

APS 400 Network Reader

Configuration tool for APS 400 system modules

User's guide



1 Content

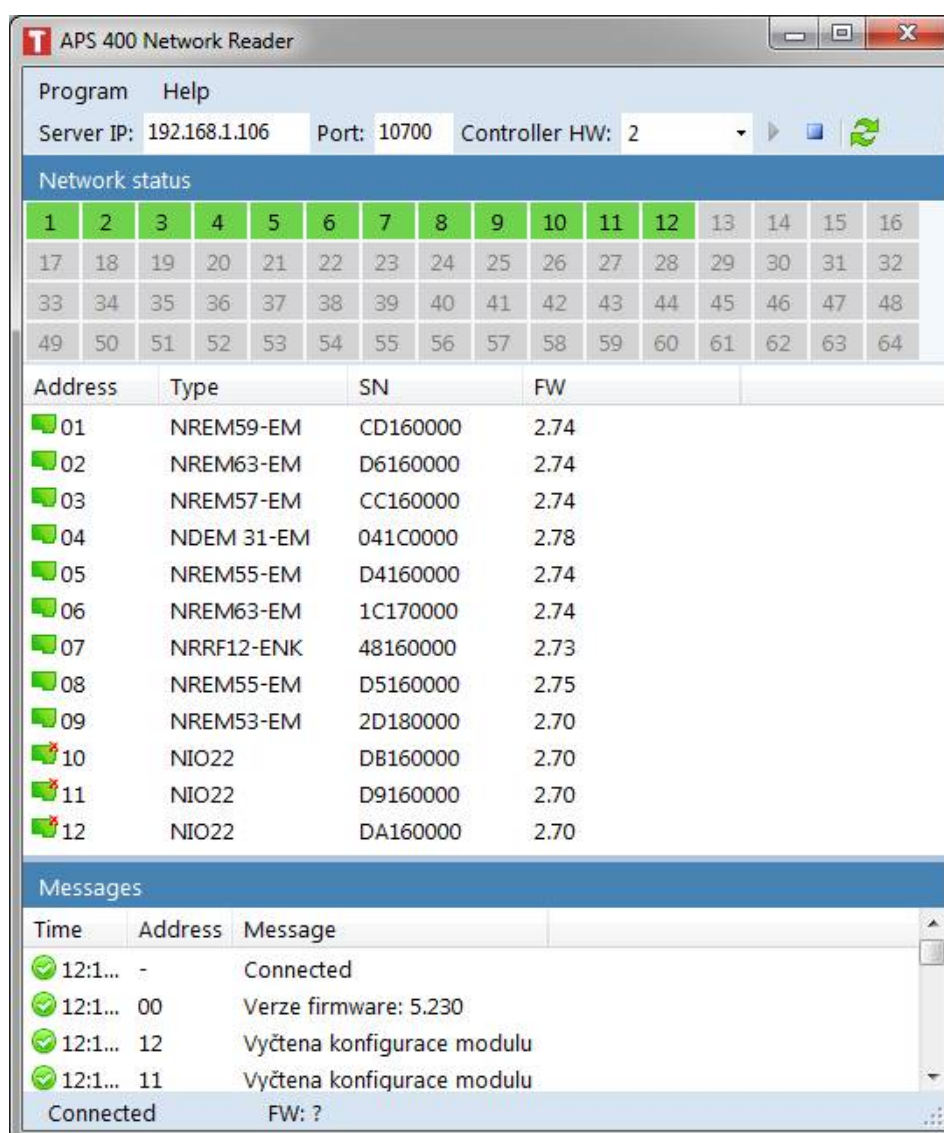
1	Content.....	2
2	Product description	3
3	Program installation and options.....	4
3.1	System requirements	4
3.2	Installation.....	4
3.3	Program options.....	4
4	Communication with network modules.....	5
4.1	Communication conditions	5
4.2	Connection parameters	5
4.3	Configurable modules	5
4.4	Connecting and disconnecting a module.....	6
4.5	HW address setting.....	6
4.6	Network modules upgrade	8
5	Configurable parameters	8
5.1	Tab page Device.....	8
5.2	Internal reader configuration	11
5.3	Keypad function	11
5.4	WIEGAND interface configuration.....	12
5.5	Input / output 3 function.....	12

2 Product description

The *APS 400 Network Reader* (pic. 1) is a basic configuration tool for setting all configurable parameters of the APS 400 system modules.

