INT-KLCD serial port* data format (with INTEGRA 24/32/64/128 v1.05)

Tab. 1 Data-frame format for writing to serial port in INT-KLCD keypad

d1	d2	· · ·	dn	crc

d1...dn - command data described in Tab. 2
crc - additional sum modulo 256 of data-frame bytes: crc = low(d1 + d2 + ... + dn)

Description:

- receiving algorithm in INT-KLCD is not time-dependant
- to perform synchronisation of INT-KLCD (i.e. to put it into base state, to make it waiting for d1) at least two bytes 0xFF have to be sent. Two successive 0xFF bytes sent in any time mean synchronisation
- to send 0xFF value as d2 or d3 or ... or dn or crc, two bytes should be sent: 0xFF followed by 0x00
- d1 can not be 0xFF (synchronisation issue)
- two bytes should be sent after the crc: 0xFF followed by 0xAA, what means that the frame is completed
- in new INT-KLCD keypads it may be necessary to send at least 3 frames to activate the described protocol

Tab. 2 Data for writing to INT-KLCD serial port

d1	action	rest of data (d2, ..., dn) description
0x70	arm	8 bytes - code (with prefix, if entered) filled with 'A's, 4 bytes - partitions to arm, 1 byte - arming mode. Its value can be only 1, 2 or 3. For description of these modes please see DloadX help on: zones - zone types - arming zones, 1 byte - crc = xor of d1...d(n-1), i.e.: 0x70 xor 8 bytes xor 4 bytes xor 1 byte E.g.: to arm partition 31 with '12345' code in arming mode 1 the following frame should be sent: 0xFF, 0xFF, 0x70, 0x12, 0x34, 0x5A, 0xAA, 0xAA, 0xAA, 0xAA, 0xAA, 0x00, 0x00, 0x00, 0x40, 0x01, 0xE7, 0x8A, 0xFF, 0xAA, where: 0xE7 = 0x70 xor 0x12 xor ... xor 0x40 xor 0x01 0x8A = (0x70 + 0x12 + ... + 0x01 + 0xE7) and 0x00FF - i.e. 8 low bits of the sum
0x71	disarm	similar to arm, but without the byte 'arming mode'
0x72	clear alarm	similar to disarm
0x73	bypass	8 bytes - code (with prefix, if entered) filled with 'A's, 16 bytes - zones to bypass, 1 byte - crc = xor of d1...d(n-1), i.e.: 0x73, 8 bytes and 16 bytes. See egzample for arm
0x74	unbypass	similar to bypass
0x75	outputs on	similar to bypass
0x76	outputs off	similar to bypass
0x77	troubles	8 bytes - code (with prefix, if entered) filled with 'A's, 1 byte - crc = xor of d1...d(n-1), i.e.: 0x77 and 8 bytes See egzample for arm
0x78	outputs	similar to troubles

Note: the crc sum in Tab. 1 is the main check sum. The sum in Tab. 2 is the second check sum.
The results of actions in Tab. 2 can be observed by scanning the data described in Tab. 4.
The result of troubles and outputs is returned once after the command is sent, see Tab. 4 and Tab. 5 for details.

Tab. 3 Data-frame format for reading from serial port of INT-KLCD keypad

0xQQ	· · ·	0xQQ	co	d1	d2	· · ·	dn	crc

0xQQ - inter-frame byte 0xFF or 0xFE, occurs at least once, but can occur more times
co - command (see the description in Tab. 4). The command can not be 0xFF nor 0xFE (synchronisation issue)
d? - data for the command (in Tab. 4 the number of bytes for each command is denoted by 'n')
crc - sum modulo 256 of data-frame bytes: crc = low(0xQQ + co + d1 + d2 + ... + dn)
in this sum only one 0xQQ byte takes place, the one directly before 'co'

If number of bytes ('n') for a command does not match the specification in Tab. 4, it is other command that is not described in this document. Drop out such data.

