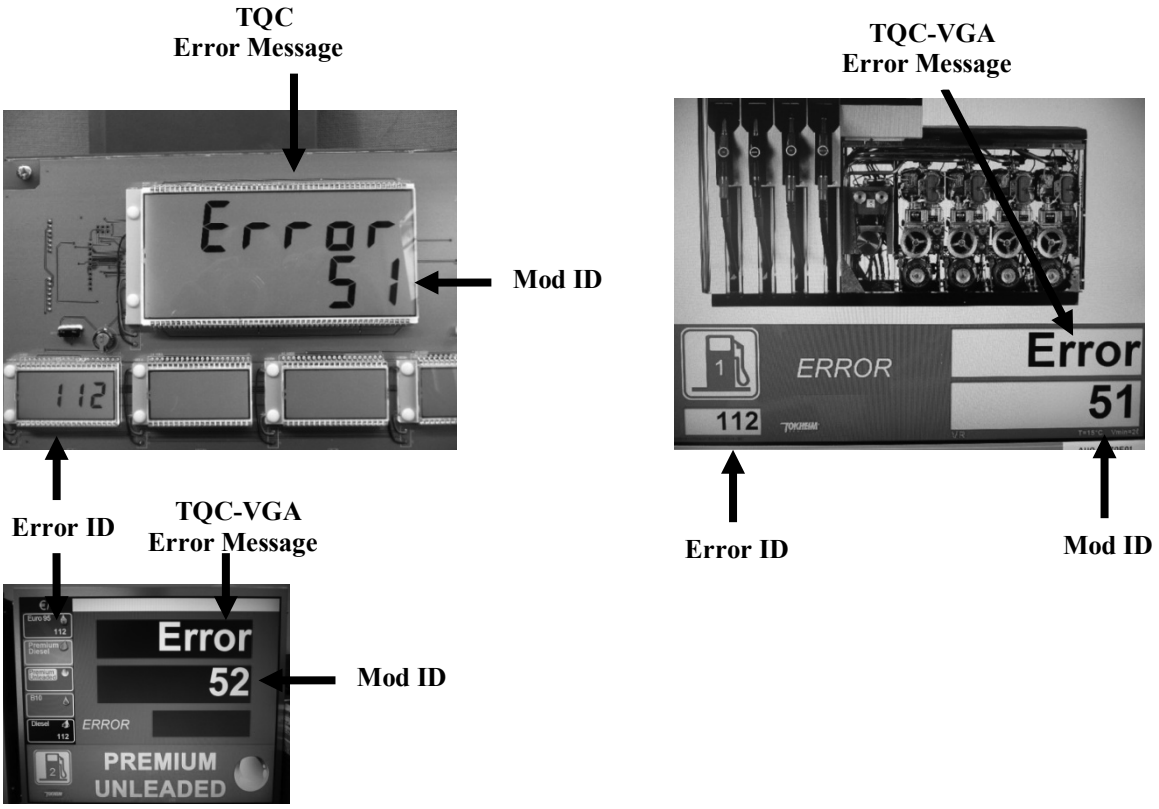
9. TROUBLE SHOOTING

9.1 Display error information

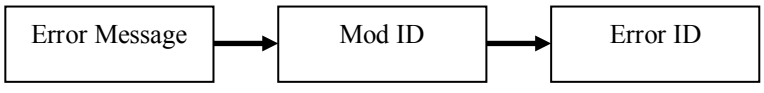


Error Message:
Display the error occurred in the system. There will be an Error **messages** displayed onto the screen.

Mod ID:
Once an error has been occurred then the **Liters space** will be filled by an error number which is the so-called **"Mod ID".** It means **Module identification.**

Error ID:
Once an error has been occurred then the **Unit Price space** will be filled by an error number with is the so-called "**Error ID**". It means Sub-error of the Module identification.

Sequence of interpreting/solving an error



The first thing the user must look at is the **Mod ID**, then the **Error ID.**
In this example the **Mod ID= 51** which means there is something wrong on the Module **FIP MANAGER SIDE 1..** Then **Error ID=112** which means **MAX NUMBER ZERO TRANSACTIONS**

9.1.1 Mod ID's

Name	Mod ID
SOFTWARE MODULE (0000-0999)	
GENERAL	0
PROCESS MANAGER	10
CONFIGURATION MANAGER	11
DATABASE MANAGER	13
FILE TRANSFER MANAGER	14
CONFIGURATION HANDLER	22
FIP MANAGER A	51
FIP MANAGER B	52
FIP MANAGER C	53
FIP MANAGER D	54
HYM MANAGER FOR FIP A	61
HYM MANAGER FOR FIP B	62
HYM MANAGER FOR FIP C	63
HYM MANAGER FOR FIP D	64
VR MANAGER FOR FIP A	71
VR MANAGER FOR FIP B	72
VR MANAGER FOR FIP C	73
VR MANAGER FOR FIP D	74
PROTOCOL HANDLER FOR FIP A	91
PROTOCOL HANDLER FOR FIP B	92
PROTOCOL HANDLER FOR FIP C	93
PROTOCOL HANDLER FOR FIP D	94
DISPLAY HANDLER	110
KDP MANAGER	120
Name	**Mod ID**
HARDWARE MODULE(1000-9999)	
PRE PROCESSOR	1200
CAN DISPLAY MASTER A	1300
CAN DISPLAY SLAVE A	1301
CAN DISPLAY MASTER B	1302
CAN DISPLAY SLAVE B	1303
CAN DISPLAY MASTER C	1304
CAN DISPLAY SLAVE C	1305
CAN DISPLAY MASTER D	1306
CAN DISPLAY SLAVE D	1307
PULSER METER 1	1400
PULSER METER 2	1401
PULSER METER 3	1402
PULSER METER 4	1403
PULSER METER 5	1404
PULSER METER 6	1405
PULSER METER 7	1406
PULSER METER 8	1407
PULSER METER 9	1408
PULSER METER 10	1409
PULSER METER 11	1410
PULSER METER 12	1411
PULSER METER 13	1412
PULSER METER 14	1413
PULSER METER 15	1414
PULSER METER 16	1415

