

1.1 Errors and Event list

1.1.1 State machine errors

Error code	Display description	Full description
0x0100	EVENT OVERFLOW	Firmware development error Too many events were entered into state machine configuration
0x0101	STATE OVERFLOW	Firmware development error Too many states were entered into state machine configuration
0x0102	TIMER LOAD OVERFLOW	Firmware development error Too many timers were initialized in state machine

Fatal state machine error

Error code	Description	Full description
0x0180	ERROR LIST FULL	Error list is full Can be configured by INCACtrl if this error is supposed to be triggered by software. If not, software will just overwrite oldest errors when new errors occur

1.1.2 Communication errors

Error code	Description	Full description
0x0200	COMM OPEN PORT	WIN32 exception error Opening COM port failed, COM port either not available or already opened up
0x0201	COMM CLEAR RW BUFFERS	WIN32 exception error Clearing of r-w buffers failed and threw an exception
0x0202	COMM SEND DATA	WIN32 exception error Attempt to sending data on serial port failed and threw an exception
0x0203	COMM TIMEOUT RECEIVE	Bus protocol communication error Not all data was received while communicating due to a timeout
0x0204	COMM CLOSE PORT	WIN32 exception error Closing of COM port failed and threw an exception
0x0210	COMM CMD NOT FOUND	Bus protocol configuration error A command was requested which is not supported/defined by bus protocol
0x0211	COMM CMD TIMEOUT REC. HEADER	Bus protocol communication error Receiving header of protocol failed due to a timeout
0x0212	COMM CMD TIMEOUT REC. TAIL	Bus protocol communication error Receiving tail of protocol failed due to a timeout
0x0213	COMM CMD CRC16 FAILED	Bus protocol communication error Error receiving correct data - checksum
0x0214	COMM CMD WRONG ADDRESS	Bus protocol communication error Wrong address was received by bus master
0x0215	COMM CMD WRONG LENGTH	Bus protocol communication error An invalid length definition was received
0x0216	COMM CMD SEND DATA	Bus protocol communication error Sending data on bus failed
0x0217	COMM CMD CLEAR RW BUFFERS	Bus protocol communication error Clearing r-w buffers failed
0x0218	COMM NO COM PORT OPEN	Bus protocol communication error No COM port open for communication
0x0219	COMM CMD BUFFER SIZE	Bus protocol communication error Buffer size check failed
0x021A	COMM CMD TIMEOUT RECEIVE	Bus protocol communication error Failed receiving all data due to a timeout

0x021B	COMM CMD TIMEOUT HEADER PRT.2	Bus protocol communication error Failed receiving all data while communicating with extended bus communication due to a timeout
0x0230	COMM CMD TIMEOUT RECEIVE ECHO	Bus protocol communication error No echo received on bus due to a problem with bus hardware
0x0231	COMM TIMEOUT NO ANSWER	Bus protocol communication error No answer was received (from a slave) after requesting data
0x0232	COMM SEND BUFFER OVERFLOW	Bus protocol communication error Length set by protocol command setup function is too large for send buffer
0x0233	COMM RECEIVE BUFFER OVERFLOW	Bus protocol communication error Length set by protocol command setup function is too large for receive buffer

