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575F, 1000F, 1100F and 1800F-2071
Large field displays for serial communication

- **Serial inputs RS-232 and RS-485**
- **Bright red LED display, 1 to 6 digits**
- **Digit sizes 57, 100 or 180 mm**
- **Input galvanically isolated**
- **Power supply 85..240 VAC or 24 VDC**
- **Case protection IP65**

575F
57 mm
5 digits

1000F
100 mm
4 digits

1100F
100 mm
6 digits

1800F
180 mm
1-5 digits

The large field display series 2071 for serial communication is designed for applications where a readability of 20 to 100 metres is required. Configuration is easy with keys and a 6-digit minidisplay inside the case.

The displays use the simple Nokeval SCL protocol where only the address, value and check sum are sent. The displays come standard with both the serial inputs RS-232 and RS-485. The serial bus is galvanically isolated from the processor and the power supply. In the configuration mode you can set the address, baud rate and the type of number value that you want to appear on the display after power connection.

In industrial environments use of the addressable serial signal RS-485 is always recommended. 31 displays can be connected to one bus and by using a serial data converter (721R), another 31 displays can be added on. The maximum distance of the bus is 1 km. Serial input RS-232 only accepts one display connected to the bus the maximum distance being 15 m.

The displays can also be used outdoors if exposure to direct sun light is prevented by using a sun cover. Case protection is IP65.

Types:

575F5-2071	Digit height 57 mm, 5 digits, red LED Dark grey plastic enclosure
1000F4-2071	Digit height100 mm, 4 digits, red LED Black steel enclosure
1100F6-2071	Digit height 100 mm, 6 digits, red LED Black steel enclosure
1800Fx-2071	Digit height 180 mm, 1-5 digits, red LED Black steel enclosure

x = number of digits, please specify in the order

Technical specification:

Input:	serial signal RS-485 and RS-232, selection with terminal connections, galvanically isolated
Max. distancies:	1000 m with RS-485 20 m with RS-232
Number of meters in one loop:	1with RS-232; 1-31 with RS-485
Data	8 characters, 1 stop, no parity
Addresses:	0...99
Baud rate:	300, 600, 1200, 2400, 4800, 9600 and 19200 baud

General:

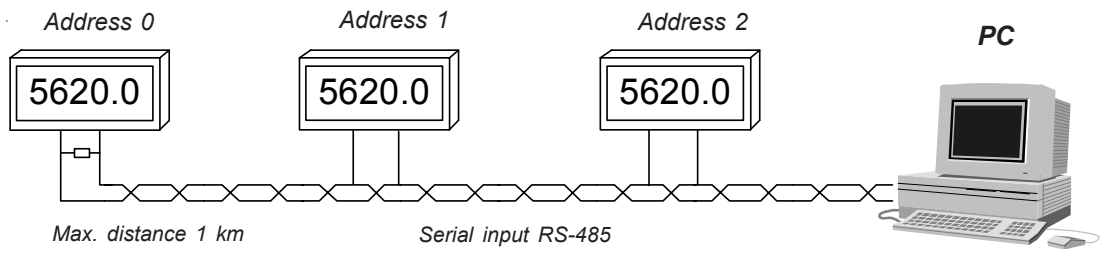
Configuration	keys and a minidisplay inside the case
Operating temp.	-35..+50 °C
Terminals	removable, wire 2,5 mm²
Power supply	85..240 VAC or 24 VDC ±15%
Case protection	IP65
Weight	575F: 3 kg, 1000F: 5 kg, 1100F: 8 kg, 1800F:18 kg

Readability of displays:

Digit size	57 mm	20..30 metres
	100 mm	40..50 metres
	180 mm	ca. 100 metres

How to order: **1100F5-2071-230VAC**

Type
Number of digits
Input card
Power supply
85-240VAC
or 24 VDC



31 displays (max.) can be connected to the bus

Nokeval SCL Protocol

for Large field displays 575F, 1000F, 1100F and 1800F-2071 and for Large panel displays 910-2071 and 920-2071

Communication parameters
Baud rate: 300, 1200, 2400, 4800, 9600 or 19200
8 data bits, None parity, 1 stop bit.

Protocols
The large field displays and panel displays can be controlled by two alternative protocols: either Nokeval SCL or Ascii. The protocol is selected in the configuration menu. Ascii protocol is very simple and there is no address involved, so every display will show the same reading. A detailed presentation of Ascii protocol is included in the manuals of the instruments.