HYM 1	1500
HYM 2	1501
HYM 3	1502
HYM 4	1503
HYM 5	1504
HYM 6	1505
VCC BOARD FOR FIP A & B	1600
VCC BOARD FOR FIP C & D	1601
COMM BOARD PRIMARY	1700
COMM BOARD SECONDARY	1701
SLAVE I/O (SIO) 1 (cable position 1)	1800
SLAVE I/O (SIO) 2 (cable position 2)	1801
SLAVE I/O (SIO) 3 (cable position 3)	1802
SLAVE I/O (SIO) 4 (cable position 4)	1803
UI MODULE FOR FIP A	2100
UI MODULE FOR FIP B	2101
UI MODULE FOR FIP C	2102
UI MODULE FOR FIP D	2103
KEYPAD BOARD FOR FIP A	2200
KEYPAD BOARD FOR FIP B	2201
KEYPAD BOARD FOR FIP C	2202
KEYPAD BOARD FOR FIP D	2203
LEAK DETECTION BOARD	2300
KDP MODULE FOR FIP A	2400
KDP MODULE FOR FIP B	2401
KDP MODULE FOR FIP C	2402
KDP MODULE FOR FIP D	2403
CARDREADER BOARD FOR FIP A	2500
CARDREADER BOARD FOR FIP B	2501
CARDREADER BOARD FOR FIP C	2502
CARDREADER BOARD FOR FIP D	2503

9.1.2 Error IDs

The next section states a list of errors per module that generates the error. CAN communication errors are to be handled a little different as they can affect multiple process and hardware modules. BUS termination is critical, as is also all devices having valid software flashed into it. One defective device can cause a group of devices (or even all) to have communication problems. Isolate the problem via a process of elimination, disconnecting more and more hardware until the problem is gone.
Remember that hardware may never be hot-wired or unplugged while powered.
The severity of an error Id will be denoted using colors in the following error table:

Color Minor Error	-	-
Color Major Error	-	-

In principle Minor errors will not interrupt deliveries, whereas Major errors will do. In both cases the product/nozzle/fip will not be blocked (except defined cases, i.e. x consecutive zero deliveries, VR timer elapsed, SD card insert / eject ...).

General Error codes 00-99 (module id = 0)

Error ID name	Error ID number	Root Cause	Solution
MAINS_OFF	1	Mains power has been lost, calculator is running on battery power only	Check the 220V power supply
MAINS_LOW	2	Mains power is too low	
MAINS_HIGH	3	Mains power is too high	
BACKUP_BATTERY_FAILURE	4	Backup battery is broken or disconnected	Check if battery is connected and replace if necessary
BACKUP_BATTERY_LOW	5	Backup battery power level is low	Battery is probably end-of life, replace
RTC_BATTERY_FAILURE	6	Real-Time-Clock battery is broken or not present	Replace the RTC battery (on APB board, under the cover) and check the calculator's date & time
FPGA_RESET	7	FPGA's logic is failing and in need of re-programming, possibly as a result of an ESD spike	System automatically recovers. If the situation persists, reboot the calculator and try to find ESD sources near the calculator

Software Module specific errors 100-999 (Module id 0001-0999)

Process Manager errors (Module id 10)

Error ID name	Error ID number	Root Cause	Solution
PROCM_CAN_BUS_EMERGENCY_ERROR	18	A CAN bus error has been detected, ARM9 communication with peripherals is not guaranteed	Check CAN termination and if all activity leds are blinking. Disconnect various CAN hardware to isolate the problem and replace faulty hardware
PROCM_PERIPH_SW_UPD_ERROR	19	A Peripheral SW Update error has been detected, ARM9 communication with peripherals is not guaranteed	A Peripheral SW Update error has been detected, ARM9 communication with peripherals is not guaranteed
PROCM_DATA_CONVERSION_ERROR	101	Conversion of data-files (XML/DB) failed.	Do a cold-start.
PROCM_PROC_CANDEV_SW_UPD_SKIPPED	110	Can device software update skipped; Off-Line device (or device in BootLoadingMode) detected .	Check CAN termination and if all activity leds are blinking. Disconnect various CAN hardware to isolate the problem and replace faulty hardware

PROCM_PROC_HEARTBEAT_EXPIRED	700	A process did not respond to heartbeat requests for too long time	The calculator will reboot. If the problem persists, contact 3rd level support and mention the TQC software version and exact dispenser configuration, country installed & communication protocol used
PROCM_PROC_CRASHED	900	A process on the calculator has crashed	

Configuration Manager (Module id 11) or Configuration Handler error (Module id 22)

Error ID name	Error ID number	Root Cause	Solution
CFG_MPC_CONFIG_PARAM_LIMIT	100	;	

Database Manager errors (Module id 13)