Fatal communication errors

Error code	Description	Full description
0x280	ERROR COMM SLAVE LOST IR1	Fatal error caused by internal bus communication IR1-sensor was thrown off the bus no reconnection possible (CH ₄ , CO ₂)
0x0281	ERROR FATAL SLAVE LOST EC1	Fatal error caused by internal bus communication EC1-sensor was thrown off the bus no reconnection possible (H ₂ S, O ₂)
0x0282	ERROR FATAL SLAVE LOST IO	Fatal error caused by internal bus communication IO-slave was thrown off the bus no reconnection possible (mA output, relais output, valve control)
0x0283	ERROR FATAL SLAVE LOST EC2	Fatal error caused by internal bus communication EC2-sensor was thrown off the bus no reconnection possible (H ₂)
0x0284	ERROR FATAL SLAVE LOST PAROX	Fatal error caused by internal bus communication Parox-sensor was thrown off the bus no reconnection possible (O ₂ paramagnetic)
0x0285	ERROR FATAL SLAVE LOST SG	Fatal error caused by internal bus communication SG-sensor was thrown off the bus no reconnection possible (SG specific gravity)
0x0286	ERROR FATAL SLAVE LOST FLOW	Fatal error caused by internal bus communication Flow-sensor was thrown off the bus no reconnection possible (flow gas and/or flow air)
0x0287	ERROR COMM SLAVE LOST IR2	Fatal error caused by internal bus communication IR2-sensor was thrown off the bus no reconnection possible (C ₂ +, CH ₄ selective)
0x0288	ERROR COMM SLAVE LOST L-OX	Fatal error caused by internal bus communication Lambda-sensor was thrown off the bus no reconnection possible (O ₂ Lambda)
0x0289	ERROR COMM SLAVE LOST B-IO	Fatal error caused by internal bus communication IO-sensor basic was thrown off the bus no reconnection possible (mA output, relais output, valve control)

1.1.3 Errors reading from or writing to memory

Error code	Description	Full description
0x0220	COMM SAVE DATA OLD COPY FCTN.	Reading saved eeprom (sensor/slave) data error Error in old copy function – function error not further specified since this function will not be used anymore in newer firmware versions (>V1.04).
0x0221	COMM SAVE DATA READ NOT OK	Reading saved eeprom (sensor/slave) data error Slave responded with “not OK” message. Possible solution: More time needed between writing and reading of eeprom data subsequently
0x0222	COMM SAVE DATA	Reading saved eeprom (sensor/slave) data error

	READ NOT CON.	No slave eeprom connected at required eeprom number
0x0223	COMM SAVE DATA READ NOT AVLB.	Reading saved eeprom (sensor/slave) data error Function not supported by slave
0x0224	COMM SAVE DATA READ RANGE	Reading saved eeprom (sensor/slave) data error Too much data was requested from eeprom
0x0225	COMM SAVE DATA WRITE NOT OK	Writing saved eeprom (sensor/slave) data error Slave responded with “not OK” message. Possible solution: More time needed between writing and reading of eeprom data subsequently
0x0226	COMM SAVE DATA WRITE NOT CON.	Writing saved eeprom (sensor/slave) data error No slave eeprom connected at required eeprom number
0x0227	COMM SAVE DATA WRITE NOT AVLB.	Writing saved eeprom (sensor/slave) data error Function not supported by slave
0x0228	COMM SAVE DATA WRITE RANGE	Writing saved eeprom (sensor/slave) data error Too much data supposed to be written to eeprom
0x0229	COMM SAVE DATA EEPROM NOT DEF.	Reading or writing saved eeprom (sensor/slave) data error Eeprom is not defined – needs to be defined
0x022A	COMM SAVE DATA PTR. NOT SET	Reading or writing saved eeprom (sensor/slave) data error Pointer to data not set
0x022B	COMM SAVE DATA BUF. TOO LARGE	Reading or writing saved eeprom (sensor/slave) data error Data buffer too large for communication buffer Solution: Increase communication buffer or reduce size of data to be stored on eeprom
0x022C	COMM SAVE DATA NO DATA	Reading or writing saved eeprom (sensor/slave) data error Size of data not set no data can be stored
0x022D	COMM SAVE DATA EEPROM NOT FND.	Reading or writing eeprom (sensor/slave) data error No eeprom found – error code of old copy function

