	Bug fix	Process data sync managers are now disabled in the ESC EEPROM if the corresponding process data size is 0 bytes.	14760
Default sync manager addresses	Bug fix	The default sync manager addresses for sync manager 1-3 have been changed to be able to pass the EtherCAT conformance test with an application using 1486 bytes of process data with the default sync manager address configuration. The new default sync manager addresses are the following: • Sync manager 0: 0x4000 • Sync manager 1: 0x4800 • Sync manager 2: 0x1000 • Sync manager 3: 0x2800 Since the sync manager addresses can be configured by the master this change does not affect existing configurations in any way.	15835
Writable entries on sync manager parameter objects	Bug fix	Writable object entries on the sync manager parameter objects (0x1C32 and 0x1C33) are no longer writable in SAFE-OPERATIONAL and OPERATIONAL states. The module must be in state PRE-OPERATIONAL for these object entries to be writable.	15974
Data size in modular device object Get_List command	Bug fix	The data size in the Get_List command towards the Modular Device object has been changed from 3 to 4 bytes to match the specification. Applications that have implemented this command must take this into account when updating to this version.	16350

Title	Category	Description	Issue(s)
Data type for generic RECORD objects	Improved functionality	The data type returned in the “Get Object Description” response for RECORD objects corresponding to ADI structs has been changed to 0x2A (RECORD without pre-defined structure) instead of the data type of the first ADI element.	14785
Mapping ADI 0 to process data	Bug fix	Earlier when mapping ADI 0, the number of elements supplied in the mapping command was used when determining how many object entries it would occupy. This was incorrect, using ADI 0 always results in exactly one object entry. This has now been fixed.	14264
PAD0 elements in ADI structs	Bug fix	Adding an element of type PAD0 in an ADI struct shall result in a non-existing sub-index. This was not the case in earlier versions, PAD0 entries returned successful responses on “Get Entry Information” commands and were counted when checking max number of sub-indices on an object. This has now been fixed.	14769
Update product names	Other change	Removed the word “Anybus” from the default product name to make names consistent between ABCC 40 modules.	16361
Candidate Firmware notification	New functionality	Added support for Application Object Instance Attribute #5, Candidate Firmware Availible, used to notify the application that there’s a new firmware available in the candidate area.	13714
Change shift reg switch fuctionality	New functionality	Added new attribute 18 in EtherCAT host object where the shift register functionality can be changed to be able to use DIP switch 1 for the EtherCAT device ID.	16256
PDI Watchdog status	Improved functionality	Changed PDI watchdog status bit 0x0110.1 from constant "0" to constant "1"	16116
Device ID value to configured station alias register	New functionality	It is now possible to enable setting the value of Device ID to the configured station alias register using the EtherCAT host object.	16495
Abort code for 0x1011	Improved functionality	Changed abort code returned when writing wrong value to object 0x1011 to 0x08000021 (Data could not be read or stored due to local control).	16512

Updated in version 1.12:

Title	Category	Description	Issue(s)
Implement APPD Object instance attr 10 "Element Name" to produce subelement names in ESI-file	Improved functionality	It is now possible to name ADI RECORD entrie names with the Application Data object attribute 10(Element name).	14869
Names for entries on ARRAY and RECORD object needs to be updated	Bug fix	Subindex 0 for ARRAY and RECORD is now “Number of entries” instead of “Highest SubIndex Supported”. Other ARRAY subindex names are now on the format “SubIndex xxx” instead of “ADIname.SubIndex xxx”.	14707

Updated in version 1.11:

Title	Category	Description	Issue(s)
Translation of PDO configuration objects.	Bug fix	The attributes on the EtherCAT host object used to translate the PDO configuration objects corresponding to assembly mapping object instances now works as intended.	13544
Object list generation	Bug fix	The object list returned for the Get OD List SDO information request is now correctly generated also when containing fragments starting at object 0x6000 or above.	13518