Error ID name	Error ID number	Root Cause	Solution
DATABASE_CREATION_ERROR	100	Database can not be created	
DATABASE_INTEGRITY_ERROR	101	SQL Integrity check of a database failed	
DATABASE_AUTHENTICITY_ERROR	102	Database file authentication record did not match the database file, fraud	
DATABASE_CALCULATE_LOCAL_TOTALS_ERROR	103	Calculate local totals failed	
DATABASE_RAM_TO_FLASH_ERROR	104	Ram to flash failed	
DATABASE_DELETE_TABLE_ERROR	105	Delete table failed	
DATABASE_DELETE_FILE_ERROR	106	Delete file failed	
DATABASE_RETRIEVE_FILE_ERROR	107	Retrieve file failed	
DATABASE_STORE_FILE_ERROR	108	Store file failed	

DATABASE_XML_FILE_ERROR	109	XML file failed	
DATABASE_UPDATE_DATA_ERROR	110	Update data failed	
DATABASE_RESTORE_DATA_ERROR	111	Restore data failed	
DATABASE_QUERY_ERROR	112	Query failed	
DATABASE_REQUEST_ERROR	113	Request failed	
DATABASE_PUT_CONFIG_ERROR	114	Put config failed	
DATABASE_GET_CONFIG_ERROR	115	Get config failed	
DATABASE_NEXT_RECORD_ERROR	116	Next record failed	
DATABASE_FULL_BACKUP_ERROR	117	Full backup failed	
DATABASE_DELETE_QUEUE_TICKET_ERROR	118	Delete queue ticket failed	
DATABASE_START_SHIFT_ERROR	119	Start shift failed	
DATABASE_COPY_FILE_ERROR	120	Copy file failed	
DATABASE_CONVERT_DATA_ITEM_ERROR	121	Data item not found in convert.db	

File Transfer Manager errors (Module id 14)

Error ID name	Error ID number	Root Cause	Solution
ILLEGAL_SD_CARD_EJECT	8	Illegal SD card eject was detected	The dispenser is blocked for further deliveries (FIP will generate error FIP_NOZZLE_BLOCKED_SD_CARD_EJECT_ERR), unblock all FIPs in the dispenser status menu
ILLEGAL_SD_CARD_INSERT	9	Illegal SD card insert was detected	
NO_SD_CARD_INSERTED	10	The requested action requires a SD card to be inserted	Insert a SD card
WRITE_PROTECTED_SD_CA	11	The requested action	Put the SD card in writable mode (using

RD		requires a writable SD card to be inserted	the small switch on its side)
SD_CARD_ACCESS_FAILED	12	TQC Could not access the file system on the SD card (mount failed)	Insert another SD card and analyze the corrupted card via a PC
FILE_BACKUP_ERROR	13	A file failed to be backed up to SD card	Attempt the backup operation again and if the problem persists, try a different SD card
FILE_RESTORE_ERROR	14	A file failed to be restored from the SD card	Attempt the restore operation again or select a different backup to restore from
FILE_CORRUPT_ERROR	15	A file on the TQC is corrupted, preventing a backup of that to be made	Reboot the TQC and try again. If the problem persists, a cold start or restore might be necessary
SD_CARD_NOT_INTEGER	17	Integrity of the SD card is broken	Insert the correct SD card or unblock the integrity via the dispenser status menu (FIP will generate error FIP_NOZZLE_BLOCKED_SD_CARD _INTEGRITY_ERR until unblocked)

Filling point Manager errors (Module id 51 for FIP A, 52 for FIP B, 53 for FIP C, 54 for FIP D)

Error ID name	Error ID number	Root Cause	Solution
FIP_UNIT_PRICE_ERROR	100	Invalid unit price	Connect the POS to get latest unit price. In case of standalone use HHT to enter correct unit price
FIP_PRESET_REACHED_ERROR	101	Event that that preset is reached	NA
FIP_AUTHORISE_TIMEOUT	102	Nozzle not taken within time, after reception of authorization from POS	Taken nozzle faster after authorize
FIP_MAX_FILL_TIMEOUT	103	Delivery takes too much time	Shorter delivery
FIP_NO_PROGRESS_TIMEOUT	104	Delivery is running but there are no volume updates received within the no progress timer	Continue delivery within time
FIP_FUELLING_SUSPENDED	105	Event that delivery is suspended	NA

FIP_FUELLING_RESUMED	106	Event that delivery is resumed	NA
FIP_MAX_VOLUME	107	Event that the maximum station volume reached	NA
FIP_MAX_USER_VOLUME	108	Event that the maximum user volume reached	NA
FIP_MAX_SUSPEND_TIMEOUT	109	Delivery is suspended to long	Resume faster
FIP_NOZZLE_OUT	*X*110	Nozzle *X* is already out	Put nozzle *X* back
FIP_WRONG_PRODUCT_ERROR	111		
FIP_MAX_NB_ZERO_TRANSACTION	112	Nozzle blocked due to maximum of zero deliveries received	Reset with HHT
FIP_TANK_LEVEL_LOW	113	Tank level of taken nozzle is low	Call supplier
FIP_LPG_BUTTON_TIMEOUT	114	Dead men's button released too long	
FIP_LPG_NOZZLE_TIMEOUT	115	Dead men's button released too long	
FIP_START_BUTTON_TIMEOUT	116	Dead men's button released too long	
FIP_MAX_NB_NOZZLE_TAKEN	117	Nozzle blocked due to maximum of zero deliveries received	Reset with HHT
FIP_PIN_CODE_ERROR	118	Wrong pin code	
FIP_MAX_PIN_CODE_ERROR	119	Max number of wrong pin codes	
FIP_SW_UPD_NOT_PERFORMED	120	Peripheral software update not performed at startup	Some Peripheral is off-line.
FIP_COLDSTART_SW_ON	121	Cold-start switch is in the on position!	
FIP_STORE_TOTAL_ERROR	122	Totals cannot be stored in the database.	
FIP_RETRIEVE_TOTAL_ERROR	123	Totals can not be retrieved from the database	
FIP_PRESET_ERROR_MIN_MAX	150	Entered local preset to high or too low	Adjust preset value