1.1.4 Sensor errors

Error code	Description	Full description
0x0300	SENS CMD BUF FULL	Firmware development error Command list for a sensor is full
0x0301	SENS UNKNOWN DATA TYPE	Firmware development error Unknown data type was loaded with command – values can not be copied
0x0302	SENS DIVISION BY ZERO	Firmware development error Values are set in a way so a division by zero could occur
0x0303	SENS UNKNOWN COMMAND	Firmware development error Unknown command type was set with command
0x0304	SENS CMD WRONG TYPE	Firmware development error Type not supported for command list
0x0305	SENS CAL STATUS ZERO IR1	Zero calibration could not be performed on IR channel 1 --- currently not used ---
0x0306	SENS CAL STATUS SPAN IR1	Span calibration could not be performed on IR channel 1 --- currently not used ---
0x0307	SENS CAL STATUS ZERO IR2	Zero calibration could not be performed on IR channel 2 --- currently not used ---
0x0308	SENS CAL STATUS SPAN IR2	Span calibration could not be performed on IR channel 2 --- currently not used ---
0x0309	SENS CAL STATUS ZERO EC1	Zero calibration could not be performed on EC channel 1 --- currently not used ---
0x030A	SENS CAL STATUS SPAN EC1	Span calibration could not be performed on EC channel 1 --- currently not used ---
0x030B	SENS CAL STATUS ZERO EC2	Zero calibration could not be performed on EC channel 2 --- currently not used ---
0x030C	SENS CAL STATUS SPAN EC2	Span calibration could not be performed on EC channel 2 --- currently not used ---
0x030D	SENS EC PRESSURE AIR	Min. pump pressure not reached – check pumps
0x030E	SENS EC PRESSURE GAS	Min. pump pressure not reached – check pumps

0x030F	SENS EC3 PRESSURE AIR	Min. pump pressure not reached – check pumps
0x0310	SENS EC3 PRESSURE GAS	Min. pump pressure not reached – check pumps
0x0311	SENS EC4 PRESSURE AIR	Min. pump pressure not reached – check pumps
0x0312	SENS EC4 PRESSURE GAS	Min. pump pressure not reached – check pumps
0x0313	SENS CALC. VALUE NOT DEFINED	Firmware development error Method not defined in child class
0x0314	SENS FATAL CHNL. ERR NOT DEF.	Firmware development error Method not defined in child class
0x0315	SENS ABORT MEAS. NOT DEF.	Firmware development error Method not defined in child class
0x0316	SENS FACTORY CALIB. NOT DEF.	Firmware development error Method not defined in child class
0x0317	SENS IR CALIB. NOT READ	Firmware development error Sensor calibration was not read before trying to reset calibration to factory settings
0x0318	SENS IR PRESS. PROCESS GAS	Error for continuous measurement instrument Minimal required pressure in process gas stream not reached – pressure measured through absolute pressure sensors of IR electronic
0x0319	SENS IR PRESS. CALIB GAS	Error for continuous measurement instrument Minimal required pressure in calibration gas stream not reached – pressure measured through absolute pressure sensors of IR electronic
0x031A	SENS SET FACT. CALIB NOT DEF.	Firmware development error Method not defined in child class
0x031B	SENS TYPE NOT DEFINED	Sensor type not defined – error in calibration