Title	Category	Description	Issue(s)
PDO configuration object complete access upload	Bug fix	PDO configuration objects where sub-index 0 has the value 0 can now be uploaded correctly using complete access SDO upload requests. This fix required that the COP common object version was increased from 2.02.01 to 2.05.01.	14605
Complete access download towards object 0x1011	Bug fix	Object 0x1011 can now be correctly written with complete access SDO download requests.	12667
Access to objects in the manufacturer specific range when running modular device profile	Bug fix	Objects in the manufacturer specific object range (0x2001-0x5FFF) can now be correctly accessed with SDO upload and download requests when running modular device profile.	13952
Disable FoE	New functionality	It is now possible to decide whether FoE shall be enabled or not in the host application by implementing the “Enable FoE” attribute on the EtherCAT host object.	13337
Object specific error codes	Bug fix	The “Object specific” error code returned from the host application is now translated to the correct SDO abort code (0x08000000). This fix required the following common object version changes: ABFCOP: 2.02.01 -> 2.05.01 ABP: 3.03.01 -> 3.08.01 ABF: 10.07.01 -> 10.12.02 M2SXXX: 2.13.01 -> 2.15.01	13561
Creating an NVS database	Bug fix	Creating the NVS database now always works, even if no database exists. This fix required that the NVS common object version was increased from 4.04.01 to 5.02.01.	14622

Updated in version 1.10:

Title	Category	Description	Issue(s)
OUT port does not work	Bug fix	The OUT port did not work on the previous version. This has been corrected in this release.	14234

Updated in version 1.09:

Title	Category	Description	Issue(s)
Sending emergency requests can break SDO responses	Bug fix	The EMCY requests were previously sent by the task handling diagnostic commands from the host application. This could at some rare occurrences cause a race condition towards the buffers used for mailbox data sent from the module. This caused corrupt SDO responses since the SDO response being prepared could be overwritten with EMCY data. The EMCY handling has now been moved to the same task as all other mailbox handling. This prevents any race conditions.	14188
The SM1 status register can become read only preventing mailbox communication	Bug fix	Copying data to sync manager 1 while sync manager 0 was full did not work in previous versions. This could lead to a deadlock of mailbox communication if data was copied to sync manager 1 (e.g. sending an EMCY request) while sync manager 0 was full (e.g. SDO upload request written by the master). This issue has now been resolved.	14196

Updated in version 1.08:

Title	Category	Description	Issue(s)
GetEntryDescription requests towards non-existant sub-indices on existing objects returns invalid data	Bug fix	When an SDO Information GetEntryDescription requests was issued towards a non-existent sub-index on an existing object, a response with data was returned to the master. Now an abort code indicating a non-existent sub-index is returned.	13543
Prepared for new version of silicon.	Other change	Adapted for new version of NP40 with Golden Image support.	13178
Change abort code for invalid value written to sub-index 0 on object 0x1003.	Bug fix	Sub-index 0 on object 0x1003 only accepts value 0 when written. The abort code returned for writing higher values was "Value too high", which yielded a problem in the EtherCAT conformance test. It expects abort code "Value exceeded".	13814
Sync manager parameter objects are no longer present in object lists containing RxPDO- and TxPDO mappable objects	Bug fix	Objects 0x1C32 and 0x1C33 were previously present in the object lists containing RxPDO- and TxPDO mappable objects, even though no entry on these objects could be mapped in a PDO. This is no longer the case.	13563
Fixed so the Anybus DR error counter is incremented when an error in messages to TherCAT object is detected.	Bug fix	Previously the DR error counter in Anybus object was not incremented when wrong size for Object subindex translation attribute in EtherCAT object is received from application. This is now fixed so it is incremented.	13468

Updated in version 1.07:

Title	Category	Description	Issue(s)
PDO Config bit in EEPROM	Bug fix	The PDO Config bit in byte “CoE Details” (in the EtherCAT EEPROM in structure category “General”) is no longer set if the host application supports remap and has assembly object instances, but all those instances specify static ADI maps.	12994
Objects 0x1C32 and 0x1C33 extension	New functionality	The host application can specify ADI that will be represented as subindices for object dictionary objects 0x1C32 and 0x1C33. The host application specify the ADI:s and the corresponding object dictionary entries in a new attribute (#15) in the EtherCAT host application object.	13257
Error register 0x1001 is cleared upon state transitions.	Bug fix	The error register, object dictionary object 0x1001, is now correctly updated upon state transition. In particular, it means that if the ABCC is disconnected due to network errors, and then connected again, the error register will be cleared when the ABCC detects the restored network connection.	13195
SDO access to type record (ADI struct) may generate FATAL	Bug fix	If reading or writing out of bounds for subindex for a record, corresponding to a ADI struct, may trigger a FATAL event.	13447
Changed ALStatus code returned on sync loss event from host application	Bug fix	Previously when the host application reports a sync loss error the AL status code 0x1A (synchronization error) was returned now the AL status code 0x2C (Fatal sync error) is returned instead.	11681

