

# ***NREM 58 SferON***

*APS 400 network reader module for SFERA panels*

*User's guide*



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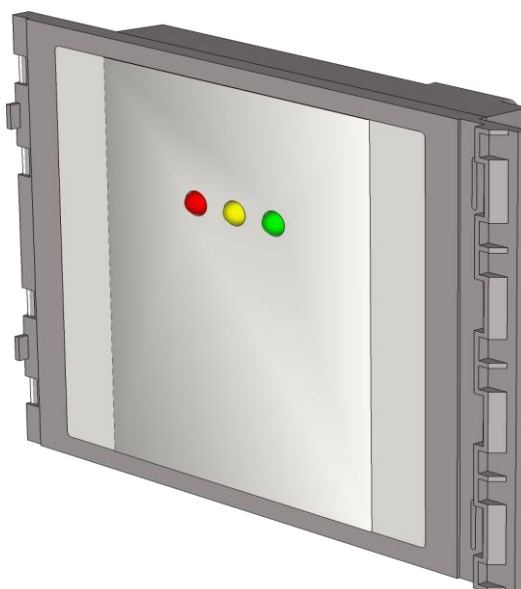
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## 2 Product Description

The **NREM 58 SferON**<sup>1)</sup> reader modules are designed for connection to the **APS BUS** of the **APS 400** identification system. Up to 64 reader modules **NREM 58 SferON** can be connected to a single MCA 168 controller.

The network reader modules (*pic. 1*) are designed for installation in **SFERA** entry panels (models: All metal, All white, All street and Robur) of audio and video systems of **Bticino** company, which is a part of **Legrand** group. The readers are integrated in the bottom part of the Namespace module (part n. 352200), and occupy space of one standard module in the panel. The module has to be covered with a top part of the Namespace module in appropriate design (352201 – All metal; 352202 – All white; 352203 – All street; 352205 – Robur).



*Pic. 1: NREM 58 SferON*

<sup>1)</sup> Commercial designation of available versions is described in *table 1*.

## 3 Technical parameters

### 3.1 Product version

Product version	Product designation	Catalogue number	Module designed for entry panel	Module features <sup>2)</sup>	
				TF	EM
	NREM 58 SferON – TF	54458600	SFERA	✓	✗
	NREM 58 SferON – EM	54458601	SFERA	✓	✓

Table 1: Product version

<sup>2)</sup> **TF** – TECHFASS factory ID media reading; **EM** – EM Marin ID media reading;

### 3.2 Technical features

Technical features	Supply voltage		9 ÷ 32 VDC
	Current demand	Typical	27 mA (27 V), 50mA (12 V)
		Maximal	140 mA (9 V)
	Version with keypad		N/A
	ID technology, typical reading range	EM Marin	4 cm (with ISO card)
	Memory		750 ID (emergency function)
	Inputs		1x logical potential-free contact 1x voltage input (+ 9 ÷ + 32 VDC)
	Output		2x relay NC/NO, 2A/24V
	I/O Port	External device	Ext. tamper / ext. reader buzzer control / Reading synchronization: MASTER / SLAVE mode
	Signalization		3x LED 1x PIEZO
	Tamper protection	Against disassembly	Reed contact
	Communication interface		RS 485 – APS BUS
	Alternative data input / output		WIEGAND (configurable)

Table 2: Technical features

### 3.3 Special accessories

Accessories	MAG	51900200	Magnet for reed contact
	WIO 22	51901000	Remote control module, 2x relay



Table 3: Special accessories

### 3.4 Using WIO 22 module for remote output control

The **WIO 22** remote control **WIEGAND** relay module is designated for secure output control of APS system reader modules. The door open or other functions can be controlled from the module located inside the secure area, while the reader module can be located in the non-secure area.

The module is controlled by **WIEGAND** signal directly from the reader module working in standard operating mode. The module must be paired with appropriate reader module before use.