		according the station settings	
FIP_PRESET_AMO_COMMA_ERROR	151	Comma error in preset amount	Fix with HHT
FIP_PRESET_VOL_COMMA_ERROR	152	Comma error in preset volume	
FIP_PRESET_ERROR_MIN_AMO	153	Remote preset amount to low according the station settings	Adjust preset value
FIP_PRESET_ERROR_MIN_VOL	154	Remote preset volume to low according the station settings	
FIP_DENSITY_ERR	160		
FIP_NOZZLE_BLOCKED_MANUAL_ERR	161	Manual blocking of this nozzle / FIP is active	Unblock via dispenser status menu
FIP_NOZZLE_BLOCKED_SD_CARD_EJECT_ERR	162	FIP is blocked due to an illegal SD card eject, see File Transfer Manager error ILLEGAL_SD_CARD_EJECT	
FIP_NOZZLE_BLOCKED_SD_CARD_INTEGRITY_ERR	163	FIP is blocked due to invalid SD card integrity, see File Transfer Manager error SD_CARD_NOT_INTEGER	
FIP_NOZZLE_BLOCKED_RUNNING_ON_BATTERY_ERR	164		
FIP_NOZZLE_BLOCKED_INTEGRITY_ERR	165		Can be Unblocked in maintenance menu
FIP_NOZZLE_BLOCKED_INTERLOCK_ERR	166		Can be Unblocked in maintenance menu
FIP_NOZZLE_BLOCKED_TAX_UP_ERR	167		Can be Unblocked in maintenance menu
FIP_NOZZLE_BLOCKED_RECEIPT_NOT_PRINTED	168		Can be Unblocked in maintenance menu
FIP_NOZZLE_BLOCKED_SW_RESET	169	Fip is blocked because we are waiting to reset (all	

		fips needs to be idle)	
FIP_NO_VALID_NOZZLE_ERROR	170	Taken nozzle is not enabled in mask	
FIP_NO_VALID_PRODUCT_ERROR	171	Product not found for taken nozzle.	
FIP_NOZZLE_BLOCKED_TEST_DEL_RUNNING	172	This fip is blocked because a test delivery is running on the other side	Will be unblocked once test delivery on other side is finished
FIP_SWITCH_BUZZER_MSG_ERR	173	Error sending a buzzer message	
FIP_SEND_KEYPAD_MSG_ERR	174	Error switching keypad	
FIP_NOZZLE_BLOCKED_IDLE_VOLUME	175	Pulses detected at a not authorized Pulser (idle volume)	Can be Unblocked in maintenance menu
FIP_NOZZLE_BLOCKED_REASON_UNKNOWN	176	Unknown reason for blocking	Can be Unblocked in maintenance menu
FIP_IDLE_VOLUME_ERR	180	Idle volume detected on delivering product	
FIP_CHANGE_TRANSACTION_STATE_ERR	200	FIP cannot change the transaction state	
FIP_REPORT_TRANSACTION_STATE2PROT_ERR	201	Transaction state cannot be reported to protocol	
FIP_GET_NEXT_TRANSACTION_BUF_ERR	202	No new transaction buffer available	
FIP_GET_CUR_TRANSACTION_BUF_ERR	203	Error getting current transaction buffer	
FIP_INIT_TRANSACTION_BUF_ERR	204	Transaction buffer cannot be initialized	
FIP_FINALIZE_TRANSACTION_BUF_ERR	205	Transaction buffer cannot be finalized	
FIP_GET_CURRENT_TRANSACTION_DATA_ERR	206	Error getting info from current transaction	
FIP_READ_CONF_ERR	207	Configuration database cannot be read	

FIP_OIML_ERR	208	OIML test error	
FIP_OIML_TIMEOUT_ERR	209	OIML test not performed in time	
FIP_CHANGE_FIP_STATE_ERR	210	FIP state change not performed	
FIP_CHANGE_LOGICAL_NOZZLE_STATE_ERR	211	State of nozzle cannot be changed	
FIP_REPORT_STATE2PROT_ERR	212	New state cannot be reported to protocol	
FIP_REPORT_NOZZLE_BLOCK_TIMER_STATUS_ERR	213	Status of nozzle block timer cannot be reported	
FIP_REPORT_VR_STATUS2PROT	214	Vapor recovery status cannot be reported to protocol	
FIP_READ_VR_STATUS_ERR	215	Vapor recovery status cannot be read	
FIP_REQ_BAT_STATE_ERR	216	Battery state cannot be read	
FIP_UPD_UP_ERR	217	Unit price display cannot be updated	
FIP_REP_ERR2PROT	218	Error report to protocol not possible	
FIP_RESET_DISP_ERR	219	Display cannot be reset	
FIP_UPD_DISP_ERR	220	Unit price cannot be displayed	
FIP_SHOW_LAST_DEL_ERR	221	Last delivery cannot be displayed	
FIP_SHOW_PROD_NAME_ERR	222	Product name cannot be displayed	
FIP_OPEN_HM_ERR	223	HM cannot be opened	
FIP_OPEN_VR_ERR	224	VR cannot be opened	
FIP_START_HM_ERR	225	HM cannot be started	
FIP_CLOSE_HM_ERR	226	HM cannot be closed	
FIP_SUSP_HM_ERR	227	HM cannot be	