Notice: The *APS 400 Network Reader* can be used only with *network modules* with *firmware version 2.70* or higher. The *system controller* must be equipped with *firmware version 227* or higher.

The communication with the network modules connected to the APS BUS is realized via the *APS nServer.NET* program communicating with relevant MCA 168 system controller.



Pic. 1: APS 400 Network Reader program

3 Program installation and options

3.1 System requirements

The program requires a PC with OS *Windows 10 / 11* and *.NET Framework 4.6.1* installed to run.

3.2 Installation

Installer of the program can be found at techfass.com. The *APS 400 Network Reader* is installed to *Program Files\TechFass\APS 400 Network Reader* folder and shortcuts for starting the application and displaying the documentation (PDF format) placed in the *Start* menu.

3.3 Program options

The program options are available in the *Options* dialog, which is displayed after selecting *Program > Options*.

The *Program Language* can be changed in the dialog. Another option allows setting the *interval of an automatic search for updates*. For an instant search press the Search now button. The option of instant search is also available in menu *Help > Check for updates*.

4 Communication with network modules

4.1 Communication conditions

The communication of the **APS 400 Network Reader** program with the network modules is realized via the **APS Server** program. It is necessary to set up a correct connection to the **MCA 168** system controller in the APS Server program first.

Note: Description of the APS Server program installation and configuration is not a part of this manual, detailed information is available at techfass.com.

4.2 Connection parameters

In the program main menu set up the parameters for connecting the program to the communication server (**APS Server** program) and the system controller (designated with its **HW address**).

Fill in the server IP address to the **Server IP** field. When the program is used locally, you can use the value 127.0.0.1. The default value of **Port** parameter is 10700 (corresponds with the IP port setting in the APS nServer.NET program).

The **Controller HW** parameter corresponds with the HW address of the MCA 168 system controller, which is connected to the network modules.

For starting the communication press the **Connect** button at the top toolbar. The **Refresh** button can be used for refreshing the information about connected modules.

4.3 Configurable modules

After the connection with the **APS nServer.NET** is established, all information about modules connected to the APS BUS is read. Following table (*tab. 1*) describes the meaning of individual icons designating options for configuring the modules.






Program icons	Icon	Meaning
		System controller FW version supports modules configuration
		System controller FW version does not support modules configuration
		Network module is online and FW version supports its configuration
		Network module is online but FW version does not support its configuration
		Network module is offline (communication is lost)

Table 1: Program icons meaning

4.4 Connecting and disconnecting a module

The *Network status* is indicated in the upper part of the program. Each address of the BUS is represented by a colored rectangle with an address number; the color of the rectangle indicates the status of the communication with the specific address.

When the controller *tries to connect* to a network reader module at specific address or when the *connection is working properly*, the status is *indicated by green color*.

When the *communication does not work well* (the controller is trying to reach a network reader module, but is unsuccessful at the specific address), the status is *indicated by red color*. This can be caused by the fact that there is no device at the communication line with relevant HW address, or on the contrary there are multiple devices sharing the same address at the communication line.

All addresses, which are *not participating in the communication* with the controller, are *indicated by grey color*.

It is possible to command the controller to try to establish communication with a specific address in the network, or to stop communicating with a specific address. Relevant commands are available in the context menu after right-clicking at the relevant address in the *Network status* area.