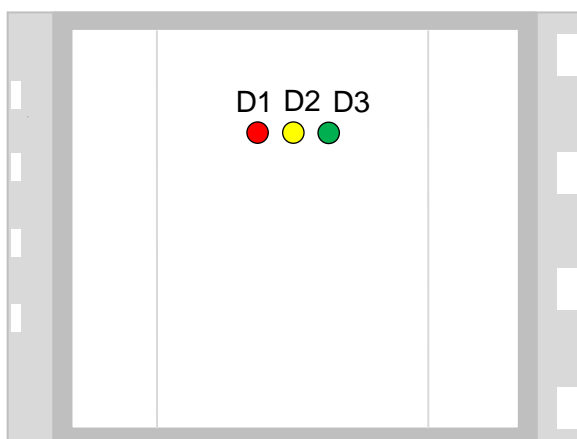
### 3.5 Mechanical design

Mechanical	Weight	0.114 kg
	Operating Temperature	-25 ÷ 60 °C
	Humidity	Max 95%, non-condensing
	Housing	IP 54, IK08 (built in entry panel)
	Pigtail	2x 0.5 m
	Dimensions (Height x Width x Depth)	115 x 91 x 27 mm

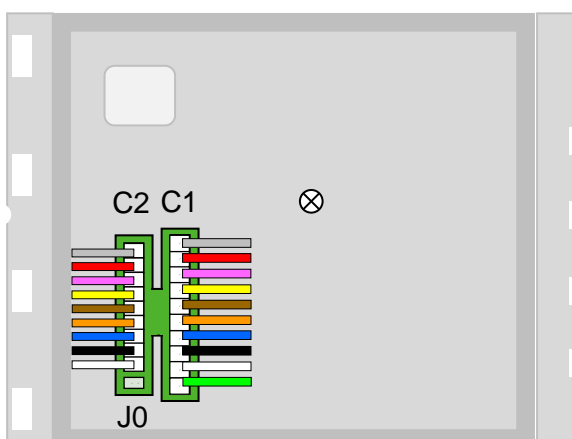
Table 4: Mechanical design

## 4 Installation

### 4.1 Connectors, jumpers and indicators description



Pic. 1: Front side of the NREM 58 SferON reader module



Pic. 2: Rear side of the NREM 58 SferON reader module

Described elements	Element	Purpose
	C1	Connector for C1 cable connection (10-wire cable)
	C2	Connector for C2 cable connection (9-wire cable)
	J0	Configuration jumper for RS 485 line termination
	D1	LED, operating mode and ID reading indication
	D2	LED, second output status indication
	D3	LED, first output status indication

Table 5: Connectors, jumpers and indicators description

## 4.2 C1 a C2 cables wiring description

Wiring description	C1 cable			C2 cable		
	#	Color	Purpose	#	Color	Purpose
	1	Grey	GND (0 V)	1	Grey	GND (0 V)
	2	Red	+9 ÷ +32 VDC	2	Red	+9 ÷ +32 VDC
	3	Pink	NO relay – lock	3	Pink	NO relay – alarm
	4	Yellow	NC relay – lock	4	Yellow	NC relay – alarm
	5	Brown	C relay – lock	5	Brown	C relay – alarm
	6	Orange	Input 2 (1st contact)	6	Orange	Input / output 3
	7	Blue	Input 2 (2nd contact)	7	Blue	GND (0 V)
	8	Black	RS 485 – A cable	8	Black	Wiegand data 0
	9	White	RS 485 – B cable	9	White	Wiegand data 1
	10	Green	Input 1			

Table 6: Wiring description

## 4.3 Standard connection of inputs and outputs

Std. connection	Input 1	Door contact, active when door closed
	Input 2	Request to exit button or handle contact, (+ 9 ÷ + 32 VDC) when button or handle active
	Output 1	Door lock control relay (+ D3 green LED)
	Output 2	Auxiliary functions relay (+ D2 yellow LED)
	I/O Port	External tamper (Standard operating mode) External reader buzzer control (op. mode with entry reader) Reading synchronization: MASTER / SLAVE mode

