*E*SCRIME - *T*ECHNOLOGIES

CABLES FOR THE SG FAMILY OF FENCING MACHINES

General Principles :

There are 3 types of cables used with SG machines:

- Master slave cables
- Rechargeable remote control cables
- Repeater cables

There are two generations of SG machines with different connectors
1. RS422 connector1 and DIN plugs for the repeaters
2. RS422 connector2 and RJ45 plugs for the repeaters.

In both cases, the SG machines can be daisy chained. In the new generation, the option Echo must be enabled to permit this chaining.

Definition of the RS422 connectors :

The female and male connectors are different.

RS422 female connector :

Row 1

Pin	Function
1	Input-
2	Input+
3	Output-
4	Output+
5	5V on generation 1 12V on generation 2

Row 2

Pin	Function
6	GND
7	GND
8	12V on generation 1 NC on generation 2
9	NC on generation 1 12V on generation 2

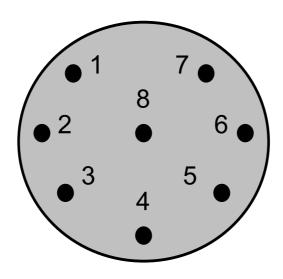## RS422 male connector (used for charging):

Row 1

Pin	Function
5	Output-
4	Output+
3	Input-
2	Input+
1	5V on generation 1 12V on generation 2

Row 2

Pin	Function
9	GND
8	GND
7	12V on generation 1 NC on generation 2
6	NC on generation 1 12V on generation 2

Definition of the repeater connectors:

Back view of the D.I.N. plug

1. **Yellow lamp on red side (left)**
2. **White lamp on red side (left)**
3. **Red lamp (left)**
4. **12V**
5. **Green (right)**
6. **White lamp on green side (right)**
7. **Yellow lamp on green side (right)**
8. **Sound**

RJ45 plug

Row 1

Pin	Function
1	GREEN
3	WHITE GREEN
5	YELLOW GREEN
7	12V

Row 2

Pin	Function
2	RED
4	WHITE RED
6	YELLOW RED
8	12V

MASTER-SLAVE CABLES :

In the SG31 or WSG31, the master or slave is set in one of the menus of the LCD screen.

With the SG21 or SG12, the machine sets itself in slave mode whenever it receives data from another machine. In order to establish master-slave communications with these machines, you thus need an **asymmetric cable** that establishes communications in one direction only. Whenever the machine that is in slave mode fails to receive data for a few seconds, it reverts automatically to master mode.

CHANGES WITH THE WSG31:

- The connectors have changed slightly.
- In the LCD menu, you can set the family of protocols(fencing technologies, Beijing or London protocols) and the baud rate. In order for these to be active, you need to turn the machine back on.

The cable is asymmetric and must be used with SG12 or SG21.

MALE-MALE cables:

Side a

1	2	3	4	5	6	7	8	9
NC	NC			NC	GND	GND	NC	NC
3	4	1	2	5	6	7	8	9
NC	NC			NC	GND	GND	NC	NC

Side b

With the cables delivered by fencing technologies, the Master side is always marked with a black tape.

If you use the SG12 or SG21 as slave, the black tape should always be on the other side.

FEMALE-MALE cables:

These should only be used with the SG12 and SG21 and only if you want to "daisy chain" many machines. You need to connect the female plug on one side to the male plug on the other (on this later plug, the cable can't be fastened).

Connection of ground is always optional.

Side a to female connector on machine

1	2	3	4	5	6	7	8	9
NC	NC			NC	GND	GND	NC	NC
		3	2		8 GND	9 GND		

Side b to top male connector on machine

The remote control cable:

This cable delivered with the SG31 allows bi-directional communications as well as **remote charging**. This cable is designed for the RS422 female plugs and thus has 2 male plugs on each side.

In generation 1, the rechargeable remote needs 5V while in generation 2, the 12V pin is used.

The inputs one each side are connected to the outputs on the other side. GND, 12V and 5V are connected directly (NC means not connected).

Side a

1	2	3	4	5	6	7	8	9
3	4	1	2	5	6	7	8	9

Side b