SCL protocol
The SCL command packet consists of the actual command added by some control bytes. Control bytes are needed to select the device to which the command is addressed from the bus, to express the beginning and the end of the command and to detect errors in the transmission.

Commands for the display
You can send numbers and letters to the display by **DISP command** (use upper case):
DISP 123456 This command will display "123456".

Control bytes
SCL command packet format is:
<ID>CommandString<ETX><BCC>
The first byte sent is (ID), which acts as the start byte and also indicates the device address to which command is directed. ID byte is formed by adding 128 (80_h) to the device address. If you want to communicate with the device at address 4, the value of the ID byte is 132 (84_h).
Note: ID byte is one byte, do not send bytes '1', '3' and '2' instead!
ETX indicates the end of the command string. It is a single byte with the Ascii value 03_h.

BCC is the checksum. It is calculated from the command string and ETX byte using XOR operation (ID is not included in the calculation).

The length of the BCC is 1 byte. If you do not want to send the checksum, you can leave it out, but you must switch it off in the menu (BCC OFF).

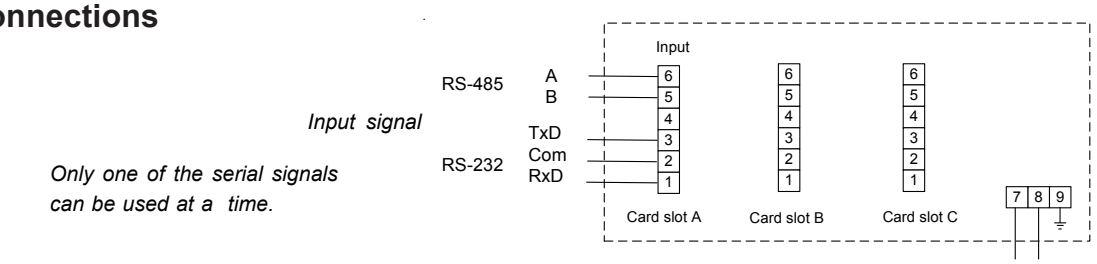
An example of the command packet: (both the characters and their Ascii values in hex):
<80h> D I S P 0 <ETX><BCC>
80 44x49x53x50x20x30x03 = 1D
The x represents XOR operation in checksum calculation.
As the ID is 80h, the target device is at address 0.

Response
The 2071 will respond to a command by sending a response string. The format of a response to a succesful command is:
<ACK>ResponseString<ETX><BCC>.
However, if there were errors in the transmission or command, the format will be:
<NAK>ErrorString<ETX><BCC>. ErrorString is a numerical string indicating the type of error. "3" means checksum error and "4" an unknown command.

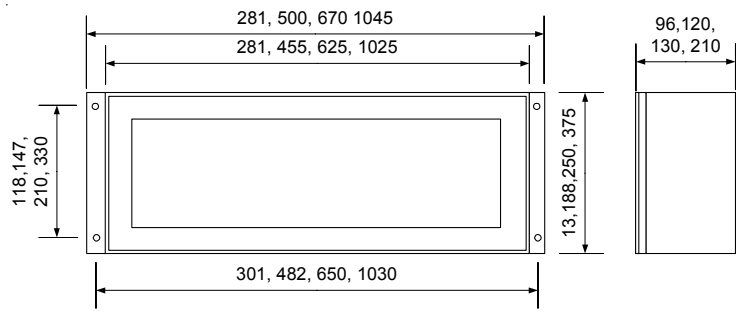
ACK-byte as the start byte of the response packet indicates that the device has accepted the command. The Ascii value of the ACK byte is 6 (06h).
NAK byte as the start byte of the response packet indicates that the device has rejected the command. The Ascii value of the NAK byte is 21 (15h).
The value of the ETX byte is 3 (03h) like in the command packet.
The content of the response packet depends on the command. The response for succesful DISP and LED commands is an empty string, that is <ACK><ETX><BCC>. For the KEYB command there will also be a response string.

The checksum BCC is calculated in the same way as in the command packet, including ACK or NAK byte, response string and ETX byte. This time the 2071 will calculate the BCC byte, and you can check it if you wish to.

Connections



Dimensions:



Power supply 85..240 VAC, or 24VDC (no polarity)

Dimensions shown in the order: 575F, 1000F, 1100F, 1800F

Glands: 2 x PG 13

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