		suspended	
FIP_RESUME_HM_ERR	228	HM cannot be resumed	
FIP_CLOSE_VR_ERR	229	VR cannot be closed	
FIP_SWITCH_HS_ERR	230	High Speed cannot be switched on	
FIP_SW_MBACKL_ERR	231	Volume or Amount display backlight cannot be switched on	
FIP_SW_UBACKL_ERR	232	Unit price display backlight cannot be switched on	
FIP_SW_ILIGHT_ERR	233	Indication light cannot be switched on	
FIP_LEAK_TEST_INTERRUPTED	234	Nozzle out during pre leak test	
FIP_HM_NOT_RSP_ERR	235	HM does not respond	
FIP_VR_NOT_RSP_ERR	236	VR does not respond	
FIP_TAX_NOZUPD_ERR	237	Unit price cannot be send to Tax unit *(China region only)*	
FIP_BAT_TEST_TIMEOUT_ERR	238	Battery test timed out	
FIP_VOLUPD_SUSP_ERR	239	Volume updated received while suspended	
FIP_CLOSE_TM_ERR	240	Tax unit cannot be closed *(China region only)*	
FIP_MM_PRESET_ERR	241	Minimum/maximum preset cannot be retrieved from database	
FIP_MAX_VOL_ERR	242	Maximum volume cannot be retrieved from database	
FIP_GET_REM_PRE_ERR	243	Remote preset cannot be retrieved from database	

FIP_SHOW_PRESET_ERR	244	Local preset cannot be displayed	
FIP_LEAK_ERR	245	Leak error	
FIP_LEAK_MES_ERR	246	Leak test message cannot be send to HM	
FIP_GET_NOZZLE_TABLE_ERR	247	Nozzle table cannot be retrieved from database	
FIP_PRESET_OVERSHOOT_ERR	248	Preset overshoot	
FIP_CHG_PRE_ERR	249	Preset value cannot be changed	
FIP_SLOW_FLOW_ERR	250		
FIP_NOZZLE_IN_CLOSE	251	Nozzle out dispenser not ready	
FIP_INFO_HM_ERR	252		
FIP_SWITCH_INTERLOCK_MSG_ERR	253		
FIP_CSD_MODULE_ERR	254		

Hydraulic Manager errors (Module id 61 for FIP A, 62 for FIP B, 63 for FIP A, 64 for FIP D)
Overcurrent denotes a short circuit or mechanical failure,
Undercurrent denotes a disconnection or thermal error.

Error ID name	Error ID number	Root Cause	Solution
HM_PULSER_TESTS_NOT_OK_ERROR	100	After pulser test time, before a delivery, the mode of the to be used pulser(s) is/are not changed into DELIVERY mode	Replace pulser(s)
HM_DISPLAY_COMMUNICATION_ERROR	101	20 successive missed responses from Display Manager, did the Display Manager crash ?	Power down/up TQC
HM_EMT_BROKEN_ERROR	102	IOHandler isn't sure that EMT update is successful	Replace EMT counter
HM_2_CL_PRESET_OVERSHOOT_ERROR	103	A broken preset valve or wrong preset valve response setting	Replace preset valve
HM_30_CL_PRESET_OVERSHOOT_ERROR	104	A broken preset valve	
HM_STORE_TOTAL_ERROR	105	Communication problem with DB mgr during calculation of the totals	Power down/up
HM_OC_FUEL_MOTOR_PRIMARY_ERROR	106	Overcurrent detected on the primary fuel motor	Search for the reason, replace motor if necessary
HM_OC_FUEL_MOTOR_SECONDARY_ERROR	107	Overcurrent detected on the secondary fuel motor	
HM_OC_VALVE_ERROR	108	Overcurrent detected on a fuel valve	Search for the reason, replace valve if necessary
HM_OC_VALVE_MASTER_ERROR	109	Overcurrent detected on a master fuel valve	
HM_OC_VALVE_SLAVE_ERROR	110	Overcurrent detected on a slave fuel valve	
HM_UC_FUEL_MOTOR_PRIMARY_ERROR	111	Undercurrent detected on the primary fuel motor	Search for disconnected motor connections, replace motor if necessary
HM_UC_FUEL_MOTOR_SECONDARY_ERROR	112	Undercurrent detected on the secondary fuel motor	
HM_UC_VALVE_ERROR	113	Undercurrent detected on a fuel valve	Search for disconnected valve connections, replace valve if necessary
HM_UC_VALVE_MASTER_ERROR	114	Undercurrent detected on a master fuel valve	
HM_UC_VALVE_SLAVE_ERROR	115	Undercurrent detected on a	

		slave fuel valve	
HM_RETRIEVE_TOTAL_ERROR	116		
HM_FINAL_VOLUME_LOWER_THAN_LAST	117		
HM_PRE_LEAK_ERROR	118		
HM_PRE_FATAL_LEAK_ERROR	119		
HM_OC_PULSER_ERROR	120	Overcurrent of a pulser detected	Check connections of pulser and replace if necessary
HM_PP_LOST_ERROR	121	;	
HM_CORRUPTED_VOLUME_ERROR	122	Corrupted volume detected	
HM_DISPLAY_ROLLOVER_ERROR	123	Trying to display a larger volume/amount as possible with current display layout.	
HM_START_WRONG_NOZZLE_ERROR	124	Trying to start an hm with a different LNO as it was opened with. (caused by nozzle juggling)	
		Note: Only one detection of overcurrent is present on a HYM (for max two connected pulsers)	

Vapor recovery Manager errors (Module id 71 for FIP A, 72 for FIP B, 73 for FIP A, 74 for FIP D)
Overcurrent denotes a short circuit or mechanical failure,
Undercurrent denotes a disconnection or thermal error.