Fatal sensor errors

Error code	Description	Full description
0x0380	SENS GLOB ERROR	Error is returned by a sensor
0x0381	SENS GLOB ERROR IO	Global error occurred in IO board
0x0382	SENS GLOB ERROR IR	Global error occurred in IR board
0x0383	SENS GLOB ERROR EC	Global error occurred in EC board
0x0384	SENS CHNL. ERROR IR1	Fatal channel error occurred in IR channel 1
0x0385	SENS CHNL. ERROR IR2	Fatal channel error occurred in IR channel 2
0x0386	SENS CHNL. ERROR EC1	Fatal channel error occurred in EC channel 1
0x0387	SENS CHNL. ERROR EC2	Fatal channel error occurred in EC channel 2
0x0388	SENS GLOB ERROR EC3	Global error occurred in EC3 board
0x0389	SENS GLOB ERROR EC4	Global error occurred in EC4 board
0x038A	SENS ANLG. OUTPUT NOT VALID	Firmware development error Analog output number too large
0x038B	SENS EC CALIB PTR NOT SET	When performing a calibration the
0x038C	SENS EC CALIB ABORT ZERO	Zero calibration for EC sensor aborted
0x038D	SENS EC CALIB ABORT SPAN	Span calibration for EC sensor aborted
0x038E	SENS EC CALIB ABORT MIXER	Mixer calibration for EC sensor aborted
0x038F	SENS EC CALIB ABORT NO DEF.	Zero calibration for EC sensor aborted
0x0390	SENS NO SLAVE FOUND	No slave was found when booting instrument – check bus connections inside the instrument and firmware versions of slave
0x0391	SENS IR BUFFER OVERFLOW	Internal buffer overflow – calibration data not conform to definition – device needs to be recalibrated in factory
0x0392	SENS IR OLD VERS. CALIBRATION	Old version of calibration on IR slave – device needs to be recalibrated in factory

0x0393	SENS EC OLD VERS. CALIBRATION	Old version of calibration on EC slave – device needs to be recalibrated in factory
0x0394	SENS IR WARMUP OVERRUN	Temperature warming up of IR board failed
0x0395	SENS IR CHNL. 1 ADC0 ERR	Measured ADC0 signal of IR sensor channel 1 too high
0x0396	SENS IR CHNL. 1 ADC1 ERR	Measured ADC1 signal of IR sensor channel 1 too high
0x0397	SENS IR CHNL. 2 ADC0 ERROR	Measured ADC0 signal of IR sensor channel 2 too high
0x0398	SENS IR CHNL. 2 ADC1 ERROR	Measured ADC1 signal of IR sensor channel 2 too high
0x0399	SENS IR TEMP ADC ERROR	Measured ADC signal of temperature sensor too high
0x039A	SENS IR CHNL. 1 REFERENCE ERROR	Reference signal of channel 1 (IR sensor) is unstable
0x039B	SENS IR CHNL. 2 REFERENCE ERROR	Reference signal of channel 2 (IR sensor) is unstable
0x039C	SENS IR CHNL. 1 REFERENCE LOW	Underflow of reference signal of channel 1 (IR sensor)
0x039D	SENS IR CHNL. 2 REFERENCE LOW	Underflow of reference signal of channel 2 (IR sensor)
0x039E	SENS IR TEMP BROKEN	Temperature sensor failure detected

1.1.5 Command list and task request list errors

Error code	Description	Full description
0x0400	REQUEST LIST TASK NOT DEF.	Firmware development error Task for request list not defined
0x0480	CLIST OVERFLOW	Firmware development error Overflow when adding commands
0x0481	REQUEST LIST OVERFLOW	Firmware development error Overflow adding tasks to request list
0x0482	RESET CALIB. LIST OVERFLOW	Firmware development error A not defined sensor was requested to be set to factory calibration
0x0483	DYN STR. LIST OVERFLOW	Firmware development error Overflow when creating dynamic signal list

1.1.6 Menu errors

Error code	Short description	Full description
0x0500	MENU OBJECT OVERFLOW	Firmware development error Too many object loaded into menu
0x0501	MENU VALUE NULL POINTER	Firmware development error CMenuValue class object failed to initialize due to NULL pointer
0x0502	MENU TYP UNKNOWN	Firmware development error Defined value type in menu not defined
0x0503	MENU PARSE NUM WRONG ORDER	Error occurred when entering a number, probably too many characters or a minus sign after a number
0x0504	MENU PARSE NUM TOO MANY DOTS	Error occurred when entering a number A number was entered with two or more dots
0x0505	MENU PARSE NUM CONVERSION	Error occurred after entering a number. The entered number could not be converted.
0x0506	MENU ADD SAVE TASK	Firmware development error Adding task to scheduler failed – a changed value was not saved
0x0507	MENU ADD SEND	Firmware development error