* data for reading from or writing to INT-KLCD serial port at 4800/8/1/N. The same protocol can be used to communicate via CA-64 PTSA

Tab. 4 Data for reading from INT-KLCD serial port

co	n	description
0x00	4 / 5*	zones 1..32 violation / zones 65..96 violation
0x01	4 / 5*	zones 33..64 violation / zones 97..128 violation
0x02	4 / 5*	zones 1..32 tamper / zones 65..96 tamper
0x03	4 / 5*	zones 33..64 tamper / zones 97..128 tamper
0x04	4 / 5*	zones 1..32 alarm / zones 65..96 alarm
0x05	4 / 5*	zones 33..64 alarm / zones 97..128 alarm
0x06	4 / 5*	zones 1..32 tamper alarm / zones 65..96 tamper alarm
0x07	4 / 5*	zones 33..64 tamper alarm / zones 97..128 tamper alarm
0x08	4 / 5*	zones 1..32 alarm memory / zones 65..96 alarm memory
0x09	4 / 5*	zones 33..64 alarm memory / zones 97..128 alarm memory
0x0A	4 / 5*	zones 1..32 tamper alarm memory / zones 65..96 tamper alarm memory
0x0B	4 / 5*	zones 33..64 tamper alarm memory / zones 97..128 tamper alarm memory
0x0C	4 / 5*	zones 1..32 bypasses / zones 65..96 bypasses
0x0D	4 / 5*	zones 33..64 bypasses / zones 97..128 bypasses
0x0E	4 / 5*	zones 1..32 'no violation' trouble / zones 65..96 'no violation' trouble
0x0F	4 / 5*	zones 33..64 'no violation' trouble / zones 97..128 'no violation' trouble
0x10	4 / 5*	zones 1..32 'long violation' trouble / zones 65..96 'long violation' trouble
0x11	4 / 5*	zones 33..64 'long violation' trouble / zones 97..128 'long violation' trouble
0x12	4 / 5*	armed partitions (with suppressed status) / really armed partitions (without suppressed status) **
0x13	4 / 5*	partitions with entry time / partitions temporary blocked (partitions type 1)
0x14	4 / 5*	partitions with exit time >10sec. / partitions blocked for guard round
0x15	4 / 5*	partitions with exit time <10sec. / partitions with arming mode 2
0x16	4 / 5*	partitions with alarm / partitions with arming mode 3
0x17	4	partitions with fire alarm
0x18	4	partitions with alarm memory
0x19	4	partitions with fire alarm memory
0x1A	4	partitions with 1st code entered
0x1A	7	time - ss,mm,hh,dd,mm,yy,tt: ss - seconds BCD (00..59) mm - minutes BCD (00..59) hh - hours BCD (00..23) dd - day of month BCD (01..31) mm - month BCD (01..12) yy - 2 last digits of the year BCD (00..99) tt - bit.7 - service mode bit.6 - trouble tt - bits.210 - day of the week (0-Mon., ..., 6-sun)
0x55	17	16 bytes - outputs state 1 byte - sum mod 256 of 0x55 and 16 bytes

* If data contains 5 bytes, the first 4 bytes are valid data. The data containing 5 bytes can only occur in INTEGRA 128 (data with 4 bytes can occur in any INTEGRA). The 5th byte is addictional byte to distinguish the meaning of the frame (it is check sum calculated as xor function of the 'co' byte and the first 4 data bytes, e.g. the following frame can occur: 0x0A, 0x01, 0x20, 0x07, 0x09, 0x25, where 0x0A - zones 65..96 tamper alarm memory, 0x01, 0x20, 0x07, 0x09 - list of zones - zone 65, 78, 81, 82, 83, 89, 92, 0x25 - crc = 0x0A xor 0x01 xor 0x20 xor 0x07 xor 0x09).

** If suppression arm status time is set to 0 in INTEGRA (i.e. there is no arm status suppression), only the 4 data bytes will be present, and the variant with 5 data bytes will not be present.