4.5 HW address setting

For *problem-free communication* at the APS BUS it is necessary to *set unique HW addresses to every connected network module*. The address is defined either by the *address jumpers configuration*, or it can be *set with the SW* – with the APS 400 Network Reader program (according to HW type, see *tab. 2*).

HW address setting	Product line	Setting type
	NIO 22, NRIF 32, NREx 53, NREM 55, NREM 57, NREM 58, NREM 59, NREM 63, NREM 64, NREM 65, NREx 73, NREx 77, NREP 78, NREM 79, NREM 80, NREM 81, NREx 82, NWGD 82	Software
	NREM 54, NREM 56, NREM 76, NWGD 46 ¹⁾ , NABA 46 ¹⁾ , NRRF 12, NRIF 232	Address jumpers
	NDEM 31	Software or directly at the terminal

Table 2: HW address setting procedure type

¹⁾ These modules occupy two successive addresses. The first address is given by the address jumpers' configuration; the second one is greater by one. The Lift and XT modules occupy 4 successive addresses.

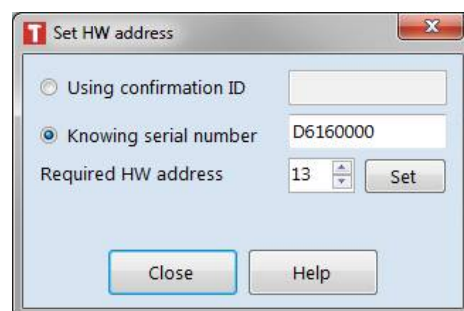
4.5.1 SW setting of the hardware address

The *APS 400 Network Reader* offers two options, how to set the HW address at a network module. The first option is using a *known serial number of the network module*, the second one is using a *known ID of a confirmation card* (tag).

The HW address setting with a known serial number procedure is supported since the network readers' FW version *2.65* and system controller FW version *229*.

The *Set HW address* dialog can be raised from the context menu in the *Network status* area or the connected readers' overview area (pic. 4).

If you know the serial number of a module (the simplest way how to set the HW addresses), select the *Knowing serial number* option and fill it in the adjacent field. After that select an unoccupied HW address in the *Required HW address* field (from the range $1 \div 64$) and press the *Set* button. The address is immediately set and the controller attempts to start the communication with a module at given address.



Pic. 4: Set HW address dialog

The second option is reading a confirmation ID at a reader in the HW address setting mode. In the *Set HW address* dialog fill in the known *ID of the confirmation card* (tag), that will be used for the HW address setting. After that select an unoccupied HW address in the *Required HW address* field (from the range $1 \div 64$) and press the *Set* button. All modules (using the SW way for HW address setting) will start blinking with red and green diode, signaling they expect reading the confirmation ID. Read the confirmation ID at required network module, the HW address will be set and after a while the communication with the address will be established.

The HW address setting procedure must be repeated until every network reader at the communication bus has a unique address.

Tip: The confirmation ID can be created from any common card (tag). You can get the card ID from a *microreader* or from the events archive in the *ASP 400 Config* program or *APS Administrator* program.

4.6 Network modules upgrade

The upgrade of the network modules is performed using a standard communication line. The upgrade file is always bound to the specific SN of the device.

For upgrading a network device raise a context menu of the reader module and select Upgrade device (NML) or Upgrade device (TFFW) according to the upgrade file suffix.

Note: If a device occupies multiple addresses at the communication line and the upgrade file is a NML file, it is necessary to connect and upload the license to every address the module occupies.

The procedure of uploading new FW to a device at a communication line is supported since the network modules FW version 2.73. The NIO 22 module does not support this function.

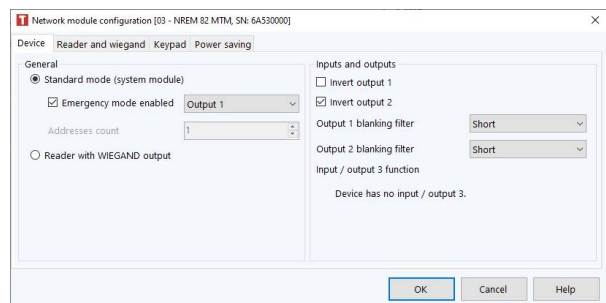
When uploading FW to a multi-address module, you must select its lowest address for the FW upload.