	COMM COMMAND	Adding task to scheduler failed – a changed value was not sent to end slave
0x0508	MENU ADD WAIT TASK	Firmware development error Adding task to scheduler failed – a display task will not be performed – restart system
0x0509	MENU MAX INFO ELEMENTS	Firmware development error Too many info elements were added to menu
0x050A	MENU ADD SEND COMMAND	Firmware development error Adding task to scheduler failed – a changed value was not sent to end slave

1.1.7 Storage errors

Error code	Short description	Full description
0x0600	STORE INIT	Error occurred when saving values
0x0601	STORE OPEN FILE FOR READING	WIN32 error Opening file for reading failed
0x0602	STORE OPEN FILE FOR WRITING	WIN32 error Opening file for writing failed
0x0603	STORE ALLOCATE MEMORY	WIN32 error Error allocating memory
0x0604	STORE BUFFER NOT EMPTY	Data buffer not empty
0x0605	STORE BUFFER TOO SMALL	Data buffer too small
0x0606	STORE PTR. SAVE PARAMETERS	Data pointer not set
0x0607	STORE TYPE NOT DEFINED	Storage type not defined
0x0608	STORE NO STORED DATA	Storage of data failed

1.1.8 SD card errors

Error code	Short description	Full description
0x0700	SDCARD POWER ON CMD0	Power on command failed
0x0701	SDCARD INITIALIZE CMD1	Initialize command failed
0x0702	SDCARD READ SECT. SEND CMD	Read section from card failed
0x0703	SDCARD READ SECT. START BYTE	Read section start byte failed
0x0704	SDCARD WRITE SECT SEND CMD	Write section to card failed
0x0705	SDCARD WRITE SECT BUSY	Timeout occurred for writing to card
0x0710	SDCARD FILE IO MOUNT	File mount error
0x0720	SDCARD FILE IO OPEN	File open file error
0x0730	SDCARD FILE IO READ	File read error
0x0740	SDCARD FILE IO WRITE	File writ error
0x0750	SDCARD FILE IO SEEK	File seek error
0x0760	SDCARD FILE IO UNLINK	File delete error
0x0770	SDCARD FILE IO CLOSE	File close error

1.1.9 H-Bus errors

Error code	Short description	Full description
0x0801	HBUS CRC	Error occurred when check CRC16 of H-Bus communication
0x0802	HBUS UNKNOWN	Unknown command detected on H-Bus

1.1.10 Event messages (not defined as errors)

Error code	Short description	Full description
0x5000	EVENT BOOTING SYSTEM	System was booted up
0x5001	EVENT ENTER WARMUP	System entered warmup
0x5002	EVENT TIME FORWARD	Daylight saving active time was set forward
0x5003	EVENT TIME BACKWARD	Daylight saving active time was set backward
0x5004	EVENT ENTER ERROR	Message is stored when entering the error state
0x5005	EVENT CALIB PURGE	Event written when calibration purge gas is started
0x5006	EVENT CALIB GAS 1	Event written when calibration gas 1 is started
0x5007	EVENT CALIB GAS 2	Event written when calibration gas 2 is started
0x5008	WATCHDOG RESTART	Message written, when watchdog restart has been performed
0x5009	AUTO RESTART	Message written, when system automatically restarts due to communication failure on start-up
0x500A	ABORT CALIBRATION SYSTEM	A running calibration was aborted by the system
0x500B	ERROR CALIBRATION	Event written on calibration error occurrence
0x500C	ERROR CAL. TIME	Event written on calibration error due to time restrictions which were not met
0x500D	ABORT CALIBRATION USER	A running calibration was aborted by user
0x500E	MESSSAGE CLEAR USER	Event and error lists cleared by user
0x500F	CHECK OF SYSTEM PERFORMED	"Check OK" was confirmed by user