Tab. 5 Data for reading from INT-KLCD serial port - troubles

co	n	description
0x54	48	16 bytes - troubles of zones 8 bytes - AC troubles in expanders 8 bytes - BATT troubles in expanders 8 bytes - NO BATT troubles in expanders 3 bytes - system troubles (see Tab. 6) 1 byte - AC troubles in CA-64 PTSA 1 byte - BATT troubles in CA-64 PTSA 1 byte - NO BATT troubles in CA-64 PTSA 1 byte - monitoring troubles in ETHM-1 1 byte - sum mod 256 of 0x54 and 47 bytes
0x57	27	8 bytes - troubles of head A of proximity card readers 8 bytes - troubles of head B of proximity card readers 8 bytes - overload of expanders supply outputs 2 bytes - addressable zone expanders short circut or jammed ACU-100 modules 1 byte - sum mod 256 of 0x57 and 26 bytes
0x58	57	14 bytes - jam level of ACU-100 modules 14 bytes - radio devices with low battery 14 bytes - radio devices with no communication 14 bytes - radio outputs with no communication 1 byte - sum mod 256 of 0x58 and 56 bytes
0x59	30	8 bytes - expanders with no communication 8 bytes - switcherooed expanders 1 byte - LCD keypads with no communication 1 byte - switcherooed LCD keypads 1 byte - ETHM-1 modules with no network cable 8 bytes - expanders tamper 1 byte - CLD keypads tamper 1 byte - LCD keypad initiation errors 1 byte - sum mod 256 of 0x59 and 29 bytes
0x5A	48	47 bytes - trouble memory of 0x54 1 byte - sum mod 256 of 0x5A and 47 bytes
0x5B	27	26 bytes - trouble memory of 0x57 1 byte - sum mod 256 of 0x5B and 26 bytes
0x5C	57	56 bytes - trouble memory of 0x58 1 byte - sum mod 256 of 0x5C and 56 bytes
0x5D	30	29 bytes - trouble memory of 0x59 1 byte - sum mod 256 of 0x5D and 29 bytes
0x5E	49	16 bytes - long zones violation memory 16 bytes - no zones violation memory 16 bytes - zones tamper memory 1 byte - sum mod 256 of 0x5E and 48 bytes
0x5F	32	1 byte - low battery in masters key fobs 30 bytes - low battery in users key fobs 1 byte - sum mod 256 of 0x5F and 31 bytes

Note: after 0x77 request sent to INTEGRA (see Tab. 2), troubles are returned once as one of commands described in Tab. 5. After the first 0x77 the 0x54 is returned, after the second 0x77 the 0x57 is returned, next time the 0x58 will be returned, and next time the 0x59, after it the 0x5A, 0x5B, 0x5C, 0x5D, 0x5E and 0x5F can be returned, and so on.
If there are no ACU-100 modules in the system, neither the 0x58 nor the 0x5C command is returned.
If there are no INT-RX modules in the system, the 0x5F command is not returned.

Note: INTEGRA does not send the 0x5A, 0x5B, 0x5C, 0x5D and 0x5E commands if trouble memory option is inactive.

Tab. 6 System troubles definition (3 bytes)

byte offset.bit number	description
0.0	OUT1 trouble
0.1	OUT2 trouble
0.2	OUT3 trouble
0.3	OUT4 trouble
0.4	+KPD trouble
0.5	+EX1 or +EX2 trouble
0.6	BATT trouble
0.7	AC trouble
1.0	DT1 trouble
1.1	DT2 trouble
1.2	DTM trouble
1.3	RTC trouble
1.4	no DTR signal
1.5	bo BATT present
1.6	external modem initialization trouble
1.7	external model command (ATE0V1Q0H0S0=0) trouble
2.0	no voltage on telephone line
2.1	bad signal on telephone line
2.2	no signal on telephone line
2.3	monitoring to station 1 trouble
2.4	monitoring to station 2 trouble
2.5	EEPROM or access to RTC trouble
2.6	RAM memory trouble
2.7	INTEGRA restart