The FW upload procedure can take up to several minutes depending on the module type.

5 Configurable parameters

The *configuration dialog* (pic. 2) is available after double-clicking selected module or selecting *Configure* from the module context menu. With regards to the module type and firmware version, program enables to configure only parameters and values, which are meaningful for the individual module.

After finishing the configuration, send it to the module by pressing the *OK* button or cancel it by pressing the *Cancel* button.



Pic. 2: Network module configuration

5.1 Tab page Device

5.1.1 Standard operating mode

In this operating mode the function of the module is defined by the program the *MCA 168* system controller. In case of losing the communication, the module can work in offline mode when the *Emergency mode* is *enabled*.

The *emergency function* offers an option to release the door lock in the offline operating mode (when the communication with the system controller is lost - it concerns the exit readers mostly). The “*Door Open*” function for *last 750 valid cards* registered before can be performed by the function only.

When the “Door Open” function is activated, the door lock is released and the beeper activated until the door is open or 5 s preset door lock release time has elapsed.

All events triggered while the offline mode is in progress are saved neither in the controller nor in the reader memory.

From FW version 2.84, on NWGD 46 modules it is possible to select which output has to be set in emergency mode:

- Output 1,
- Output 2,
- Output 1 and output 2.

The Invert transistor output function (concerns NREM 55 module) can be used when it is required to control a reverse lock. The setting inverts the logic of the output statuses.

Setting count of HW the addresses is enabled for the devices controlling output modules (count of the addresses corresponds to the number of controlled outputs).

5.1.2 Reader with WIEGAND output

Modules providing own IDs reading can be configured in the **WIEGAND reader** mode, in which the code of read ID is sent in one of selected formats using its **WIEGAND** output. Supported formats are: 26, 32, 42 or 44 bits.

WIEGAND	ID technology	IDs sending
	EM Marin	Formatted with internal reader format configuration first, then sent with standard WIEGAND output – 26, 32, 42, or 44 bit format
	Other media	Standard WIEGAND output – 26, 32, 42 or 44 bits

Table 2: IDs format in WIEGAND operation mode

If the reader module features a keypad, the key code is sent immediately after a key press as a 4-bit burst; the highest bit comes first, the values are binary encoded. The key codes sent differ in accordance to the keypad function setting (tab. 3).

Since the **FW** version **2.79** it is furthermore possible to turn on the **Send reading synchronization commands to the controller** option. This function can be used to cancel mutual disturbance of a pair of TECHFASS® readers – module can operate in the **Wiegand reading synchronization – MASTER mode**. The function can be applied after connecting the module to properly configured reader module supporting the **Wiegand reading synchronization - SLAVE mode**.

WGD key code encoding	Key code				PIN or ID keypad			
	Title	Code	Title	Code	Title	Code	Title	Code
	1	1	9	9	1	1	8	8
	2	2	10	10	2	2	9	9
	3	3	ESC	0	3	3	0	0
	4	4	ENTER	11	4	4	ESC	10
	5	5	F1	12	5	5	↵	11
	6	6	F2	13	6	6	F ↑	14
	7	7	F3	14	7	7	A ↓	15
	8	8	F4	15				

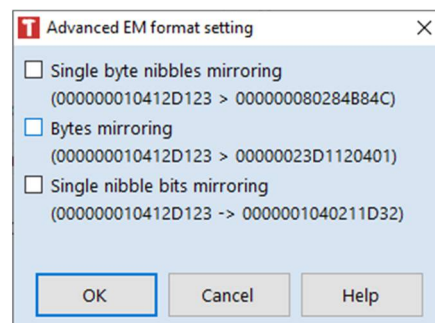
Table 3: Key code encoded in WIEGAND output configuration

5.2 Internal reader configuration

After reading an ID medium at a reader containing internal reader, the code is first formatted according to the settings, and then it is used for further operation.