Updated in version 1.05:

Title	Category	Description	Issue(s)
Lower case “m” in name for 0x1C00:1	Bug fix	The name for sub-index 1 on the object 0x1C00 is now “Sync Manager 0” with a capital “M” like the other sub-indices.	12796
Wrong behavior on SAFEOP->OP transition when H_APPSTATUS is set	Bug fix	The module now waits for the SAFEOP->OP timeout before setting synchronization errors to the master. Earlier the synchronization error was set directly, not giving the host application a chance to lock onto the sync signal.	12781
ERROR->PROCESS_ACTIVE transition no longer possible	Improved functionality	It is no longer to transition from the ABCC ERROR state to PROCESS_ACTIVE if the H_APPSTATUS register is set.	-

Updated in version 1.04:

Title	Category	Description	Issue(s)
Fixed issue 11892	Bug fix	The assembly mapping object instance attribute “ADI map” is now updated correctly when changing the content of the corresponding PDO.	11892
Fixed issue 11683	Bug fix	The PDO upload supported bit in the EEPROM is now cleared if the PDO config supported or PDO assignment supported bits are set.	11683
Fixed issue 11752	Bug fix	Reading an unused subindex on a PDO configuration object corresponding to an assembly mapping instance no longer generates an abort code.	11752
Fixed issue 11753	Bug fix	The ABCC no longer accepts writing of PDO configuration objects in states other the Pre-Operational.	11753
Fixed issue 11857	Bug fix	Factory default reset initiated from the “Restore parameters” object (0x1011) is now correctly sent to the application object instance (0) instead of instance 1.	11857
Fixed issue 11850	Bug fix	The ACI SPI slave now handles fragmented read messages correctly.	11850

Updated in version 1.03:

Title	Category	Description	Issue(s)
Fixed issue 11159	Bug fix	It is now possible to do FW update through the Anybus file system interface object with files named other than “firmware.hif”.	11159
Fixed issue 11158	Bug fix	Firmware upgrade though the Anybus file system interface object now works even with 255 bytes in a File_Write command.	11158
Fixed issue 11158	Bug fix	Module.nfo can now be read correctly though the Anybus file system interface object.	11158
Fixed issue 11620	Bug fix	ADIs used when running modular device profile are now translated correctly into modular device specific objects.	11620
Fixed issue 11624	New functionality	It is now possible to read out the firmware file (if present) through FoE.	11624
Fixed issue 11623	New functionality	It is now possible to read out module.nfo though FoE.	11623
Fixed issues 11197 and 11195	Bug fix	Corrected behavior for the 0x1003 object.	11197 and 11195
Fixed issue 11543	Bug fix	Device ID set from the host application no longer needs a power cycle to be used as actual value.	11543
Fixed issue 11496	Bug fix	The Anybus file system interface object now only supports 1 instance.	11496
Fixed issue 11463	Bug fix	SdoInfo now returns the correct access rights for the PDO assignment objects.	11463

Title	Category	Description	Issue(s)
Fixed issue 11216	Bug fix	Files downloaded through FoE are now closed correctly after the last fragment has been read.	11216
Fixed issue 11331	Bug fix	The sync parameter objects now correctly indicate support for shift of inputs/outputs when the host application supports sync functionality.	11331
Fixed issue 11116	Bug fix	Remapping of process data now works when running modular device profile.	11116
Fixed issue 10806	Bug fix	Reading the “Disc CRC” attribute from the Anybus file system interface object now works as it should.	10806
Fixed issue 11136	New functionality	Module.nfo can now be read.	11136
Fixed issue 11135	New functionality	The module now supports shift register mode.	11135
Fixed issue 11617	Bug fix	Module now accepts UDP frames with source port other than 0x88A4.	11617
Fixed issue 11548	Bug fix	FIFO underrun/overrun handling now matches ET1100.	11548