Table 7: Standard connection

## 4.4 D1 LED Indication

LED indicators	D1	Continuously lit (red)	Online operating mode via RS 485
		Blinking with 2s period (red)	Offline mode, emergency function enabled
		Short flashing with 1 s period (red)	Offline mode, emergency function disabled
		Fast switching (red/green)	Address setting mode
		Single flash (green)	ID media reading
	D2	Green	Controlled by the controller's program <sup>3)</sup> , copies 1st output status (Relay1)
	D3	Yellow	Controlled by the controller's program <sup>3)</sup> , copies 2nd output status (AuxOutput)

Table 8: LED indicators

<sup>3)</sup> The function of inputs and outputs is defined by user's programming of the controller.

#### 4.5 Installation instructions

The reader module uses passive RF/ID technology, which is sensitive to RF noise sources. Noise sources are generally of two types: radiating or conducting.

Conducted noise enters the reader via wires from the power supply or the host. Sometimes, switching power supplies generate enough noise to cause reader malfunction, it is recommended to use linear system power supplies.

Radiated noise is transmitted through the air. It can be caused by computer monitors or other electrical equipment generating electromagnetic fields.

Consequently, a short distance between the reader modules themselves can cause reading malfunctions – for correct operation it is necessary to keep a minimum distance of 50 cm. Various metallic constructions may have a negative influence on this distance; if there are any doubts, it is recommended to perform a practical test before final mounting.

Nearby metal surfaces may cause a decrease in reading distance and speed. This is caused by the combined effects of parasitic capacitance and conductance.

#### 4.6 Mounting and removal the module

Reader module assembly and disassembly is performed the same way as other functional modules of the SFERA panel. Relevant mounting procedures can be found in the user's guide to the SFERA entry panel.

## 5 Setting parameters of the reader module

### 5.1 Configurable parameters

Parameters	Parameter	Possible range	Default setting
	Enabling of emergency function	YES / NO	NO
	Address on a communication line	1 ÷ 64	1
	Internal reader configuration	Configurable	Standard
	Operating mode	Standard / Wiegand Input / Wiegand Output	Standard
All parameters are given by programming through the MCA 168 control module, see <a href="http://www.techfass.cz/files/aps_400_config_en.pdf">http://www.techfass.cz/files/aps_400_config_en.pdf</a>			

Table 9: Configurable parameters

### 5.2 Reader module parameters setting

Setting of all parameters of the reader module can be done only when the module is connected to the system bus of MCA 168 controller. Detailed instructions for setting reader module parameters are described in the *APS 400 Network Reader* configuration program user's guide available at: [http://www.techfass.cz/files/m\\_aps\\_400\\_network\\_reader\\_en.pdf](http://www.techfass.cz/files/m_aps_400_network_reader_en.pdf).



## 6 Reader module functioning

### 6.1 Operating modes

The *NREM 58 SferON* reader modules are intended for online operating mode on APS 400 system BUS (*APS BUS*). The activity of the modules is defined by the system controller; so the modules are able to provide various functions not only controlling of the door.

In case of the communication line fails the modules can work in offline mode (when the *emergency function* is enabled) - it concerns the exit readers mostly. The “Door Open” function for last 750 valid cards registered before can be performed in this mode only.

### 6.2 Emergency “Door Open” function description

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.

### 6.3 Read ID media format

#### 6.3.1 EM Marin ID media format

The EM Marin ID media format can be changed into selected 24, 32 or 40 bits length of ID code. The default length is 40 bits. This setting is only changed when unifying of the ID media codes length is required – in combined systems with WIEGAND output readers with a fixed WIEGAND data format IDs (more information in *APS 400 Network Reader* user's guide available at [http://www.techfass.cz/files/m\\_aps\\_400\\_network\\_reader\\_en.pdf](http://www.techfass.cz/files/m_aps_400_network_reader_en.pdf)).

### 6.4 Wiegand interface configuration

#### 6.4.1 Standard operating mode

This is the module default operating mode. The Wiegand interface is used for controlling the WIO 22 module in this configuration. When the reader module operates in the standard operating mode, the I/O Port (*tab. 6*) is used as an input for monitoring an external device tamper status.