Error ID name	Error ID number	Root Cause	Solution
VR_MOTOR_OC_ERROR	100	VR Pump motor overcurrent detected	Search for the reason, replace motor if necessary
VR_MOTOR_UC_ERROR	101	VR Pump motor undercurrent detected	Search for disconnected motor connections, replace motor if necessary
VR_FLOW_VALVE_OC_ERROR	102	VR Proportional valve overcurrent detected	Search for the reason, replace valve if necessary
VR_FLOW_VALVE_UC_ERROR	103	VR Proportional valve undercurrent detected	Search for disconnected valve connections, replace valve if necessary
VR_RETURN_VALVE_OC_ERROR	104	VR Return per product valve overcurrent detected	Search for the reason, replace valve if necessary
VR_RETURN_VALVE_UC_ERROR	105	VR Return per product valve undercurrent detected	Search for disconnected valve connections, replace valve if necessary
VR_RETURN_VALVE_OFF_ERROR	106	VR Return per product valve closed by HYM (in-delivery timeout)	If the problem happens multiple times, call 3rd level support
VR_DEVICE_CONTROL_ERROR	110	SCG : VCC not connected / not calibrated / not CAN terminated / not the correct software (version)	Check VCC alive and its software version
		OL & SCG : HYM where return valve is connected is unresponsive	Check HYM alive
		Motor / Valve control failed	Check FPGA alive
		IOHandler is running in cold start mode, does not have a valid configuration for other reasons or is not running at all	Check cold start state / IOHandler startup log that states the IOHandler does not use an initial minimal configuration
VR_DEVICE_CONTROL_TIMEOUT	111	The control of all the necessary devices took longer than required	Check VCC, HYM and / or FPGA is alive
VR_NOT_CALIBRATED	112	At least one of the VR nozzles on the current FIP is not calibrated for VR	Perform calibration, OL connect Gallus, SCG no gallus needed
VR_NO_HW_AND_VR_NOZZLES	113	There is no VR Hardware connected but there are VR	Connect ECRV option board or Disable all VR

		nozzles defined	Nozzles from the configuration
VR_NOZZLE_BLOCK_TIMER_STARTED	114	Nozzle block timer started due to bad efficiency counter exceeds its configured maximum count	Validate the configured VR block criteria parameters, re-calibrate this nozzle, validate correct functioning of VR peripherals
VR_NOZZLE_BLOCK_TIMER_ELAPSED	115	Time before block has expired after the previous error	
VR_INVALID_CONFIG	117	The current configuration cannot be used by the VR Manager, see associated error text for more details	Validate configuration parameters in the VR configuration menu
VR_SCG_MODE_SET_TO_OL_MODE	118	SCG mode could not be initialized by memory errors for the associated table updating mechanism, the self calibrating mode could not continue, set to OL mode therefore	Reboot the TQC and see if the problem is gone. If not, replace processor board
VR_CONFIG_READ_ERROR	119	Failed to read the configuration from the Database Manager	
VR_VCC_START_ERROR	121	Failed to start measurements on the VCC	Validate if VCC communication is ok and if it is calibrated. Call 3rd level support if the problem persists
VR_VCC_NOT_CONFIGURED	122	Operational VCC is not stated as active VCC node in the Op.CAN file	Re-run auto / single configuration
VR_VCC_NOT_DETECTED	125	VCC (operational and/or default address) could not be detected on the CAN bus, SCG mode cannot be used.	Re-run auto / single configuration and if the problem persists, check VCC connections and VCC having correct software
		Note: A not calibrated VCC will refuse to get into an operational address. This will show up as a warning in the auto-configure procedure	
VR_MOTOR_CONTROL_FAIL	150	Motor failed to start / stop	Check if FPGA is active
VR_FLOW_VALVE_CONTROL_FAIL	151	VR flow valve control (either power or open) failed to be controlled	
VR_FLOW_VALVE_POWER_FAIL	152	VR flow valve power failed to be controlled	
VR_FLOW_VALVE_OPEN_FAIL	153	VR flow valve aperture failed to be controlled	
VR_RETURN_VALVE_CONTROL_FAIL	154	VR Return valve failed to be controlled (either power or	Check HYM is active

		open/close)	
VR_RETURN_VALVE_POWER_FAIL	155	VR Return valve power failed to be controlled	
VR_RETURN_VALVE_OPEN_FAIL	156	VR Return valve open/close failed to be controlled	
VR_GALLUS_CONTROL_ERROR	157	Failed to start / stop the gallus measurements	Check PP is active
VR_SET_VRLED_ERR	234	Failed to control the VR LED (definition used to be of the FIP). This error is reported without displaying	Check if display is active

Protocol Handler errors (Module id 90 for Protocol, 91 for Application FIP A, 92 for FIP B, 93 for FIP C, 94 for FIP D)

Error ID name	Error ID number	Root Cause	Solution
PROT_ERROR_COMM_BOARD	100	No communication with the COMM Board	Check led on COM board is blinking and this board has the correct software. Replace COM board if necessary
PROT_ERROR_COMMUNICATION	101	No communication with the POS	Check communication settings (non-conflicting address) and cabling
TAXMGR_UPDATE_UP	100 /* UP modify in progress */	;	
TAXCPU_RESET_ERR	101/* UP modify in progress */	;	
TAXCPU_DISPLAY_ERR	102	tax without display screen	

Display Handler error (Module id 110)

Error ID name	Error ID number	Root Cause	Solution
DISP_UNITPRICE_ERROR	102		
DISP_UNITPRICE_COMMA_ERROR	106		
DISP_VOLUME_COMMA_ERROR	107		
DISP_AMOUNT_COMMA_ERROR	108		
DISP_DISPLAY_OFF_LINE	109		
DISP_DISPLAY_UPDATE_ERROR	110		