Updated in version 1.02:

Title	Category	Description	Issue(s)
Fixed issue 11083	Bug fix	PDO mapping objects for the first slot after the coupler are now correctly set up even if the coupler doesn't have any mappable ADIs in that direction.	11083
Fixed issue 11092	Bug fix	Output data before SAFEOP->OP transition is now only required if output data size > 0.	11092
Fixed issue 11089	Bug fix	Get_Enum_String has now been added as a supported command on instance 1 of the network configuration object.	11089
Fixed issue 10996	Bug fix	Bitwise FMMU functionality was turned off in last HDL build, this has now been turned back on in this version.	10996
Fixed issue 10995	Bug fix	Bitwise FMMU functionality was turned off in last HDL build, this has now been turned back on in this version.	10995
Fixed issue 11006	Bug fix	The EtherCAT stack will now return ALSTATUSCODE_SMWATCHDOG if the master is trying to go to OPERATIONAL without sending process data in SAFEOP.	11006
Fixed issue 11013	Bug fix	The EtherCAT stack will now report ALSTATUSCODE_INVALIDSMCFG if sync manager 2 or 3 isn't configured in 3 buffer mode when going to state SAFEOP or OP.	11013
Fixed issue 11005	Bug fix	The correct abort code is now returned when writing non exisiting sub indices for object 0x1003.	11005
Fixed issue 11032	Bug fix	The "Product Version" is now reported in both object 0x1018 and 0x100A.	11032
Fixed issue 10989	Bug fix	Remapping from network fails. PDO mapping objects created when no process data was mapped in the corresponding direction where always read only. This has been changed, so they are now writable if Remap_ADI commands are supported.	10989
Added support for the BOOT state	New functionality	The BOOT state is now supported and can be used for e.g. firmware download over EtherCAT.	-
Fixed issue 10960	Bug fix	**Modular device: More Input/Output Data SDOs created than given by the number of slots.** Fixed calculations used for checking if an ADI should be translated into an input or output object.	10960

Title	Category	Description	Issue(s)
Fixed issue 10958	Bug fix	**Modular device: Wrong object indices for Information Data SDOs.** Calculations of object indices for information objects in the FW was wrong and has been corrected.	10958
Fixed issue 10961	Bug fix	**Modular device: Wrong PDO mapping of ADIs with more than one element.** ADI arrays and structs are now taken into account when setting up PDO mapping objects.	10961
Fixed issue 10966	Bug fix	**Modular device: PDO mapping object exist without process data mappable ADIs.** Found issue that caused object 0x1600 and 0x1A00 to always be created regardless of mode. This is no longer done when running modular device profile.	10966
Fixed issue 10876	Bug fix	**Long response time to SDO upload of PDO mapping object with many ADI elements.** Earlier ALL entries of a PDO was updated when reading the first one, this has been changed so they are now updated on request instead.	10876
Fixed issue 10895	Bug fix	**Wrong length in SDO complete access response for 0x1C32, 0x1C33.** Found and corrected issue in COP. The length for non implemented sub indices was added when calculating the size for an object.	10895
Fixed issue 10868	Bug fix	**FATAL when reading PDO mapping object with assembly mapped multiple element ADIs.** Fixed in source code.	10868
Fixed issue 10806	Bug fix	**Wrong error code for missing attribute "Disc CRC" in ABCC file system interface object.** The ABCC should no longer return an error on this command, instead the CRC 0 is returned.	10806
Fixed issue 10848	Bug fix	**Wrong data type for enum ADI objects.** The correct data type is now returned for ENUMs.	10848
Support for RAMLoaderDS	New functionality	The firmware now supports the use of RAMLoaderDS, meaning HIFF files can be used to upgrade the firmware.	-
Bitwise FMMUs	New functionality	Functionality for bitwise FMMUs has been turned on in HDL.	10995, 10996
Encrypted HDL	New functionality	The HDL component is now encrypted and requires crypto key to be downloaded to the NP40.	-

Updated in version 1.01:

Title	Category	Description	Issue(s)
Initial release	New functionality	This is the initial release of ABCC40 ECT.	-