Generally, the ID codes can be formatted to 24, 32, 40 or 44 bits format. The default value (for EM Marin media) is 40 bits, in this configuration the ID code is not changed.

If further adjustment of the EM Marin media code interpretation (other than the above) is required, click the *Advanced setting* link. In the displayed dialog you can select any combination of the offered modifications of the interpreted code (pic. 3).



Pic. 3: Advanced EM format setting

Note: User configuration of *Advanced settings of the EM Marin code interpretation* requires a deeper knowledge of the issue. Therefore, we recommend leaving the setting to an installation company.

5.3 Keypad function

Setting up the keypad function is only enabled where it is meaningful. The keypad function setting can be set to one of the following options:

- *Key code (or keypad not present)* – this option is used when a module without any keypad is used or when a keypad is used for entering a reason for exit.
- *PIN* – with this option selected the keypad is used for entering PIN codes, a correct PIN is required for valid identification when this option is selected; furthermore you can select a time schedule, which will cause the module to suppress PIN code requirement for a valid identification, when the time schedule is valid.
- *ID* – this option enables entering a code at the keypad which is used as a user's read ID medium; the time for locking up the keypad when an unknown ID is entered 5 times in a row can be set there as well, the setting range is from 0 to 2550s with a 10s step.

5.4 WIEGAND interface configuration

The modules **NWGD 46** and **NDEM31** feature a **WIEGAND input**, which allows to connect an **external reader** with **WIEGAND output**. Setting up the operation mode determines the function of connected reader (configurable only for the NDEM 31 module, the NWGD 46 uses always the external reader configuration).

If the operating mode is set to **Off**, the external reader is not involved; if set to **Entry reader**, the identification events raised at the reader have a reason code 255 assigned; if set to **External reader**, the internal reader of the module is turned off and the chosen reasons are assigned to the identification events raised at the external reader.

The module accepts the **WIEGAND** formats mentioned in the **table 4**. If the read signal is formatted otherwise, the data are not considered as valid and thus ignored. If another format of data is required to be considered as valid, it is necessary to set up the **User configuration** of the data read at the WIEGAND input. The table also shows the process used for individual width of read data.

Accepted formats	Read data width	Process	Resulting code width
	26 bits	Parity bits cut off (in front and at the back)	24 bits
	32 bits	Data bytes reversed	32 bits
	34 bits	Parity bits cut off (in front and at the back)	32 bits
	37 bits	Parity bits cut off (in front and at the back)	35 bits
	42 bits	Parity bits cut off (in front and at the back)	40 bits
	44 bits	Last 4 bits cut off	40 bits
	56 bits	Data bytes reversed	56 bits

Table 4: Accepted formats of read WIEGAND data– standard configuration

To enable user configuration, check the appropriate checkbox. Set the indexes of the **first** and the **last** data bit. If required, choose the **Reverse data bytes** option.

Note: User configuration of **WIEGAND input** requires a deeper knowledge of the issue; we recommend leaving the setting to an installation company.

5.5 Input / output 3 function

The **input / output 3 function** can only be configured on modules and in operating modes when meaningful. If the module does not feature this port or its function is given by selected operating mode, only the available configuration or determined function is displayed.

When the **Reader with WIEGAND output** operating mode is selected, the port function is always **Tamper** (tamper contact). When the **Entry reader** or **External reader** operating mode is selected, the port is always used for **External reader buzzer control**.

In the **Standard operating mode** the **Tamper** function is one of available options. Since the FW version 2.79 the **Reading synchronization** function driven by **IO port 3** can be selected on 125 kHz reader modules. The function can be set to **Master** or **Slave** mode.