All Hardware module common errors 00-99 (Module id 1000-9999)

Error ID name	Error ID number	Root Cause	Solution
FLASH_FAILURE	1		
CHECKSUM_FAILURE	2		
RAM_FAILURE	3		
WATCHDOG_RESET	4		
DEVICE_CONFIGURATION_ERROR	5		
CAN_CONFIGURATION_ERROR	6		
CAN_COMMUNICATION_ERROR	7		
HEARTBEAT_TIMEOUT	16		

Hardware module specific errors 100-999 (Module id 1000-9999)

Pre-Processor module error (Module id 1200)

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			
PP_CHECKSUM_ERROR	100	Corrupt SW detected during power up	Download correct PP software
PP_MAX_FLOW_ERROR	101	One of the meters is blocked or valve problem	Control meters and valves
PP_ONE_METER_NOT_RUNNING_ERROR	102	One of the meters is blocked or valve problem	
PP_10_X_SLOW_FLOW_ERROR	103	Meters or valves problems	
PP_FRAUD_DETECTED_ERROR	104	MP1: pulse(s) detected when MP1 not in delivery	No fraud allowed
PP_PULSER_SEQUENCE_LINE_A_ERROR	105	MP1: pulse line A is not following pulse line B, sensor A is not working correctly or broken line A	Replace pulser *(China region only)*
PP_PULSER_SEQUENCE_LINE_B_ERROR	106	MP1: pulse line B is not following pulse line A, sensor B is not working correctly or broken line B	
PP_PULSER_SENSOR_LINE_A_ERROR	107	MP1: 3 pulses on line B, still no pulses on line A, sensor A is not working correctly or broken line A	
PP_PULSER_SENSOR_LINE_B_ERROR	108	MP1: 3 pulses on line A, still no pulses on line B, sensor B is not working correctly or broken line B	
PP_PULSER_LINE_A_BROKEN_ERROR	109	MP1: during pre-delivery test pulser line A low, broken line A	
PP_PULSER_LINE_B_BROKEN_ERROR	110	MP1: during pre-delivery test pulser line B low, broken line B	
PP_PULSER_NOT_CONNECTED_ERROR	111	MP1: during pre-delivery test both pulser lines are low MPC: 30ms no pulser volume update when in delivery mode	Connect (new) pulser

CAN Display Module error (Module id 1300 - 1307)
Module id 130*X*: Even values for *X* denote master displays, 1300 = A, 1302 = B, 1304 = C, 1306 = D
Odd values for *X* denote slave displays, 1301 = A, 1303 = B, 1305 = C, 1307 = D
Note: After re-wiring CAN cables, an auto-configure is needed to straighten CAN addresses & module ids out

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			
CSD_RAM_DEFECT	100		
CSD_FLASH_DEFECT	101		
CSD_CONFIG_PAR_ERROR	102		
CSD_SDO_CRC_ERROR	103		
CSD_CAN_COM_ERROR	104		
CSD_PDO_CRC_ERROR	105		
CSD_UPD_NUMBER_ERROR	106		
CSD_DATA_STORE_ERROR	107		

Pulser error (Module id 1400 - 1415)
Module id 14*XX* is used, where *XX* is the meter number - 1
Note: After re-wiring CAN cables, an auto-configure is needed to straighten CAN addresses & module ids out

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			
MPC_ERR_FLASH_PROG_CRC	100	Corrupt SW detected during power up	Download correct software or Replace MPC
MPC_ERR_CONFIG_MSG_CRC	101	Get or set configuration message corrupt	Send correct get/set configuration message
MPC_ERR_FLASH_WRITING	102	Broken flash	Replace MPC
MPC_ERR_CAN_OVERFLOW	103	CAN-bus communication problem	Replace MPC if the problem persists, check with other possible CAN problems in the dispenser
MPC_ERR_SENSOR	104	Broken sensor A, B or C	Replace MPC
MPC_ERR_SEQUENCE	105	Pulse lines are not following each others	Disconnect/connect MPC or replace MPC
MPC_ERR_STATE_ERROR	106	For debug purpose (normally not shown on the display	Correct SW
MPC_ERR_MAX_BACK	107	Pulser reached max volume turning in the wrong direction	Change direction or replace MPC

MPC_ERR_BACKWARD	108	Pulser turning the wrong direction	
MPC_ERR_ADC_CALIBR	110	ADC calibration went wrong, broken ADC	Replace MPC
MPC_ERR_ADC_STATUS	111		
MPC_ERR_IDLE_VOLUME_DETECT	112	Pulse(s) detected when pulser in IDLE mode	No fraud
MPC_ERR_LPG_FACTOR	113	Calculated TC factor for LPG lower than 0, wrong density send for LPG	Send correct density for LPG
MPC_ERR_PT100_NOT_CONNECTED	119	No PT100 temperature probe connected or broken wires	Connect (new) PT100 temperature probe
MPC_ERR_MAGNET_ERROR	120	;	

HYM Board error (Module id 1500 - 1505)
Module id 150*X*: X + 1 corresponds to the HYM position, from the left on the IO board
Note: Faulty HYM hardware might report an incorrect module ID (but still in the 1500-1505 range) as it might fail to electronically readout its position on the IO board

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			

VCC Board error (Module id 1600 - 1601)
Module id 1600 is for FIP A&B and module id 1601 is for FIP C&D
Note: After re-wiring CAN cables, an auto-configure is needed to straighten CAN addresses & module ids out