## 6.4.2 Wiegand output

The module can be configured into a standard reader with a **WIEGAND output** in 26, 32, 42 or 44 bits format for **EM Marin** technology ID media. Read IDs are formatted with the previous setting first (see *chapter 6.3.1*), after that they are sent in the output format.

Wieg	ID media technology	Available configuration of the WIEGAND output format
	EM Marin	26bit, 32bit, 42bit, 44bit

Table 10: ID media format in WIEGAND operating mode

Two long beeps and the red LED lit feature powering up the module. The green LED blink indicates an ID reading.

Individual signals function in **WIEGAND output** operating mode is described in *table 11*.

Wiegand	Input 1	Beeper control (0 V active)
	Input 2	Yellow LED control (+9 ÷ + 32 VDC active)
	Output 1 (relay)	Tamper signaling; it follows the alarm state of tamper sensors (tamper signal = relay switched on) <sup>3)</sup>

Table 11: Signal function in WIEGAND operating mode

Since the **FW version 2.79** the reading synchronization of a **couple of TECHFASS readers** is implemented, enabling to **cancel the mutual disturbance** of the modules. The reader module offers the **Wiegand data interface synchronization** in **MASTER** mode.

## 6.4.3 Wiegand input (entry reader)

The module can be configured into a mode of controlling the door from both sides (**entry reader mode**).

In the **entry reader mode** an identification at an external reader connected via the **WIEGAND interface** acquires a **reason code 255**; at the same time the reader module operates standardly, the reason codes equal zero.

When the reader module operates in the entry reader operating mode, the I/O Port (*tab. 6*) is used as an output for controlling the entry reader buzzer.

Since the **FW version 2.79** the reading synchronization of a **couple of TECHFASS readers** is implemented, enabling to **cancel the mutual disturbance** of the modules. The reader module offers the **Wiegand data interface synchronization** in **SLAVE** mode.

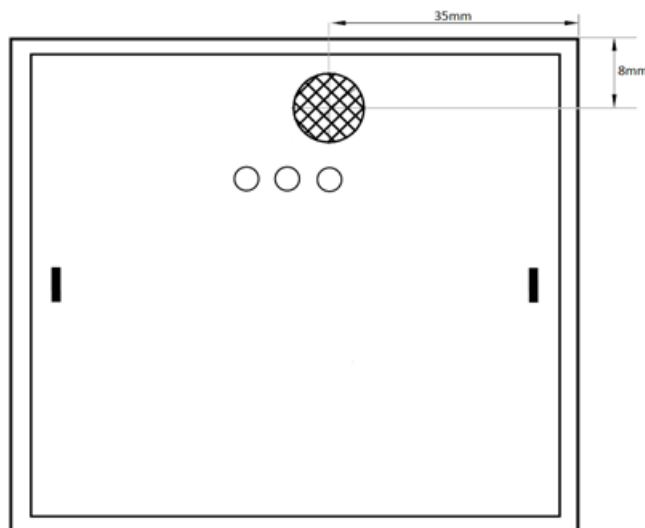
The **WIEGAND input** and **WIEGAND output** operating modes are mutually exclusive.

### 6.5 Reading synchronization

Since the *FW version 2.79* the reading synchronization of a *couple of TECHFASS readers* is implemented, enabling to *cancel the mutual disturbance* of the modules. The reader module offers to use the *IO synchronization* in both *MASTER* and *SLAVE* mode. The *input/output port 3* is used as the *synchronization signal*.

## 7 Magnet placement for tamper alarm indication

Magnet for tamper alarm indication should be attached to the front side of used installation box. The picture 6 shows the position of the magnet relative to the NREM 58 SferON reader module position displayed from the front. The magnet position in the installation box is given by projecting the drawing at the front side of the installation box.



Pic. 6: Magnet placement

## 8 Useful links

- Wiring diagrams: <http://techfass.cz/diagrams-aps-400-en.html>
- Program equipment: <http://techfass.cz/software-and-documentation-en.html>