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			
VCC_ERR_FLASH_WRITING	102	A flash error has occurred while attempting to write setup, configuration & calibration data to flash	Replace VCC unit
VCC_ERR_FLASH_UNINITIALIZED	103	Uninitialized flash memory, not calibrated VCC	Re-calibrate VCC on a VCC test bench and / or replace with a calibrated unit
VCC_ERR_FLASH_FUTURE_LAYOUT	104	Unsupported future flash layout	Perform VCC software update to a software version that does not generate this error or replace the unit with a calibrated spare
VCC_ERR_FLASH_CRC_MISMATCH	105	Flash CRC was incorrect	Replace VCC unit

VCC_ERR_ADC_STATUS_PA	112	VCC pressure A side was measured outside the measurement window of ±300 mbar, Defective VCC, Blockage in the VR system, Valve not opening, Blocked VR filter	Is the nozzle pointing in a 'down' position ? Is the hose free of twists ? Check for system blockage Contact 3rd level support if seen more times
VCC_ERR_ADC_STATUS_VA	113	VCC flow sensor connection is broken	Replace unit with a calibrated spare
VCC_ERR_ADC_STATUS_PB	114	B-side equivalent of error VCC_ERR_ADC_STATUS_PA	-
VCC_ERR_ADC_STATUS_VB	115	B-side equivalent of error VCC_ERR_ADC_STATUS_VA	
VCC_ERR_NO_FLOW	120	No flow measured while there was (some) pressure, blockage ?	Contact 3rd level support if seen more times
VCC_ERR_PRESSURE_DROP_TOO_HIGH	123	Pressure drop too high compared to the flow rate	
VCC_ERR_PRESSURE_DROP_TOO_LOW	124	Pressure too low compared to the flow rate	
VCC_ERR_FLOW_A_DC_LEVEL	128	VCC flow sensor is out of balance	Check for blockage, contact 3rd level support if seen more times
VCC_ERR_FLOW_B_DC_LEVEL	129	B-side equivalent of error VCC_ERR_FLOW_A_DC_LEVEL	
VCC_ERR_ADC_CHANNEL_MISMATCH	131	The ADC has measured a different channel than expected	Contact 3rd level support if seen more times
VCC_ADC_INIT_ERROR	132	(Initial) ADC communications failed, is the ADC present / broken ?	
VCC_ERR_VCC_CAL_CANCELLED	135	Calibration measurement was probably cancelled	Re-calibrate VCC
		Note: This error will only be generated on a VCC test bench during a calibration session	
VCC_ERR_ADC_STATUS_PA_ZCAL	140	During pressure sensor A-side self test at startup of the VCC there was a problem found in measuring the zero-level of the one of the ADC channels	Possible defective VFM, Contact 3rd level support if seen more times
VCC_ERR_ADC_STATUS_PA_FCAL	141	During pressure sensor A-side self test at startup of the VCC there was a problem found in measuring the some current of the one of the ADC channels	
VCC_ERR_ADC_STATUS_VA_ZCAL	144	Same as error	

		VCC_ERR_ADC_STATUS_PA_ZCAL for the flow-sensor voltage, A-side	
VCC_ERR_ADC_STATUS_VA_FCAL	145	Same as error VCC_ERR_ADC_STATUS_PA_FCAL for the flow-sensor voltage, A-side	
VCC_ERR_ADC_STATUS_PB_ZCAL	142	Same as error VCC_ERR_ADC_STATUS_PA_ZCAL, B-side	
VCC_ERR_ADC_STATUS_PB_FCAL	143	Same as error VCC_ERR_ADC_STATUS_PA_FCAL, B-side	
VCC_ERR_ADC_STATUS_VB_ZCAL	146	Same as error VCC_ERR_ADC_STATUS_VA_ZCAL, B-side	
VCC_ERR_ADC_STATUS_VB_FCAL	147	Same as error VCC_ERR_ADC_STATUS_VA_FCAL, B-side	

COMM Board error (Module id 1700 - 1701)
Module id 1700 is for primary (right-most placed) board and module id 1701 is for secondary board (left of the primary board)

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			
COMM_SDO_CRC_ERROR	103	;	
COMM_DATA_STORE_ERROR	107	;	

Slave IO (SIO) Board error (Module id 1800 - 1803)
Module id 180*X*: X + 1 corresponds to the SIO's cable position, counted from the IO board connection
Note: After re-wiring CAN cables, an auto-configure is needed to straighten CAN addresses & module ids out

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			

UI Module errors (Module id 2100-2103)
Module id 2100 is for FIP A, 2101 is for FIP B, 2102 is for FIP C, 2103 is for FIP D

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			
UI_RAM_DEFECT	100	;	
UI_FLASH_DEFECT	101	;	
UI_CONFIG_PAR_ERROR	102	;	

UI_SDO_CRC_ERROR	103	;
UI_CAN_COM_ERROR	104	;
UI_PDO_CRC_ERROR	105	;
UI_DATA_STORE_ERROR	106	;
UI_CMD_PAR_ERROR	107	;

Keypad Board error (Module id 2200 - 2203)
Module id 2200 for FIP A, 2201 for FIP B, 2202 for FIP C, 2203 for FIP D
Note: After re-wiring CAN cables, an auto-configure is needed to straighten CAN addresses & module ids out

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			

Leak detection board error (Module id 2300)

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			

Card reader board error (Module id 2500 - 2503)
Module id 2500 for FIP A, 2501 for FIP B, 2502 for FIP C, 2503 for FIP D
Note: After re-wiring CAN cables, an auto-configure is needed to straighten CAN addresses & module ids out

Error ID name	Error ID number	Root Cause	Solution
See also the hardware module common errors 00-99			